



# LAND TO THE WEST OF HATFIELD

Environmental Statement – Chapter 12: Transport

Arlington Business Parks GP Limited

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## 12 TRANSPORT

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### 12.1 INTRODUCTION

This Chapter has been prepared by Vectos and assesses the potential effect of the Proposed Development on traffic and transportation. Likely significant effects associated with enabling, demolition and construction activities and the completed Development are identified and, where necessary, mitigation measures are outlined.

This Chapter is supported by the following technical appendices:

- Appendix 12.1: Personal Injury Collision Data

### 12.2 METHODOLOGY

#### 12.2.1 Legislation and Planning Policy Guidance

##### 12.2.1.1 National Planning Policy Framework

The NPPF is a central government planning document produced by the Department for Communities and Local Government. The revised NPPF was published on 24 July 2018 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in March 2012.

Section 9 of the NPPF deals with 'promoting sustainable transport.' Paragraph 103 states that:

*"Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes."*

Paragraph 108 sets out the transport issues which should be addressed within Development Plans and decisions. These are:

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

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

In addition to this Paragraph 111 states that *"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."*

### 12.2.1.2 Hertfordshire Local Transport Plan

Hertfordshire County Council has recently produced their Local Transport Plan. Hertfordshire's Local Transport Plan 4 (LTP4) sets the framework for achieving a better transport system for the County over a plan period (2018 – 2031).

One of the core features of the LTP4 is to do more to improve conditions for sustainable modes of transport including walking, cycling and public transport. It includes a more prominent consideration of their needs in all transport schemes, strategies and new developments as well as improvements to cycling infrastructure, walking environments and multi modal interchanges. The attractiveness of bus travel will also be enhanced through the implementation of more bus priority measures.

Significant sustainable transport proposals include:

- Sustainable travel towns at Bishop's Stortford, Broxbourne, Hatfield, Hemel Hempstead, Hertford, St Albans, Stevenage, Watford and Welwyn Garden City. These will comprise extensive improvements for walking, cycling and passenger transport, combined with activity to encourage more sustainable travel behaviour;
- An east-west bus rapid transit scheme between Hemel Hempstead and Welwyn Garden City, with potential future extensions to Hertford and Harlow; and
- A programme of A414 highway improvements including a Hertford Bypass.

A summary of the transport related policies set out within LTP4 are provided below.

#### 12.2.1.2.1 Policy 1: Transport User Hierarchy

To support the creation of built environments that encourage greater and safer use of sustainable transport modes, the County Council will consider the following in the design of any new scheme and development:

- *“opportunities to reduce travel demand and the need to travel;*
- *vulnerable road user needs (such as pedestrians and cyclists);*
- *passenger transport user needs;*
- *powered two-wheeler (mopeds and motorbikes) user needs;*
- *other motor vehicle user needs”.*

#### 12.2.1.2.2 Policy 2: Influencing Land use planning

Policy 2 relates to the location of developments, and states that *“the County Council will encourage the location of new development in areas served by, or with the potential to be served by, high quality passenger transport facilities so they can form a real alternative to the car, and where key services can be accessed by walking and cycling.”*

#### 12.2.1.2.3 Policy 3: Travel Plans and Behaviour Change

The County Council will encourage Travel Plans through:

- *“Working in partnership with large employers, businesses and other organisations to develop travel plans and implement Smarter Choices measures;*
- *Seeking the development, implementation and monitoring of travel plans as part of the planning process for new developments; and,*

- *Supporting school travel plans and working closely with parents, pupils, teachers and local residents to deliver a network of more sustainable transport links to school.”*

#### 12.2.1.2.4 Policy 5: Development Management

Policy 5 relates to the management of new development. It states that *“the County Council will work with development promoters and district and borough councils to:*

- *ensure the location and design of proposals reflect the LTP Transport User Hierarchy and encourage movement by sustainable transport modes and reduced travel demand;*
- *Ensure access arrangements are safe, suitable for all people, built to an adequate standard and adhere to the Council’s Highway Design Standards;*
- *Consider the adoption of access roads and internal road layouts where they comply with the appropriate adoption requirements and will offer demonstrable utility to the wider public. Where internal roads are not adopted the county council will expect suitable private management arrangements to be in place;*
- *Secure developer mitigation measures to limit the impacts of development on the transport network, and resist development where the residual cumulative impact of development is considered to be severe;*
- *Require a travel plan for developments according to the requirements of ‘Hertfordshire’s Travel Plan Guidance’;*
- *Only consider new accesses onto primary and main distributor roads where special circumstances can be demonstrated in favour of the proposals;*
- *Resist development that would either severely affect the rural or residential character of a road or other right of way, or which would severely affect safety on rural roads, local roads and rights of way especially for vulnerable road users; and,*
- *Ensure that any new parking provision in new developments provides facilities for electric charging of vehicles, as well as shared mobility solutions such as car clubs and thought should be made for autonomous vehicles in the future.”*

#### 12.2.1.2.5 Policy 6: Accessibility

In order to increase ease with which people can access key services, the Council will be:

- *“working in partnership with key stakeholders such as bus and rail operators, community transport operators, the voluntary sector and public service providers;*
- *Supporting transport services which could include providing resource for bus and other transport services;*
- *Addressing the barriers to accessibility particularly regarding active modes and for people with impaired mobility;*
- *Promoting travel options and facilitating accessible transport information provision, including open data initiatives;*
- *Improving travel choices and options including support for the provision of shared mobility initiatives.”*

#### 12.2.1.2.6 Policy 7: Active Travel – Walking

The County Council will encourage and promote walking by:

- *“implementing measures to increase pedestrian priority and creating ‘pedestrian friendly’ centres;*
- *providing infrastructure to provide safer access to key services and pedestrian facilities;*
- *identifying and promoting networks of pedestrian priority routes;*
- *promoting recreational walking; and*
- *supporting the implementation of the Rights of Way Improvement Plan.”*

#### 12.2.1.2.7 Policy 8: Active Travel – Cycling

The County Council will encourage and promote cycling through:

- *“Infrastructure improvements, especially within major urban areas to enable and encourage more cycling;*
- *Implementing measures to increase the priority of cyclists relative to motor vehicles;*
- *Improved safety for users including delivery of formal and informal cycle training schemes;*
- *Supporting promotion campaigns to inform, educate, reassure and encourage cycling provision and education, such as Bikeability; and*
- *Facilitating provision of secure cycle parking.”*

#### 12.2.1.2.8 Policy 9: Buses

The County Council will *“promote and support bus services to encourage reduced car use by supporting bus priority measures, maintaining bus stops and other bus related highway infrastructure, supporting cost effective bus services, and working with partners to develop appropriate passenger fares and promote bus services as an option for work and school journeys.”*

#### 12.2.1.2.9 Policy 12: Network Management

The County Council will *“seek to manage, and where feasible reduce traffic congestion, through a multitude of measures, including the use of Intelligent Transport Systems, encouraging the use of sustainable modes of travel through the measures described above, controlling on-street vehicle parking and managing street works to minimise network disruption.”*

#### 12.2.1.2.10 Policy 13: New Roads and Junctions

The County Council will *“design new transport infrastructure, following application of the Transport User Hierarchy, to manage existing demand and that of planned development.”*

#### 12.2.1.2.11 Policy 17: Road Safety

The County Council will *“seek to improve safety on the county’s roads by working with Hertfordshire Road Safety Partnership to deliver targeted, effective and appropriate road safety measures.”*

### 12.2.1.3 Welwyn Hatfield Borough Council Local Plan Policy

The development plan for the site comprises:

- The saved policies of the Welwyn Hatfield District Plan adopted 2005;
- The Hertfordshire Waste Local Plan adopted 2012-2014; and
- The Hertfordshire Minerals Local Plan adopted 2007.

The District Plan was first adopted by Welwyn Hatfield Borough Council in 2005 and sets out the strategic and detailed planning policy for the District. However, the Plan is now out of date and is not able to deliver new strategic housing sites.

The emerging Local Plan was submitted for examination on 15 May 2017 and Melvyn Middleton BA(Econ) DipTP DipMgmt MRTPI has been appointed by the Secretary of State to carry out an independent examination of our Local Plan (2013-2032).

Stage 4 of the hearing sessions took place in the Council Chamber on Tuesday 26 June, Wednesday 27 June, Thursday 28 June and Friday 29 June 2018. Stage 5 of the hearing sessions are scheduled to take place in the Council Chamber at the Welwyn Hatfield Council offices on Tuesday 6 November and Wednesday 7 November 2018 (reserve day).

