



North Hemel Hempstead

Transport Assessment

Client: Pigeon (Hemel Hempstead) Ltd and Bloor Homes

i-Transport Ref: NM/TH/WF/ITL16207-005A R

Date: 04 December 2025

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SECTION 1 Introduction

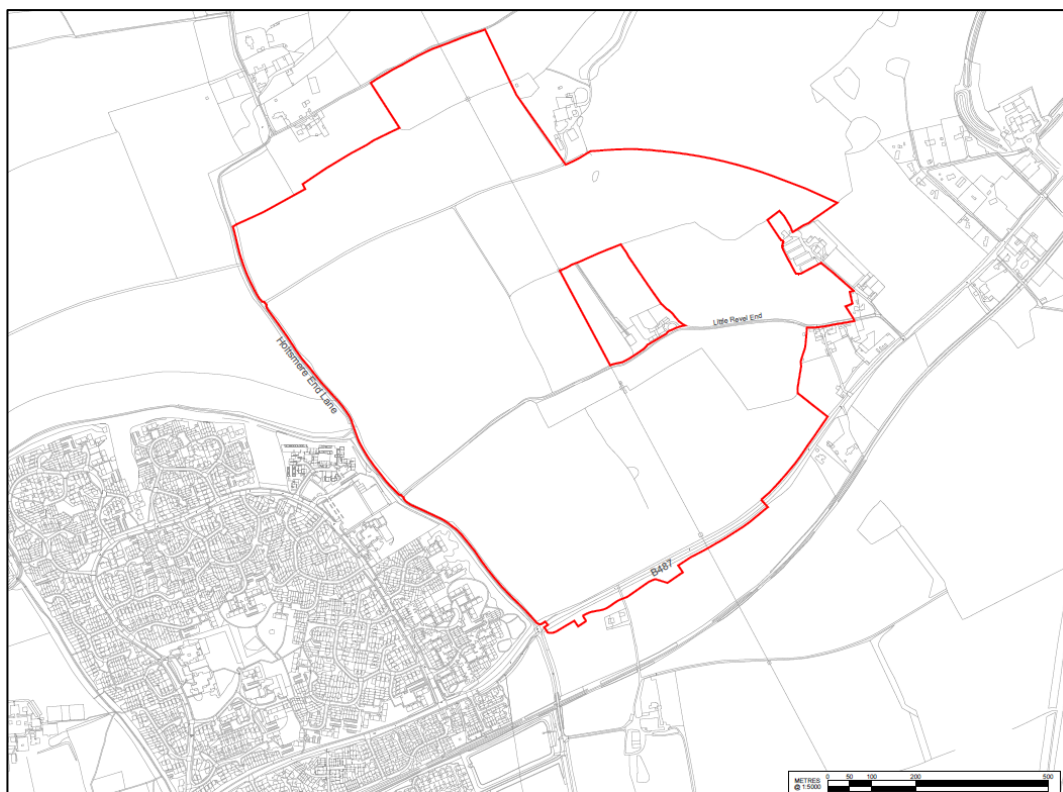
- 1.1.1 Bloor Homes ('Bloor') and Pigeon (Hemel Hempstead) Ltd ('Pigeon') ('the Applicant'), are submitting an outline planning application (all matters reserved) for residential-led development ('the Proposed Development') at land to the north of the B487 (Hemel Hempstead Road / Redbourn Road) ('the Site'). A full description of the Proposed Development is provided below:

"Outline application for residential-led mixed use development comprising up to 1,500 new dwellings (including residential accommodation and specialist accommodation for older people) (Use Class C3), a care home (Use Class C2), a 3FE primary school (including early years provision) (Use Class F1), a local centre, mobility hub, open space, amenity space, allotments, green infrastructure, sustainable drainage systems, vehicular and active travel routes, and supporting infrastructure and works. All matters reserved save for access from B487."

- 1.1.2 This Transport Assessment (TA) has been prepared to assess the transport impacts of the Proposed Development. As detailed within the development description, the application is outline only with all matters reserved except for access from B487. This TA sets out the transport context and strategy for the Proposed Development, detailing how the Vision to create a connected place that puts people first, prioritises sustainable travel and is fit for the future will be delivered. The impact across all travel modes is also examined, and opportunities for improvements have been identified. The proposals make the most of the Site location, integrating into the existing network as well as integrating with the aspirations for the area.

1.2 Site Description

- 1.2.1 The Site is located north of the B487 (Hemel Hempstead Road / Redbourn Road) between the eastern urban edge of Hemel Hempstead and the village of Redbourn, approximately 4km north east of Hemel Hempstead's town centre, in the Local Authority of St Albans City & District Council ('SACDC'). The Site lies immediately east and south of the administrative boundary of Dacorum Borough Council ('DBC'). The Site area is 105.60ha. **Figure 1-1** shows the Site location.
- 1.2.2 The Site is identified in the submitted Draft SACDC Local Plan (Site H1 – North Hemel Hempstead) to provide a new neighbourhood extension of 1,500 new homes (indicative).
- 1.2.3 The Site comprises arable agricultural farmland with areas of pasture, interspersed with mature field trees and hedgerow field boundaries. The Site is in proximity to strategic routes and benefits from direct linkages via the B487 to the A5183 Dunstable Road and the M1 motorway to the east. Three public footpaths (ref: Redbourn 009, 010 and 011) cross the Site.

Figure 1-1 - Site Location Plan

- 1.2.4 The Site is undulating with falls generally from northwest to southeast. Two shallow “valley” features follow the topography towards the south east corner of the Site towards the B487. The B487 is included within the Site boundary along the southern extents of the Site and is slightly elevated from the Site by approximately 500mm. Holtsmere End Lane (a single carriageway rural lane) is to the west and north of the Site, with Little Revel End, a single carriageway rural lane serving a small number of residential properties, dividing the centre of the Site east to west.

1.3 Surrounding Area

- 1.3.1 Approximately 4 ha of land including residential properties and associated gardens on Little Revel End are excluded from the centre of the Site. This includes Little Revel End Farm.
- 1.3.2 To the west of the Site and Holtsmere End Lane is Woodhall Farm residential neighbourhood and includes Woodhall Farm Medical Centre, Brockswold Primary School, Woodhall Farm Medical Centre and small retail area including a Sainsbury’s supermarket and car park.

1.3.3 Tullochside Farm, adjacent to the south eastern Site boundary, includes a dwelling, gypsy and traveller Site with caravans and other buildings. Spencer's Park residential development is under construction to the south west of the Site. To the north comprises Holtsmere End hamlet which includes the Grade II listed Holtsmere Manor, and to the north east comprises a farmhouse and farm buildings associated with Great Revel End Farm. Two Grade II listed buildings are associated with Great Revel End Farm: a barn and Great Revel End Farmhouse.

1.3.4 To the south, on the southern side of the B487, is the Grade II listed Wood End Cottages. The land to the south of the B487 has been identified for development in the submitted Draft SACDC Local Plan (Site H2 – East Hemel Hempstead (North)) referred to as 'East Hemel' in this report.

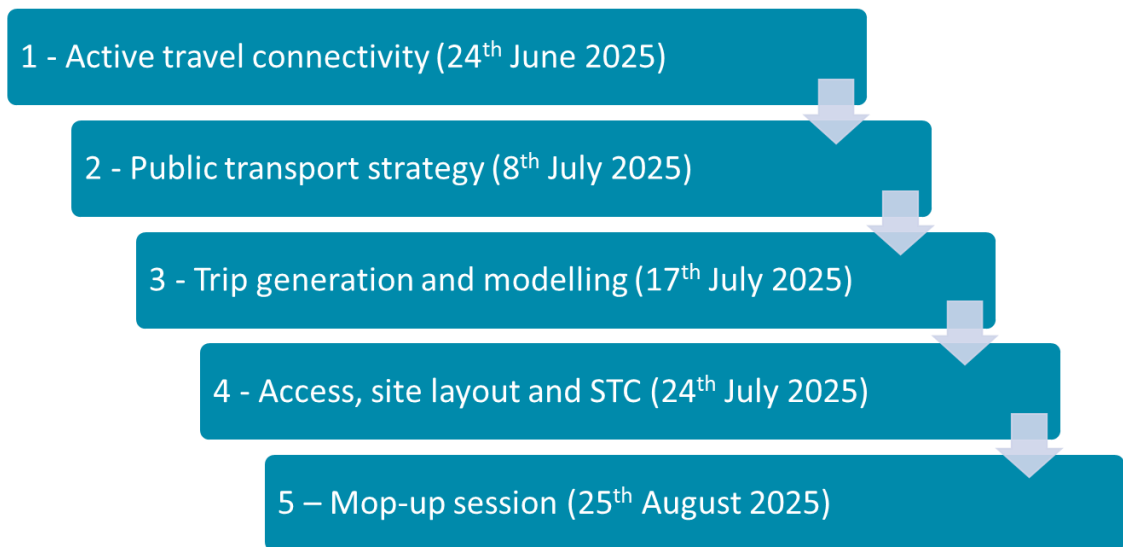
1.4 Hemel Garden Communities (HGC)

1.4.1 The Site forms part of the Hemel Garden Communities (HGC) Growth Area. The HGC Growth Area includes land within Dacorum Borough Council (DBC) and SACDC and will provide 11,000 new homes and 10,000 jobs.

1.4.2 Within SACDC, the HGC Programme plans to deliver at least 4,300 new homes by 2041, and 5,500 homes in total by 2050, through a network of new garden communities to the north east and east of Hemel Hempstead.

1.5 SACDC and HCC Pre-Application Summary

1.5.1 Extensive pre-application engagement with SACDC and HCC has been undertaken. This has included pre-application meetings with SACDC as well as transport specific workshops with HCC. A Transport Scoping Note (TSN) (**ITL16207-003 TN**) was submitted to HCC and SACDC on 1st May 2025 which set out the transport context, principles and proposed approach to this TA. A series of follow up technical workshops were held with HCC and SACDC, as summarised below:

Figure 1-2 - Pre-Application Technical Workshops Summary

1.5.2 A summary of the key points and actions from the technical workshops is provided below.

Active Travel Connectivity

- Key walking and cycling routes and desire lines identified by i-Transport agreed (towards East Hemel, Maylands and Hemel Hempstead town centre) but highlighted the need to also consider routes for recreational journeys, not only utility routes.
- Need to also account for connections to the wider HGC area to the north west of the Site. Appropriate safeguarding required to enable future connections.
- Eastern junction must have a safe pedestrian and cycle crossing connections to serve anticipated desire lines and prevent unsafe pedestrian movements in this location.
- Accepted that active travel connections to Sainsbury's in Woodhall Farm would be via the improved active travel connectivity along Redbourn Road to Shenley Road. Applicant is supportive of improvements to the bridleway north of Woodhall Farm, however this will present an alternative, recreational pedestrian and cycle route option.
- Delivery and funding of active travel improvements to be in collaboration with other developments within Hemel Hempstead to enable a coordinated approach to delivery.

Public Transport

- Agreed that the main bus route corridor for the Site would be located along the Redbourn Road corridor (following Centrebus 46 route), along the southern boundary of the Site.

- Agreed to the principle of extending the existing route of Centrebus 46 to the town centre and Hemel Hempstead train station. HCC Public Transport team suggested introducing additional, frequent service between Site, town centre and station.
- HCC suggested a preference for the future Orbital loop for full HGC to be provided in 2 sections, as a single loop would be inefficient in terms of the number buses required.
- In the Cumulative scenario (with East Hemel), bus services along the southern and eastern part of the Orbital route are to become operational, providing access between the Site, East Hemel, employment areas and towards the town centre along A414 corridor.
- HCC were supportive of the proposed western junction being a dedicated bus only access.
- HCC requested need for flexibility around bus contributions to enable services to be introduced in line with development phasing and occupation. This would allow coordination with other developments coming forward within the town, including East Hemel.

Trip Generation and Modelling

- Approach to trip generation and modelling agreed with Hemel Hempstead Paramics. This model is to be used to assess the impacts of the Proposed Development as two main scenarios: Core (without Draft LP allocations) and Cumulative (with Draft LP allocations).
- Agreed that MSOA 005 rather than MSOA 013 would be used to derive the baseline mode share for external employment trips.
- Confirmed that the Sustainable Transport Corridor (STC) route through East Hemel will be open between B487 and A414, with access for all modes (although possibly some HGV bans).
- It was confirmed that in the Cumulative scenario, the trips between the Site and East Hemel will be accounted for in the B487 junction modelling. This is particularly important for movements associated with the secondary school and employment.
- HCC confirmed agreement with the modelling approach outlined in **ITL16207-004 TN**.
- It was agreed that the 60% HGC and 40% wider Hemel Hempstead sustainable mode targets set by HGC will be a guide target, rather than aiming to the nearest percentage.

Access

- Agreed that the Proposed Development will be served by two vehicle access points from B487 Hemel Hempstead Road, both to be signal controlled. Western junction to be bus only and eastern junction to be all modes access. B487 to be shared with East Hemel.

1.5.3 The above comments have been taken on board and used to inform the development proposals and assessment presented within this TA. A Framework Travel Plan (FTP) (**ITL16207-008**) and Framework Construction Traffic Management Plan (FCTMP) (**ITL16207-007**) have also been prepared alongside this TA setting out the intended approach and principles to managing travel through the Proposed Development occupation to encourage sustainable travel. Provision of a full TP and CTMP will be provided as part of reserved matters applications/ conditions.

1.6 Structure of Transport Assessment

1.6.1 The remainder of this Transport Assessment is structured as follows:

- **Section 2** outlines the relevant national and local policy;
- **Section 3** sets out the Vision and sustainable transport principles for the Proposed Development;
- **Section 4** outlines the baseline conditions of the area focusing on travel behaviour and trends;
- **Section 5** demonstrates the Site's connectivity by sustainable modes of travel and how the Proposed Development could help contribute to the local walking and cycling connectivity aspirations;
- **Section 6** presents how the Site will be accessed from the surrounding highway network;
- **Section 7** details the access proposals;
- **Section 8** presents the proposed trip generation, distribution and modelling methodology to assess the traffic impact of the Proposed Development; and
- **Section 9** offers a summary to the Transport Assessment and outlines the conclusions.

SECTION 2 Transport Policy Context

2.1 Overview

- 2.1.1 This section of the TA summarises the relevant national and local transport planning policies that have been taken into account as part of the assessment and used to inform the proposals.

2.2 Relevant National Policy

The National Planning Policy Framework (December 2024)

- 2.2.1 Notwithstanding the outcome of the above review, national and local transport policy essentially provides 'four key transport tests' that new development should comply with. These are set out in Paragraph 115 of the NPPF and are reflected in local transport policy:

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

a) sustainable transport modes are prioritised taking account of the vision for the Site, the type of development and its location;

b) safe and suitable access to the Site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) 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 through a vision-led approach." (ref: NPPF para 115)

- 2.2.2 In terms of the last test, Paragraph 116 of the NPPF sets a deliberately high bar when it comes to preventing development from coming forward for transport reasons:

"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, following mitigation, would be severe, taking into account all reasonable future scenarios." (ref: NPPF para 116)

- 2.2.3 Development should therefore provide opportunities for sustainable travel; achieve safe access; be designed in accordance with national design guidance and should only be prevented where the residual cumulative impact is '**severe**'. These four key tests are assessed in this TA.

2.3 Relevant Local Policy

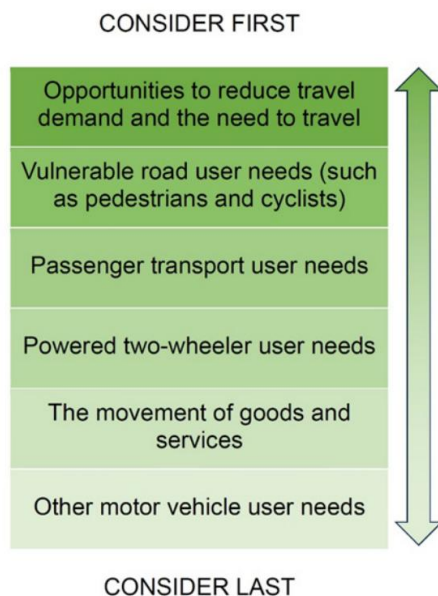
Hertfordshire Local Transport Plan (LTP4) 2018 – 2031

2.3.1 LTP4 sets out how transport can support a positive future for Hertfordshire by contributing to:

- Economic growth
- Meeting housing needs
- Improving public health
- Reducing environmental damage
- Ensuring safe and efficient travel

2.3.2 Reducing reliance on private cars and encouraging alternative travel modes is a key focus of HCC's LTP4. Policy 1 introduces the Transport User Hierarchy, illustrated in **Figure 2-1**, which should guide both transport strategy development and the design of individual schemes.

Figure 2-1 Transport User Hierarchy



2.3.3 Policy 2 of LTP4 focuses on supporting developments with the potential to be served by high quality passenger transport facilities so they can form a real alternative to the car. The delivery of infrastructure to support the sustainability of the Site and the wider HGC have formed a central part of the Proposed Development, with excellent opportunities for travel by public transport.

2.3.4 Policy 5 focuses on ensuring the access arrangements are safe, suitable for all people and the internal network is developed to suitable adoptable standards. The proposed access junction has been designed in accordance with design standards. The Parameter Plans submitted with the application show the principles of the internal network. The full details of internal routes will be provided as part of reserved matters and will be in line with HCC design guidance.

2.3.5 Policy 6 and 7 promote walking and cycling respectively by delivering infrastructure to provide safer access to key services and identifying and promoting networks of priority routes.

2.3.6 Policy 12 states that HCC will seek to manage, and where feasible reduce traffic congestion, prioritising strategic routes. Detailed strategic traffic modelling has been undertaken and presented in this TA, assessing the impacts of the development on the highway network.

HCC Highways Place and Movement Planning and Design Guide

2.3.7 The guide provides comprehensive design advice for highway improvements carried out by the council, developers, agents, or third parties. It supports the delivery of sustainable, safe, and inclusive transport infrastructure, aligned with the User Hierarchy outlined in LTP4.

2.3.8 The guidance is split into four parts, each covering different aspects of planning and design:

- Part 1: Strategic principles and policy alignment
- Part 2: Detailed design standards and layout requirements
- Part 3: Planning application preparation and compliance
- Part 4: Technical specifications and adoption standards

2.3.9 Of particular relevance to this application is Part 1 of the policy which provides overarching design principles, these will be taken into account as part of the internal Site layout design.

SACDC Local Plan 1994

2.3.10 Adopted in November 1994, this Plan served as the statutory development framework for the St Albans City and District Council. Many policies have since expired, a number were “saved” in 2007 and remain part of the current development plan.

2.3.11 Many transport policies are less focused on active travel and instead prioritise proposals for junction improvements and safeguarding land for future road widening. Relevant saved policies include the parking standards and highways considerations to promote road safety and managing highway capacity.

2.3.12 Policy 34 – Highways Considerations in Development Control states ***"Development likely to generate a significant amount of traffic or which involves the creation or improvement of an access onto public highway will not normally be permitted unless acceptable in terms of road safety, environmental impact of traffic, road capacity, and car parking provision."***

2.3.13 Policy 36A – Location of New Development in Relation to Public Transport Network states ***"In considering the impact of new development, account will be taken of its proximity to the public transport network and whether facilities will be provided within the development to cater for use of the network."***

2.3.14 The 1994 Plan is in the process of being replaced by a new 2041 Local Plan. The emerging SACDC 2041 Draft Local Plan was submitted for Examination on 29 November 2024, and the Hearings have now concluded. Significant weight should therefore be given to the emerging SACDC 2041 Draft Local Plan.

SACDC Draft Local Plan 2041

2.3.15 The Draft Local Plan sets out the spatial planning strategy for St Albans City and District from October 2024 to March 2041. Once adopted, it will replace the 1994 Local Plan, aiming to manage development, infrastructure, and environmental protection in line with national planning policy.

2.3.16 The HGC features heavily in the Draft Local Plan. It states that to support this planned growth, DBC and SACDC have jointly prepared policies and evidence to govern design and delivery of those new communities.

2.3.17 The Site is identified as a draft allocation *H1 – North Hemel Hempstead* within the Draft Local Plan. This includes a proposed use of primarily residential, comprising 1,500 homes (indicative) in total and 1,125 in the Plan period. There are several transport related development requirements set out as part of the allocation, as listed below:

- ***High-quality Key and Local Transport Network including the Sustainable Transport Corridor, active and sustainable routes, wider routes, and interventions. The Key and Local Transport Network should connect the Site with local and key destinations including the new local centre, surrounding neighbourhoods, schools, Woodhall Farm, Country Park, the Nickey Line, Hemel Hempstead Town Centre and railway station and Redbourn.***
- ***Contributions to improve and enhance countryside access links and off-road paths (Public Rights of Way) including Footpath 9, 10 and 11.***
- ***Contributions to access and route improvements to the Nickey Line including connections to Redbourn and placemaking enhancements set out in the Nickey Line Vision and Strategy.***

- ***HGC Green Loop including Holtsmere End Lane and connections to the Green Loop and Dodds End Lane.***
- ***An Integrated Mobility hub with facilities to encourage and facilitate modes of transport other than the private car.***
- ***Safe, high-quality pedestrian and cycle crossings, including the Redbourn Road (B487). A high-quality gateway entrance along the B487 to Hemel Hempstead serving Site allocations H1 and H2.***
- ***Development and design that considers connections to the neighbourhoods to the south and west.***
- ***Enable enhancements to Woodhall Farm local centre and strengthen active travel routes to this local destination.***
- ***Opportunities for remote working within local centres.***

2.3.18 These transport related interventions and aspirations have been considered and incorporated into the development proposals and have informed the transport strategy for the Proposed Development.

Emerging Supplementary Planning Documents

2.3.19 HGC, SACDC and DBC collectively are preparing two Supplementary Planning Documents ("SPDs") to provide additional guidance on policies relating to HGC, these are:

- HGC Framework and Transformation SPD; and
- HGC Stewardship and Placemaking SPD.

2.3.20 The purposes of the two SPDs are to inform the future design, masterplanning, planning applications and the development delivery of the HGC Programme Area.

2.3.21 The NPPG states that SPDs "should build upon and provide more detailed advice or guidance on policies in an adopted local plan. As they do not form part of the development plan, they cannot introduce new planning policies into the development plan."

2.3.22 The SPDs have not yet been subject to consultation and therefore currently carry no weight. It is anticipated that both SPDs will be issued for consultation in early 2026, with formal adoption expected in Spring 2026. Although the draft SPDs have not been published, the HGC Framework Plan Evidence Base Report (September 2024) and the draft HGC Strategic Design Code (September 2024) form part of the Regulation 19 LP evidence base. The Proposed Development has had regard to the content of these evidence base documents.

HGC 2050 Transport Vision & Strategy

- 2.3.23 The Transport Vision & Strategy is part of the evidence base supporting the DBC and SACDC draft Local Plans; Hertfordshire County Council's Growth and Transport Plan, and the wider HGC Programme.
- 2.3.24 The HGC Transport Vision and Strategy document aims to achieve change to active and sustainable travel modes for 40% of existing trips from/ to/ within Hemel Hempstead, and 60% modal shift from/ to/ within HGC by 2050. This is intended to be supported through a series of interventions to be included within the Infrastructure Delivery Plan (IDP) for HGC.
- 2.3.25 The HGC Transport Vision forms the basis of the vision and strategy for the Site that is detailed in the following section.

2.4 Summary

- 2.4.1 The primary aims of the national, regional and local transport policy focus on limiting the number of trips that need to leave the Site, promoting active travel by delivering infrastructure to provide safer access to key services, and adopting a vision led approach.
- 2.4.2 The Proposed Development is identified as a draft allocation *H1 – North Hemel Hempstead* within the SACDC Draft Local Plan. The Proposed Development will provide the transport related requirements set out as part of the allocation, the details of which are presented through this document.
- 2.4.3 The HGC Framework Plan and Strategic Design Code have been referred to throughout the masterplanning process. The target of achieving 60% modal shift from/ to/ within HGC by 2050, as set out within the HGC Transport Vision and SACDC Draft Local Plan Policy LG3 Pillar 1, is a key consideration to the assessment of the Proposed Development. The design of the Proposed Development, the connections to existing transport opportunities and the sustainable interventions presented through this document aim to support achievement of this vision.

SECTION 3 Vision and Sustainable Transport Strategy

3.1 Overview

- 3.1.1 The Proposed Development will be designed to align with and support the vision for the wider HGC programme area. This includes ambitious but realistic targets to encourage the uptake of sustainable modes of travel including walking, cycling and public transport. In addition to this, routes for wider strategic connections including the STC will be safeguarded through the Site.

3.2 Hemel Garden Communities Transport Vision

- 3.2.1 The HGC Transport Vision is as follows:

“By 2050, Hemel Hempstead will be a place where walking, cycling and public transport are the natural choice for local journeys, for residents and visitors alike. A place where at least 40% of all person trips from/to/within Hemel Hempstead, and 60% of all person trips from/to/within new Hemel Garden Communities neighbourhoods, will be undertaken by sustainable modes of travel. An innovative place, fit for the future, where high-quality transport networks prioritise local journeys and support decarbonisation. Well-connected neighbourhoods and employment areas will strengthen the local economy and promote sustainable growth and investment.”

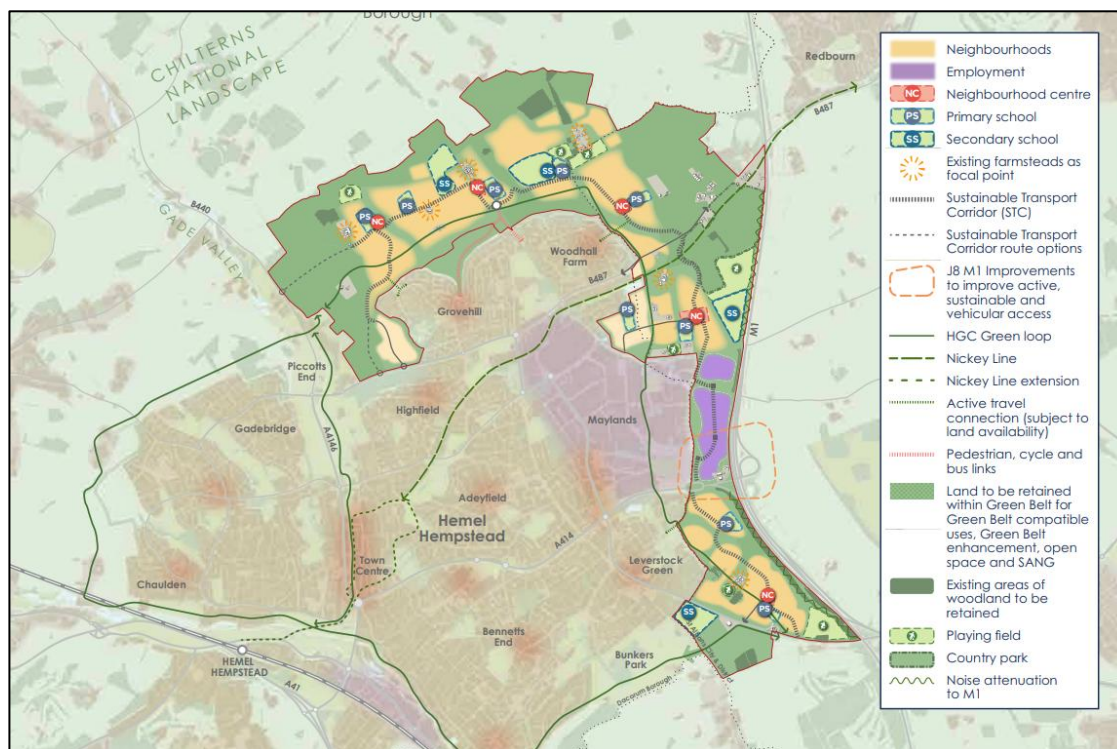
- 3.2.2 The HGC Transport Vision is set out across three strategic themes. **Figure 3-1** below presents an interpreted summary of these, which have informed the transport strategy for the Proposed Development.

Figure 3-1 HGC Transport Vision Strategic Theme Summary



3.2.3 Figure 3-2 below illustrates the concept masterplan developed by HGC.

Figure 3-2 Concept HGC masterplan



Source: HGC Framework Plan Story Document

3.2.4 The HGC area will be well integrated and connected to the existing built up area of Hemel Hempstead. There will be a good range of local facilities and services delivered, enabling most everyday journeys to be undertaken by active modes or utilising public transport.

3.3 North Hemel Transport Vision

3.3.1 This section demonstrates how the masterplanning and proposed interventions support and comply with the wider HGC Vision through consideration of the strategic themes.

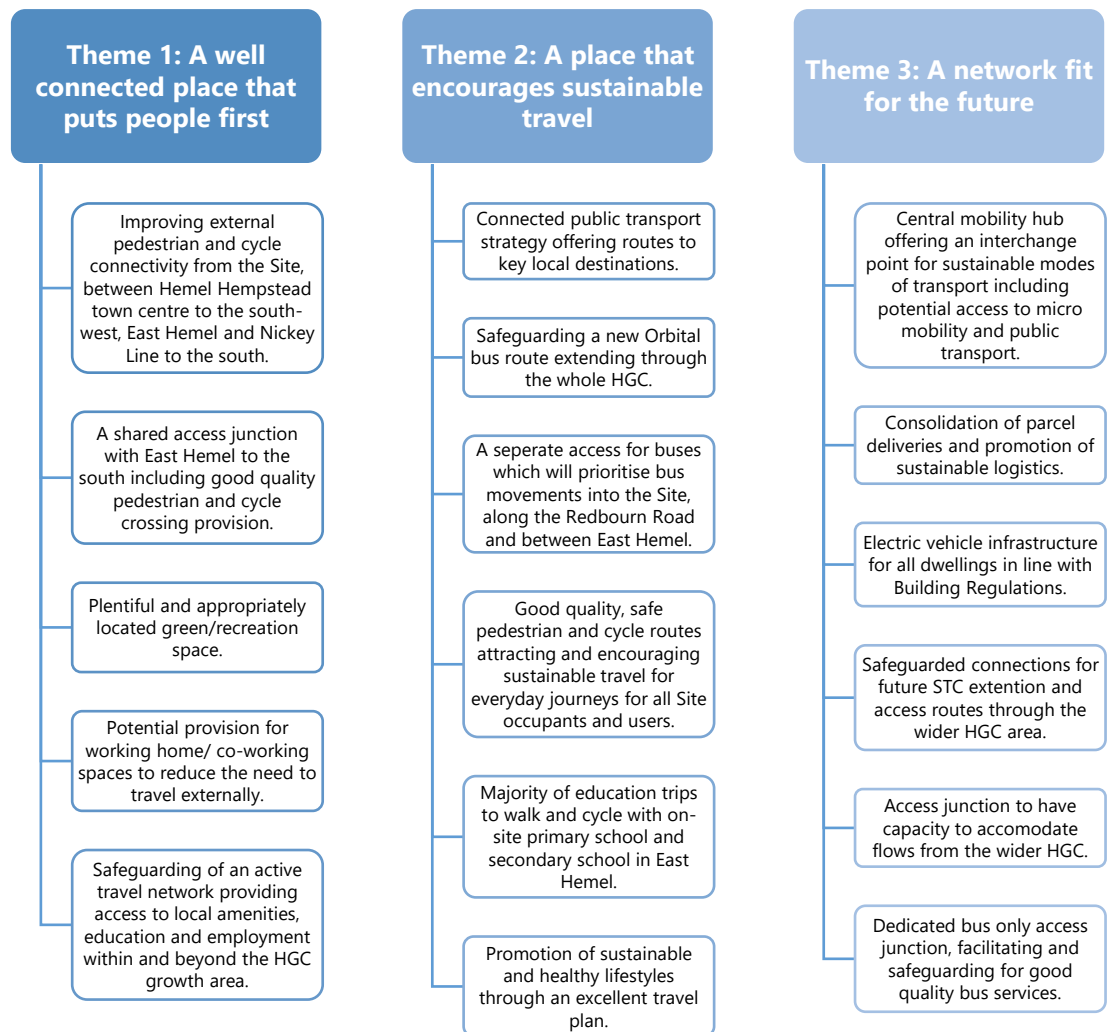
3.3.2 The North Hemel Transport Vision can be summarised as follows:

“Creation of a well-connected development that maximises the opportunities presented by the Site location and transport connectivity, both in a standalone context and in the context of current and future development coming forward in the area. By prioritising sustainable travel, the development will support the achievement of the Hemel Garden Communities’ Transport Vision and target 60% sustainable travel mode share.”

3.3.3 The prioritisation of sustainable travel is at the heart of the Vision, both as a standalone development, and as an element of the wider HGC area covering both SACDC and DBC.

3.3.4 **Figure 3-3** presents a summary of the interventions included as part to the Proposed Development which align with, and will support, the achievement of the Vision. These have been identified and developed through the pre-application engagement with SACDC and HCC, as well as close collaboration with the adjoining developments, particularly East Hemel.

Figure 3-3 - Transport Vision Interventions Summary

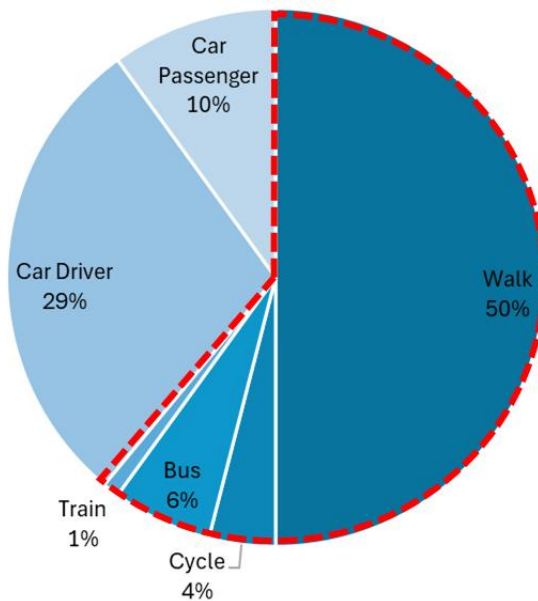


3.3.5 These are initial principles at this stage and will be delivered through a combination of on-site and Site-specific interventions, joint delivery with East Hemel as well as contributions. The full delivery approach and mechanisms are to be agreed with SACDC and HCC. The interventions are expanded on in **Section 5**, with principles for the on-site interventions and connections also set out within the Development Specification and Access and Movement Parameter Plan, with details to be developed and agreed as part of subsequent reserved matters applications.

3.4 Achieving the Vision

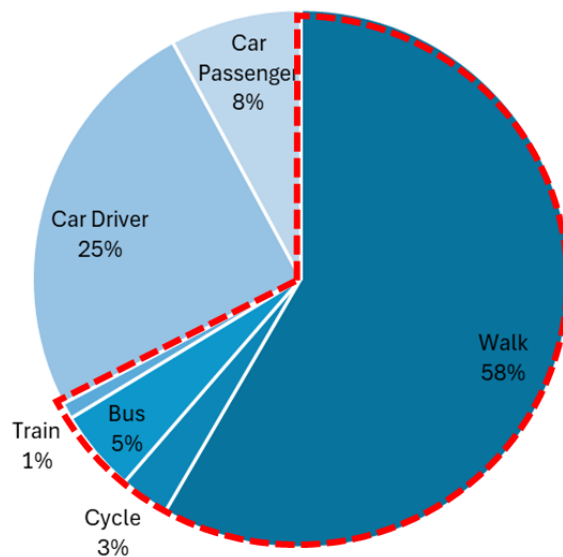
- 3.4.1 The success of the Vision will be the achievement of HGC's goal for 60% of all person trips to be undertaken by sustainable modes. To determine the anticipated mode share, a Trip Model has been developed, and the methodology has been agreed with HCC. The agreed Trip Model assigns the total person trip generation from the Proposed Development across modes based on existing local travel behaviour, the location and appeal of local trip attractors, existing transport connectivity, consideration of the masterplanning and travel interventions, amongst many other variables. The output of the Trip Model is the total trip generation of the Proposed Development across all modes, and the sustainable trip demand distributed locally and across the network.
- 3.4.2 The methodology and outputs of the model are presented and discussed in **5.9.1** of this TA, but the mode share outputs are shown in the following figures to demonstrate how the modelled mode share of the Proposed Development accords with the Vision for the Site.
- 3.4.3 The mode share for the Site has been determined for two development scenarios: **Core**, which considers the Proposed Development in isolation against background growth and committed development; and, **Cumulative** which considers the Proposed Development against, background growth, committed development and SACDC/ DBC Local Plan Sites.
- 3.4.4 The distinctions in the mode share of the Proposed Development trips across these scenarios relates to the inclusion of the employment and education facilities within the neighbouring East Hemel development that creates a 'pull' for Proposed Development trips for these purposes to be made using active modes. This effect is demonstrated in the following figures.
- 3.4.5 **Figure 3-4** shows the mode share of the Proposed Development in the Core scenario. This demonstrates that 61% of daily trips by sustainable modes of transport.

Figure 3-4 Development Mode Share – Core Scenario



3.4.6 **Figure 3-5** shows the proposed mode share of the Proposed Development in the Cumulative scenario. This demonstrates that 67% of daily trips by sustainable modes of transport.

Figure 3-5 Development Mode Share – Cumulative Scenario



3.4.7 Both mode share scenarios consider a future year of 2041, by which point it is anticipated that the HGC's wider vision for at least 40% of all person trips from/to/within Hemel Hempstead to being sustainable will be in the process of being realised. The Proposed Development mode shares presented above should be considered in the context of the Vision for a wider mode within Hemel Hempstead that is supported by SACDC and DBC in their emerging Local Plans.

SECTION 4 Transport Connectivity and Opportunities

4.1 Overview

4.1.1 This section presents an overview of existing travel behaviours and trends in the area as well as reviewing how and where people in the area travel. Within this wider context, the existing opportunities for travel across sustainable modes are explored, and how the Proposed Development could help fulfil improvements and enhancements to these.

4.1.2 The opportunities presented by the existing local transport network and local travel behaviours have been discussed and agreed with HCC throughout the pre-application process. The opportunities outlined in this section are capitalised on through the active travel strategy that is detailed in **Section 5**.

4.2 How do existing residents travel?

4.2.1 **Table 4-1** presents the 2011 Census Method of Travel to Work data for the Dacorum 005 Middle Super Output Area (MSOA), which is adjacent to the Site and covers Woodhall Farm. This is the most representative location for the existing commuting mode share. This shows car travel (both driving and passenger in a car or van) is the most popular mode of travel for commuting trips. Thus, there is an opportunity to encourage active travel trips in the local area.

4.2.2 Mode share information for other journey purposes is also available on Temprow and the National Travel Survey (NTS). These sources are utilised in the Trip Model outlined in **5.9.1**. It is anticipated that a large proportion of non-commuter trips including education and shopping trips will be undertaken within the Site or the wider HGC area.

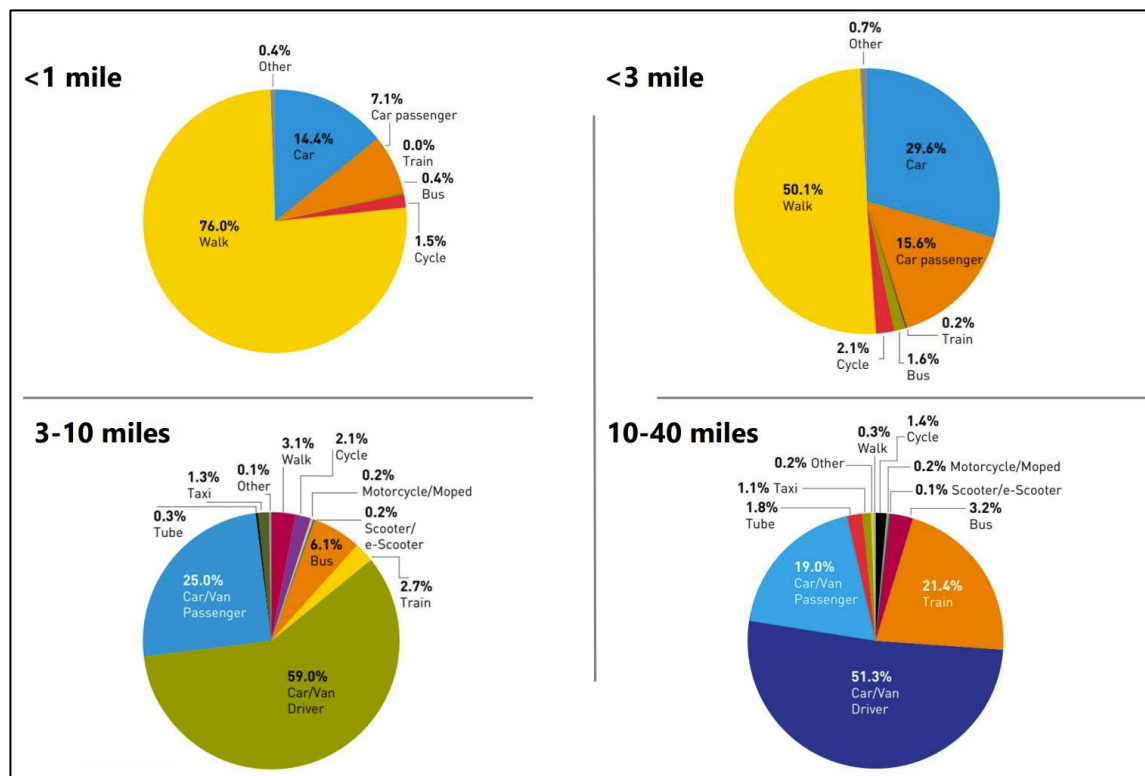
Table 4-1 Local Method of Travel to Work

Mode	Mode Share %
Walk	9%
Cycle	1%
Bus	6%
Train	4%
Car Driver	75%
Car Passenger	5%
Total	100%

Source: NOMIS 2011 Census Method of Travel to Work data for the Dacorum 005

4.2.3 Facilitating shorter journeys to essential amenities and facilities will be important for the achievement of the target mode share. Examination of mode share across journey distance bands offers an initial indication on the potential mode share. The charts in **Figure 4-1** below present this for Hertfordshire. The mode share for journeys under 1 mile form the basis for the mode share assumed for trips remaining internal to the Proposed Development in the Trip Model presented in 5.9.1.

Figure 4-1 Hertfordshire Mode Share

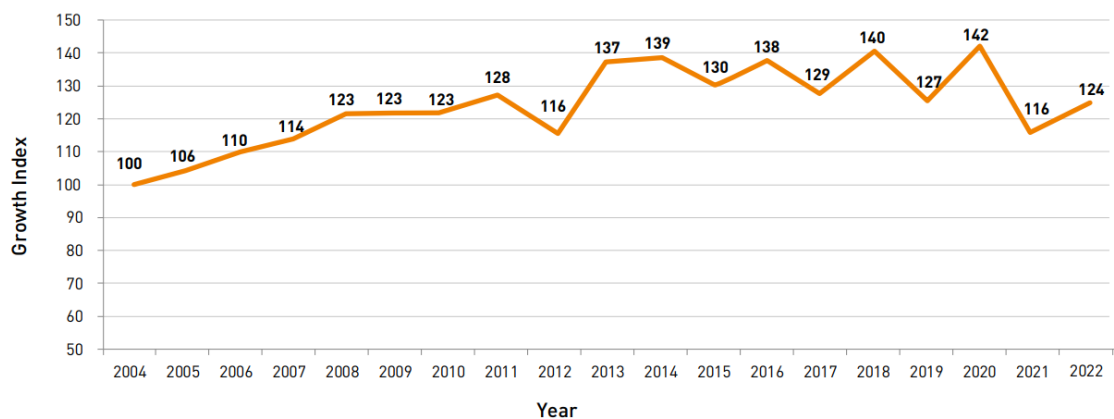


Source: Hertfordshire Traffic and Transport Data Report 2023

4.2.4 The charts indicate that the highest potential for walking and cycling is for journeys under 3 miles (4.8km). All trips within the Site will be within this distance, therefore offering potential for significant sustainable travel mode share for internal trips. The nearby allocations within HGC growth area will also be within 3 (4.8km) miles, as will much of the major employment area of Hemel Hempstead industrial estate. This presents an excellent opportunity for many employment trips at the Site to be undertaken by foot or cycle.

4.2.5 Recent data indicates that nationwide the increase in cycle trips during COVID does not seem to have been sustained in the longer term. The decrease since COVID is reflected at a county level although unlike the UK average, cycle trips did increase between 2021-2022.

Figure 4-2 Change in cycling in Hertfordshire



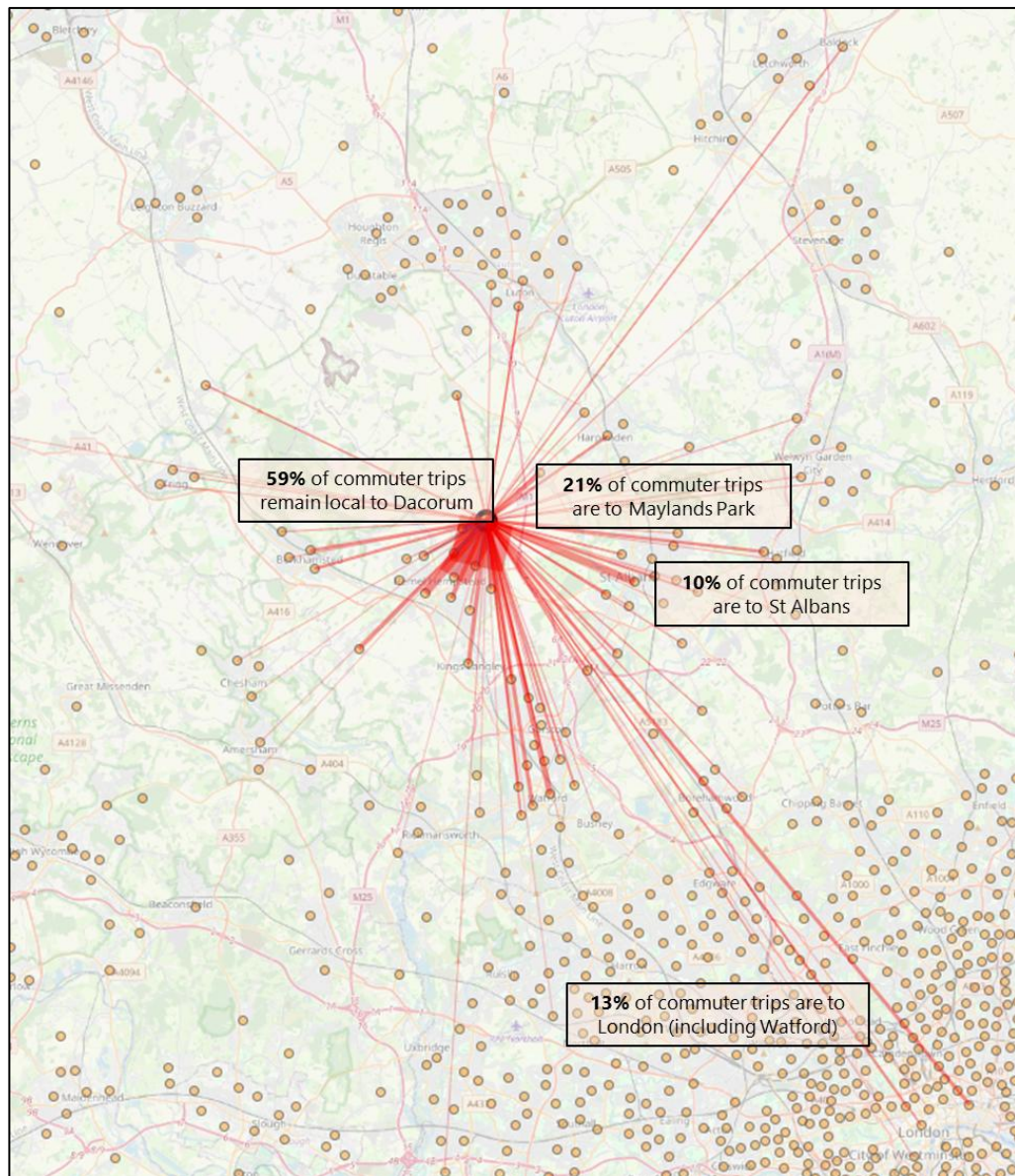
4.2.6 An effective strategy to increase cycle mode share is by focusing on trips that take less than 20 minutes for a cyclist (or 3 miles). The 2022 HCTS showed that 51% of all journeys were under 3 miles, which means a lot of people could switch from driving to sustainable travel for these short trips. The potential measures to maximise the cycle mode share are detailed in **Section 4.4**. This includes connections to the proposed HGC Green Loop, potential improvements along Redbourn Road towards Hemel Hempstead town centre, improved connections to The Nickey Line, mobility hub and dedicated cycle infrastructure within the Site and into the wider HGC.

4.2.7 For journeys between 3-10miles (4.8-18km) car travel becomes more popular. To reduce car mode share, public transport will be promoted for these journeys, with buses offering a good, realistic alternative. For longer distance journeys over 10miles rail will be more suitable, via Hemel Hempstead and Apsley stations. To help facilitate change in the way existing and prospective residents travel, the Proposed Development includes improvements to bus travel connectivity along key routes. These interventions are detailed in **Section 5.3.3**.

4.3 Where do existing residents travel?

4.3.1 Hemel Hempstead is a large town with a high number of jobs and amenities and a high proportion of everyday trips which remain local to the Dacorum and St Albans boroughs. Maylands Park offers a major centre of employment in the Hemel area and attracts 21% of commuter trips from the Site's MSOA which can easily be undertaken by active travel. The Site is also located close to St Albans and is a popular destination for existing residents in the area although severance in sustainable travel trips is created by the M1 to the east and the lack of direct bus services. Hemel Hempstead's proximity to London and direct train connection has also created large commuting flows to the capital. The figure below demonstrates the existing journey to work distribution from the nearest MSOA to the Site (MSOA Dacorum-005).

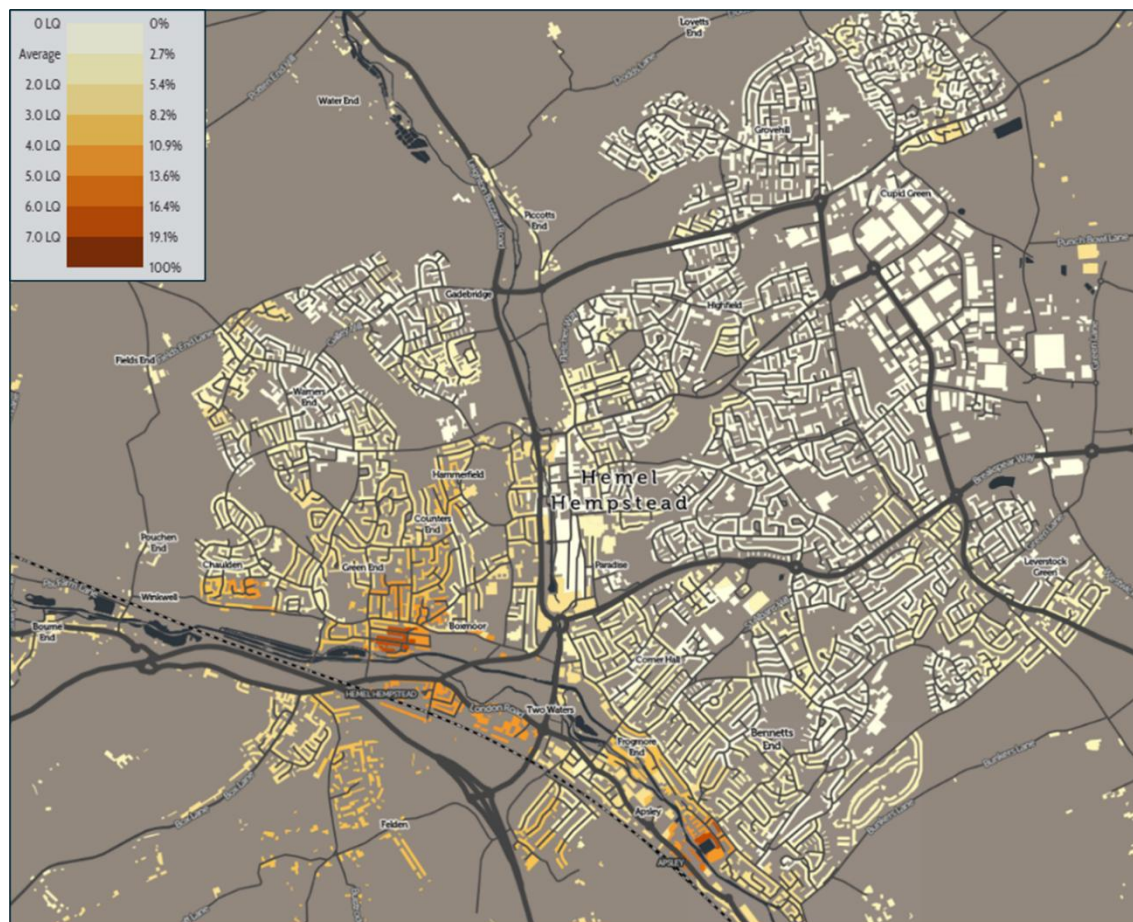
Figure 4-3 Existing journey to work distribution from North Hemel (MSOA Dacorum-005)



Source: DataShine

- 4.3.2** Census 2011 data suggests that existing residents living in areas around the train stations at the western side of the town have a higher proportion of people using the excellent rail connections to London than is the case for existing residents close to Site, as presented in **Figure 4-4**.