These hearing sessions are to examine the Green Belt Study Stage 3 (EX88) and will not include discussion of individual site allocations. Additional hearing sessions for site allocations will be arranged later in the examination.

The Local Plan is not expected to be adopted until mid-late 2019. Once adopted, the Local Plan will include allocated sites for strategic housing, in line with government policy and to address an urgent housing need. As such, given the progress made to date on the emerging Local Plan, it is a material consideration in the determination of the application.

It is considered that the most relevant policies from the Local Plan Proposed Submission are:

- SP1 Delivering sustainable development;
- SP2 Targets for growth;
- SP3 Settlement strategy and green belt boundaries;
- SP4 Transport and travel;
- SADM3 Sustainable travel for all;
- SP6 Community services and facilities;
- SP7 Type and mix of housing;
- SP8 The local economy;
- SP9 Place making and high-quality design;
- SADM11 Amenity and layout;
- SADM12 Parking, servicing and refuse;
- SP10 Sustainable construction
- SADM14 Flood risk and surface water management
- SP11 Protection and enhancement of critical environmental assets
- SP12 Strategic Green Infrastructure
- SADM16 Ecology and landscape
- SP13 Infrastructure delivery
- SP14 New schools
- SADM26 New dwellings in Hatfield
- SADM34 Development within the green belt.



#### 12.2.1.4 *Welwyn and Hatfield 2030+ Transport Strategy*

The aim of this document is to unlock the potential of the town by the improvement of movement between business and social hubs and within the town itself.

The aims for this transport strategy are to:

- *“Improve the experience of walking and cycling, providing safe, attractive and convenient routes for residents and visitors.*
- *Connect diverse areas of the town with an ambitious, affordable and innovative public transport strategy.*
- *Break down the east-west town division to improve connections across Hatfield.*
- *Create a well-connected green infrastructure strategy to encourage the use of green spaces and support healthy and active lifestyles.”*

Some of the main challenges highlighted in this transport strategy are:

- *To tackle the increasing pressure on the road network by emphasising walking and cycling around Hatfield and promote the use of public transport; and*
- *Enable sustainable methods of commuting patterns.*

#### 12.2.2 Assessment Methodology

The IEMA ‘Guidelines for the Environmental Assessment of Road Traffic’ have been used to ensure that the environmental effects arising due to predicted changes in traffic levels are properly and comprehensively addressed.

The IEMA guidelines advise the use of a ‘check-list’ of likely effects covering noise, vibration, visual impact, severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, accidents and safety, hazardous loads, air pollution, dust and dirt, ecological impact and impact on heritage and conservation areas, where relevant.

The IEMA guidelines acknowledge that for many developments, some of the effects listed may not be widely relevant, but suggests that reasons should be provided for any exclusion.

This Chapter of the ES deals only with those transport effects likely to be relevant to the Development i.e. severance, pedestrian amenity (which for the purposes of this assessment includes fear and intimidation); driver delay; pedestrian delay; and accidents and safety. Other effects related to the noise and air quality are dealt with in Chapter 7: Air Quality and Chapter 9: Noise and Vibration of this ES.

Within the assessment, the future baseline year of 2028 has been compared with the 2028 future ‘with development’ year to assess the effect of the Proposed Development on the transport networks, using the IEMA criteria.

The assessment described in this Chapter has had regard to the description of development set out in Chapter 3 of this ES.

The assessment includes a comparison against the future baseline years (cumulative assessment) which includes other committed development which could impact the study area.

Following the assessment, additional transport mitigation measures are described which will seek to mitigate the potential effects of the Proposed Development where necessary. An assessment of residual effects following implementation of these mitigation measures is then provided.

### 12.2.3 Study Area

In accordance with IEMA guidelines, the study area has been defined by identifying key links or locations where environmental impacts may occur as a result of the Proposed Development. This is based on professional judgement and the data sources available.

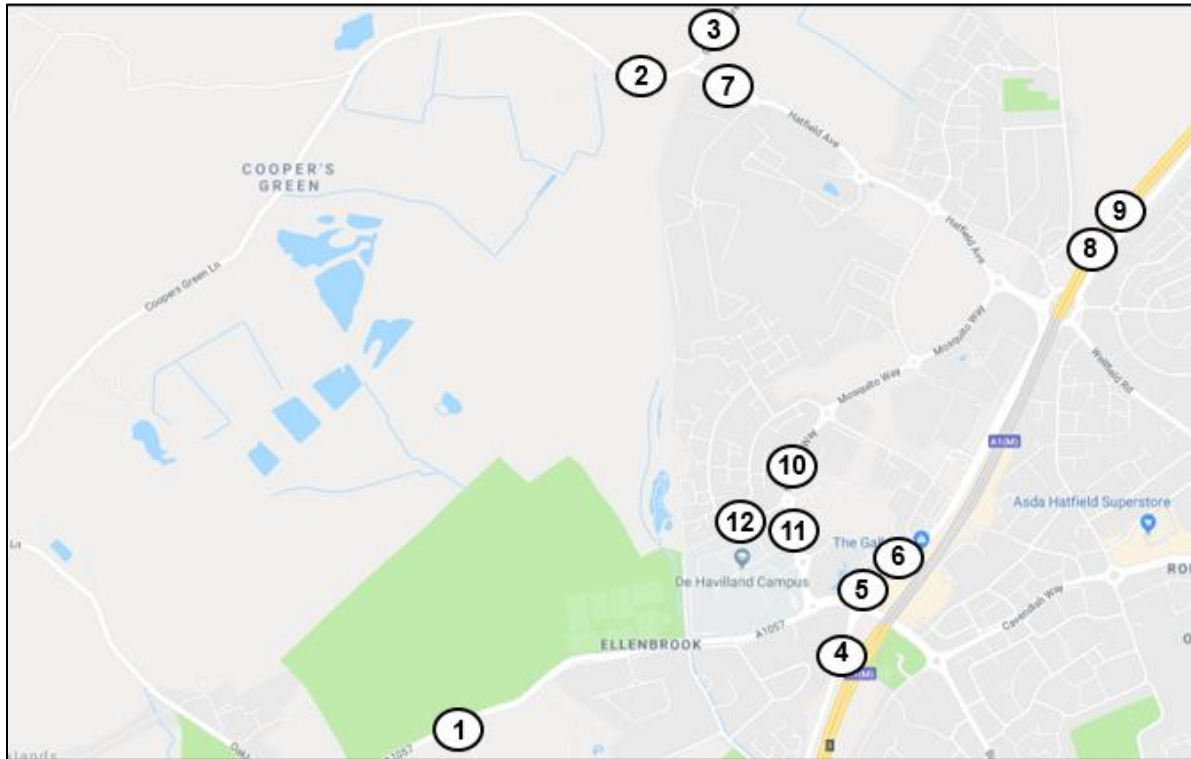
The highway links included within the study area are summarised below in **Table 12.1**.

**Table 12.1: Study Area**

Link Reference	Road Link	Link Location
1	A1057 St Albans Road W	West of Albatross Way
2	Coopers Green Lane	North of Hatfield Avenue
3	Coopers Green Lane	South of Hatfield Avenue
4	A1001	South of Cavendish Way Roundabout
5	A1001 Southbound	North of Cavendish Way Roundabout
6	A1001 Northbound	North of Cavendish Way Roundabout
7	Hatfield Avenue	Between Coopers Green Lane and Frobisher Way
8	A1(M) Northbound	Between Junction 3 and Junction 4
9	A1(M) Southbound	Between Junction 3 and Junction 4
10	Mosquito Way	Between Albatross Way and Tamblin Way
11	Mosquito Way	Between Albatross Way and Bishop Square
12	Albatross Way	Between proposed site access and Mosquito Way

The locations of each of the links described in Table 12.1 above are shown in **Figure 12.1**.

**Figure 12.1 Link Locations**



**12.2.4 Sensitivity of Receptors**

The sensitivity of a road can be defined by the vulnerability of the user groups who may use it e.g. elderly people or children. A sensitive area may be where pedestrian activity is high, for example in the vicinity of a school, or where there is already an existing accident issue. It also takes account of the existing nature of the road i.e. an existing ‘A’ road is likely to have a lower sensitivity than a minor residential road as it is already used by a larger volume of traffic and therefore small increases would result in a smaller change in the nature of the road.

The definitions of receptor sensitivity are shown in **Table 12.2** below.