Figure 4-4 Existing rail mode share for Hemel Hempstead



Source: DataShine

- 4.3.3 This highlights the opportunities of facilitating connectivity to Hemel Hempstead train station from the Site to ensure the pull of commuter trips to London can be satisfied sustainably.
- 4.3.4 The interventions proposed for the Site (detailed in **Section 5**) respond to where existing and prospective residents are anticipated to travel, informed by the Trip Model impact assessment (detailed in **5.9.1**). The interventions for bus and active travel are focused along routes that are anticipated to be most beneficial to both existing communities and the HGC.
- 4.3.5 The Site is located approximately 1km north of the Maylands Business Parks, offering a key employment opportunity for future residents of the Site. This area is easily accessible from the Site by various non-car means and currently employs over 18,000 people. As part of the Herts Enviro-Tech Enterprise Zone, it is expected to expand by an additional 10,000 jobs in the future. This makes it a significant employment hub, providing a great opportunity to situate new homes close to jobs, with sustainable access options via walking, cycling and public transport.

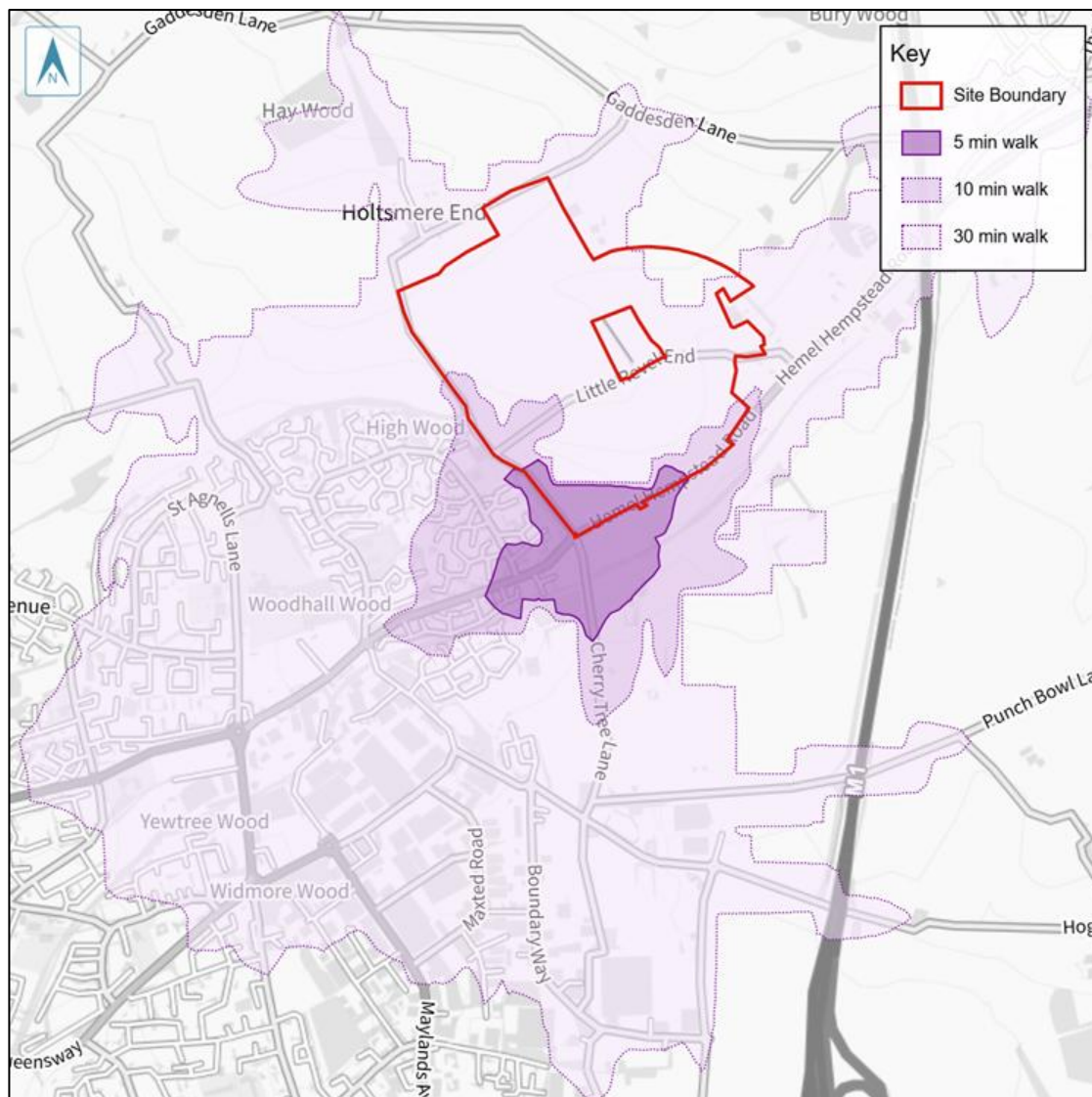
4.4 What are the opportunities for sustainable modes?

Existing walking and cycling provision

Walking

- 4.4.1 The Site is located to the north-east of Hemel Hempstead town centre, with B487 Hemel Hempstead Road forming the southern boundary and main access route into the Site. East of the Site, the road is predominantly rural with limited footways. Beyond the Site to the west, the road becomes more urban in character with footways connecting to the existing local network.
- 4.4.2 There is currently a narrow footway on the northern side of the road, adjacent to the southern boundary of the Site. At the junction of the B487 with Holtsmere End Lane/Cherry Tree Lane, the footway relocates to the southern side of the carriageway towards the west. The southern footway terminates at Phoenix Walk to the west, before recommencing shortly after to provide continuous provision from Brockwood Drive to the centre of Hemel Hempstead.
- 4.4.3 In addition, Cherry Tree Lane has a partial footway provision along its eastern side, linking to the Nickey Line, some 200m to the south. This is a traffic free direct pedestrian and cycle link running parallel to the B487 and towards the northern part of the Hemel Hempstead Industrial Estate and the A4147 Redbourn Road and on towards Hemel Hempstead town centre.
- 4.4.4 There is a wide verge on the northern side of the B487 west of Holtsmere End Lane to Shenley Road. No formal crossing points are provided across the B487 at any point between the Site and Shenley Road. A formal uncontrolled crossing is provided just west of the Shenley Road junction.
- 4.4.5 West of Shenley Road, footways are provided on both sides of the carriageway, and there are frequent formal controlled and uncontrolled crossing points.
- 4.4.6 A popular active travel link in the area is the Nickey Line which follows the path of a former railway connecting Harpenden, Redbourn, and Hemel Hempstead, passing through a tunnel beneath the M1. It offers a good quality, well utilised non-vehicular route to the town centre, providing access to various local amenities along the way.
- 4.4.7 **Figure 4-5** demonstrates walking time isochrones from the southwestern Site access.

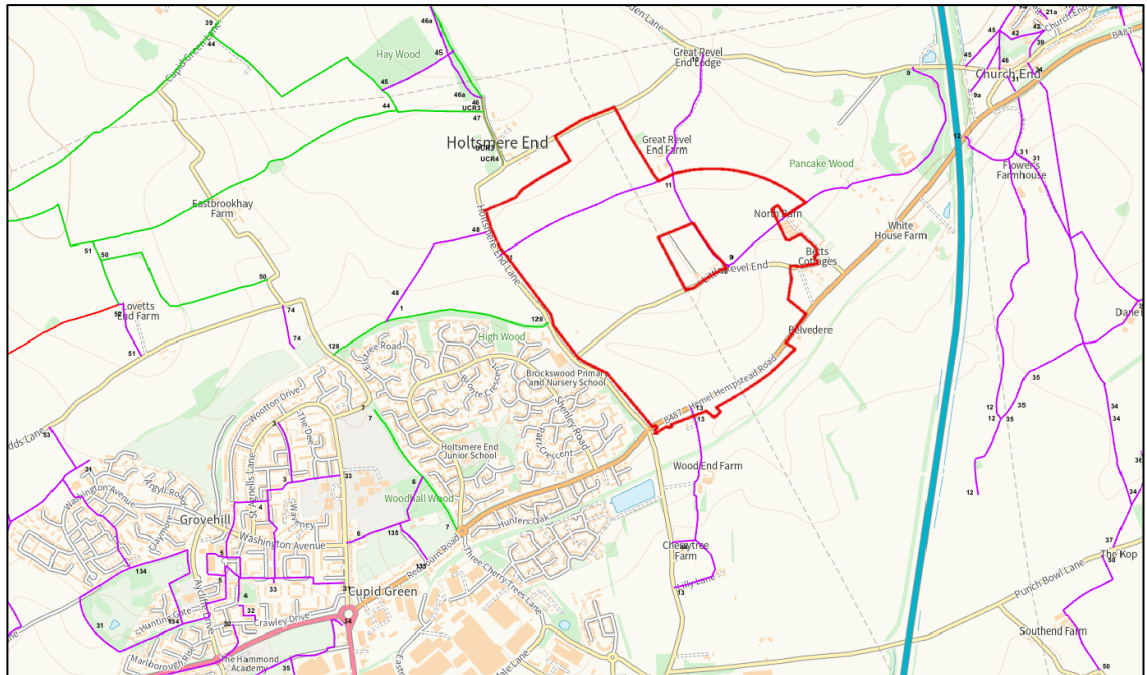
Figure 4-5 Walking Isochrone



Public Right of Way (PRoW)

- 4.4.8 There are several PRoWs within vicinity of the Site that provide connectivity between key local facilities and services as well as leisure routes. This includes footpaths, bridleways and byways.
- 4.4.9 Use of the existing PRoW network will be promoted through masterplanning and be retained as attractive leisure routes and integrated with good quality on-site walking and cycling routes. Bridleway 128 which runs along the northern boundary of Woodhall Farm offers an alternative, recreational route to Woodhall Farm from the on-street route via Redbourn Road.
- 4.4.10 The existing PRoWs in proximity to the Site are presented in **Figure 4-6**.

Figure 4-6 Local PRow Network

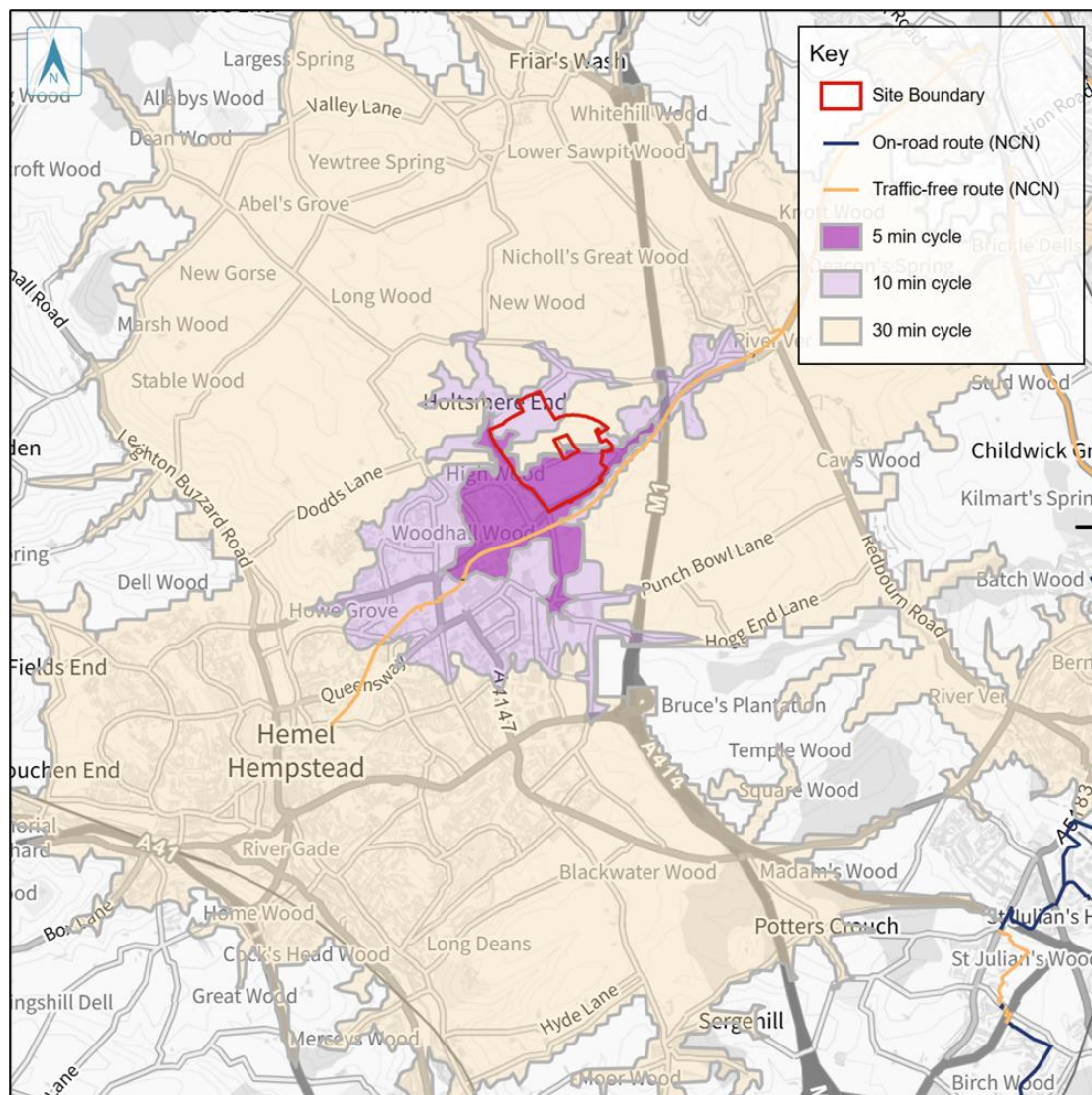


Source: HCC Rights of Way Viewer Map

Cycling

- 4.4.11 The Nickey Line is located circa 200m to the south. The Proposed Development includes support towards a suite of interventions to improve cycle connectivity between the Site, Hemel Hempstead town centre as well as across the local area, including East Hemel and employment areas to the south via STC and HGC Green Loop. These are described in **Section 5.3.3**.

Figure 4-7 Cycle Isochrones



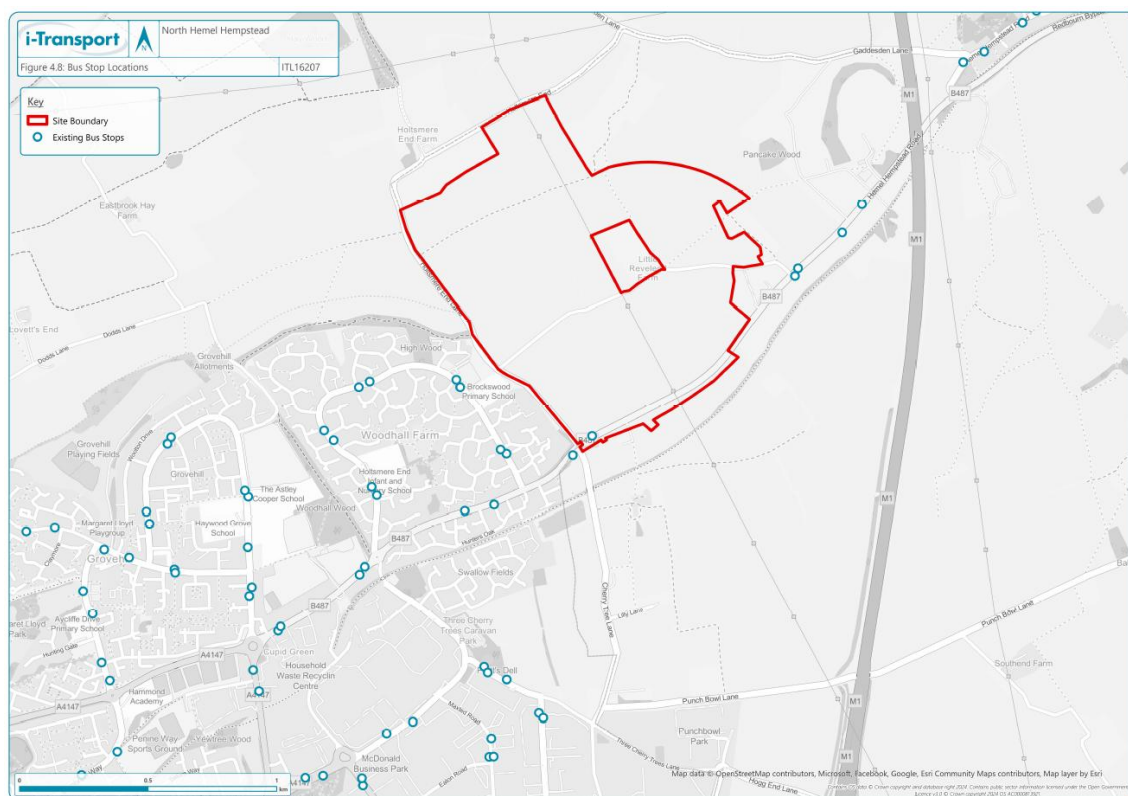
Bus

- 4.4.12** The Site has good existing public transport accessibility with existing bus stops along Redbourn Road approximately 75m from the south west corner of the Site. The bus service that operates from the stops outside the Site (Route 46) connects Luton, Markyate, Redbourn and Hemel Hempstead every hour (Monday-Saturday).
- 4.4.13** Additional bus stops are available in neighbouring Woodhall Farm which is accessible via Redbourn Road and Shenley Road. These provide opportunities to access many local facilities and employment opportunities located within the town. Notable amongst these is the route 2 service operated by Arriva which provides up to five buses per hour and boasts a twelve-minute journey time to the town centre, serving Hemel Hempstead Train Station. The nearest route 2 bus stops sit close to its south-west corner, making it an ideal "early win" opportunity

notwithstanding any new services or service extensions that may come forward as the Proposed Development progresses. Combined with the Centrebus 46 that runs out to the east along Redbourn Road on an hourly basis, the Site is currently well served by public transport.

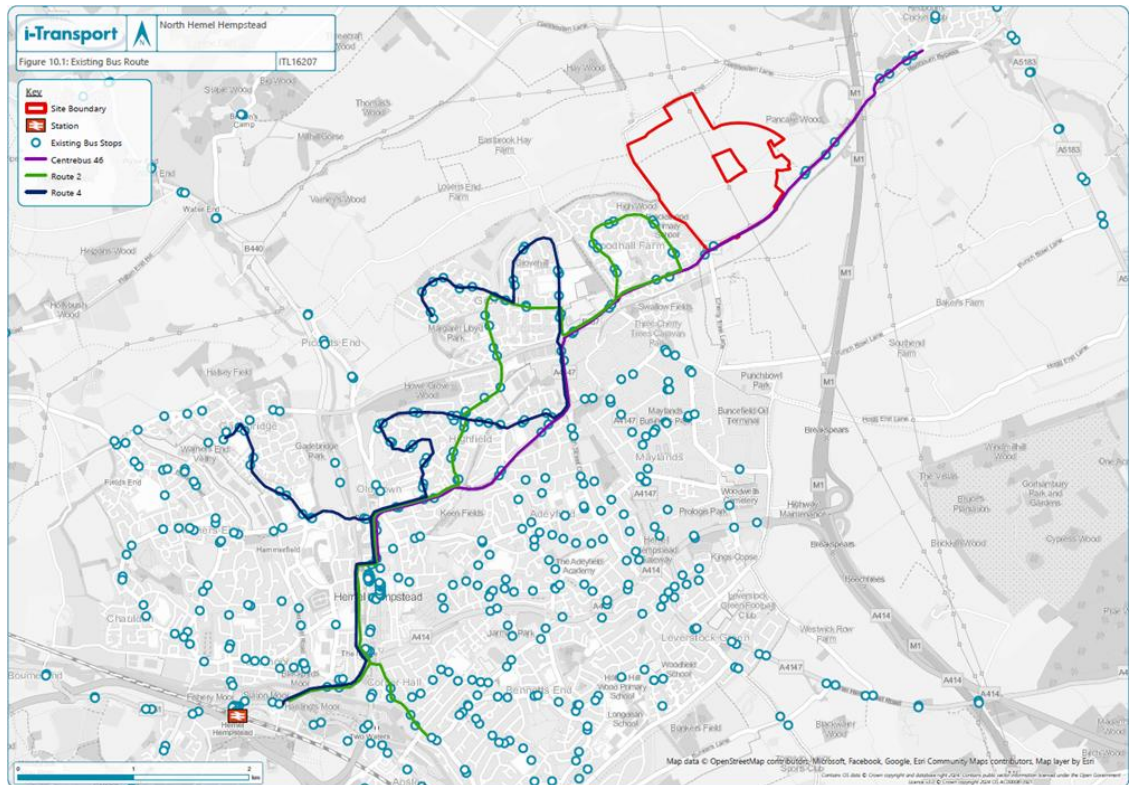
4.4.14 **Figure 4-8** presents the local bus stop locations in relation to the Site.

Figure 4-8 Bus stop locations



4.4.15 The existing local bus routes are included in **Figure 4-9**. The bus proposals for the Proposed Development and those to be delivered as part of the wider HGC are detailed in **Section 5.5**.

Figure 4-9 Existing bus routes



Rail

4.4.16 The nearest Train Station to the Site is Hemel Hempstead, located circa 7km to the southwest. Forming part of the West Midlands Railway line, the station offers good, regular services between London Euston (30minutes) as well as Watford (13minutes), and Milton Keynes (33 minutes).

Table 4-2 Rail Frequency

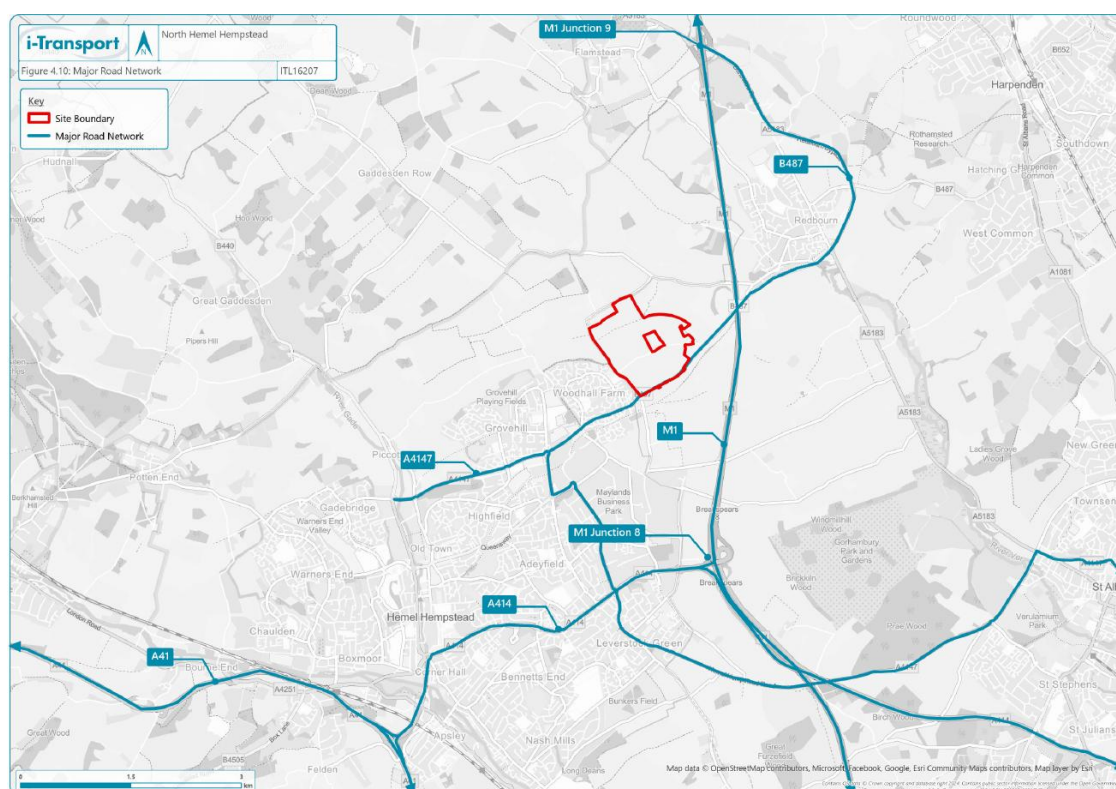
Destination	Peak Hour Frequency	Peak Hour Frequency
London Euston	4	30 minutes
Watford Junction	4	13 minutes
Tring	4	12 minutes
Milton Keynes Central	4	33 minutes
Bletchley	1	32 minutes

4.5 Highway Network

Major Highway Network

- 4.5.1 The Site is directly accessible from the B487 which provides a principal local connection between Hemel Hempstead town centre to the west and Redbourn and Harpenden to the east. This offers excellent highway accessibility. **Figure 4-10** shows the major highway network local to the Site.

Figure 4-10 Major Local Highway Network



As demonstrated, the Site is well located with respect to accessing key local centres and the wider region, with National Highways (NH) Strategic Road Network (SRN) accessible via M1 Junction 9 approximately 6.5km to the north along A5183 Dunstable Road. A description of the major road connections and routes that are accessible from the Site is provided below.

B487 Hemel Hempstead Road / Redbourn Road

- 4.5.2 The Site fronts onto the B487 Redbourn Road, subject to the national speed limit along the Site frontage and to the east. To the west of the Site, the speed limit reduces to 40mph. To the east, the road provides a relatively high-quality route towards Redbourn, and then north via the A5183 towards Junction 9 of the M1. At Redbourn the A5183 also links south towards St Albans.

- 4.5.3 To the southwest of the Site, the B487 takes on more suburban/urban characteristics, although retaining its 40mph speed limit. In advance of any new highway links to the south, vehicle movements from the Proposed Development travelling to destinations to the south and west (including the centre of Hemel Hempstead and industrial areas) will utilise this road.

M1

- 4.5.4 Hemel Hempstead benefits from excellent connectivity to the SRN via Junctions 8 of the M1, which is only a few miles east of the town centre. This makes the M1 a primary route for residents and businesses traveling north toward Milton Keynes, Northampton, and Leeds, or toward London around 25 miles south, with the M25 only 3 miles to the south at Junction 6A.
- 4.5.5 From the Site, the M1 can be accessed via Junction 9, a 7-minute drive along the B487 to the east of the Site and via Junction 8, a 5-minute drive along Cherry Tree Lane and Maylands. Connections to Junction 8 from the Site will improve with the provision of a connection south through East Hemel.

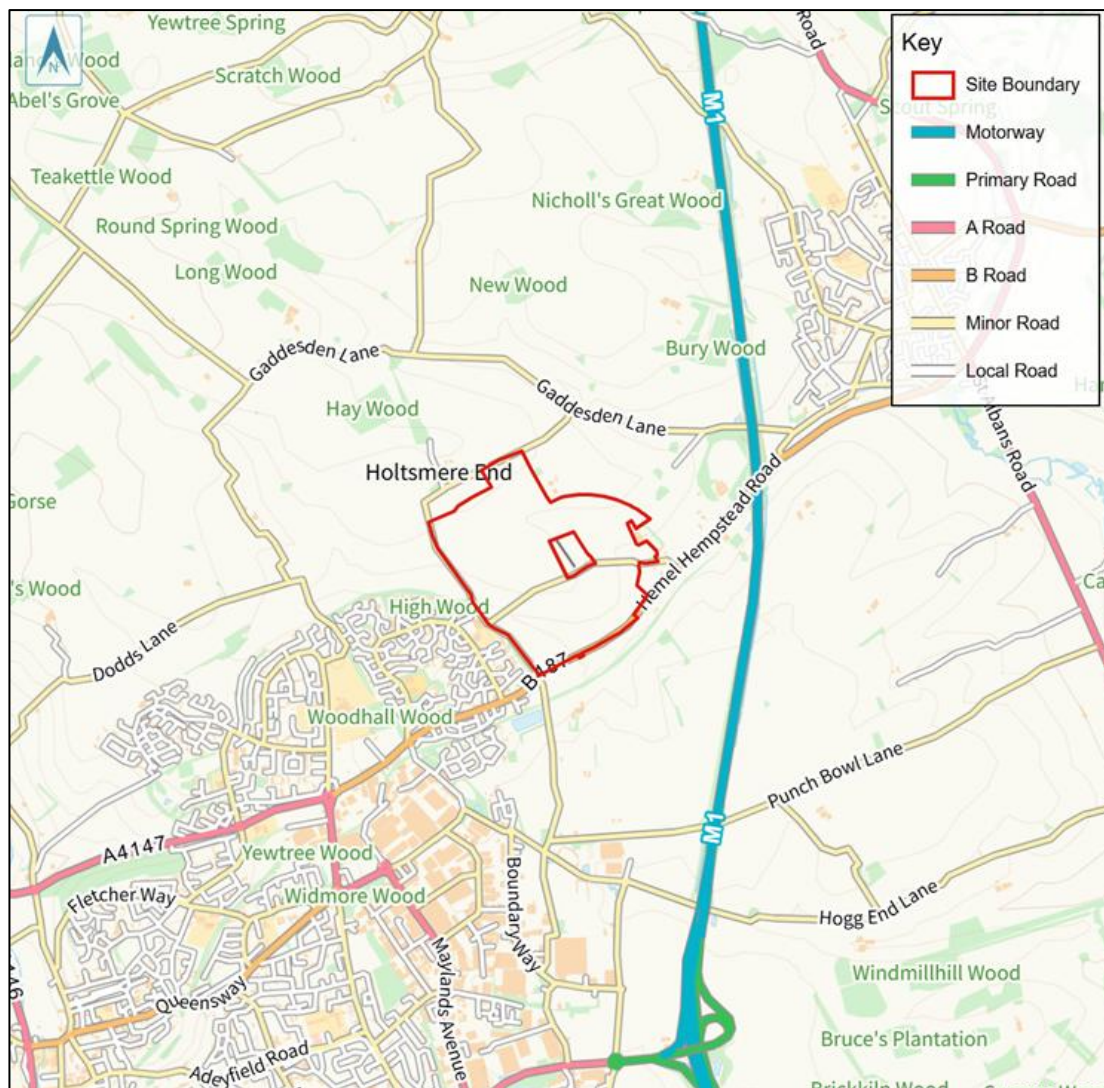
A414

- 4.5.6 The A414 is a strategic route that begins at Apsley, linking to the A41 bypass and then heading east toward St Albans. It connects Hemel Hempstead to the M1 at Junction 8, making it a key route for commuting to London and for regional distribution.

Local Highway Network

- 4.5.7 The western and northern boundaries of the Site are bordered by Holtsmere End Lane, a small single-track road connecting the B487 to Gaddesden Lane. The Site is divided by a small unnamed single-track road used to serve a small number of properties at Little Revel End.
- 4.5.8 The following **Figure 4-11** shows the local highway network around the Site.

Figure 4-11 Local Highway Network



Source: Ordnance Survey

Cherry Tree Lane

- 4.5.9 At the Site's south west corner, this two-way road is narrow, with only occasional informal passing places. Its edges are poorly maintained. Whilst there is a continuous footway along its eastern side (except for a short stretch at its most northern end), the road's narrow width and lack of passing places means that vehicles frequently mount the footway to pass. There is a 7.5 tonne weight limit along the extent of the road.
- 4.5.10 Whilst this route provides a direct route from the Site to the industrial area and onward links from the A414/M1, any significant increase in traffic flow using this route should be discouraged.

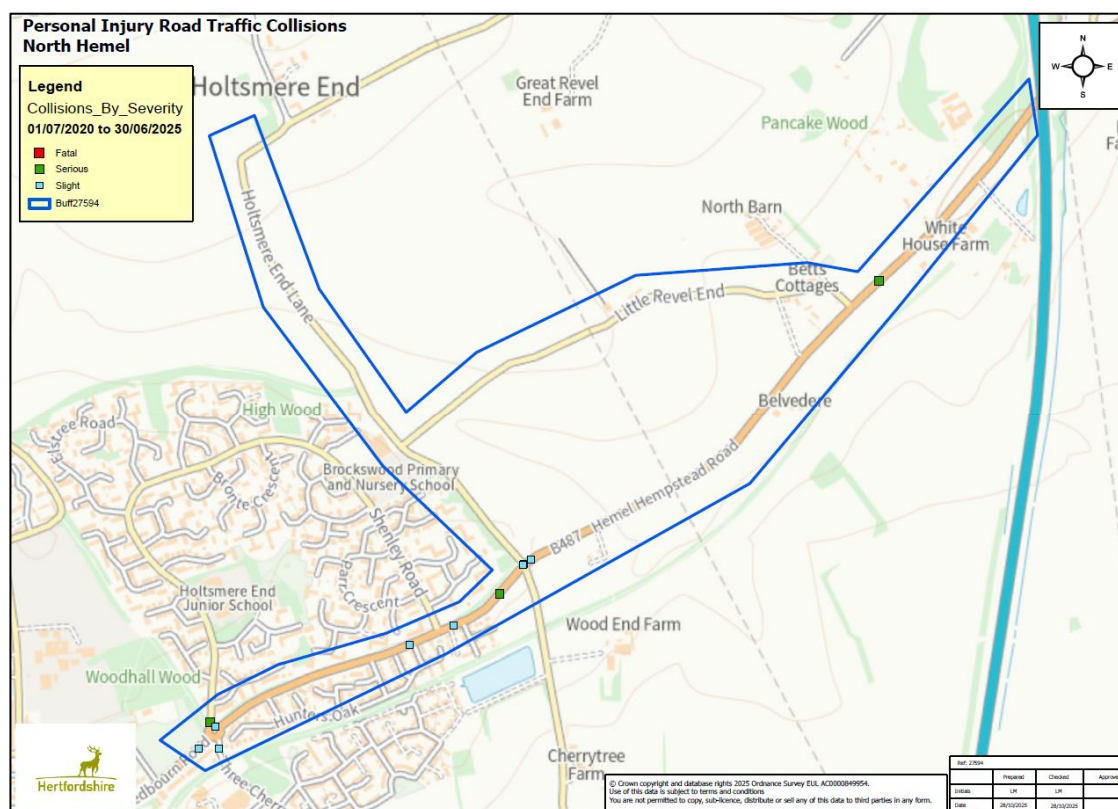
Three Cherry Trees Lane

4.5.11 This is the next available route from the Site towards the industrial area and onward links. It joins the B487 Redbourn Road via a four-arm roundabout. It is a 30mph two-way road throughout. Whilst its northern end is relatively narrow, two-way vehicular movements are possible although slightly restricted below the Nickey Line bridge. Further south, a 2m (6' 6") width restriction is in place and then a new traffic signal-controlled junction to Admiral Avenue introduces a change in the character of the road to one more akin to an industrial area, with wide road and footways available throughout the remainder of the industrial estate to the south.

Personal Injury Accident Summary

4.5.12 Personal Injury Accident (PIA) has been obtained from HCC covering the latest available 5-year period. The locations and severity of the collisions are demonstrated in the following figure. The full PIA data is included as **Appendix A**.

Figure 4-12 PIA Data



4.5.13 The PIA data demonstrates a total of 11 accidents in the last 5 years within the study area, 8 of which were slight and the remaining serious. A summary of the collisions is included in **Table 4-3**.

Table 4-3 Summary of PIA Data

	Fatal	Serious	Slight	Total
Motor Vehicles Only	0	1	5	6
Motorcycle	0	1	0	1
Pedal Cycle	0	0	1	1
Pedestrian	0	2	0	2
Total	0	4	6	10

- 4.5.14** There is a small cluster of accidents at the Redbourn Road / Holtsmere End Lane / Cherry Tree Lane junction. A number of these involved vehicles exiting Cherry Tree Lane colliding with mainline traffic along Redbourn Road. As part of the proposals, Holtsmere End Lane and Cherry Tree Lane will be restricted to traffic, becoming part of the proposed Green Loop.
- 4.5.15** There is also minor cluster of accidents at Redbourn Road / Shenley Road / Three Cherry Trees Lane roundabout approximately 1.2km west of the Eastern Junction. The attributing factors associated with these incidents include inappropriate crossing over the roundabout arms, and vehicles waiting to enter the junction edging too far out and being struck. The Proposed Development vehicle distribution outputs developed as part of the Paramics modelling demonstrates that the majority of development trips route south before accessing this junction, or east along Hemel Hempstead Road.
- 4.5.16** Whilst any accident is regrettable, the quantum, cause and locations of the accidents do not suggest a particular highway safety issue on the local highway network. Nonetheless road safety for all road users is a primary consideration when considering the potential implications of development and are considered in the context of the Site access/routes further in this document. A large section of the study area in **Figure 4-13** is to be improved in terms of both highway and active travel capacity. These interventions prioritise both driver and non-driver safety and are detailed in **5.9.1**.

4.6 How the opportunities will be taken up

- 4.6.1** As set out in **Section 3**, the transport strategy and vision seek to create a well-connected place that puts people first, encourages sustainable travel and provides a network fit for the future.

4.6.2 Hemel Hempstead is a large town with many amenities, a large centre for employment focused on Maylands close to the Site, and excellent rail connections to London, Northampton and Milton Keynes. The Nickey Line presents the opportunity to make active travel into the town an attractive alternative to the private car, promoting healthy lifestyles. Connectivity to, and encouraging use of, the Nickey Line will therefore be important. Independent of the Nickey Line, the proposals will also include cycle improvements along key routes towards the town centre.

4.6.3 Many day-to-day trip attractors associated with retail, leisure and personal business are located within the town centre, which also forms part of the route to the train stations offering onward connections to London. The bus strategy for the Proposed Development focuses on unlocking and enhancing existing opportunities to access the town centre and train station.

4.7 Summary

4.7.1 Hemel Hempstead is a large town with a high number of jobs and amenities and a high proportion of everyday trips which remain local to Dacorum and St Albans. Maylands Park is within a short walk or cycle and offers a major centre of employment in the Hemel area.

4.7.2 The Site's proximity to London and direct train connection has created large commuting flows to the capital. There is an opportunity for direct bus and cycle connections to Hemel Hempstead Train Station to be created through appropriate interventions.

4.7.3 76% of trips in Hertfordshire over a distance of less than 1 mile are undertaken by walking. This demonstrates the potential for internalising movements within the Site by sustainable modes, with a primary school and local centre where daily trips can easily be undertaken by foot.

4.7.4 The opportunities outlined in this section are capitalised on through the sustainable transport strategy that is detailed in the following section.

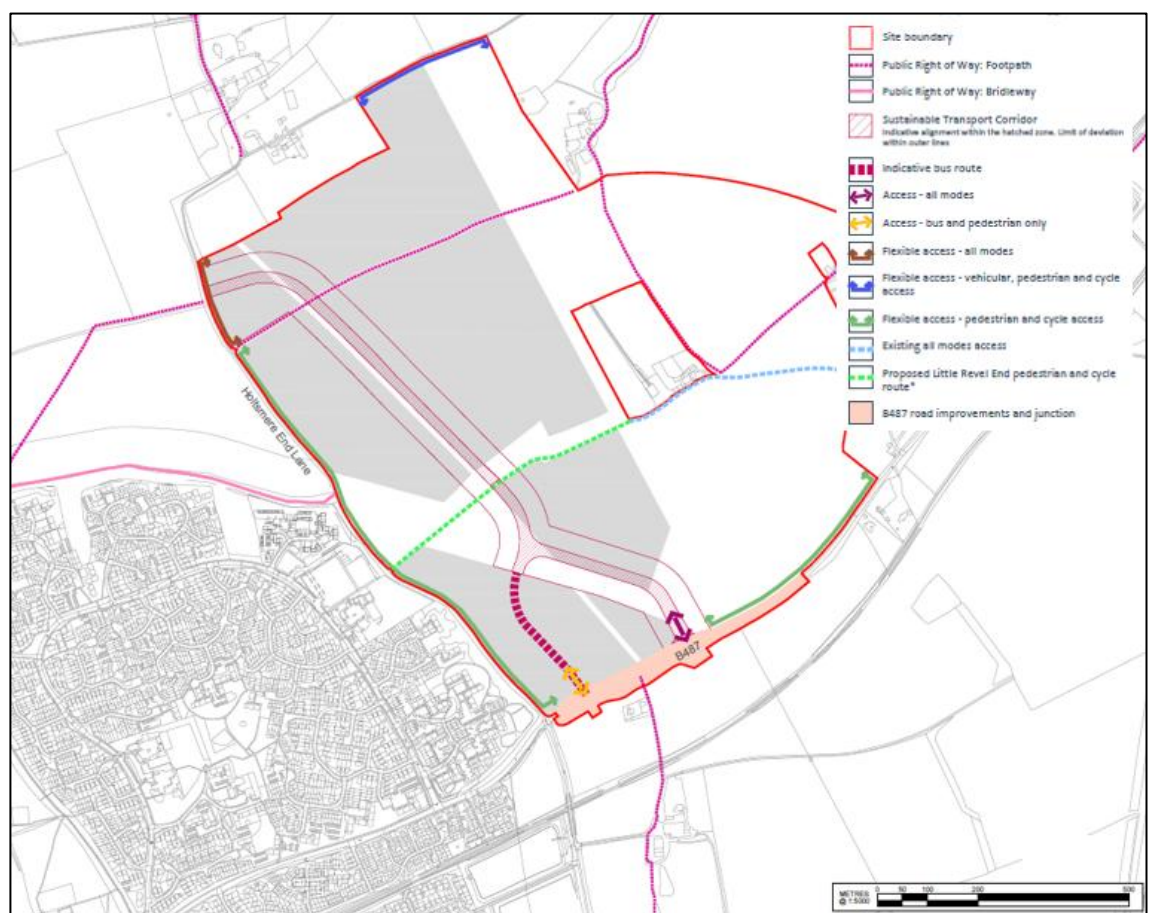
SECTION 5 Sustainable Transport Strategy

5.1 Introduction

5.1.1 This section details how the Proposed Development will connect to the local transport network, in a way that is safe and suitable for all users and prioritises sustainable modes, as required by the NPPF. The access strategy has been developed to accord with the overall HGC Vision to achieve a high level of trips by sustainable modes and safeguard for future connectivity.

5.1.2 This has been used to develop the Access and Movement Parameter Plan shown below:

Figure 5-1 Access and Movement Parameter Plan

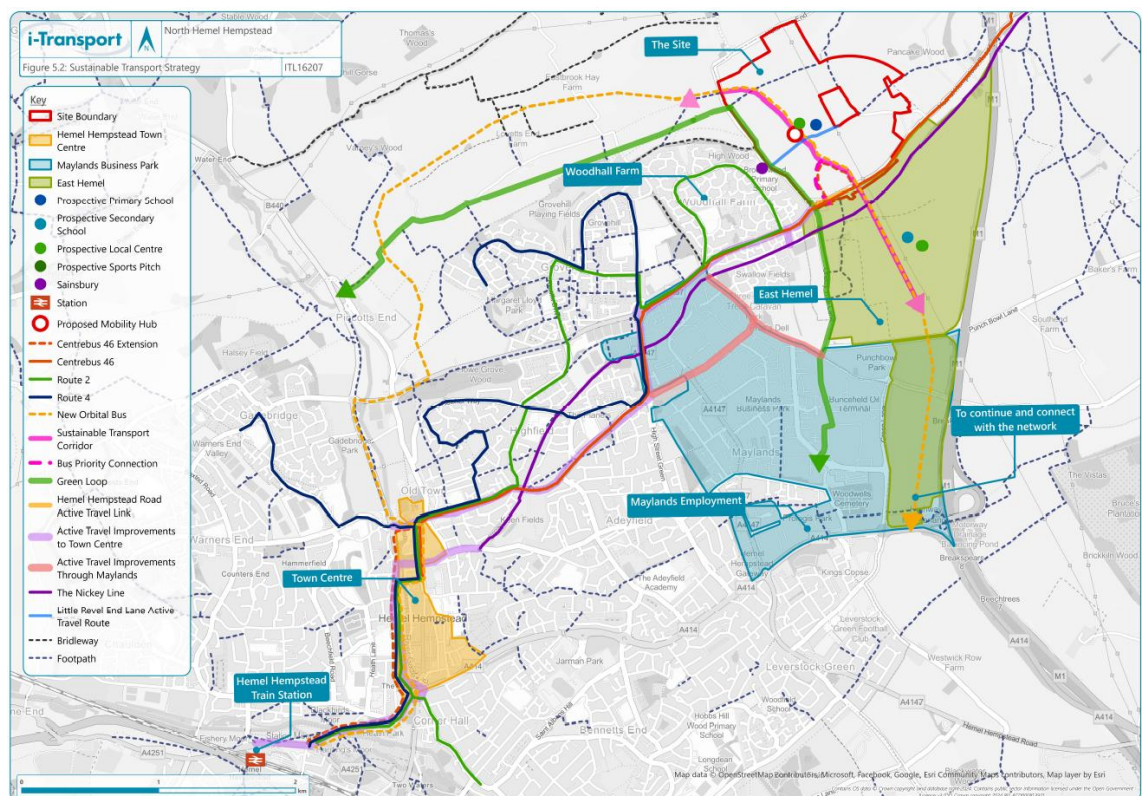


5.2 Sustainable Transport Strategy Overview

5.2.1 Achieving the HGC's Vision for a 60% of all trips to use sustainable modes of travel relies on providing excellent public transport and active travel connections to the surrounding network. As detailed in the previous section, the opportunities for this lie in facilitating fast and frequent connections to Hemel Hempstead Train Station and Town Centre by bus, improvements to active travel connectivity along Redbourn Road and connecting with the Nickey Line and ensuring a high proportion of trips remain within the Site and the wider HGC.

5.2.2 **Figure 5-2** below shows how the Site fits into the wider transport network and sets the context for the remainder of this section which details the opportunities highlighted.

Figure 5-2 Sustainable Transport Strategy



5.2.3 **Figure 5-3** shows the illustrative masterplan for the Proposed Development. This builds on the masterplanning inclusions and interventions introduced in **Section 3** as being critical for achieving the Vision for the Site. Each of these are developed in more detail throughout this Section. The illustrative masterplan is included in full as **Appendix B**.

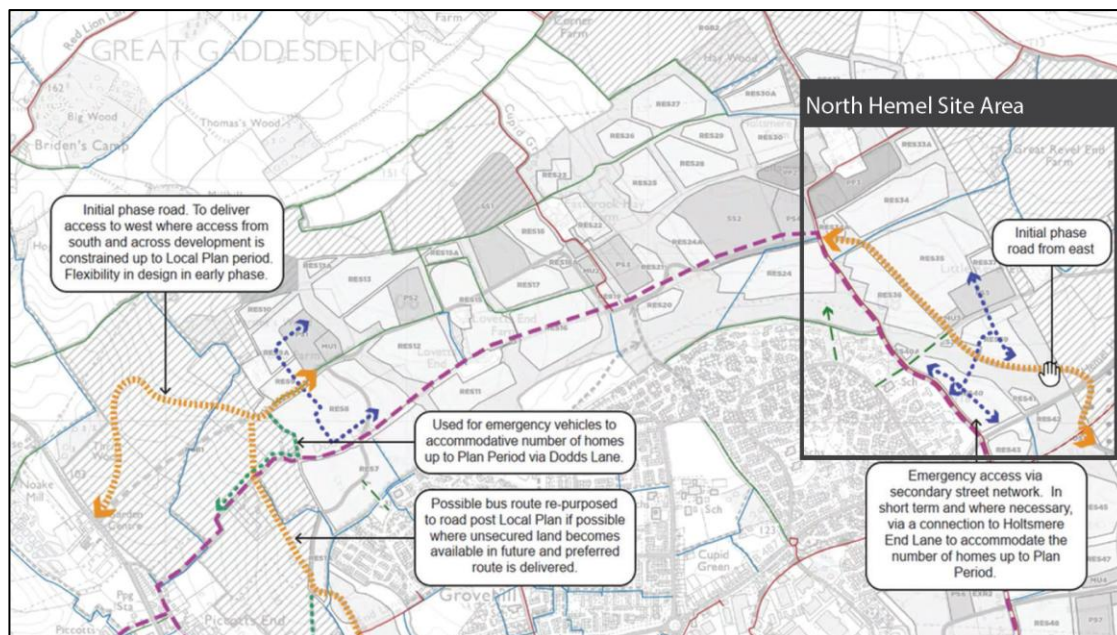
Figure 5-3 Illustrative masterplan



5.3 Sustainable Transport Corridor

- 5.3.1 HGC's Vision focuses on the delivery of a STC which will connect the new community to the wider network, offering a movement corridor that prioritise active travel and bus connectivity.
- 5.3.2 The final route of the STC is yet to be finalised however, it will extend between Leighton Buzzard Road to the west and Breakspear Way (and beyond) to the south. Through the Site, the STC alignment crosses in a north-south direction, continuing south towards East Hemel crossing the B487. The alignment of the STC within the Site has been secured on the parameter plan with limits of deviation to allow flexibility for the final STC layout and route. **Figure 5-4** below shows HGC's Vision for the STC.

Figure 5-4 Overview of STC



- 5.3.3 The STC will be designed to facilitate and prioritise efficient bus movement. The single carriageway will be between 6.2m and 6.5m wide, with no parking or loading at the kerbside (unless it can be accommodated off the carriageway).
- 5.3.4 General traffic will be permitted to use the corridor on entry to the Site from Hemel Hempstead Road. The corridor will be open to general traffic for delivery within the Local Plan period, however it will be designed to safeguard provision for a potential bus gate in the future, with general traffic displaced onto the adjoining primary roads. Connections will be provided to the development parcels via priority minor arm junctions. The access zones have been identified on the Access and Movement Parameter Plan, including a connection point for continuation of the STC. This is demonstrated in **Figure 5-1**.
- 5.3.5 Continuing south, the STC will be open to general traffic through East Hemel towards the M1.
- 5.3.6 The STC will include segregated pedestrian footways on both sides of the carriageway, as well as a segregated cycleway on one side. The footways and cycleway will be off set from the carriageway by generous verges. Pedestrian and cycle crossing points will be provided at key interchange points, both at side roads and along key pedestrian and cycle route desire lines.

5.4 Pedestrian and cycle access

Overview

- 5.4.1 As detailed within **Section 4**, the main pedestrian and cycle desire lines are expected to be towards the southwestern corner of the Site as well as south towards East Hemel in the Cumulative scenario. The internal walking and cycling network within the Site will be designed to facilitate these movements, with good quality routes served by crossing points.
- 5.4.2 The active travel strategy has been developed for the two development scenarios: **Core**, which considers the Proposed Development in isolation and, **Cumulative** which considers the Proposed Development and East Hemel.
- 5.4.3 **Figure 5-5** summarises the active travel strategy for the Core Scenario and Error! Reference source not found.**Figure 5-6** for the Cumulative Scenario in the wider context of Hemel Hempstead. The remainder of this Section details these active travel interventions.