**Table 12.2: Definitions of Receptor Sensitivity**

Sensitivity / Value	Definition
<b>High</b>	<p>The receptor has little ability to absorb changes in traffic flows without fundamentally altering its present character or it is of international or national importance.</p> <p>Receptors of greatest sensitivity to traffic flows will include those where the following are present: schools, colleges, playgrounds, accident clusters, retirement homes, roads without footways that are used by pedestrians.</p>
<b>Medium</b>	<p>The receptor has moderate capacity to absorb change without significantly altering its present character, or is of high importance.</p>

	Medium traffic flow sensitive receptors include: congested junctions, doctors' surgeries, hospitals, shopping areas with narrow roadside frontage, roads with narrow footways, recreation facilities.
<b>Low</b>	The receptor is tolerant of change without detriment to its character or is of low or local importance.  Receptors with low sensitivity to traffic flow will include: places of worship, public open spaces, tourist attractions and residential areas with adequate footway provision.

The sensitivity of each of the receptors in the Study Area within this assessment has been identified based on the assessor's judgment of their sensitivity. The results are shown in **Table 12.3** below.

**Table 12.3: Sensitivity of Receptors**

Link Reference	Road Link	Receptor Sensitivity
1	A1057 St Albans Road W	Low
2	Coopers Green Lane	Low
3	Coopers Green Lane	Low
4	A1001	Low
5	A1001 Southbound	Low
6	A1001 Northbound	Low
7	Hatfield Avenue	Low
8	A1(M) Northbound	Low
9	A1(M) Southbound	Low
10	Mosquito Way	High
11	Mosquito Way	High
12	Albatross Way	High

#### 12.2.5 Information Sources

The following information sources have been reviewed in respect to the existing transport conditions of the Site and the surrounding area:

- On-Site Observations;
- Google Maps;
- Department for Transport (DfT) Automatic Traffic Counts (ATCs);
- Manual Classified Counts (MCCs); and
- Personal Injury Collision (PIC) Data.

#### 12.2.6 Temporal Scope

The temporal scope of effects in relation to transport is described as short, medium, long term or permanent, as shown below. For the operational assessment the effects are permanent, whereas for construction they are long term for.

- Short term: <36 months
- Medium term: up to 72 months

- Long term/Permanent: those associated with the completed development

### 12.2.7 Types of Impacts

The following paragraphs cover each of the impacts that are considered in this Chapter.

#### 12.2.7.1 Severance

Severance is defined as the perceived division that can occur within a community when it becomes separated by a major traffic artery and describes a series of factors that separate people from places and other people. Such division may result from the difficulty of crossing a heavily trafficked road and a physical barrier created by the road itself.

The measurement and prediction of severance is difficult, but relevant factors include road width, traffic flow, vehicle speeds, the presence of crossing facilities and the number of movements across the affected route.

IEMA guidelines refer to the DfT's 'Manual of Environmental Appraisal', which states that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively.*" It is advised that these broad indicators should be used with care and regard paid to specific local conditions.

#### 12.2.7.2 Pedestrian Delay

IEMA guidelines note that changes in the volume, composition and/or speed of traffic may affect the ability and time required for people to cross roads. Typically, increases in traffic levels result in increased pedestrian delay, although increased pedestrian activity itself also contributes. The guidelines do not set any thresholds, recommending instead that assessors use their judgement to determine the significance of the effect.

The IEMA guidelines refer to a report published by the Transport Research Laboratory (TRL) as providing a useful approximation for determining pedestrian delay. The TRL research concluded that mean pedestrian delay was found to be 8 seconds at flows of 1,000 vehicles per hour and just below 20 seconds at 2,000 vehicles per hour for various types of crossing condition. This research has been reproduced in DMRB Volume 11, Section 3, Part 8. Figure 1 of Part 8 provides predictive mean pedestrian delay based on empirical data taking into account traffic flow and a range of parameters such as crossing width and vehicle speeds.

A two-way flow of 1,400 vehicles per hour has been adopted as a lower threshold for assessment (equating to a mean 10 second delay for a link with no pedestrian facilities) in the TRL report. Below this flow pedestrian delay is unlikely to be a significant factor. This is a robust starting point for narrowing down the modelled routes within the Study Area and ensuring the routes selected exceed the suggested threshold of analysis in DMRB Volume 11. It should be noted that for controlled forms of pedestrian crossing the pedestrian delays are less.

#### 12.2.7.3 Pedestrian Amenity

IEMA guidelines define pedestrian amenity as the relative pleasantness of a journey and can include fear and intimidation if they are relevant. As with pedestrian delay, amenity is affected by traffic volumes and composition along with pavement width and pedestrian activity. The guidelines suggest tentative thresholds of significance would be where the traffic flow is halved or doubled.

#### *12.2.7.4 Driver Delay*

IEMA guidelines note that driver delay can occur at several points on the network, although the effects are only likely to be significant when the traffic on the highway network is predicted to be at or close to the capacity of the system.

A qualitative assessment has been undertaken to establish the impact on driver delay as a result of the Proposed Development. This is based on the traffic generation of the Proposed Development as reported in **Section 12.4**.

#### *12.2.7.5 Accidents and Safety*

The IEMA guidelines do not include any definition in relation to accidents and safety, necessitating professional judgement to assess the implications of local circumstance, or factors which may increase or decrease the risk of accidents.

#### *12.2.7.6 Public Transport*

The IEMA guidelines do not include any definition in relation to public transport. An assessment of the potential effects of the Completed Development on surrounding public transport facilities is included in this Chapter.

### **12.2.8 Screening Process**

Within the IEMA guidance, two broad rules are set out which can be used as a screening process to limit the scale and extent of the assessment:

- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%); and
- Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.

Where the predicted increase in traffic flows is lower than the above thresholds, the IEMA guidelines suggest the significance of the effects can be stated to be negligible (not significant) and further detailed assessments are not warranted. Furthermore, increases in traffic flows below 10% are generally considered to be insignificant in environmental terms given that daily variations in background traffic flows may vary by this amount.

### **12.2.9 Magnitude of Effect**

The criteria that have been used to determine magnitude of change from the baseline conditions as a result of the Proposed Development are set out in **Table 12.4** below. However, the absolute effect is also important e.g. the total flow of traffic or HGVs on a link. This is because an increase of 100% in the traffic flow on a road is likely to lead to an insignificant impact if the existing flows are low.

**Table 12.4: Definition of Magnitude of Effect**

	<b>Negligible</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Severance</b>	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows of over 90%
<b>Pedestrian Delay</b>	Two-way traffic flow <1,400 vehicles per hour	A judgement based on the road links with two-way traffic flows exceeding 1,400 vehicles per hour in context of the individual characteristics		
<b>Pedestrian Amenity</b>	Change in total traffic or HGV flows <100%	A judgement based on the routes with >100% change, in the context of their individual characteristics		
<b>Driver Delay</b>	A judgement based on quantitative analysis			
<b>Accidents &amp; Safety</b>	A judgement based on quantitative analysis			
<b>Public Transport</b>	A judgement based on quantitative analysis			

#### 12.2.10 Significance Criteria

The significance level attributed to each effect has been assessed based on the magnitude of change due to the Proposed Development and the sensitivity of the affected receptor / resource to change.

Magnitude of change is assessed on a scale of high, medium, low and negligible whilst the sensitivity of the affected receptor / resource is assessed on a scale of high, medium, and low.

The significance of the effect is judged on the relationship of the magnitude of change from the baseline conditions and the sensitivity of the receptor. The criteria for predicting the significance of the effects is summarised in **Table 12.5** below.

**Table 12.5: Criteria for Assessing Effect Significance**

<b>Sensitivity of Receptor</b>	<b>Magnitude of Change from the Baseline</b>			
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Negligible</b>
<b>High</b>	Substantial	Substantial	Moderate	Negligible
<b>Medium</b>	Substantial	Moderate	Minor	Negligible
<b>Low</b>	Moderate	Minor	Negligible	Negligible

Potential effects are therefore concluded to be of negligible, minor, moderate or substantial significance and can be either beneficial or adverse. Moderate and substantial effects are considered to be significant. Negligible and minor effects are not significant.

#### 12.2.11 Assumptions and Limitations

The following assumptions and limitations are relevant to this Chapter:

- Traffic counts (ATCs and MCCs) are subject to an accuracy of + or – 10%; and
- Completed development traffic generation estimates have been based on trip rates derived from the TRICS database. Whilst these are a useful tool for estimating potential

trip generation, various factors mean that they do not provide an entirely accurate representation of future trip numbers.

## 12.3 BASELINE CONDITIONS

This section provides a summary of the existing conditions within and around the Site, including an assessment of the local transport networks.