Figure 5-5 Active Travel Strategy – Core Scenario

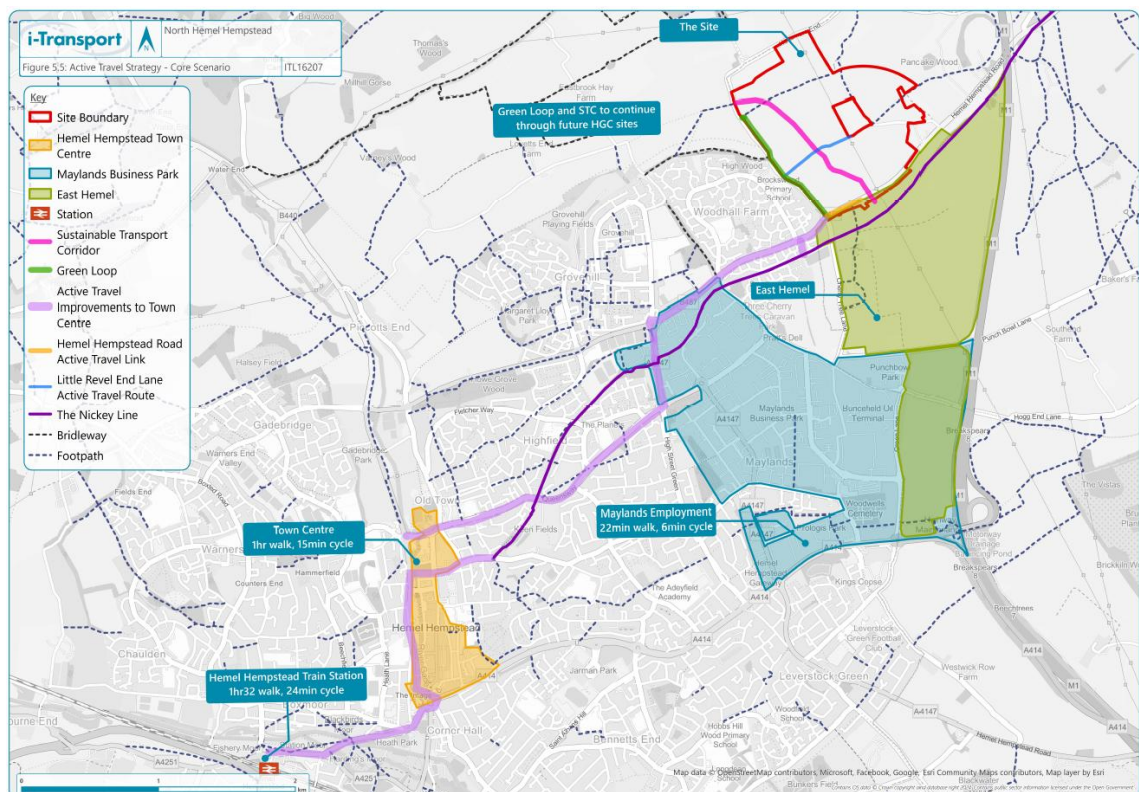
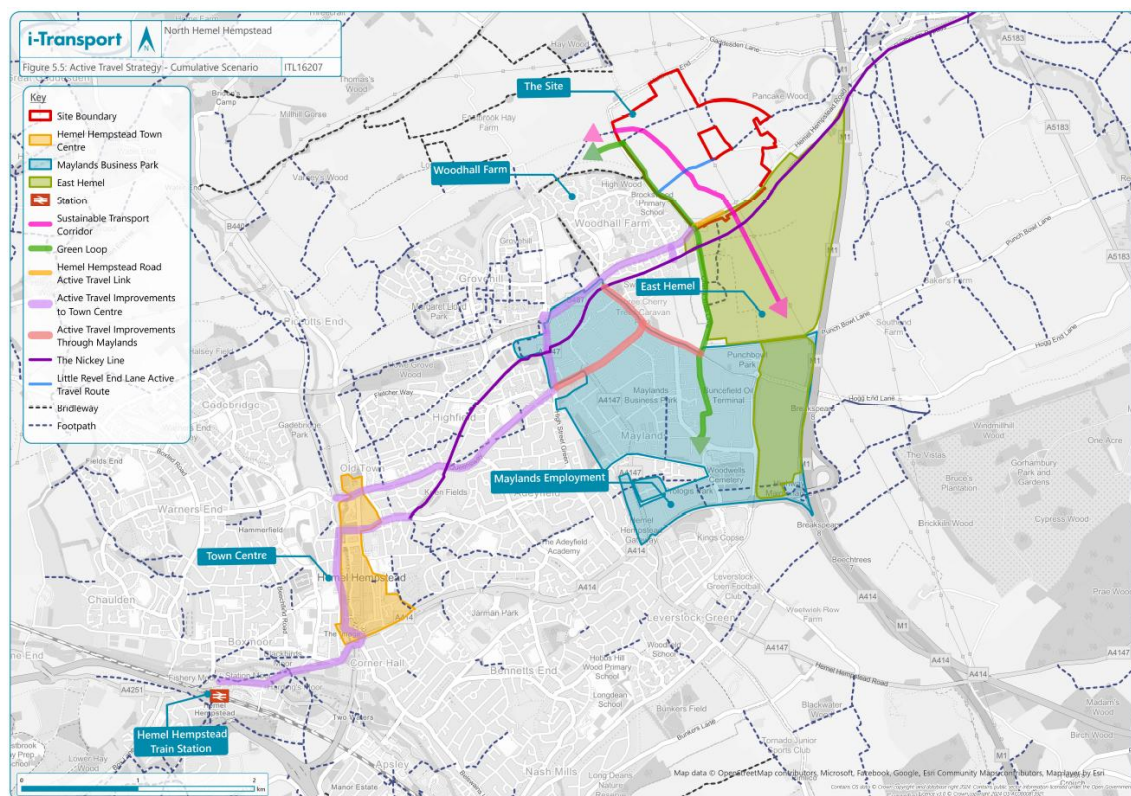


Figure 5-6 - Active Travel Strategy – Cumulative Scenario



Proposed Redbourn Road Active Travel Interventions

- 5.4.4** Based on the anticipated desire lines for future occupants of the Proposed Development, routes for walking and cycling improvements have been identified and are shown in **Figure 5-5**. These routes have been informed by the trip generation and distribution assessment undertaken in **Section 7**. The routes are based on the active travel interventions identified and prepared by SLR (the transport consultant for TCE on the East Hemel site), with the principles discussed with during pre-application engagement with HCC.
- 5.4.5** As shown, two sets of routes have been identified for the Core and Cumulative scenario. In the Core scenario, the active travel desire lines are anticipated to be along the Redbourn Road corridor towards the town centre, train station and industrial estate. The intervention routes therefore focus along Redbourn Road, connections to the Nickey Line, along Queensway, Swallowdale Lane and Marlowes.

- 5.4.6 In the Cumulative scenario, there is expected to be a greater attraction for journeys to the south towards East Hemel, with the additional amenities and facilities including secondary school and employment. These journeys will be enabled along the Green Loop and STC which offer direct, convenient and good quality connections to the south. The southern section of the STC through East Hemel will come forward as part of the East Hemel development. The proposals for pedestrian and cycle crossing of B487 Hemel Hempstead Road, as presented in **Section 6**, have been developed jointly with the applicant for East Hemel to ensure continuity between the two sites.
- 5.4.7 The Proposed Development will deliver a good quality footway/cycleway between the Eastern Junction and Western Junction, linking to the routes along Redbourn Road to the west, and to the south. Direct connections to the Green Loop/ Holtsmere End Lane will also be provided along the western Site boundary, as well as the northern boundary. The location and number of connections has not yet been determined. Connection zones have been identified within the Access and Movement Parameter Plan (**Figure 5-1**), with full details to be provided as reserved matters.

Green Loop

- 5.4.8 HGC Green Loop will be a key movement corridor for pedestrians and cyclists, connecting the new development areas to existing parts of Hemel Hempstead and the wider landscape. The proposed HGC Green Loop along Holtsmere End Lane lies outside of the Site boundary but will be delivered by the Proposed Development through a S278 Highways Agreement.
- 5.4.9 The Green Loop will cross the B487 at the existing Holtsmere End Lane/ Cherry Tree Lane crossroads, west of the Western Junction. Both Holtsmere End Lane and Cherry Tree Lane will become restricted to vehicular traffic. The crossing will be a good quality, wide signal-controlled Pegasus crossing, enabling use by pedestrians, cyclists and equestrians.
- 5.4.10 This closure will not be introduced until an alternative vehicle access route is available, to facilitate access to the existing properties to the north. In the final Proposed Development build out, this will be along the STC. Vehicle movements between the northern section of Holtsmere End Lane and the STC will be restricted to access only and implemented through appropriate signage and Traffic Regulation Order (TRO) to enable enforcement. There may be an interim connection provided to the south of the STC connection to enable the restriction of Holtsmere End Lane earlier in the construction programme.

PRoW Network

- 5.4.11 There are several PRoWs within vicinity of the Site that provide offer connectivity between the Site and key local facilities and services, as well as routes for recreational journeys. This includes bridleways and Byways Open to All Traffic (BOATs) that are suitable for cyclists.
- 5.4.12 The existing PRoW network within the Site will be promoted through masterplanning to encourage use by local people and be retained as attractive routes for leisure walking.
- 5.4.13 The existing PRoW (Route 11) will continue to link Holtsmere End Lane and Great Revel End Farm (Route 11) and the PRoW that links Great Revel End Farm with Little Revel End and extends towards the settlement of Redbourn (Routes 9 and 10) will be retained and integrated into the Proposed Development, enabling connectivity to the wider PRoW network.
- 5.4.14 To better serve future desire lines through the proposed community park and to remove potential conflicts between farm activity and pedestrians, the Applicants are working with the landowners to apply to divert PRoW Route 10. As discussed with the PRoW team at HCC and SACDC, permission for this footpath diversion will be sought outside this planning application.
- 5.4.15 Pedestrian access to PRoW (Route 13) will be greatly improved through the implementation of footway/cycle provision along the B487 past the PRoW access to the Eastern Junction.

Little Revel End Lane

- 5.4.16 This lane currently provides access to Little Revel End Farm and would be restricted to vehicular traffic to the west of this existing property. This closure is proposed to enable the movement of pedestrians and cyclists through the Site to be prioritised and to provide an attractive green walking and cycling route that connects the built development to the Suitable Alternative Natural Greenspace (SANG) and beyond. This closure would be subject to a separate Traffic Regulation Order (TRO).

5.5 Bus Strategy

Overview

- 5.5.1 The Site benefits from being located on the route of the existing Centrebus 46 service which runs along Hemel Hempstead Road between Hemel Hempstead town centre and Luton. It is anticipated that this will be the main bus used by future users of the Site during initial phases of the HGC (i.e. until connections towards Leighton Buzzard Road and East Hemel are provided).

5.5.2 In addition to this service, the strategy will safeguard space to accommodate future services as part of East Hemel and the wider HGC area; these services are expected to travel along Link Road or along the STC towards Leighton Buzzard Road to the west and continue south along the STC through East Hemel.

5.5.3 A bus strategy has been developed to align with wider studies and strategies for the wider HGC growth area. This has been informed by pre-application engagement with HGC, including the Public Transport team. This bus strategy serves destinations that the modelling undertaken and presented in **Section 7.3** demonstrated to be popular attractors for bus trips such as Hemel Hempstead Train Station, Town Centre and later employment uses within East Hemel.

Core Scenario Bus Strategy

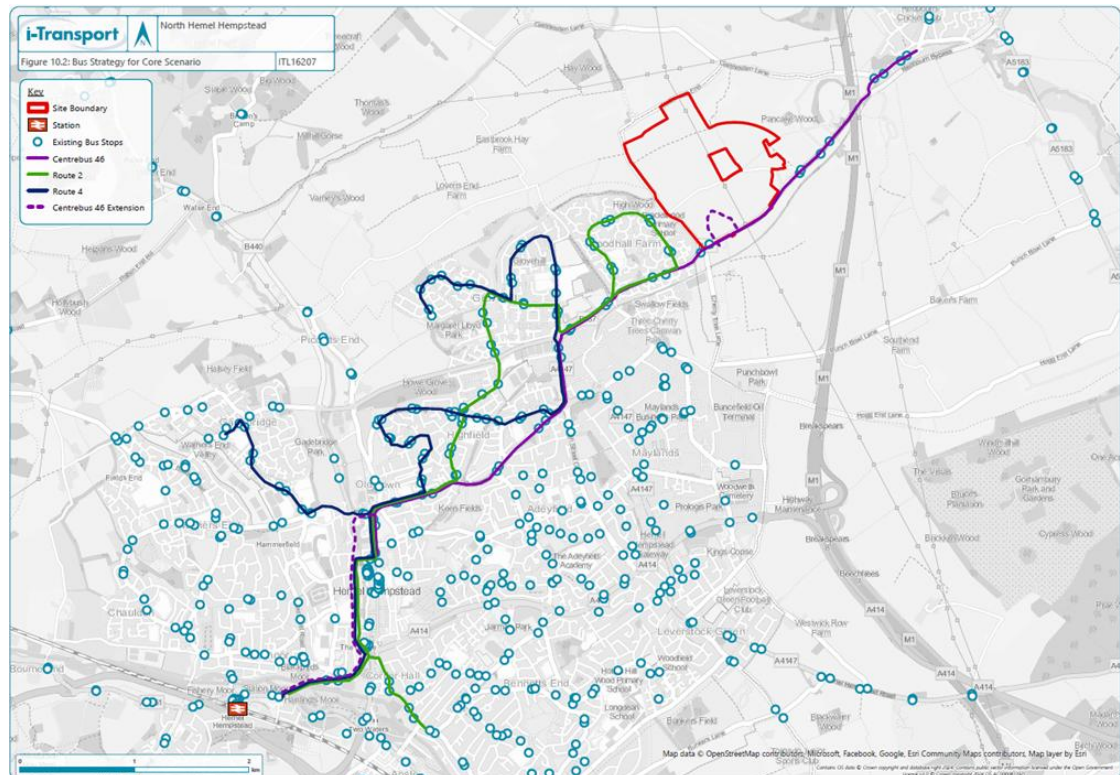
5.5.4 As part of the Proposed Development, the Centrebus 46 (or similar service) is to be rerouted into the Site from Hemel Hempstead Road to access bus stops within the Site, including at the proposed mobility hub. The two access junctions provide flexibility for routing bus services, with the Western Junction being bus only and therefore offering prioritised bus access.

5.5.5 The main demand for bus movements is expected to be between the Site, Hemel Hempstead Town Centre and Hemel Hempstead Train Station. It is proposed that the Proposed Development provides support to improving frequency and quality of services along this corridor, routing along Hemel Hempstead Road, Redbourn Road and Queensway.

5.5.6 The existing Centrebus 46 service currently terminates at Bridge Street. To improve rail access, it is proposed that the existing route is also extended to Hemel Hempstead Train Station. There is also the opportunity to offer more direct connections to the town centre and station by routing services along Link Road and Leighton Buzzard Road rather than Queensway.

5.5.7 The proposed bus strategy for the Core Scenario is demonstrated in **Figure 5-7**.

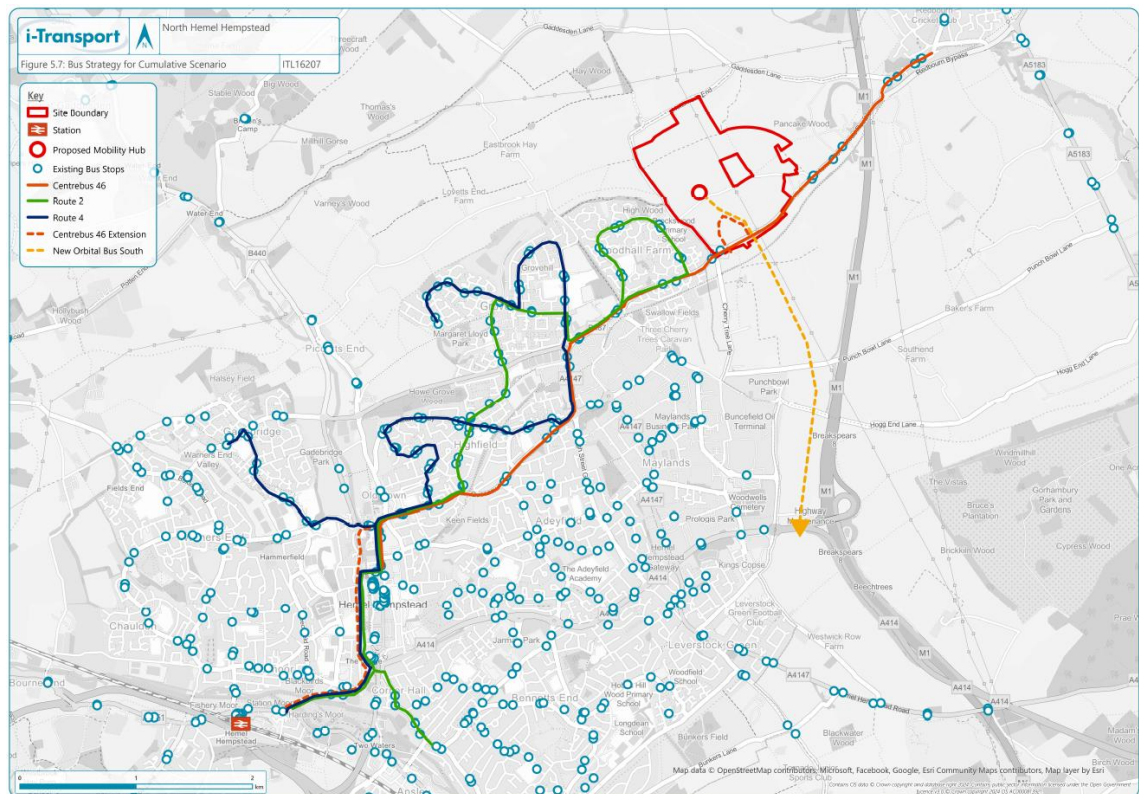
Figure 5-7 Bus strategy for core scenario



Cumulative Scenario Bus Strategy

- 5.5.8 The provision of the STC through the East Hemel site to A414 Breakspear Way to the south unlocks the opportunity to provide a new Orbital bus service between the Site, East Hemel and onwards towards St Albans and Hemel Hempstead (south) along A414 Breakspear Way.
- 5.5.9 The proposed bus strategy for the Cumulative Scenario is demonstrated in **Figure 5-8**.

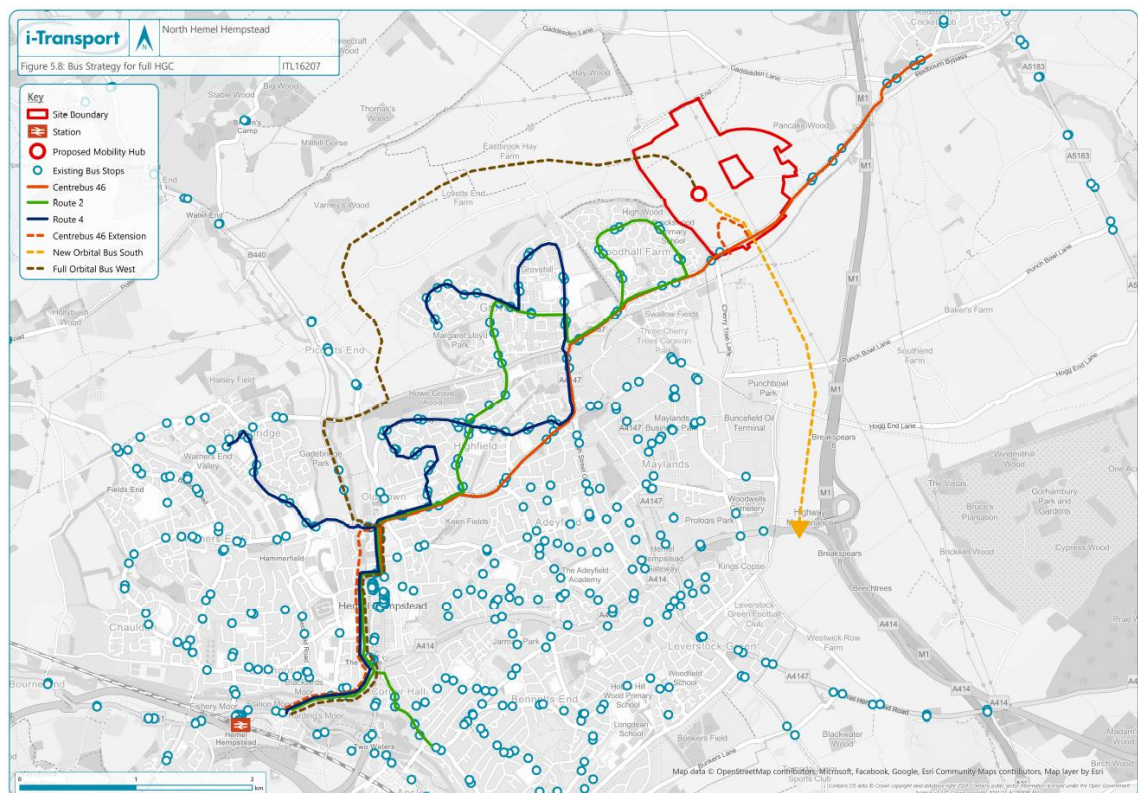
Figure 5-8 Bus strategy for cumulative scenario



Full HGC Bus Strategy

- 5.5.10 The full buildout of the HGC to the north and west of the Site will facilitate delivery of the second part of the Orbital bus route, providing a connection to the west. Whilst full details of the route and final alignment of the STC have yet to be developed, the route is intended to join Link Road and Leighton Buzzard Road providing connections to Hemel Hempstead Town Centre and Train Station. It is anticipated there will be a bus filter/ gate along the STC west of the Site to prioritise the STC for active travel and bus movements, displacing general traffic onto secondary roads.
- 5.5.11 **Figure 5-9** provides an overview of the potential full HGC bus strategy and connections from the Site. The masterplan includes safeguarding for the future connections to the west and north.
- 5.5.12 A network of mobility hubs is proposed through HGC and the existing town including one within the North Hemel Site. Broad Location which will encourage and facilitate travel to Maylands and beyond using sustainable means.

Figure 5-9 Bus strategy for full HGC



- 5.5.13 The Site will be very well connected in the full HGC build-out scenario, being the interchange point between the two parts of the Orbital bus route. This will offer residents excellent accessibility across the HGC area as well as route options to access the town centre and station.

5.5.14 Note, the above strategy excludes the connections to the south of the town and along the A414 Breakspear Way corridor which are not directly connected to the Site and are unlikely to be popular routes for future occupants, with the Centrebus 46 offering a more direct connection.

5.5.15 The Proposed Development had been designed to facilitate bus movements in the Core Cumulative and Future Full HGC Scenarios. The operation of these services will be supported through appropriate S106 contributions to be agreed with SACDC and HCC.

5.6 Mobility Hub

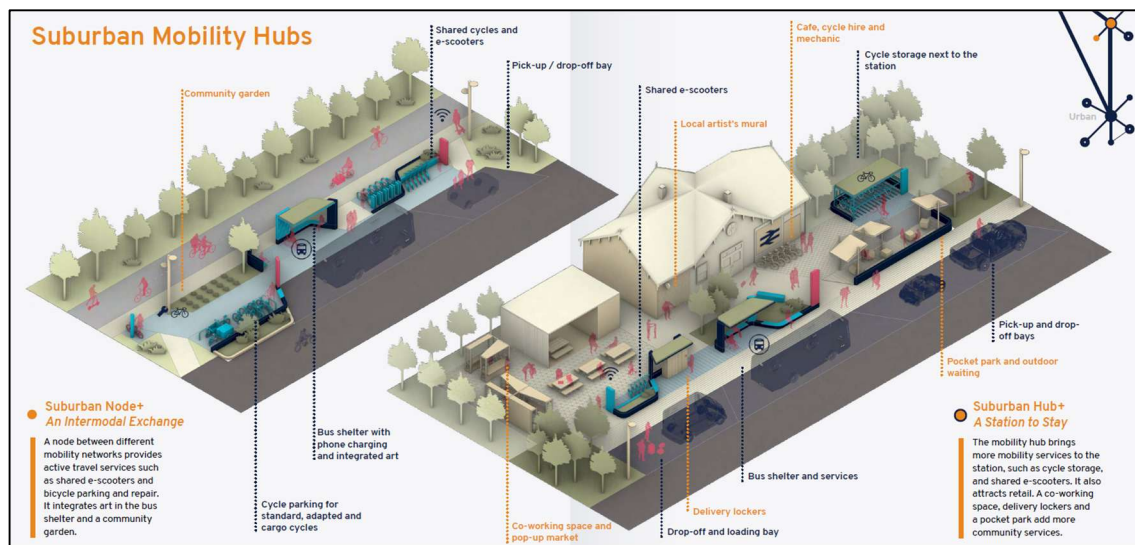
5.6.1 A mobility hub will be included within the Proposed Development. This will be designed to integrate with the network of mobility hubs proposed across the town and HGC area.

5.6.2 Full details of the mobility hub will be detailed as part of future reserved matters applications. The infrastructure provision to be included as part of the mobility hub is to be agreed with HCC and will be dependent on future mobility infrastructure proposed across the town to ensure integration with the wider network. This may include for example the following:

- Secure cycle parking including electric bike charging and space for cargo bikes;
- Public transport information and ticketing;
- Space for micromobility (scooter or cycle hire);
- Seating and shelter;
- Space for car club vehicles;
- Delivery lockers, and pick-up and drop-off bay.

5.6.3 The mobility hub will adopt the principles of a Suburban Mobility Hub set out within Future Mobility Hubs guidance produced by Go-Ahead and ARUP. A concept is presented below.

Figure 5-10 - Suburban Mobility Hub Concept Principles



Source: Future Mobility Hubs, Go-Ahead and ARUP

5.7 Parking and Servicing

5.7.1 The application is outline only, except for B487 access. The final car parking and servicing provision will therefore be developed as part of reserved matters. It is expected that a mix of parking ratios, forms, types will be provided depending on the character and typology of the area, including a combination of on and off-plot car parking. Infrastructure for electric vehicle charging provision will also be accommodated in accordance with Building Regulations.

5.7.2 The level of car parking will seek to strike a suitable balance between encouraging the uptake of sustainable modes of travel and accommodating resident's needs whilst not resulting in excessive over-spill parking occurring. This level is expected to be set out in the Development Specification document and will be determined as part of reserved matters, informed by land use and quantum. The following standards as set out within SACDC's Cycle and Car Parking Guidance and Standards for New Developments (Appendix 1 of SACDC Draft Local Plan) will be used as a baseline for the residential parking provision:

- 1-bedroom dwellings (including studios): 1.5 spaces (either 1.5 unallocated, or 1 allocated and 0.5 unallocated)
- 2-bedroom dwellings: either 2 spaces (either 2 unallocated or 1 allocated and 1 unallocated) or 2.5 spaces (2 allocated and 0.5 unallocated)
- 3+ bedroom dwellings: 2.5 spaces (2 allocated and 0.5 unallocated)

- 5.7.3 Ensuring good quality cycle parking provision is delivered will be important to achieve the sustainable travel objectives. The Proposed Development will therefore include suitable parking for both origins and destinations across the Site, with each dwelling accommodating space for secure and covered cycle parking. Short stay cycle parking will be provided at key destinations, including the local centre and mobility hub. In these areas, a mix of cycle parking spaces/stands will be provided, to enable use by all users including single tier and two-tier stands.

5.8 Framework Travel Plan

- 5.8.1 A Framework Travel Plan (FTP) has been prepared which sets out the overarching aims and objectives for reducing single occupancy vehicle trips. The FTP sets out overarching measures and targets for the Site as a whole. Individual Travel Plans (TPs) for the specific land uses across the Proposed Development will draw on the FTP for the overarching aims and objectives with more specific targets and measures that may be relevant for those specific purposes.
- 5.8.2 The principal aim of the FTP is in line with the HGC Transport Vision, that is, for 60% of journeys from/to/within the Site will be completed by sustainable modes of travel. At the core of a TP is its package of soft measures, comprising of a mixture of incentives, actions, information provision which are to be introduced to support to meet the aims and objectives set out.
- 5.8.3 The baseline mode share will be derived from the initial survey undertaken when the 150th dwelling is occupied. Interim surveys will be undertaken through the construction period, when the 500th and 900th dwelling is occupied. A final survey will be conducted at final occupation.

5.9 Sustainable Transport Strategy Summary

- 5.9.1 Achieving the HGC's Vision for a 60% of all trips to use sustainable modes of travel relies on providing suitable public transport and active travel connections to the surrounding network. Interventions focus on connections to Hemel Hempstead Train Station and Town Centre by bus, improvements to active travel connectivity along Redbourn Road and connecting with the Nickey Line and ensuring a high proportion of trips remain within the Site or the wider HGC.
- 5.9.2 The STC will form the central spine road through the Site and will be designed to accommodate and prioritise bus movements. General traffic will be permitted to use the STC on entry to the Site from the B487 Hemel Hempstead Road via the Eastern Junction. The STC will be open to general traffic for delivery within the Local Plan period, however it will be designed to safeguard provision for a potential bus gate in the future, with general traffic displaced onto the adjoining primary roads..

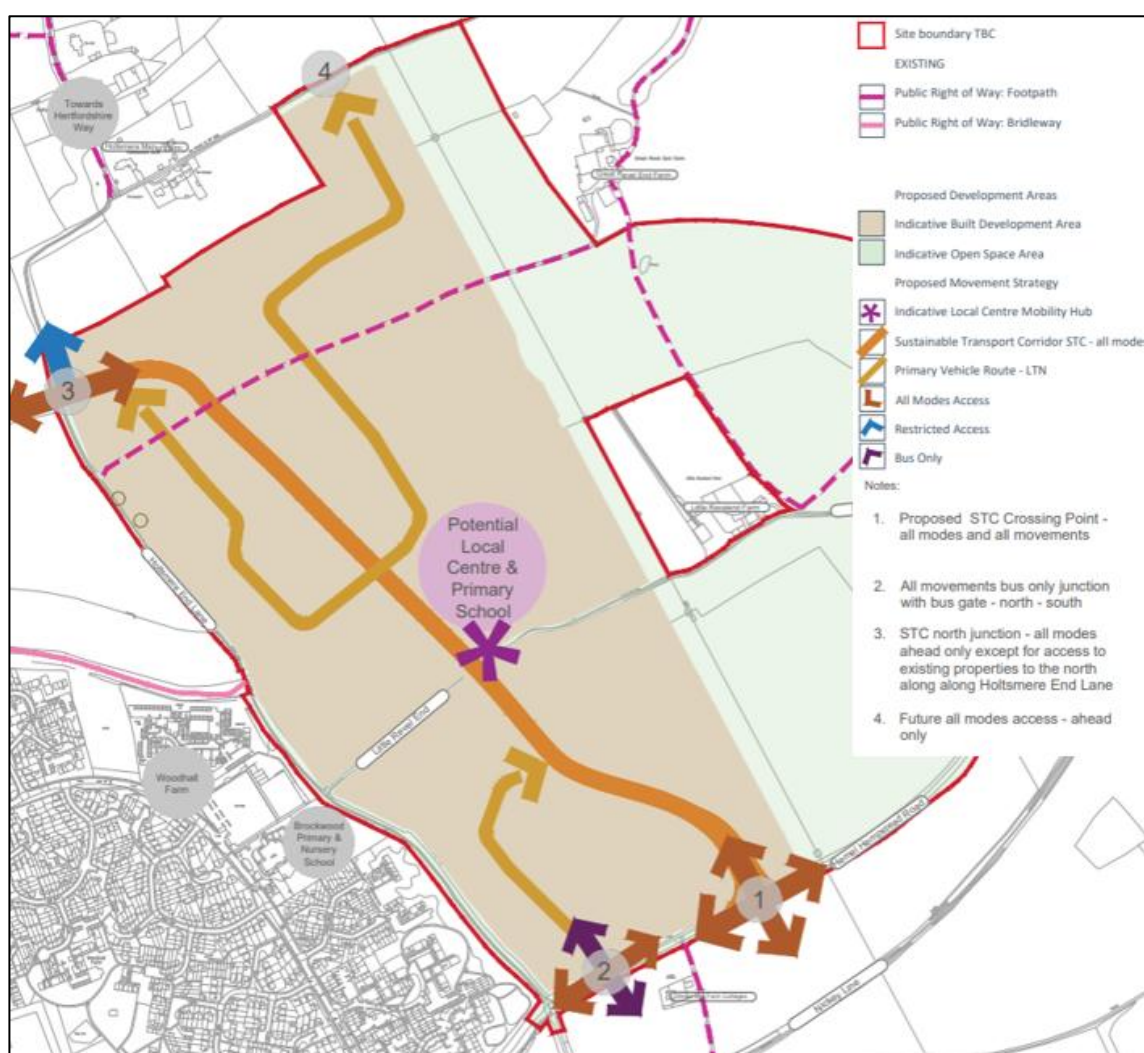
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- 5.9.3 The access junction has been designed to facilitate active travel connectivity between the Site and East Hemel with signal-controlled pedestrian and cycle crossing provision included at the Eastern Junction and controlled pedestrian crossing provision at the Western Junction. General traffic will access the Site at the Eastern Junction where the STC crosses. The Western Junction provides a dedicated bus only access from B487 and between East Hemel.
- 5.9.4 Future STC link to the wider HGC area are safeguarded along the western boundary, with the Parameter Plans including a zone for future STC crossing. A zone for all modes connection to the north is also safeguarded to facilitate connections and access to parcels north of Holtsmere End Lane.
- 5.9.5 A network of walking and cycling routes will be provided within the Site, which will include connections to the external network from the Site boundary. Pedestrian and cycle access will be provided along the western boundary onto Holtsmere End Lane that will eventually form part of HGC Green Loop. To the south, there will be connections onto the cycle and pedestrian routes along the B487 Hemel Hempstead Road corridor, connecting to the wider network.
- 5.9.6 An Integrated Mobility hub with facilities to encourage and facilitate modes of transport other than the private car will be located close to the local centre. This may accommodate the following facilities: secure cycle parking including electric bike charging and space for cargo bikes, public transport information and ticketing, space for micromobility, seating and shelter, space for car club vehicles, delivery lockers, pick-up and drop-off bay.

SECTION 6 Vehicular Access Strategy

6.1.1 Vehicular access into the Site will be from B487 Hemel Hempstead Road. The access strategy has been jointly developed together with The Crown Estate (TCE), landowners of East Hemel.

6.1.2 **Figure 6-1** provides an overview of the vehicular access strategy principles.

Figure 6-1 Access Strategy Overview



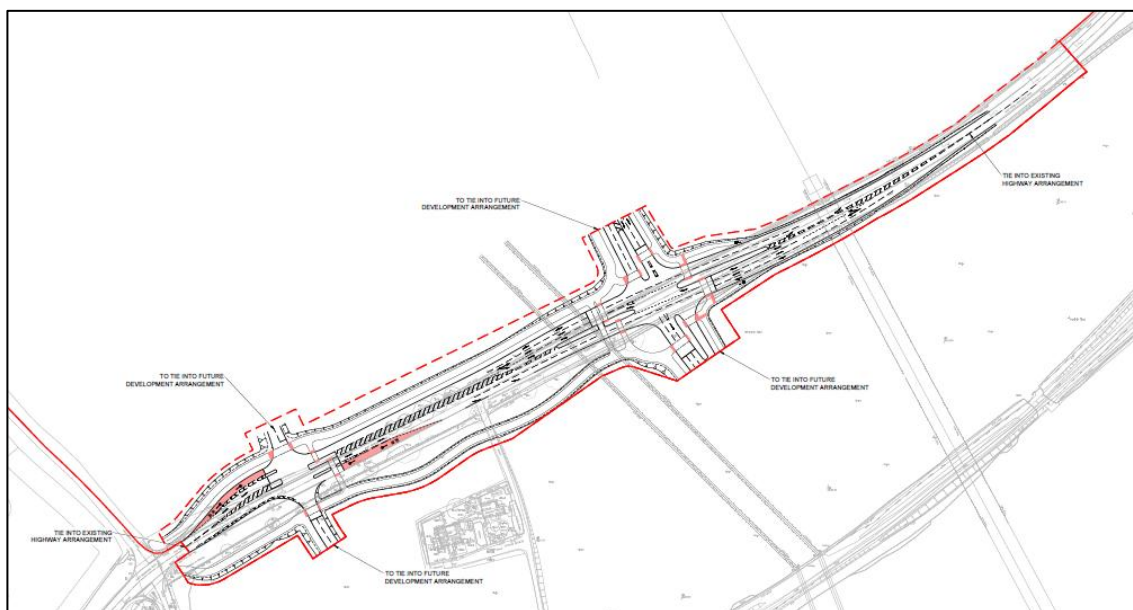
6.1.3 This figure labels the locations of the following points, which are detailed within this section:

- 1 Eastern Junction – all modes access (detailed component of application)
- 2 Western Junction – bus only access (detailed component of application)
- 3 Future STC North – STC ahead only, access only onto Holtsmere End Lane
- 4 Future All-Modes North – all modes access to future development to the north

6.2 1 - Eastern Junction – all modes access

- 6.2.1 The design of the proposed access junctions along B487 Hemel Hempstead Road has been developed by SLR and is included as **Appendix D** (an extract is also shown as **Figure 6-2**). Standalone junction modelling of the Eastern Junction has also been undertaken and is detailed in **Section 8.5**.

Figure 6-2 Proposed Redbourn Road Site Access Junctions



Source: SLR

- 6.2.2 The junctions have been designed in line with geometric standards in Design Manual for Roads and Bridges (DMRB) *CD123 – Geometric design of at-grade priority and signal-controlled junctions* and informed by joint pre-application discussions with HCC and SACDC.
- 6.2.3 As part of the proposals, a speed reduction is proposed from 60 mph to 40 mph on part of the B487 to cover the extents of the proposed access junctions. The location of the change in speed limit is to be agreed with HCC. This speed reduction would be subject to a TRO.
- 6.2.4 These highway works will be delivered jointly with the Applicant and TCE through a Section 278 Agreement under the Highways Act, subject to agreement on the proposal with HCC.
- 6.2.5 The form of the junction as a signal-controlled crossroads facilitates direct connections between both developments, enabling the STC to pass through the HGC with minimal delays across Hemel Hempstead Road. The junction permits all turning movements between both Sites.
- 6.2.6 Active travel is very well served, with a wide verge proposed adjacent to the carriageway providing a pleasant environment, off-setting pedestrian and cycle routes from vehicular traffic.

- 6.2.7 In terms of crossing provision, staggered crossings are proposed on all the arms of the junction, and a sparrow cycle crossing on the western arm. The active travel connections run west on both sides of the B487 from the junction. Beyond the junction to the east, facilities are provided for cyclists to exit and enter the carriageway for cycle journeys continuing east along Hemel Hempstead Road. There is an all-green phase for the active travel movements.
- 6.2.8 The 'Cumulative Scenario' highway impact assessment (detailed in **Section 8**) includes the STC extending from the Site across Hemel Hempstead Road via the Eastern Junction, through East Hemel to A414 Breakspear Way. The Eastern Junction facilitates direct connections south towards the M1 and beyond, alleviating pressures elsewhere on the network, notably on routes through Maylands which are currently used to serve this north-south connection.
- 6.2.9 The phasing of the Site access strategy will be developed closely with SACDC and HCC as well as other stakeholders including East Hemel. The 'Core Scenario' assessed within the highway impact assessment demonstrates that the access strategy for the Proposed Development in a standalone context, which includes all vehicle trips routing along the B487, can be appropriately mitigated through highway interventions and does not have a 'severe' highway network impact.

6.3 2 - Western Junction – bus only access

- 6.3.1 Frequent and direct bus connections to facilities and amenities within HGC, Maylands, Hemel Hempstead town centre and station is a key objective to achieve the Site's Vision. The Western Junction will therefore be for buses only. The design of this junction is included as **Appendix D**.
- 6.3.2 Like the Eastern Junction, the Western Junction will also be in the form of a signal-controlled crossroads allowing all movements for buses along Hemel Hempstead Road and between the two Sites.
- 6.3.3 To prioritise bus movements, there will be a bus lane on approach to the junction from the east and west and the signals will be demand responsive to minimise any bus delay at the junction.
- 6.3.4 There is not anticipated to be high levels of crossing movements at the Western Junction, with the main desire line towards the town centre and HGC Green Loop to the west. However, the proposals include a controlled pedestrian crossing point on the eastern arm of the junction to facilitate occasional crossing movements.
- 6.3.5 This location will potentially be used for construction access in the early phases of the buildout.

6.4 3 - Future STC North – STC ahead only, access only onto Holtsmere End Lane

- 6.4.1 Whilst in the first instance the STC will route from the Site, through East Hemel to Breakspear Way in the south, beyond the emerging Local Plan period the STC will continue north from the Site to provide access north and west through the wider HGC area. This connection will meet the existing highway network in the northwest of Hemel Hempstead at Leighton Buzzard Road. It is therefore important the Proposed Development safeguards this future connection.
- 6.4.2 Accordingly, within the Site the STC will extend up to the northwestern Site boundary with Holtsmere End Lane.
- 6.4.3 It is proposed to restrict the existing junctions to Holtsmere End Lane and Cherry Tree Lane to motorised traffic, which will become part of the Green Loop. A new Pegasus (pedestrian, cycle and equestrian) crossing will be provided in place of the vehicle junctions, offering a continuous, safe crossing point. There will be a need to retain vehicular access for Holtsmere End Lane to serve existing properties to the north. The final arrangement proposes access to these properties via the STC. This will allow the main section of Holtsmere End Lane, that forms part of the Green Loop, to be restricted to vehicles. To prevent Holtsmere End Lane and the STC becoming a rat-run, vehicle movements will be restricted to access only to Holtsmere End Lane at the point it crosses the STC.
- 6.4.4 During the construction programme, an interim arrangement will likely be provided to enable the early restriction of Holtsmere End Lane. This is likely to be an alternative vehicle access connection onto Holtsmere End Lane, or use of Little Revel End Lane. This will be determined as part of the construction programme and agreed with HCC as part of reserved matters.
- 6.4.5 The HGC Sites that are to come forward west of the Site boundary with Holtsmere End Lane can extend the STC without the need for any highway's changes within the Site boundary.

6.5 4 - Future All-Modes North – all modes access to future development to the north

- 6.5.1 The Site will also safeguard a secondary road connection to the north to facilitate all modes access to future development to the north. Within the Site, this connection will serve residential parcels at the northeast of the Site and will extend to the northern Site boundary with Holtsmere End Lane. The future HGC parcel to the north of the Site will continue this access to the north.

6.6 Summary of Vehicle Access

6.6.1 The application is seeking detailed permission for two principal access points along the B487 to the Proposed Development. Two new junctions will be provided as follows:

- Eastern Junction – new junction at the B487 Hemel Hempstead Road. This will be the main access for all modes of transport and will be a shared junction on the STC that connects the Site with Draft Site Allocation H2 (East Hemel Development) to the south. This STC junction has been developed in collaboration with TCE, the access points on the B487 forming the detailed element of this application.
- Western Junction – A second access to the Site off the B487 is provided west of the Eastern Junction for buses, pedestrians and cyclists only.

6.6.2 Both junctions are to be signal controlled and are connected by good quality pedestrian and cycle routes on both sides of Hemel Hempstead Road that run parallel with the carriageway, off set from vehicular traffic by a generous verge. A speed reduction is proposed from 60 mph to 40 mph on part of the B487 to cover the extents of the proposed access junctions.

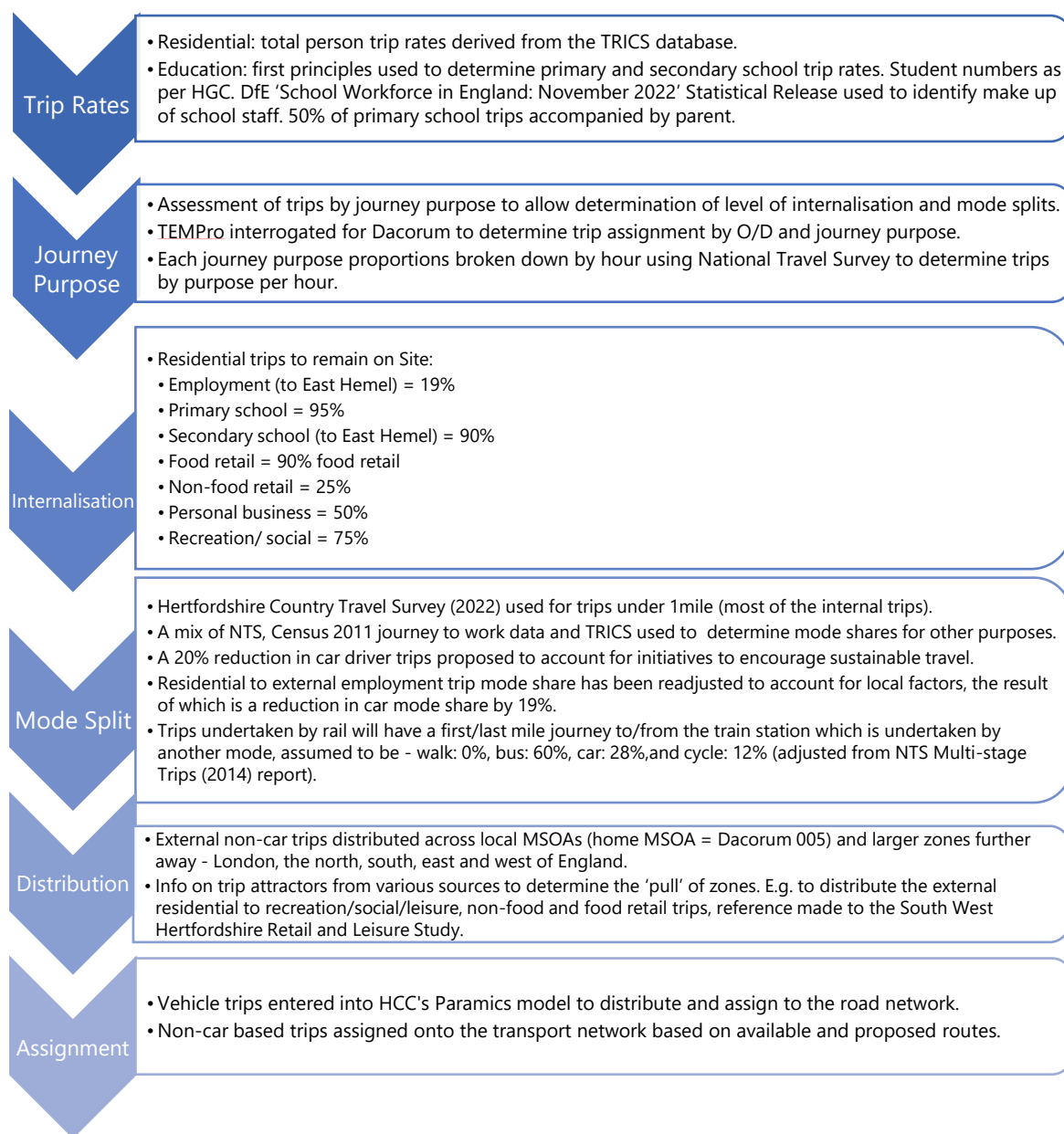
6.6.3 Holtsmere End Lane will form part of the Green Loop but be retained as public highway, however vehicular use will be restricted at the junction with the B487, to allow provision of a controlled Pegasus crossing enabling safe crossing of the B487 for active travel. The vehicle restriction would be subject to a TRO. Vehicular access along Holtsmere End Lane to the north of the Site will be enabled via a new, alternative route along the STC. This will be restricted for access only. Full details and phasing of the vehicular closure of Holtsmere End Lane is to be agreed with HCC.

SECTION 7 Trip Generation and Distribution

7.1 Overview

- 7.1.1 The methodology for trip generation, internalisation and mode share as presented in **ITL16207-004 TN**, provided in **Appendix E** has been agreed with HCC during pre-application engagement, as set out within **Section 1**.
- 7.1.2 To ensure consistency for developments across the HGC area, the same approach developed by SLR on behalf of HGC and TCE is used. Accordingly, the methodology for trip generation, internalisation and mode share broadly follows that which is detailed within "*Trip Generation and Internalisation Report*" prepared by SLR (dated June 2024), tailored to reflect the uses and connectivity of the Proposed Development. Similarly, to distribute the sustainable and active travel trips across the network, the methodology described in "*Trip Distribution Report*" prepared by SLR (dated June 2024) has been followed.
- 7.1.3 The diagram overleaf shows a summary of the approach to trip generation, internalisation, mode share, distribution and assignment which is detailed in this section.

Figure 7-1 Summarised trip generation methodology



7.1.4 Central to the Site's Vision is the assessment of the Proposed Development, both in a standalone context and in the context of development Sites coming forward within both DBC and SACDC Local Plan, through the **Core** and **Cumulative** scenarios as set out in **Section 3.4**.

7.2 Trip Generation, Internalisation and Mode Share

Trip Generation

7.2.1 **Table 7-1** below demonstrates the total person trip rates and resultant trip generation for the Proposed Development, based on the full allocation build-out of 1,500 homes and **Table 7-2** shows the trip generation for the proposed primary school.

Table 7-1 Total person trip rates and trip generation

	AM Peak Period 07:00-10:00			PM Peak Period 16:00-19:00		
	Arr.	Dep.	Two-way	Arr.	Dep.	Two-way
Trip Rate	0.507	1.600	2.107	1.519	0.740	2.259
Trip Generation (1,500 homes)	761	2,400	3,161	2,279	1,110	3,389

Table 7-2 Primary school trip generation

	AM Peak Period 07:00-10:00			PM Peak Period 16:00-19:00		
	Arr.	Dep.	Two-way	Arr.	Dep.	Two-way
Pupil	630	0	630	0	32	32
Parent	315	315	630	16	16	32
Staff	43	0	43	0	43	43

7.2.2 The Proposed Development includes a local centre, primary school, care home, leisure and recreational journeys, a significant proportion of day-to-day trips are therefore expected to be internalised. Although the Proposed Development does not include employment or a secondary school, these uses will be delivered and available within the wider HGC area as part of the neighbouring East Hemel development. In the interim, there are existing schools and employment opportunities in the local area.

Internalisation

7.2.3 The proposed levels of trip internalisation by journey purpose are outlined in the tables below.

Table 7-3 Level of trip internalisation Core Scenario

Trip Purpose	Distribution	
	External (Off-site)	Internal (On-site)
Residential to Employment	100%	0%
Residential to Education (Primary)	5%	95%
Residential to Education (Secondary)	100%	0%
Residential to Food Retail	10%	90%
Residential to Non-Food Retail	75%	25%
Residential to Personal Business	50%	50%
Residential to Recreation/Social	25%	75%

Table 7-4 Level of trip internalisation Cumulative Scenario

Trip Purpose	Distribution	
	External (Off-site)	Internal (On-site)
Residential to Employment	81%	19%
Residential to Education (Primary)	5%	95%
Residential to Education (Secondary)	10%	90%
Residential to Food Retail	10%	90%
Residential to Non-Food Retail	75%	25%
Residential to Personal Business	50%	50%
Residential to Recreation/Social	25%	75%

Mode Share

7.2.4 The Hertfordshire County Travel Survey (2022)¹ outlines the mode share split for journeys less than 1 mile (1.6km). Given the proposed sustainable transport interventions to be brought forward with the Site (and surrounding Sites forming part of HGC), car mode share has been reduced by 20% from 14.4% to 11.5%. The internal trip mode split (except education), including adjusted, is set out in the table below:

Table 7-5 Mode share for internal trips (except for education)

Mode	Hertfordshire County Travel Survey Mode Share %	Adjusted Mode Share %
Walk	76%	77%
Cycle	2%	3%
Bus	1%	2%
Train	0 %	0%

¹ Hertfordshire Traffic and Transport Data Report 2022

Mode	Hertfordshire County Travel Survey Mode Share %	Adjusted Mode Share %
Car Driver	14%	11%
Car Passenger	7%	7%
Total	100%	100%

7.2.5 Residential to primary and secondary school mode shares are derived from the NTS: 'NTS0614a: Trips to and from school for trip length by main mode and age, aged 5 to 16' for trips under 1 mile, as demonstrated in the below table. The 20% reduction in car mode share has also been applied.

Table 7-6 Mode share for internal education trips

Mode	Primary School	Secondary School (Cumulative Only)
Walk	87%	90%
Cycle	2%	1%
Bus	2%	5%
Car Driver	10%	2%
Car Passenger	0%	3%
Total	100%	100%

Note: secondary school mode share varies slightly across the day. The morning peak is presented in the table.

7.2.6 The external Residential to Employment mode split has been devised using data from the 2011 Census for Dacorum 005 MSOA, adjusted with specific consideration of likely mode share to local external employment centres at Hemel Hempstead and St Albans.

Table 7-7 Adjusted mode share

Mode	Residential to Employment Baseline Mode Share (Dacorum 005 MSOA)	Residential to Employment Adjusted Mode Share
Walk	15%	17%
Cycle	2%	7%
Bus	4%	11%
Train	3%	3%
Car Driver	70%	56%
Car Passenger	6%	6%
Total	100%	100%

7.2.7 The external Residential to Education mode split has been derived from Hertfordshire Traffic and Transport Data Report (2022)' which provides a percentage breakdown of modal split for journeys made to primary and secondary schools. The external residential to Food/Non-Food Retail, Personal Business and Recreation/Social have been derived from representative Sites in TRICS. These have not been adjusted. These mode shares for external journey purposes are presented in the below table.

Table 7-8 Mode share for external trips

Mode	Residential to Employment	Residential to Primary Education	Residential to Secondary Education*	Residential to Food Retail*	Residential to Non-Food Retail/Personal Business*	Residential to Recreation/Social*
Walk	16%	50%	44%	32%	28%	29%
Cycle	7%	4%	4%	2%	7%	8%
Bus	12%	2%	14%	11%	11%	13%
Train	3%	0%	3%	1%	0%	2%
Car Driver	56%	12%	16%	32%	32%	34%
Car Passenger	6%	32%	20%	22%	22%	14%
Total	100%	100%	100%	100%	100%	100%

* Mode shares for purpose do vary slightly across the day. The morning peak mode share is presented in the table.

Trip generation, Internalisation and Mode Share Summary

7.2.8 The trip generation for both the Core Scenario and Cumulative Scenario are presented in the below tables.

Table 7-9 Multi-modal trip generation (Core Scenario)

Total	AM (0800-0900)			PM (1700-1800)		
	In	Out	Tot	In	Out	Tot
External						
Walk	115	222	336	97	47	144
Cycle	17	43	60	32	16	48
Bus	34	97	131	55	27	81
Train	8	24	32	14	7	21
Car Driver	101	290	391	294	141	434
Car Passenger	59	99	158	60	29	89
Internal						
Walk	772	69	841	215	98	313
Cycle	15	2	17	7	3	11
Bus	17	2	19	6	3	8
Train	0	0	0	0	0	0

Total	AM (0800-0900)			PM (1700-1800)		
	In	Out	Tot	In	Out	Tot
Car Driver	87	10	97	32	15	47
Car Passenger	2	6	9	20	9	29

Table 7-10 Multi-modal trip generation (Cumulative Scenario)

Total	AM (0800-0900)			PM (1700-1800)		
	In	Out	Tot	In	Out	Tot
External						
Walk	64	86	149	71	35	106
Cycle	11	26	37	26	12	38
Bus	16	47	64	42	20	62
Train	4	12	15	11	5	17
Car Driver	72	203	275	252	121	373
Car Passenger	36	40	76	50	24	74
Internal (including East Hemel)						
Walk	887	643	1530	295	137	433
Cycle	16	12	29	9	4	14
Bus	22	22	44	8	4	12
Train	0	0	0	0	0	0
Car Driver	91	50	140	40	19	59
Car Passenger	8	22	30	26	12	38

7.2.9 The percentage mode share comparison between the Core Scenario and Cumulative Scenario are presented in **Table 7-11**. This demonstrates the impact of the inclusion of East Hemel on mode share.