### 12.3.1 Pedestrian and Cycle Network

There are no public rights of way (PROW) crossing the site. There are currently three existing pedestrian accesses to the site. At the northern end of the site there is a pedestrian access gate from Coopers Green Lane, immediately west of the junction with Hatfield Avenue. To the east of the site, there is a further pedestrian access located off a short footpath from Cunningham Avenue. Finally, there is a pedestrian access at the southern end the site from Albatross Way, opposite the University of Hertfordshire building. These pedestrian links will be retained/improved as part of the Completed Development.

In addition, Hatfield Business Park as well as Salisbury Village Residential Area has an extensive network of footways and shared pedestrian and cycleways, which link Hatfield town centre with controlled crossing and subways to allow pedestrians to cross the A1001, for further detail please refer to **Figure 12.2** which shows the local walking and cycling routes.

Similar to the pedestrian network, there is a good off-road cycling network with segregated pedestrian / cycleways along Hatfield Avenue, Mosquito Way and within the existing residential areas to the southeast of the site. The Business Park also provides an extensive segregates pedestrian/cycleway in its vicinity.

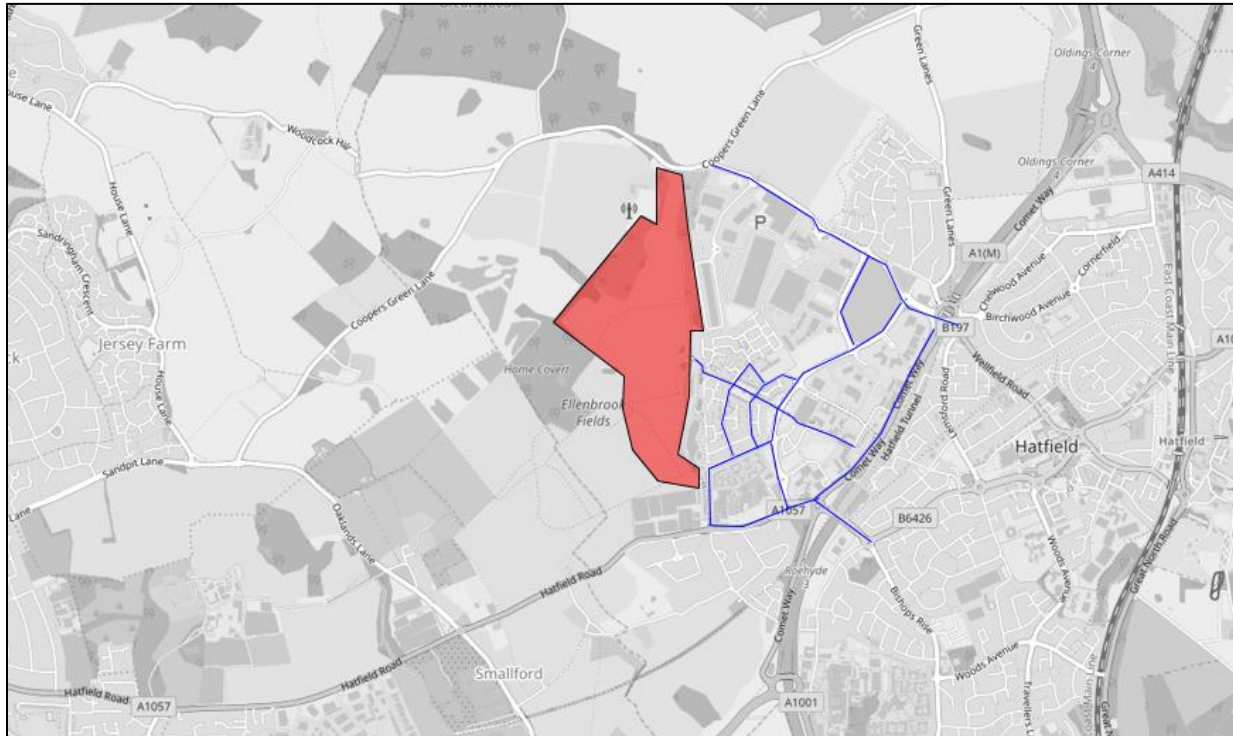
There are examples of existing footways/cycleways at all three proposed accesses to the site. The northern site will benefit from an existing shared walkway/cycleway that runs along the west side of Hatfield Avenue. This will provide residents with a sustainable transport opportunity to the Hatfield Business Park. A subway allows users to cross the A1001 providing access onto Hatfield Train Station.

Moreover, the central access to the site benefits from a shared walking and cycling link directly to the Parkhouse Court retail development. The link is 780m in length, has crossing points at all roads including a signalised crossing over Mosquito Way. This link can also be used to access the Galleria, pedestrians and cyclists can access the shared segregated walkway/cycleway along the A1001 with the option to use the signalised crossing to access the north of the retail development or use the signalised crossing at the A1057 roundabout to access the shout of the Galleria complex cycle parking is provided at both.

The southern access also has easy access to a shared walkway/cycleway along Albatross Way. This link provides the opportunity to directly access the University of Hertfordshire. In addition, this link can also be used to access the Galleria, pedestrians and cyclists can access the shared segregated walkway/cycleway along Mosquito Way with the option to use the signalised crossing to access the south of the Galleria complex where cycle parking is provided at both.



Figure 12.2 Walking and Cycling Routes



### 12.3.2 Local Bus Services

The local area, including Hatfield Business Park and the University of Hertfordshire is well served by a number of bus services, which pass within close proximity of the site. To the north of the site, the primary bus stops are situated along Hatfield Avenue and would be accessible for those living within the Upper Village and some of the Central Village. The Lower Village and some of the Central Village will be mainly served by stops on Cunningham Avenue and Albatross Way.

A total of nine bus services are accessible from the bus stops located within the vicinity of the site, providing high frequency services to a number of key destinations, including Hatfield town centre, Hatfield Rail Station, Welwyn Garden City, Hertford, Broxbourne, Watford and St Albans. A summary of the available bus services is provided below in **Table 12.6**.

**Table 12.6: Local Bus Services**

Route No.	Route	Average Frequency (Services per Hour)		
		Weekday	Saturday	Sunday
341	Hatfield – Broxbourne	1 – 2 <sup>1</sup>	1	No Service
601	Welwyn Garden City – Borehamwood	2 – 4	1 <sup>2</sup>	No Service
602	Hatfield – Watford	2 – 4	1 – 3	1
610/611	Cockfosters – Luton	1 – 2	1	No Service
614/644	Hatfield – Queensbury	1 – 3	1	No Service
615	Hatfield – Stanmore	1 <sup>3</sup>	No Service	No Service
635	Watford – Hatfield – Hitchin	1	No Service	No Service
641	Hatfield – Broxbourne	1 – 4 <sup>4</sup>	1	No Service
653	New Greens – Welwyn Garden City	1 – 3	1 – 2	1

<sup>1</sup>During the AM and PM peaks. One service every 2 hours approximately during the off-peak; <sup>2</sup> excl. before 7:00, 9:00, 10:00, 13:00, 14:00 and 17:00 onwards; <sup>3</sup>4 services per hour in the AM peak; <sup>4</sup>4 services per hour until midday and then 1 – 2 services per hour PM

### 12.3.3 Local Rail Services

Hatfield railway station is approximately 3.2km from the northern access to the site, 2.6km to the east of the site and 3km from the southernmost part of the site. Walking and cycling routes to the station exist from Hatfield Business Park and regular bus services are available to the station from Albatross Way.

Thameslink and Great Northern operate services throughout the day. Regular services from Hatfield Station are provided to London Kings Cross, Moorgate, Finsbury Park, Welwyn Garden City, Cambridge, Peterborough and all other stations in between.

In addition to this there are 238 cycle parking spaces at the station, accompanied by CCTV surveillance. Cycling to the station from the centre of the site would currently take approximately 10-15 minutes. A summary of main local rail services and selected calling points are provided in **Table 12.7**.

**Table 12.7: Summary of Direct Rail Services from Hatfield Station**

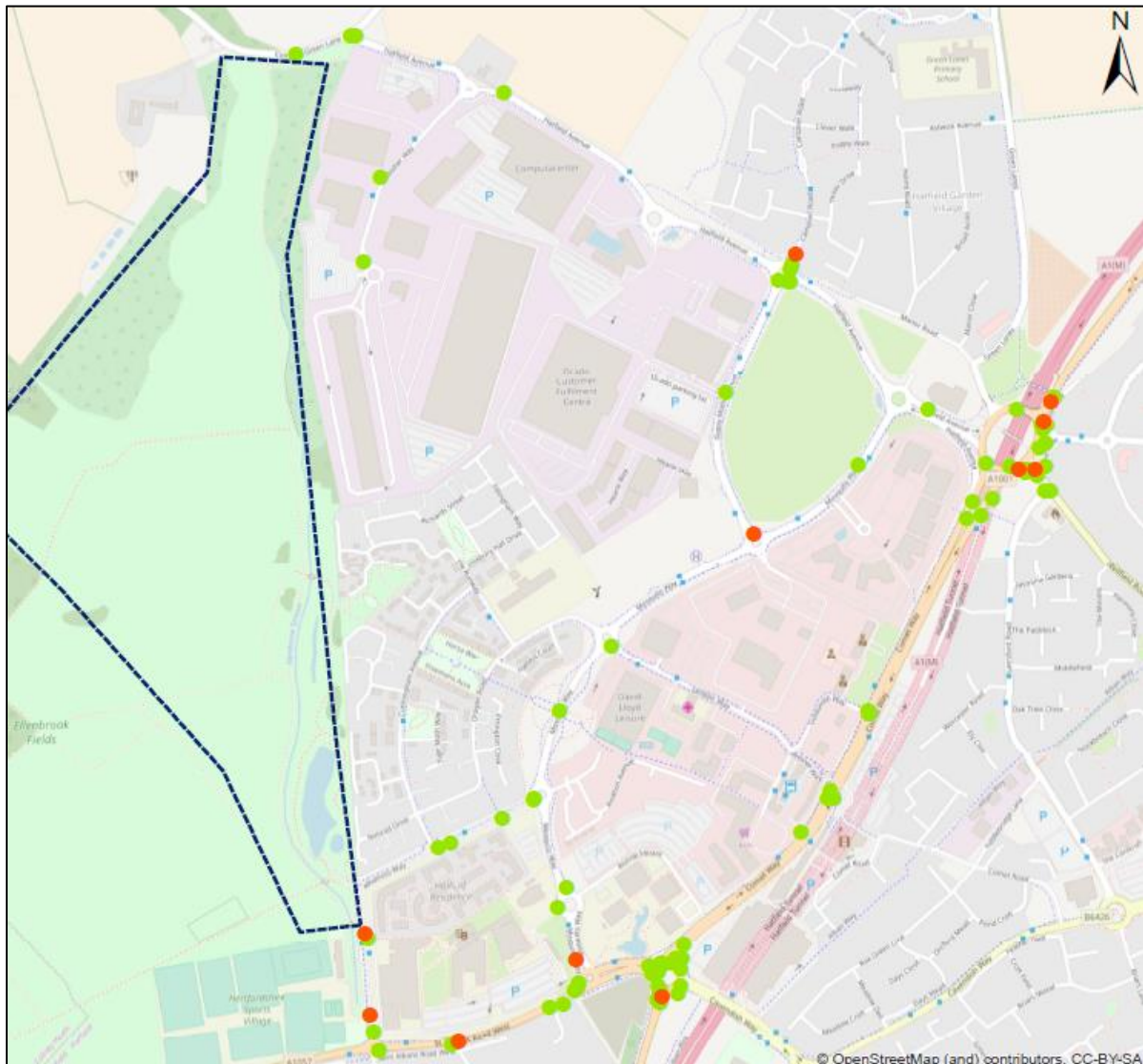
Destination	Main Calling Points	Average Frequency (Services per Hour)		
		Weekday	Saturday	Sunday
London Kings Cross	Potters Bar – Alexandra Palace – Finsbury Park	4 – 8	3	1 – 4
Moorgate	Potters Bar – Alexandra Palace – Finsbury Park – Highbury & Islington	4 – 8	3	1 – 4
Cambridge	Welwyn Garden City – Stevenage – Shepreth	1 – 2	1	1
Peterborough	Knebworth – Hitchin – Biggleswade – Huntingdon	1 – 2	1	1

### 12.3.4 Personal Injury Collision (PIC) Data Analysis

Details of the Personal Injury Collisions (PICs) recorded in the study area have been obtained from HCC for the latest 5-year period from 1st January 2013. The study area is illustrated in **Figure 12.3** below and includes the following main roads:

- Coopers Green Lane;
- Frobisher Way;
- Comet Way;
- Hatfield Avenue;
- Mosquito Way;
- Albatross Way; and
- St Albans Road West.

**Figure 12.3 Collision Locations**



The collision statistics are included at **Appendix 12.1**.

A total of 97 collisions were recorded in the study area during the five-year period. Of the recorded collisions, 86 were classified as ‘Slight’ (green dots), 11 were classified as ‘Serious’ (orange dots) and none were classified as ‘Fatal’. A summary of the collisions recorded per year is provided in **Table 12.8** below.

**Table 12.8 PIC Data Summary**

Year	Fatal	Serious	Slight	Total
2013	0	0	10	10
2014	0	6	19	25
2015	0	2	18	20
2016	0	1	54	25
2017	0	2	15	17
<b>Total</b>	<b>0</b>	<b>11</b>	<b>86</b>	<b>97</b>

Pedestrians and cyclists were involved in 28 of the 97 incidents recorded. A break down is displayed in **Table 12.9**.

**Table 12.9 Summary of Collisions Involving Pedestrians or Cyclists**

Mode	Fatal	Serious	Slight	Total
<b>Cyclists</b>	0	2	13	15
<b>Pedestrians</b>	0	5	8	13

#### 12.3.4.1 Serious Collisions

The ‘Serious’ collisions have been analysed to determine if the highways layout was a contributing factor to causing the collision.

Of the 11 serious collisions that were recorded, seven involved a pedestrian or cyclist. Of these, the first serious incident took place in November 2014 on the A1001 Birchwood roundabout junction with B197 Wellfield Road. A car was travelling south on the roundabout with a cyclist travelling west obscured by a bus. As the bus moved off, the car collided with the cyclist. The error was mainly contributed to the poor awareness of the driver and a failure to look properly. None of the causation factors were related to the road environment.

Another serious incident occurred in October 2017 on Albatross Way circa 215 meters north of the junction with A1057 Ellenbrook Lane Roundabout. The incident involved a car travelling north on Albatross way overtaking a stationary bus. Meanwhile, a pedestrian crossed in front of the stationary bus, travelling east. The collision was attributed to a poorly judged location to cross, whereby the pedestrian was obscured by the bus and failure to look when crossing. Additionally, the driver exhibited a failure to look properly. None of the factors were related to the road environment.

The remaining four serious pedestrian collisions are all partially and some completely attributed to pedestrian error. All four are due to a pedestrian not paying attention when crossing either due to misjudged speed of oncoming vehicles, intoxication or a distraction, for example getting items from the boot of a car. Three of the collisions involved pedestrians in blind spots from other vehicles or from the

windshield vertical A-pillar obscuring a driver view. The second serious cyclist collision occurred from a car changing lanes and a failure to look properly when doing so.

The majority of these 'serious' collisions were due to the view of pedestrians or cyclists being obstructed by other stationary or moving transport and driver error, mainly a failure to look properly. None of the 'Serious' collisions were attributed to the road environment.

#### *12.3.4.2 Slight Collisions*

Of the 86 'slight' collisions only two were highlighted having causation factors related to the road environment, representing 2.1% of all collisions (including those classed as 'serious'). It is also worth noting that these collisions had other causation factors in addition to the road environment.

The most recent incident that had a causation factor relating to the road environment occurred in November 2016 on the A1057 St Albans Road West Hatfield junction with A1057 Mosquito Way Roundabout. In this incident a stolen car has collided with the rear of a stationary police car waiting on the roundabout heading eastbound. A failure to look from the oncoming driver and the fact that the driver might have been acting differently in a stolen car were contributing factors to the collision, along with a poor road layout however the combination of factors means that road layout was not the primary factor in this collision.

The other collision that involved the road environment as a contributory factor took place in August 2015 on Frobisher Way, at the exit from Belgrave House circa 240 metres southwest of the roundabout junction with Hatfield Avenue. The collision occurred when a bicycle heading northeast on the footpath of Frobisher Way was hit by a car exiting Belgrave House. The main contributing factors were a failure to look by both cyclist and driver. A minor contributing factor was the road layout and poor visibility.

Out of the other 'slight' collisions involving pedestrians and cyclists the majority all involved a failure to look properly by either the car driver, cyclist or pedestrian. However, it should be noted that two of these incidents also had poor visibility as contributing factors- the first occurred due to dim lighting on Frobisher Way Hatfield, circa 30 metres north of the Entrance to Yodel Depot, and the second, explained above, occurred due to poor road layout on the exit from Belgrave House.