Table 7-11 Mode share comparison

Mode	Core Scenario	Cumulative Scenario	Difference
Walk	50%	59%	9%
Cycle	4%	3%	-1%
Bus	6%	5%	-1%
Train	1%	1%	0%
Car Driver	29%	25%	-4%
Car Passenger	10%	8%	-2%
Total	100%	100%	0%

7.3 Trip Distribution and Assignment

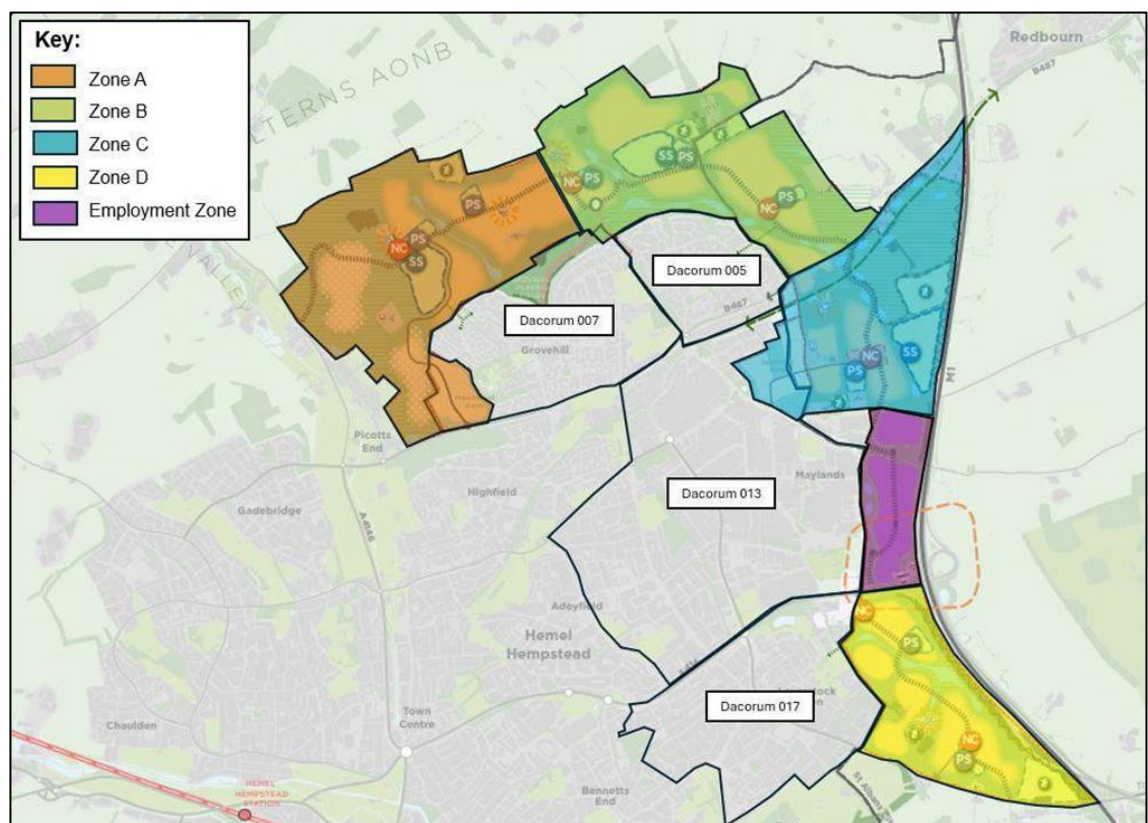
Vehicle distribution

7.3.1 The external vehicular trip distribution has determined using the Paramics model for Hemel Hempstead. The vehicle Core Scenario trip generation as set out in **Table 7-9** and Cumulative Scenario trip generation set out in **Table 7-10** has been input into the model to assign trips onto the network. The results of the Paramics model are set out later in **Section 8**.

Sustainable travel distribution

- 7.3.2 The distribution of external non-car trips has been assessed to understand the sustainable travel desire lines and the potential impact of the Proposed Development on existing infrastructure.
- 7.3.3 The external non-car trips have been distributed across local MSOAs and larger zones further away, composing London, and the north, south, east and west of England.
- 7.3.4 The below figure is an extract from the SLR 'Trip Distribution Report' demonstrating the 5 zones making up HGC.

Figure 7-2 HGC model zoning



Source: SLR's 'Trip Distribution Report'

7.3.5 As part of the SLR trip distribution study, information on trip attractors were derived from various sources to determine the 'pull' of each zone for various journey purposes. For example, to distribute the external residential to recreation/social/leisure, non-food and food retail trips, reference was made to the South West Hertfordshire Retail and Leisure Study (2018) report which indicates retail store and leisure locations. The full SLR '*Trip Distribution Report*' should be referred to for detailed reference to the active travel trip distribution methodology and justification of the mode splits.

7.3.6 Whilst rail trips are considered in this approach, the impact of these trips will also be felt across other modes used for the first/last-mile travel. These trips have been proportioned appropriately across modes and assumed they will all access Hemel Hempstead station to offer a worst-case assessment.

7.3.7 **Table 7-12** shows the 24-hour, two-way, external, sustainable travel trip generation by mode.

Table 7-12 Development two-way daily distribution across sustainable transport

Destinations	Core Scenario				Cumulative Scenario			
	Walk	Cycle	Bus	Rail	Walk	Cycle	Bus	Rail
North Hemel	4700	243	0	0	5360	269	0	0
East Hemel	0	0	0	0	1903	88	161	0
Dacorum 001	2	0	0	0	2	0	0	0
Dacorum 002	2	0	0	0	2	0	0	0
Dacorum 003	4	0	0	0	3	0	0	0
Dacorum 004	2	0	0	0	2	0	0	0
Dacorum 005	380	34	57	1	101	23	40	1
Dacorum 007	331	41	83	0	28	11	2	0
Dacorum 008	29	10	20	0	15	7	13	0
Dacorum 009	4	0	0	19	3	0	0	2
Dacorum 010	0	0	15	0	0	0	11	0
Dacorum 011	0	0	4	0	0	0	3	0
Dacorum 013	469	97	101	2	151	52	15	1
Dacorum 014	0	0	6	0	0	0	4	0
Dacorum 015	173	46	151	0	20	25	94	0
Dacorum 016	0	0	2	0	0	0	1	0

Destinations	Core Scenario				Cumulative Scenario			
	Walk	Cycle	Bus	Rail	Walk	Cycle	Bus	Rail
Dacorum 017	2	22	6	0	2	15	4	0
Dacorum 018	7	0	18	0	5	0	5	0
Dacorum 019	2	2	11	0	2	0	6	0
Dacorum 020	2	0	2	0	2	0	1	0
Dacorum 021	0	15	4	0	0	10	3	0
Dacorum 022	0	15	4	19	0	5	1	2
St Albans 001	0	0	0	2	0	0	0	2
St Albans 002	0	0	0	1	0	0	0	1
St Albans 003	0	0	2	0	0	0	1	0
St Albans 006	0	15	2	0	0	10	1	0
St Albans 009	0	0	6	0	0	0	4	0
St Albans 012	0	9	10	0	0	5	6	0
St Albans 014	0	0	2	0	0	0	1	0
London	0	0	72	80	0	0	51	73
North	0	15	8	3	0	10	5	3
South	0	15	31	5	0	10	22	4
East	0	0	10	2	0	0	7	2
West	0	0	4	1	0	0	3	1
Hemel Hempstead Rail Station	0	16	81	0	0	0	0	0
Total	6111	593	710	134	7600	553	522	91

7.3.8 The distribution of sustainable trips across the network for both scenarios is assessed in further detail below.

7.4 Sustainable Travel Demand Assessment

7.4.1 The plans presented in this section demonstrate the two-way 24-hour movements included in **Table 7-12** across sustainable modes. These plans are also included as figures at the end of the report.

- 7.4.2 This assessment of where active travel and bus trips are routing to from the Site has been used to determine where enhancements may best be delivered.

Walking

- 7.4.3 **Figure 7-3** shows the walking trips for the Core Scenario which highlights that 84% of external walking trips are to Dacorum 005, 007 and 013, areas comprising Maylands Industrial Estate, Woodhall Farm and Grovehill. This demonstrates the need for pedestrian connectivity to the west along Redbourn Road to access these popular locations.
- 7.4.4 13% of the external walking trips are to the town centre and train stations suggesting they are slightly too far for walking to be the primary trip mode, nonetheless the minority that do choose to walk will benefit from the improved active travel connections proposed.

Figure 7-3 Walking distribution heat map (Core Scenario)

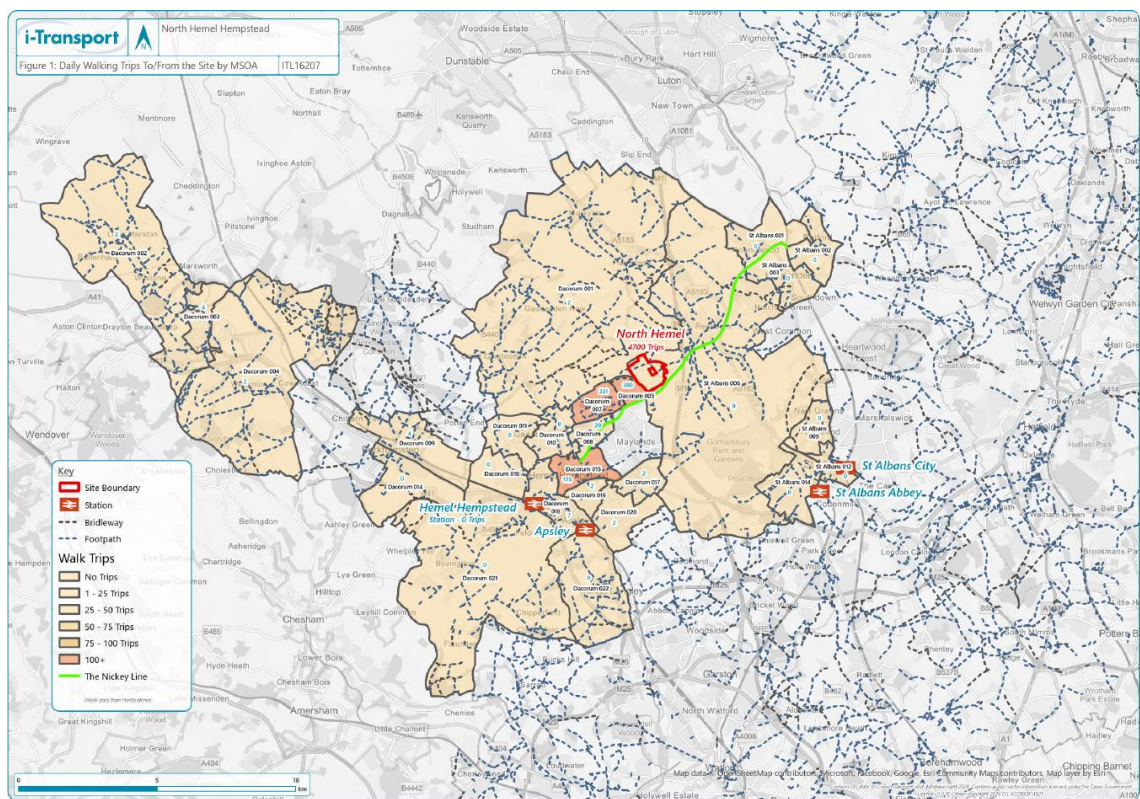
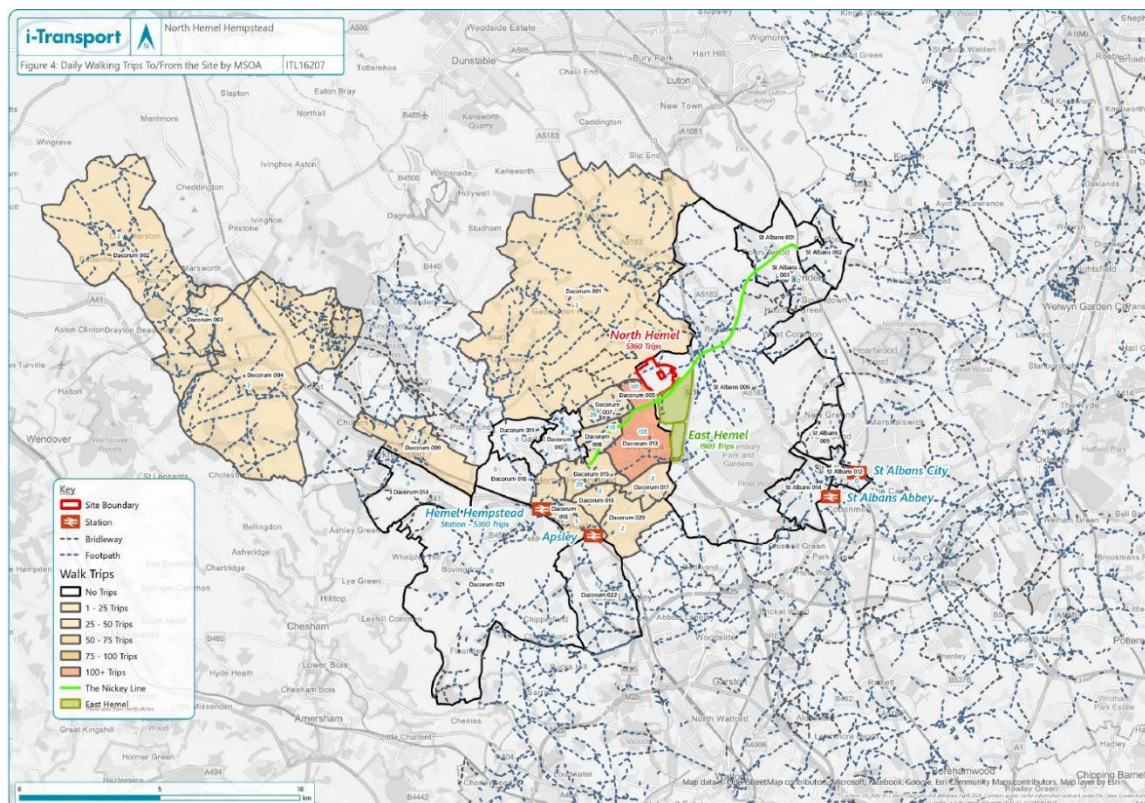


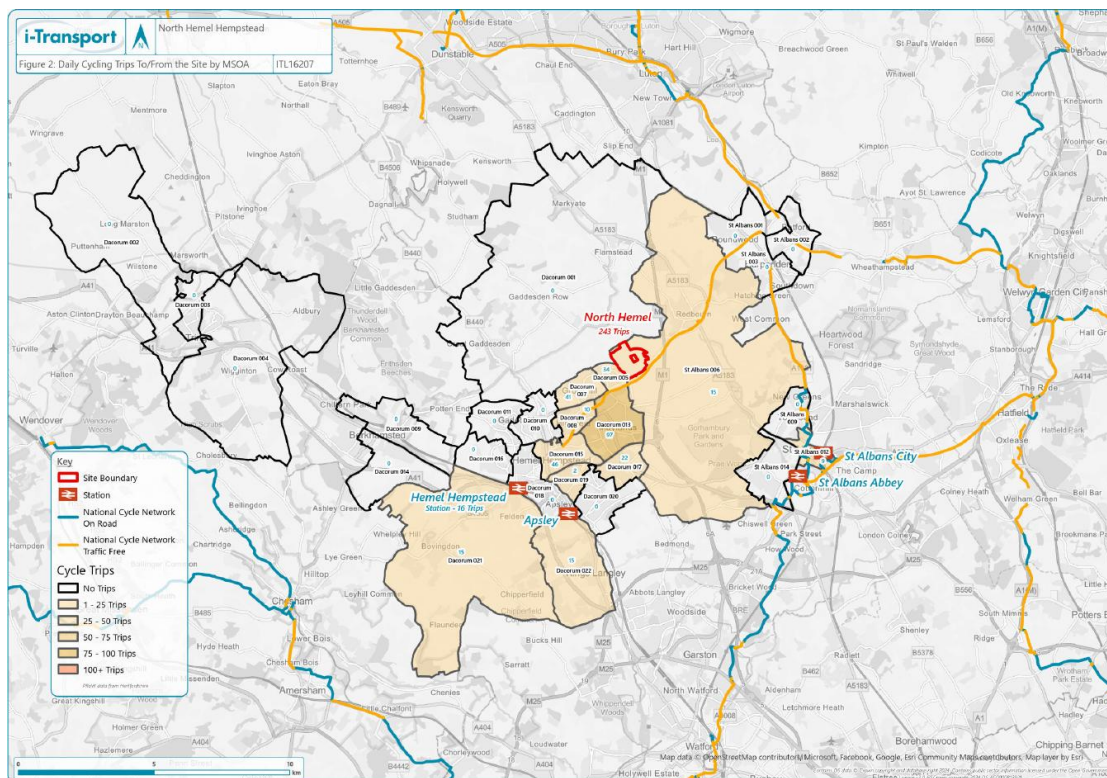
Figure 7-4 Walking distribution heat map (Cumulative Scenario)



Cycle

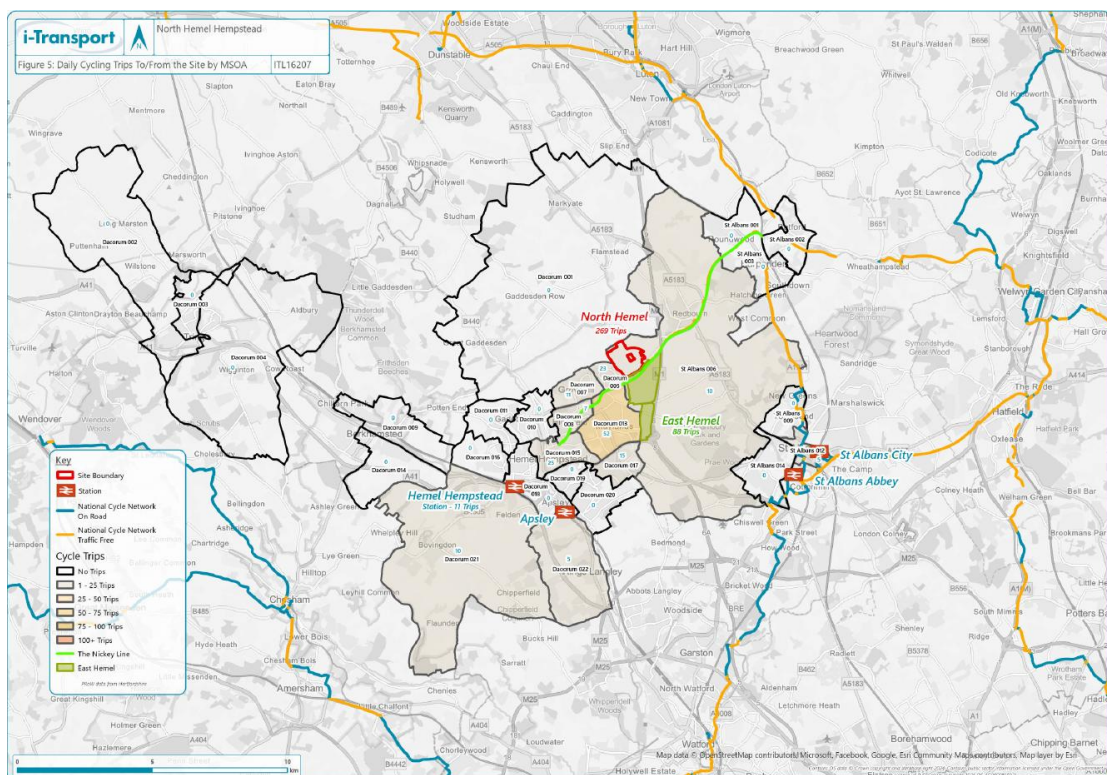
- 7.4.6 **Figure 7-5** shows the cycling trips for the Core Scenario. The most popular zones for cyclists are Dacorum 013 and 015 which includes the Hemel Hempstead Industrial Estate and town centre. This accounts for 41% of all external cycle trips.
- 7.4.7 For the Industrial Estate, cyclists would use Redbourn Road, Cherry Tree Lane and Three Cherry Trees Lane. The proposed Green Loop and STC connections will also facilitate these movements. For the town centre, improvements to cycling infrastructure, including connecting to the Nickey Line (as detailed in **Section 5.3.3**) would serve these movements.

Figure 7-5 Cycle distribution heat map (Core Scenario)



7.4.8 Figure 7-6 below shows the cycling trips for the Cumulative Scenario. This demonstrates 88 daily cycle journeys between the Site and East Hemel.

Figure 7-6 Cycle distribution heat map (Cumulative Scenario)

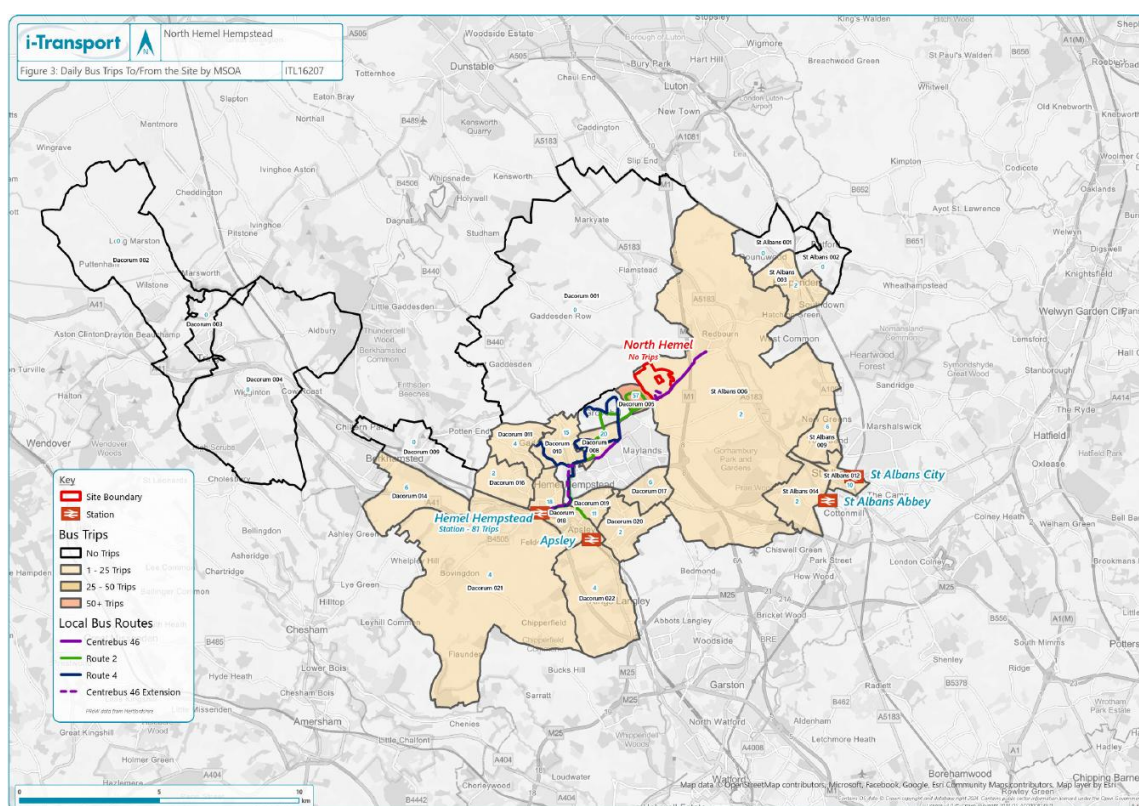


Bus

7.4.9 Figure 7-7 below shows the bus distribution for the Core Scenario. This demonstrates that the Proposed Development will generate 712 daily bus trips, with 587 remaining local to St Albans and Dacorum. The most popular bus destinations are the town centre attracting 151 of these trips, Hemel Hempstead Industrial Estate attracting 101 trips and the station attracting 81 trips.

7.4.10 The majority of the remaining 44 local bus trips are well served by the existing bus routes 2 and 4 which are less direct services through the north of Hemel Hempstead.

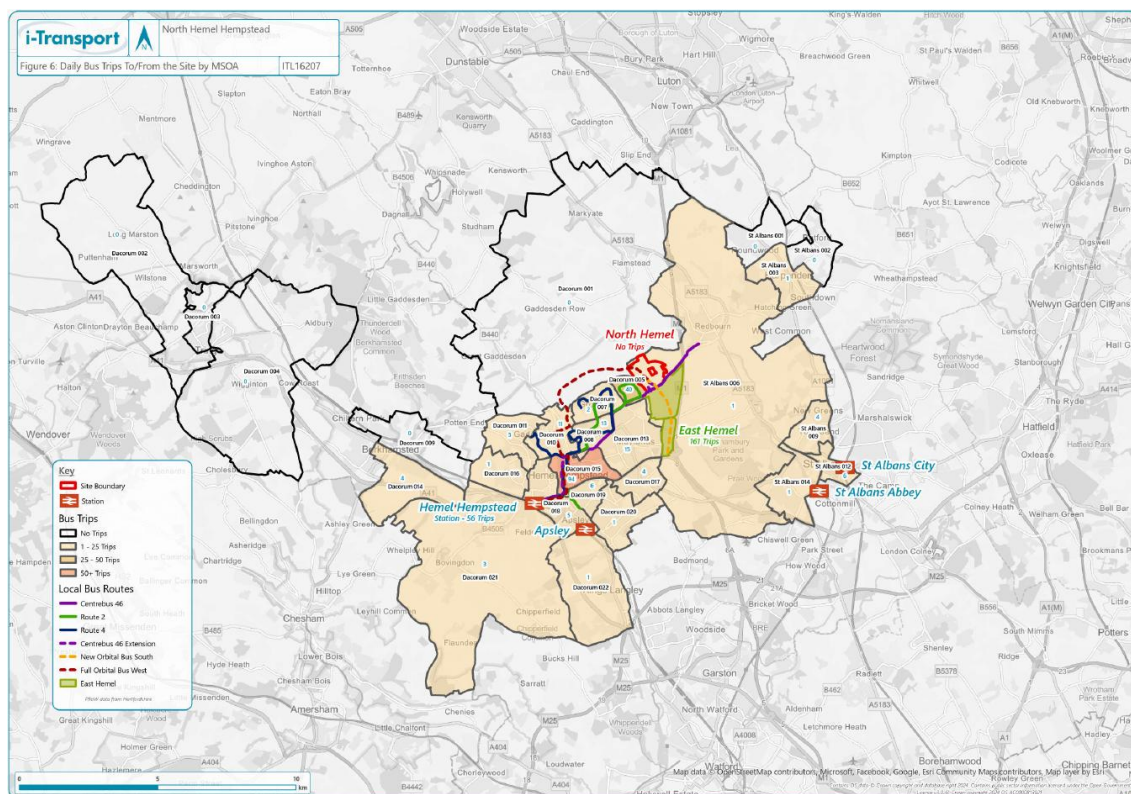
Figure 7-7 Bus distribution heat map (Core Scenario)



7.4.11 Figure 7-8 below shows the bus distribution for the Cumulative Scenario. This demonstrates that the previous destinations remain popular, although the highest demand would be at East Hemel given the local centre, secondary school and employment component at this Site. This demand will be served by a new Orbital bus route between the Site, East Hemel and onwards towards St Albans and Hemel Hempstead (south) along A414 Breakspear Way corridor.