#### *12.3.4.3 Summary*

After completing the review of the latest available PIC data, it is apparent that the majority of collisions occurred as a result of driver error. The PIC data review has revealed that there are no significant collision trends relating to the road environment throughout the study area.

#### **12.3.5 Baseline Traffic Flows**

A series of MCC and ATC data sources have been used to establish baseline traffic flows on the local highway network. The ATC survey data was obtained from DfT Traffic counts and HCC traffic data. Where data sources are not from 2018, TEMPRO (v 7.2) growth factors have been derived in order to uplift the data to the 2018 base year.

The 2018 baseline conditions are summarised in **Table 12.11** (AADT), **Table 12.12** (Weekday AM Peak) and **Table 12.13** (Weekday PM Peak).

**Table 12.11: 2018 Baseline Traffic Flows (24 Hour AADT)**

Link Ref	Link	Total Vehicles	HGVs
1	A1057	14,665	618
2	Coopers Green Lane	11,525	217
3	Coopers Green Lane	11,491	174
4	A1001	24,275	2,526
5	A1001 Southbound	12,274	1,277
6	A1001 Northbound	13,490	1,404
7	Hatfield Avenue	7,055	203
8	A1(M) Northbound	47,397	6,799
9	A1(M) Southbound	48,651	6,430
10	Mosquito Way	9,495	405
11	Mosquito Way	10,314	386
12	Albatross Way	1,784	198

**Table 12.12: 2018 Baseline Traffic Flows (AM Peak)**

Link Ref	Link	Total Vehicles	HGVs
1	A1057	1,963	83
2	Coopers Green Lane	1,312	37
3	Coopers Green Lane	1,290	31
4	A1001	1,948	195
5	A1001 Southbound	717	72
6	A1001 Northbound	1,211	121
7	Hatfield Avenue	804	30
8	A1(M) Northbound	2,981	342
9	A1(M) Southbound	3,892	496
10	Mosquito Way	978	44
11	Mosquito Way	1,077	44
12	Albatross Way	205	16

**Table 12.13: 2018 Baseline Traffic Flows (PM Peak)**

Link Ref	Link	Total Vehicles	HGVs
1	A1057	2,424	102
2	Coopers Green Lane	1,078	8
3	Coopers Green Lane	1,093	5
4	A1001	1,851	105
5	A1001 Southbound	1,203	68
6	A1001 Northbound	901	51
7	Hatfield Avenue	659	12
8	A1(M) Northbound	4,021	390
9	A1(M) Southbound	3,703	267
10	Mosquito Way	991	40
11	Mosquito Way	1,062	36

12	Albatross Way	165	25
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### 12.3.6 Future Baseline Traffic Flows

The future baseline conditions are summarised in **Table 12.14** (AADT), **Table 12.15** (Weekday AM Peak) and **Table 12.16** (Weekday PM Peak).

The future baseline data has been derived by applying traffic growth factors to the 2018 base traffic flows. The traffic growth factors have been derived from TEMPRO (v7.2) and will include background traffic as well as traffic generated by committed development schemes.

**Table 12.14: 2028 Future Baseline Traffic Flows (24 Hour AADT)**

Link Ref	Link	Total Vehicles	HGVs
1	A1057	16,809	708
2	Coopers Green Lane	13,210	249
3	Coopers Green Lane	13,171	199
4	A1001	27,824	2,896
5	A1001 Southbound	14,069	1,464
6	A1001 Northbound	15,463	1,609
7	Hatfield Avenue	8,086	232
8	A1(M) Northbound	54,327	7,793
9	A1(M) Southbound	55,764	7,370
10	Mosquito Way	10,883	464
11	Mosquito Way	11,822	442
12	Albatross Way	2,045	227

**Table 12.15: 2028 Future Baseline Traffic Flows (AM Peak)**

Link Ref	Link	Total Vehicles	HGVs
1	A1057	2,229	94
2	Coopers Green Lane	1,490	42
3	Coopers Green Lane	1,465	35
4	A1001	2,212	222
5	A1001 Southbound	814	82
6	A1001 Northbound	1,375	138
7	Hatfield Avenue	913	34
8	A1(M) Northbound	3,385	389
9	A1(M) Southbound	4,420	563
10	Mosquito Way	1,111	50
11	Mosquito Way	1,223	50
12	Albatross Way	233	18

**Table 12.16: 2028 Future Baseline Traffic Flows (PM Peak)**

Link Ref	Link	Total Vehicles	HGVs
1	A1057	2,755	116
2	Coopers Green Lane	1,225	9
3	Coopers Green Lane	1,242	6
4	A1001	2,104	119
5	A1001 Southbound	1,367	78
6	A1001 Northbound	1,023	58
7	Hatfield Avenue	749	14
8	A1(M) Northbound	4,569	444
9	A1(M) Southbound	4,208	303
10	Mosquito Way	1,126	45
11	Mosquito Way	1,207	41
12	Albatross Way	188	28

## 12.4 ASSESSMENT OF EFFECTS

### 12.4.1 Construction Effects

The number of construction-related vehicle trips has been calculated based on information provided from other residential sites. The estimated construction vehicle trips are summarised below in **Table 12.17**. It should be noted however, that this assessment represents an approximation of the required construction movements, and a detailed Construction Management Method Statement will be completed before commencement of work, detailing a more specific estimation of vehicles that will require access to the Site.

**Table 12.17: Predicted Construction Traffic (Two-Way Movements)**

	24 Hour AADT	AM Peak	PM Peak
<b>Light Vehicles</b>	150	45	45
<b>HGVs</b>	60	12	12
<b>Total Vehicles</b>	210	57	57

It should be noted that the construction process will be split over four phases as follows:

- Delivery of Infrastructure and Phase 1 homes: 2020 – 2021
- Delivery of Phase 2 homes: 2022 – 2023
- Delivery of Phase 3 homes: 2024 – 2025
- Delivery of Phase 4 homes: 2026 – 2027.

The effects of each Phase separately are therefore considered to be temporary long term (> 72 months).

The additional vehicle movements on each link over the 24 hour period, Weekday AM peak hour, and Weekday PM peak hour as a result of the construction phases are summarised in **Table 12.18**, **Table 12.19** and **Table 12.20** respectively. This assessment has been undertaken on the baseline of 2018 as this is the most robust assessment.



**Table 12.18: 2018 Base + Construction Traffic Flows (24 Hour AADT)**

Link Ref	Link	2018 Base		2018 Base + Construction		Net Change (%)	
		Tot Veh	HGV	Tot Veh	HGV	Tot Veh	HGV
1	A1057	14,665	618	14,675	618	+0.1%	0%
2	Coopers Green Lane	11,525	217	11,548	217	+0.2%	0%
3	Coopers Green Lane	11,491	174	11,514	174	+0.2%	0%
4	A1001	24,275	2,526	24,318	2,556	+0.2%	1.0%
5	A1001 Southbound	12,274	1,277	12,278	1,277	0%	0%
6	A1001 Northbound	13,490	1,404	13,494	1,404	0%	0%
7	Hatfield Avenue	7,055	203	7,079	203	+0.3%	0%
8	A1(M) Northbound	47,397	6,799	47,397	6,799	0%	0%
9	A1(M) Southbound	48,651	6,430	48,651	6,430	0%	0%
10	Mosquito Way	9,495	405	9,513	405	+0.2%	0%
11	Mosquito Way	10,314	386	10,373	416	+0.5%	6.8%
12	Albatross Way	1,784	198	1,871	228	+4.2%	13.2%

**Table 12.19: 2018 Base + Construction Traffic Flows (AM Peak)**

Link Ref	Link	2018 Base		2018 Base + Construction		Net Change (%)	
		Tot Veh	HGV	Tot Veh	HGV	Tot Veh	HGV
1	A1057	1,963	83	1,966	83	+0.2%	0%
2	Coopers Green Lane	1,312	37	1,319	37	+0.5%	0%
3	Coopers Green Lane	1,290	31	1,297	31	+0.5%	0%
4	A1001	1,948	195	1,961	201	+0.7%	+3.1%
5	A1001 Southbound	717	72	718	72	+0.1%	0%
6	A1001 Northbound	1,211	121	1,212	121	+0.1%	0%
7	Hatfield Avenue	804	30	811	30	+0.9%	0%
8	A1(M) Northbound	2,981	342	2,981	342	0%	0%
9	A1(M) Southbound	3,892	496	3,892	496	0%	0%
10	Mosquito Way	978	44	983	44	+0.6%	0%
11	Mosquito Way	1,077	44	1,094	50	+1.6%	+13.6%
12	Albatross Way	205	16	230	22	+12.4%	+37.5%