7.4.12 Buses will be a popular mode choice for the movement given the priority at the Western Junction and along the STC, as well as the network of bus stops and mobility hubs. When HGC is fully built out, it is anticipated bus demand along this Orbital route will significantly grow.

Figure 7-8 Bus distribution heat map (Cumulative Scenario)



7.5 Trip Generation and Distribution Summary

- 7.5.1** The Trip Model developed distributes active travel trips throughout Hemel Hempstead and beyond. This has informed the Sustainable Transport Strategy set out within **Section 5** which focuses on prioritising and enabling travel by sustainable modes to most directly serve popular connections across those modes within both Core and Cumulative scenarios. This includes on-site provision including a mobility hub, good quality network of internal walking and cycling routes, as well as prioritised bus connections, and external improvements to existing active travel as well as enabling the delivery of new routes including HGC Green Loop and STC.
- 7.5.2** The remaining journeys, that cannot be made by sustainable means of transport are assessed in the following section.

SECTION 8 Highway network impact assessment

8.1 Overview

- 8.1.1 The vehicular trip generation of the Proposed Development has been determined via the Trip Model detailed in **5.9.1** and agreed with the highways and planning authorities.
- 8.1.2 As agreed with HCC and SACDC the impact of the Proposed Development on the highway network has been undertaken using the Paramics model for Hemel Hempstead.
- 8.1.3 The Paramics model is a microsimulation-based local model owned by HCC and operated by SLR and is used to distribute trips and assign them across the network. The study area consists of Hemel Hempstead and the surrounding suburbs.

8.2 Model Setup

- 8.2.1 The extent of the model is included in the plan below. Junction 69 in the plan refers to the Eastern Junction which in the case of the Cumulative Scenario is shared with East Hemel.

Figure 8-1 Extent of Hemel Hempstead Paramics model



Scenarios

8.2.2 The following scenarios have been modelled to assess the highway impacts of the Proposed Development:

Core Scenarios

- Scenario 1: **2041 Reference Case** (including Committed Development)
- Scenario 2: **2041 Reference Case + Proposed Development**
- Scenario 3: **2041 Reference Case + Proposed Development + Highway Interventions**

Cumulative Scenarios

- Scenario 4: **2041 Local Plan Reference Case** (Including Committed Development + End of SACDC/DBC Local Plan Sites without the Proposed Development)
- Scenario 5: **2041 Local Plan Reference Case + Proposed Development**

Core and Cumulative Scenario Growth

8.2.3 The full list of committed development Sites (included within all the above scenarios) and Local Plan development Sites (included within Cumulative scenarios) is set out within SLR's Hemel Hempstead Paramics Model Inclusions Note included within **Appendix F**.

Core and Cumulative Scenario Highway Interventions

8.2.4 **Figure 8-2** below shows the highway scheme locations included within the Paramics model for Hemel Hempstead which have been identified within the IDPs and modelling undertaken to support both DBC and SACDC Draft Local Plan. A summary of the Paramics mitigation assumptions is set out within SLR note included within **Appendix F**.

8.2.5 A corresponding list of interventions against assessment scenarios is included as **Table 8-1**.

Figure 8-2 Highway Mitigation Intervention Locations



Table 8-1 Intervention Summary

Location Ref	Intervention location and description	Scenario	
		Core	Cumulative
1	New spine road from Hemel Hempstead Road to the A414 (delivered by EHH)		X
2	Addition of right flare on Lawn Lane east and signal optimisation at the Durrants Hill/ Lawn Lane junction		X
3	M1 Junction 8 – Major reconfiguration to provide direct access into Maylands (<i>Project Breakspear</i>) (<i>East Hemel southern access</i>)		X
4	M1 dedicated coach service Luton to Hemel Hempstead		X
5	New high frequency bus service along A414 corridor		X
6	Northbound bus lane on Maylands Avenue		X
7	Restrict Lawn Lane access at northern end to bus and cycle only		X
8	Southbound bus lane on Leighton Buzzard Road north from North Hemel development		X

Location Ref	Intervention location and description	Scenario	
		Core	Cumulative
9	Redbourn Road/ Three Cherry Trees Lane/ Shenley Road – replacement of roundabout with signalised junction	X	X
10	Redbourn Road/ Link Road/ St angels Lane – partial signalisation scheme	X	X
11	Link Road/ Cambrian Way – widening roundabout exit arms to allow two lane throughputs for east-west and west-east movement		X
12	Leighton Buzzard Road/ Combe Street – replacement of the existing mini-roundabout with a signalised junction		X
13	Maylands Avenue/ Maxted Road – junction signalisation		X
14	Cherry Tree Lane Quietway		X
15	Punchbowl Lane Quietway		X
16	Hogg End Lane Quietway		X
17	Bunkers Lane Quietway		X
18	Reduced speed limits on A4147 adjacent to EHH access junction and extending to M1 overbridge (East Hemel southern access)		X
19	Reduced speed limits on B487 adjacent to EHH/ NH access junction and extending to approx. M1 underpass. (North Hemel access)	X	X
20	Reduced speed limits on Leighton Buzzard Road corridor to the north of the Link Road roundabout		X
21	Introduction of 20mph speed limit on Fishery Road		X
22	A4251/ A4146 Station Road roundabout conversion into signalised junction		X
23	20mph speed limit along Marlowes and reduction from two to one lane between Hillfield Road and Midland Road		X
24	A414/ Maylands Avenue – partial signalisation		X

8.2.6 The implementation of the above highway interventions will be supported through appropriate S106 contributions to be agreed with SACDC and HCC.

8.3 Vehicle Trip Assignment

8.3.1 This section presents the results of the Paramics modelling across all scenarios.

8.3.2 **Figure 8-3** and **Figure 8-4** show the assignment of Proposed Development trips across the local network for the Core Scenario in the morning and evening peak hours, respectively.

Figure 8-3 Proposed Development Trip Assignment – Core Scenario Morning Peak

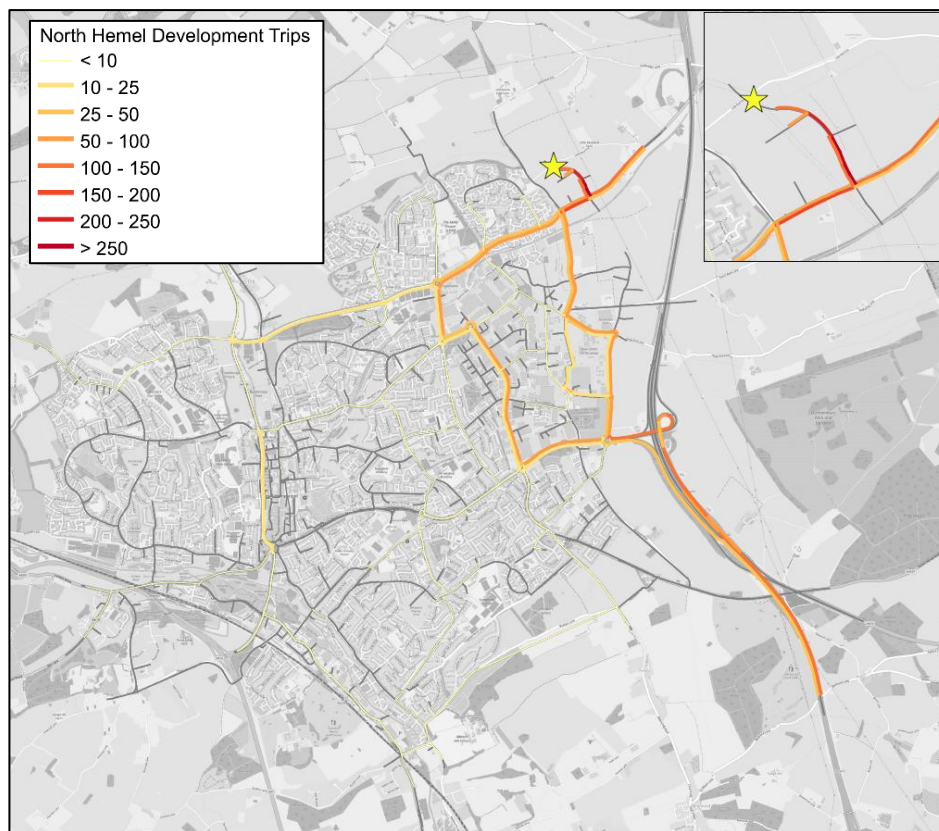
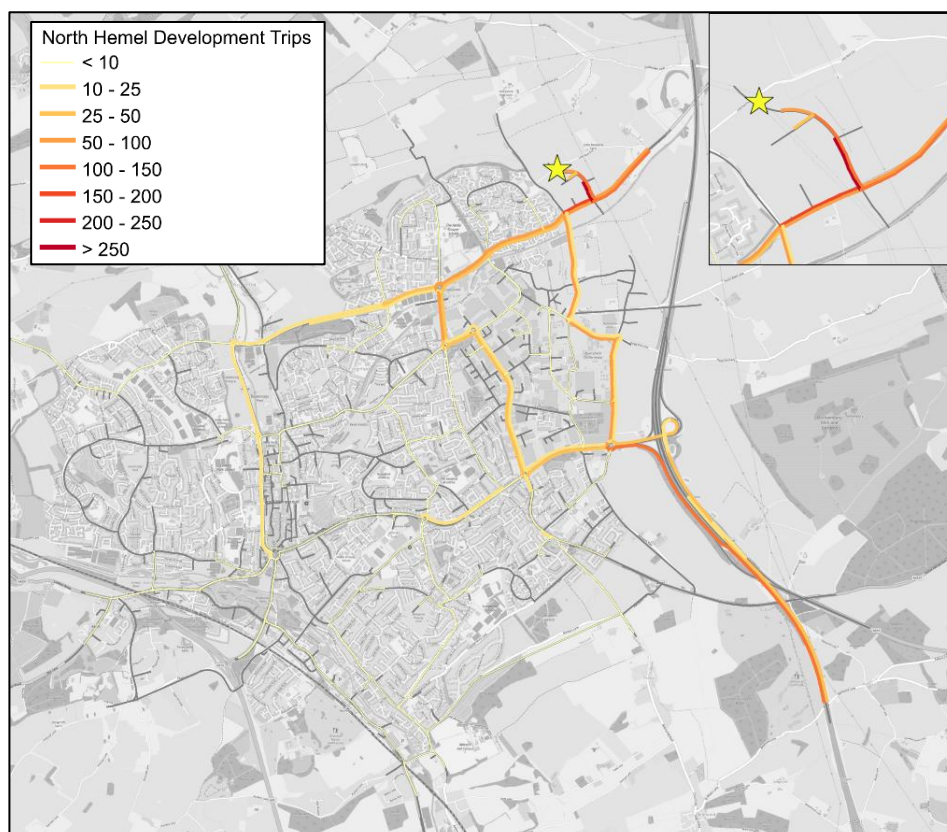


Figure 8-4 Proposed Development Trip Assignment – Core Scenario Evening Peak



8.3.3 This demonstrates that the highest proportion of trips route west towards the town centre, along the B487 between the Site and destinations to the west and south. There is a tidal flow of vehicles travelling south in the morning peak and returning north in the evening peak. In the Core Scenario movements route toward M1 Junction 8 via Cherry Tree Lane and Green Lane or through the Maylands Industrial Estate. Journeys towards St Albans, Harpenden and north on the M1 route east along B487 Hemel Hempstead Road towards A5183 and M1 Junction 9.

8.3.4 **Figure 8-5** and **Figure 8-6** show the assignment of Proposed Development trips across the local network for the Cumulative Scenario in the morning and evening peak hours, respectively.

Figure 8-5 Proposed Development Trip Assignment – Cumulative Scenario Morning Peak

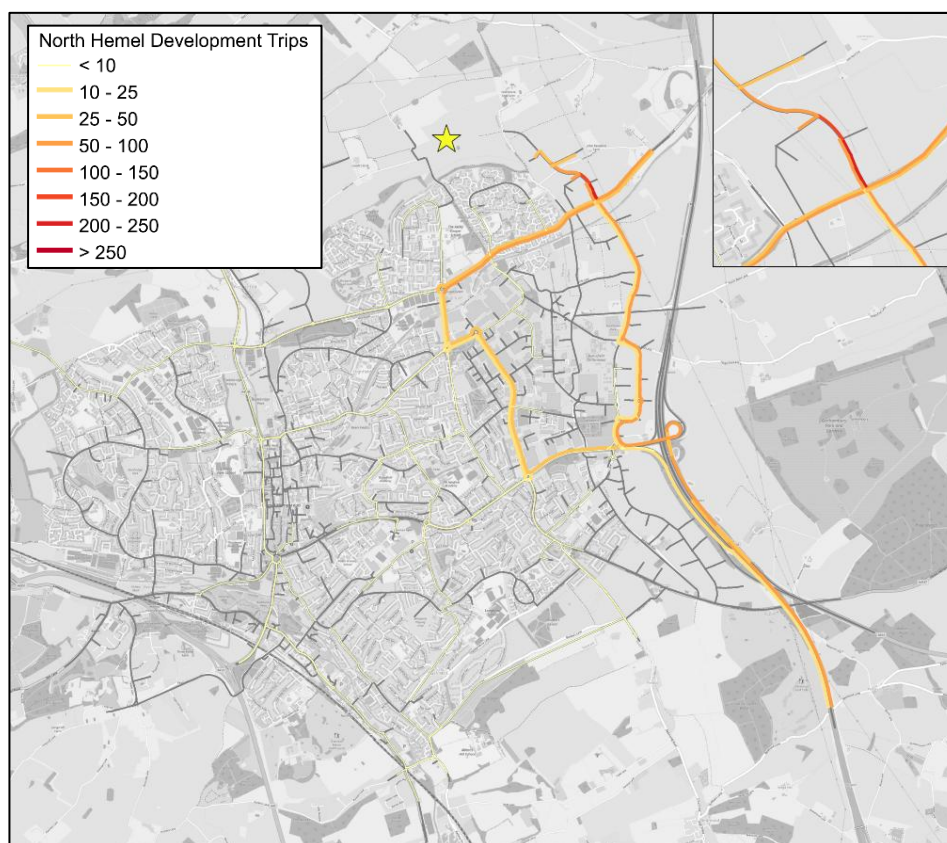
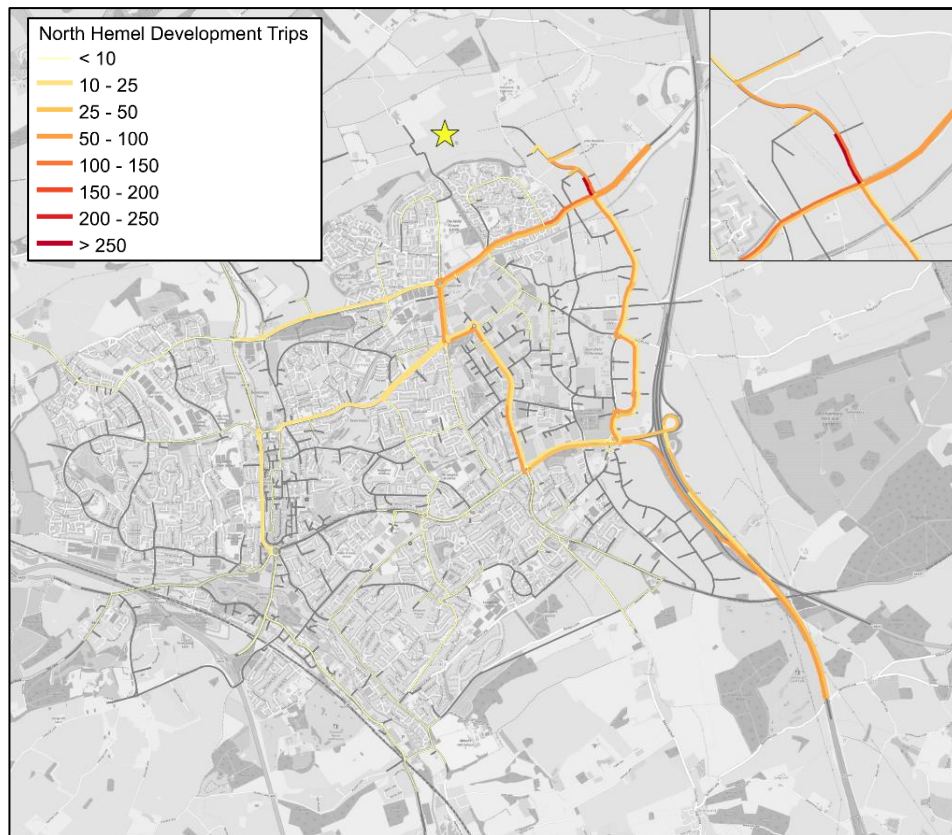


Figure 8-6 Proposed Development Trip Assignment – Cumulative Scenario Evening Peak



8.3.5 The main difference in vehicle routing is as a result of the STC, with vehicles travelling south and towards M1 Junction 8 utilising the STC rather than Cherry Tree Lane, Green Lane and through Mayland Avenue Industrial Estate. This reduced the movements travelling west along the Redbourn Road corridor, although this remains a popular route to the town centre. The movements to the east along B487 Hemel Hempstead Road remain similar to the Core scenario.

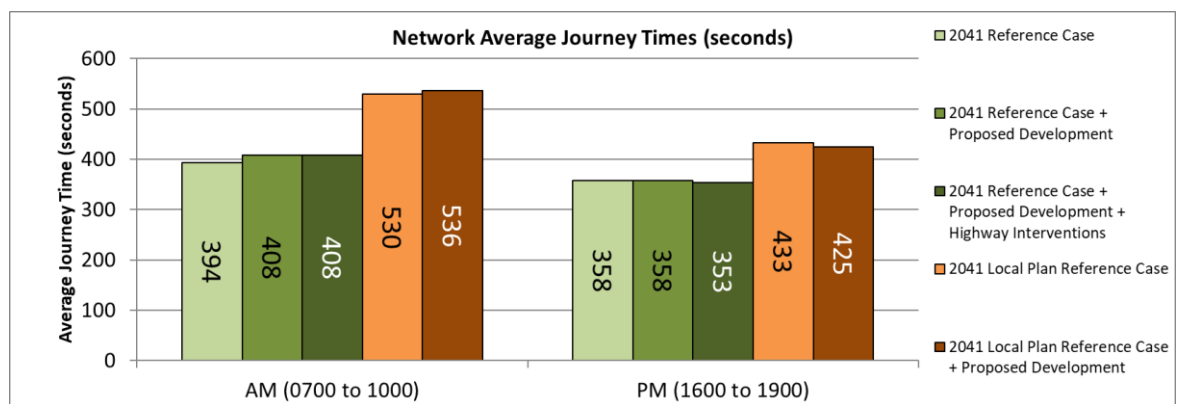
8.4 Junction Impact Assessment

8.4.1 An assessment of the impact of the Proposed Development across all junctions within the study area has been undertaken using the Paramics model. **Table 8-2** and **Figure 8-7** below present a summary of the Average Journey Time (seconds) across the scenarios assessed.

Table 8-2 - Network Average Journey Time (seconds) Table

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Network Mean Delay (s)	2041 Reference Case	2041 Reference Case + Proposed Development	2041 Reference Case + Proposed Development + Highway Interventions	2041 Local Plan Reference Case	2041 Local Plan Reference Case + Proposed Development
AM (0700 to 1000)	394	408	408	530	536
PM (1600 to 1900)	358	358	353	433	425

Figure 8-7 -Network Average Journey Time (seconds) Graph



- 8.4.2 The above results demonstrate that compared with the 2041 Reference Case the Proposed Development has a low impact on the overall network operation, with only an additional 14 seconds journey time created in the AM peak period and no change in the PM peak period.
- 8.4.3 The highway interventions (set out in **Table 8-1**) in the Core scenario improve the overall network performance, particularly in the PM peak period, reducing journey times by 5 seconds.
- 8.4.4 As wider development and highway interventions across both DBC and SACDC come forward, the average journey times across the network increase to 530 seconds in the AM peak period and 433 seconds in the PM peak period. The Proposed Development results in a minor increase of 6 seconds in the AM peak period and a reduction of 8 seconds in the PM peak period.
- 8.4.5 Overall, the network performance remains acceptable in all scenarios, with average journey times across the network remaining under 9 minutes in the AM peak and 8 minutes in the PM peak.
- 8.4.6 To demonstrate the impact of the Proposed Development, highway interventions and performance of the network, Queue Impact Plots have been obtained for the following:

Core Scenario:

- **2041 Reference Case (Scenario 1) vs 2041 Reference Case + Proposed Development (Scenario 2) (Figure 8-1 and Figure 8-2):** demonstrating the impacts the Proposed Development has on the network, without the delivery of any highway interventions.
- **2041 Reference Case (Scenario 1) vs 2041 Reference Case + Proposed Development + Highway Interventions (Scenario 2) (Figure 8-3 and Figure 8-4):** demonstrating the influence the Core scenario highway interventions have on the network.

Cumulative Scenario:

- **2041 Local Plan Reference Case (Scenario 4) vs 2041 Local Plan Reference Case + Proposed Development (Scenario 5): (Figure 8-5 and Figure 8-6):** demonstrating the impacts of the Proposed Development once all DBC and SACDC Local Plan development Sites and the full list of Cumulative highway interventions (**Table 8-1**) are delivered.

8.4.7 The Queue Impact Plots presents the change in average maximum queue length (in vehicle numbers) recorded on all assessed junction approaches from the two scenarios compared. The queue impacts are assessed against the following criteria, as presented in the figures overleaf:

- Criteria 1 – queue length has decreased by more than – 10 vehicles.
- Criteria 2 – queue length has increased by between 10 and 25 vehicles.
- Criteria 3 – queue length has increase between 25 and 50 vehicles.
- Criteria 4 – queue length has increased by more than 50 vehicles.

8.4.8 The Queue Impact Plots only highlight junctions which experience an impact which satisfy the above criteria. Therefore, those junctions not highlighted do not experience notable impacts.

Core Scenario

Figure 8-8 Queue Impact Plot – Scenario 1 vs Scenario 2 - Morning Peak



Figure 8-9 Queue Impact Plot – Scenario 1 vs Scenario 2 - Evening Peak



- 8.4.9 The results demonstrate that the inclusion of Proposed Development vehicle movements in addition to the committed future year network conditions results in moderate impacts during the morning peak period. Those impacts identified at the A414/ Maylands Avenue roundabout and along the Maylands Avenue corridor stem from the A414/ Green Lane roundabout which already experiences significant queues on the westbound approach (heading towards the M1) in the future year scenario. This part of the network is therefore sensitive to any increase in flows.
- 8.4.10 Whilst the proposed Development does generate additional vehicle movement on this part of the network, the impacts are disproportionate to the level of movements. This is due to queuing at the A414/ Green Lane junction tailing back through the A414/ Maylands Avenue creating knock on impacts along the Maylands Avenue corridor. This is only an issue in the morning peak.
- 8.4.11 The Proposed Development also results in moderate queue increases along the Redbourn Road corridor, at the Redbourn Road/ Three Cherry Trees Lane/ Shenley Road roundabout and Redbourn Road / Link Road/ St Agnells Lane roundabout. Some delays at these junctions are also experienced during the PM peak period, albeit only between 10 and 25 additional vehicles.
- 8.4.12 The A414 corridor will have issues in the future year regardless of the Proposed Development coming forward. The main part of the network which the Proposed Development has a direct impact is along Redbourn Road. An additional run of the model has been undertaken with the inclusion of highway interventions in the form of a signal-controlled junction at Redbourn Road/ Three Cherry Trees Lane/ Shenley Road roundabout and partial signalisation of Redbourn Road / Link Road/ St Agnells Lane roundabout.

Figure 8-10 - Queue Impact Plot – Scenario 1 vs Scenario 3 – Morning Peak

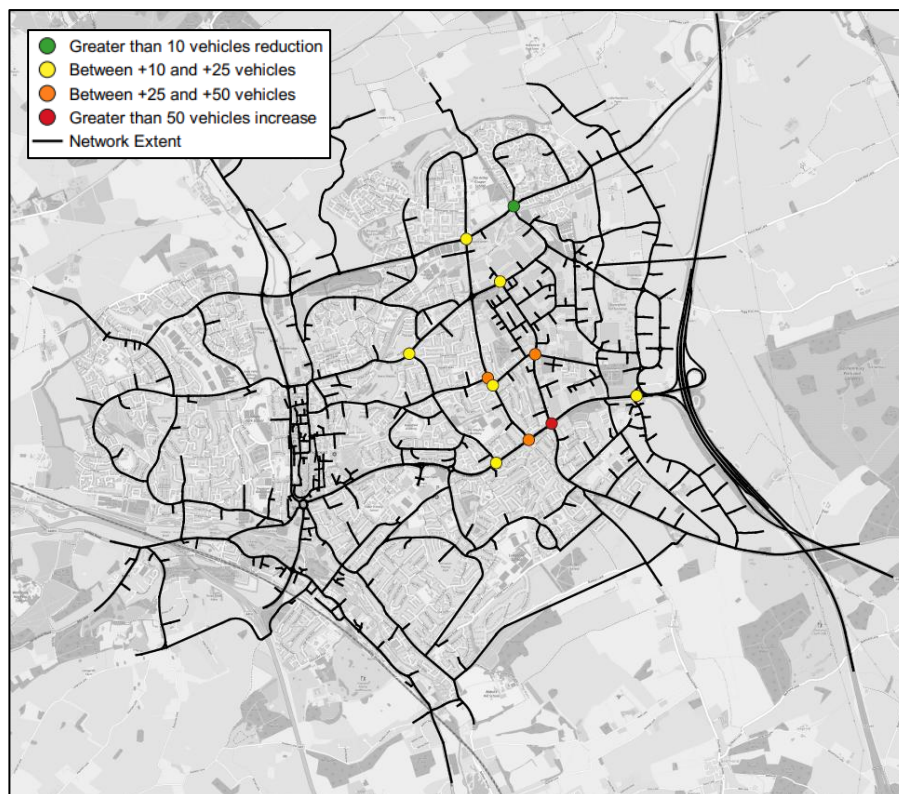


Figure 8-11 - Queue Impact Plot – Scenario 1 vs Scenario 3 – Evening Peak



8.4.13 The results demonstrate that the inclusion of the two schemes benefit both Redbourn Road/ Three Cherry Trees Lane junction and the Redbourn Road/ Link Road junction. The operation of the Redbourn Road/ Link Road junction is improved although a low level of queues still occur, with low queues also occurring at the Redbourn Road/ Cherry Tree Lane junction in the evening peak periods. This is part a result of upstream vehicle movements being released from the improvements at the Redbourn Road/ Three Cherry Trees Lane junction to the east.

8.4.14 Away from the Redbourn Road corridor, there remains impacts in the morning peak related to the operation of the A414/Green Lane roundabout, whilst in the evening peak there is very little impact from the Proposed Development, particularly with the inclusion so of the two schemes.

Cumulative Scenario

Figure 8-12 Queue Impact Plot – Scenario 4 vs Scenario 5 - Morning Peak