**Table 12.20: 2018 Base + Construction Traffic Flows (PM Peak)**

Link Ref	Link	2018 Base		2018 Base + Construction		Net Change (%)	
		Tot Veh	HGV	Tot Veh	HGV	Tot Veh	HGV
1	A1057	2,424	102	2,427	102	+0.1%	0%
2	Coopers Green Lane	1,078	8	1,085	8	+0.5%	0%
3	Coopers Green Lane	1,093	5	1,100	5	+0.5%	0%
4	A1001	1,851	105	1,864	111	+0.6%	+5.0%
5	A1001 Southbound	1,203	68	1,204	68	+0.1%	0%
6	A1001 Northbound	901	51	902	51	+0.1%	0%
7	Hatfield Avenue	659	12	666	12	+1.0%	0%
8	A1(M) Northbound	4,021	390	4,021	390	0%	0%
9	A1(M) Southbound	3,703	267	3,703	267	0%	0%
10	Mosquito Way	991	40	996	40	+0.5%	0%
11	Mosquito Way	1,062	36	1,079	42	+1.4%	+14.7%
12	Albatross Way	165	25	190	31	+13.6%	+21.1%

**12.4.1.1 Severance**

Examining the daily and peak hour flows presented in the tables above, there are only two links which will experience an increase in two-way traffic flows of over 10% (if classed as a sensitive link). Link 11 is anticipated to experience an increase in HGV flows of 13.6% in the AM peak and 14.7% in the PM peak. Link 12 is anticipated to experience an increase in HGV flows of 13.2% over the 24 hour period, 37.5% in the AM peak hour and 21.1% in the PM peak hour.

Due to the sensitivity of these links, further assessment is required with changes in traffic flows of over 10%.

It is important to note however, that due to the fact that Links 11 and 12 are currently used by very few HGVs, the percentage change in HGV traffic is over 10%, however the actual increase in two-way HGV flows (just 6 HGVs on both links) over the course of the AM and PM peak hours is not deemed to represent a significant increase given that the route provides good pedestrian facilities and the impacts of the construction period will be negligible.

As a result, it is considered that the effect of the construction phase on severance is **Minor Adverse**.

**12.4.1.2 Pedestrian Delay**

As described in Table 12.4, the impact of additional traffic on pedestrian delay should only be considered where traffic flows exceed 1,400 vehicles per hour, in the context of individual characteristics.

The following links will experience traffic flows of over 1,400 vehicles per hour:

- Link 1: A1057
- Link 4: A1001
- Link 8: A1(M) Northbound
- Link 9: A1(M) Southbound

Although hourly two-way traffic flows are above 1,400 vehicles on each of the above links, the increases in vehicle flows as a result of the construction phase are considered to be small, especially in the context of the characteristics of each link, which are strategic in nature and all provide good pedestrian facilities.

The overall significance of the effect is therefore concluded to be **negligible**.

#### *12.4.1.3 Pedestrian Amenity*

As described in Table 12.4, the impact of additional traffic on pedestrian amenity should only be considered where the change in traffic flows or HGV flows is more than 100%. No links are anticipated to experience an increase in traffic flows of 100% or more, and therefore the effect of the construction phase on pedestrian amenity is considered to be **negligible**.

#### *12.4.1.4 Driver Delay*

As stated in Table 12.4, there are no specific thresholds for whether the magnitude of change is classed as High, Medium, Low or Negligible. Therefore, a judgement based analysis has been undertaken, as described below.

The increase in traffic on any one link during the construction phase is not considered to be numerically significant, especially given the strategic nature of the study network. It is considered unlikely that the increase in traffic would result in an increase in delay at any one junction, especially when construction traffic is distributed across the network. The effect of the construction phase on driver delay can therefore be classed as a **negligible**.

#### *12.4.1.5 Accidents & Safety*

As stated in Table 12.4, there is no specific definition regarding the magnitude of change in relation to accidents and safety, and instead it is stated that a judgement will be needed to assess the implications of local circumstances or factors which may increase or decrease the risk of accidents.

The PIC data analysis undertaken previously within this Chapter determined that over the five-year period the collisions recorded occurred predominantly due to driver error rather than highway design flaws.

The increase in HGV movements on any one link in the AM peak, PM peak and across a 24-hour period is low. These increases in traffic flows are therefore not considered to be significant enough to result in any increase in collisions, especially when taking into account the results of the PIC data analysis. It is therefore concluded that the significance of the effect during the construction phase will be **negligible**.

#### *12.4.1.6 Public Transport*

Workers employed during the construction phase will be encouraged to travel to the Site using sustainable modes of travel where possible.

Given the frequency services that are available, it is not anticipated that any additional trips generated by employees during the construction phase will have a significant impact on the capacity of the local public transport network and may actually result in a benefit due to increased patronage prior to the Development opening. As a result, the significance of the effect is concluded to be **negligible**.

**12.4.1.7 Summary of Effects during Construction**

The effects of the Proposed Development during the construction phase are summarised below in Table 12.21. It should be noted that these effects are all temporary and long term due to the construction phase lasting more than 72 months.

**Table 12.21: Summary of Effects during Construction**

Description of Effect	Significance of Effect
Severance	Minor Adverse (Temporary)
Pedestrian Delay	Negligible (Temporary)
Pedestrian Amenity	Negligible (Temporary)
Driver Delay	Negligible (Temporary)
Accidents & Safety	Negligible (Temporary)
Public Transport	Negligible (Temporary)

**12.4.2 Operational Phase Effects**

The additional vehicle movements on each link over the 24-hour period, Weekday AM peak hour and Weekday PM peak hour as a result of the Completed Development are summarised in Table 12.22, Table 12.23 and Table 12.24 respectively.

Following this, the transport and access effects of the Proposed Development have been assessed in relation to the key effects such as severance, pedestrian delay etc. It should be noted that the effects of the Development will be Permanent.

**Table 12.22: 2028 Future Base + Development Traffic Flows (24 Hour AADT)**

Link Ref	Link	2028 Base		2028 Base + Development		Net Change (%)	
		Tot Veh	HGV	Tot Veh	HGV	Tot Veh	HGV
1	A1057	16,809	708	17,107	708	+1.8%	0%
2	Coopers Green Lane	13,210	249	13,867	249	+5.0%	0%
3	Coopers Green Lane	13,171	199	13,828	199	+5.0%	0%
4	A1001	27,824	2,896	29,071	2,917	+4.5%	+0.7%
5	A1001 Southbound	14,069	1,464	14,188	1,464	+0.8%	0%
6	A1001 Northbound	15,463	1,609	15,551	1,609	+0.6%	0%
7	Hatfield Avenue	8,086	232	8,788	232	+8.7%	0%
8	A1(M) Northbound	54,327	7,793	54,327	7,793	0%	0%
9	A1(M) Southbound	55,764	7,370	55,764	7,370	0%	0%
10	Mosquito Way	10,883	464	11,417	464	+4.9%	0%
11	Mosquito Way	11,822	442	13,523	463	+14.4%	+4.8%
12	Albatross Way	2,045	227	4,553	248	+122.7%	+9.4%

**Table 12.23: 2028 Future Base + Development Traffic Flows (AM Peak)**

Link Ref	Link	2028 Base		2028 Base + Development		Net Change (%)	
		Tot Veh	HGV	Tot Veh	HGV	Tot Veh	HGV
1	A1057	2,229	94	2,261	94	+1.4%	0%
2	Coopers Green Lane	1,490	42	1,559	42	+4.6%	0%
3	Coopers Green Lane	1,465	35	1,534	35	+4.7%	0%
4	A1001	2,212	222	2,343	224	+5.9%	+1.0%
5	A1001 Southbound	814	82	832	82	+2.2%	0%
6	A1001 Northbound	1,375	138	1,380	138	+0.3%	0%
7	Hatfield Avenue	913	34	987	34	+8.1%	0%
8	A1(M) Northbound	3,385	389	3,385	389	0%	0%
9	A1(M) Southbound	4,420	563	4,420	563	0%	0%
10	Mosquito Way	1,111	50	1,167	50	+5.1%	0%
11	Mosquito Way	1,223	50	1,402	52	+14.6%	+4.4%
12	Albatross Way	233	18	496	20	+113.2%	+12.1%

**Table 12.24: 2028 Future Base + Development Traffic Flows (PM Peak)**

Link Ref	Link	2028 Base		2028 Base + Development		Net Change (%)	
		Tot Veh	HGV	Tot Veh	HGV	Tot Veh	HGV
1	A1057	2,755	116	2,786	116	+1.1%	0%
2	Coopers Green Lane	1,225	9	1,292	9	+5.5%	0%
3	Coopers Green Lane	1,242	6	1,309	6	+5.4%	0%
4	A1001	2,104	119	2,231	121	+6.1%	+1.8%
5	A1001 Southbound	1,367	78	1,374	78	+0.5%	0%
6	A1001 Northbound	1,023	58	1,038	58	+1.4%	0%
7	Hatfield Avenue	749	14	821	14	+9.6%	0%
8	A1(M) Northbound	4,569	444	4,569	444	0%	0%
9	A1(M) Southbound	4,208	303	4,208	303	0%	0%
10	Mosquito Way	1,126	45	1,181	45	+4.9%	0%
11	Mosquito Way	1,207	41	1,381	43	+14.4%	+5.4%
12	Albatross Way	188	28	444	31	+136.8%	+7.7%

**12.4.2.1 Severance**

Examining the daily and peak hour flows presented in the tables above, there are only two links which are anticipated to experience an increase in two-way traffic flows of over 10% (if classed as a sensitive link) or 30% for links with low sensitivity.

It is anticipated that total vehicle flows on Link 11 will increase by 14.4% across the 24 hour period, 14.6% in the AM peak and 14.6% in the PM peak. The effect of the Completed Development on severance for Link 11 is therefore judged to be Minor Adverse.

Link 12 will increase by 122.7% across a 24 hour period, 113.2% in the AM peak hour and 136.8% in the PM peak hour.

These increases represent a substantial magnitude of effect and would therefore represent a Substantial Adverse effect, based on the criteria included in Table 12.5. It should be noted however, that this link is approximately 7.3m in width with segregated footways and cycleways, and has been designed to accommodate high volumes of traffic. The link is currently lightly trafficked in the context of surrounding roads and therefore although the percentage change in traffic flows is over 100%, the actual change in vehicle numbers is not considered to be significant in the context of the link characteristics.

As a result, and given that no other links experience an increase in traffic flows of over 30%, it is considered that the overall effect of the Completed Development on the study area is **Minor Adverse**.

#### *12.4.2.2 Pedestrian Delay*

As described in Table 12.4, the impact of additional traffic on pedestrian delay should only be considered where traffic flows exceed 1,400 vehicles per hour, in the context of individual characteristics.

The following links will experience traffic flows of 1,400 vehicles per hour:

- Link 1: A1057
- Link 2: Coopers Green Lane
- Link 3: Coopers Green Lane
- Link 4: A1001
- Link 8: A1(M) Northbound
- Link 9: A1(M) Southbound
- Link 11: Mosquito Way

Although hourly two-way traffic flows are above 1,400 vehicles on each of the above links, the increases in vehicle flows as a result of the Completed Development are considered to be low in the context of the existing traffic flows and the characteristics of each link. Links 1, 4, 8, 9 and 11 are all strategic in nature and provide adequate pedestrian facilities, whilst Link 2 and Link 3 do not provide any pedestrian facilities and due to the distance to the closest settlements, are highly unlikely to experience any pedestrian traffic in the current situation.

As a result, the effect of the Completed Development on pedestrian delay on the links within the study area is considered to be **negligible**.

#### *12.4.2.3 Pedestrian Amenity*

As described in Table 12.4, the impact of additional traffic on pedestrian amenity should only be considered where the change in traffic flows or HGV flows is more than 100%.

Only Link 12 is anticipated to experience an increase in traffic of more than 100%. Current traffic flows on this link are low, despite the link having been designed to accommodate high volumes of traffic. As a result, although the proportional increase in traffic is high, the actual increase in traffic is not considered to be significant. Good pedestrian facilities are provided in the form of a dedicated footway that is segregated from the carriageway by a grass verge. The effect of the Completed Development on

pedestrian amenity for Link 12 is therefore considered to be Moderate Adverse and negligible on the remaining links.

The overall effect on pedestrian amenity can be classed as **Minor Adverse**.

#### *12.4.2.4 Driver Delay*

As stated in Table 12.4, there are no specific thresholds for whether the magnitude of change is classed as High, Medium, Low or Negligible. Therefore, a judgement based analysis has been undertaken, as described below.

The increases in traffic on all links, with the exception of Link 12, are all below 30% and are therefore classed as experiencing a negligible magnitude of change. Link 12 is anticipated to experience and increase in traffic flows of over 100% which would be classed as a substantial magnitude of change. However, current traffic flows on this link are low, despite the link having been designed to accommodate high volumes of traffic. As a result, although the proportional increase in traffic is high, the actual increase in traffic is not considered to be significant and it is judged that the link and the associated junctions have capacity to accommodate the predicted increase vehicles without resulting in a significant delay to drivers. The effect of the Completed Development on Link 12 is therefore judged to be Minor Adverse.

The effect of the Completed Development on driver delay across the study area, given that the remaining links will not experience significant increases in traffic is classed as a **negligible**.

#### *12.4.2.5 Accidents and Safety*

As stated in Table 12.4, there is no specific definition regarding the magnitude of change in relation to accidents and safety, and instead it is stated that a judgement will be needed to assess the implications of local circumstances or factors which may increase or decrease the risk of accidents.

The PIC data analysis undertaken previously within this Chapter determined that over the five-year period the collisions recorded occurred predominantly due to driver error rather than highway design flaws.

The increase in total vehicle and HGV movements on any one link in the AM peak, PM peak and across a 24 hour period is not considered to be significant in the context of the link characteristics. These increases in traffic flows are therefore not considered to be significant enough to result in any increase in collisions, especially when taking into account the results of the PIC data analysis. It is therefore concluded that the significance of the effect of the Completed Development will be **negligible**.

#### *12.4.2.6 Public Transport*

Future residents will be encouraged to travel sustainably where possible. As described previously, a range of local bus services are accessible within the vicinity of the Site. It is also proposed that at least one bus service will be diverted through the site in order to serve future residents.

Given the frequency services that are available it is not anticipated that any additional trips generated by the Completed Development will have a significant impact on the capacity of the local public transport network and may actually result in a benefit due to increased. As a result, the significance of the effect is concluded to be **negligible**.

#### 12.4.2.7 Summary of Effects of the Completed Development

The effects of the Completed Development are summarised below in **Table 12.25**. It should be noted that these effects are all permanent.

**Table 12.25: Summary of the Completed Development**

Description of Effect	Significance of Effect
Severance	Minor Adverse
Pedestrian Delay	Negligible
Pedestrian Amenity	Minor Adverse
Driver Delay	Negligible
Accidents & Safety	Negligible
Public Transport	Negligible

#### 12.4.3 Cumulative Effects

The cumulative impacts of the Completed Development have been assessed within the overall impact assessment, as this included background traffic growth and traffic associated with a range of committed developments.

As such the cumulative impacts of the development are as set out within the operational effects section of this report, will result in a negligible cumulative impact on severance, pedestrian delay, pedestrian amenity, driver delay, accidents and safety and public transport.

## 12.5 MITIGATION

### 12.5.1 During Construction

Although only negligible impacts have been identified, to ensure best practice a robust Construction Traffic Management Plan (CTMP) will be implemented, ensuring that the potential impact of the demolition and construction phase on the surrounding highway network is minimised.

The CTMP will include, amongst other aspects, details of the following:

- Proposed working hours;
- Vehicle size and schedule of use;
- Access arrangements;
- Access routing;
- Measures to reduce impact on the highway network, such as wheel washing.

### 12.5.2 During Operation

The development comprises a mix of uses which will allow people to undertake some of their day to day trips without leaving the site. In particular:

- Primary education trips should be retained on site since there will be provision of a primary school;
- Day to day shopping can be undertaken at either the retail units on the site or in the adjacent District Centre and Galleria;



- The site is adjacent to two major employment centres within the borough (i.e. Hatfield Business Park and the University) which provide a wide variety of employment opportunities; and
- A park is proposed to the west of the site to provide informal recreation for residents on the site and those that live in the neighbouring area.

#### *12.5.2.1 Residential Travel Plan*

The Residential Travel Plan will define, in an integrated way, how transport demand for the site will be managed and promote travel to and from the site by means other than the car.

The Travel Plan will be an over-arching plan to be implemented for the site as a whole and will be the main document for the residential element. In addition, travel plans will be implemented for the primary school.

The overall management and implementation of the Travel Plan would be the responsibility of the developer. A Travel Plan Co-ordinator would be appointed by the developer and would be responsible for the management, development and implementation of the Travel Plan. The school will appoint School Travel Plan Co-ordinators.

#### **12.5.3 School Travel Plan**

The proposed primary school will be required to develop and agree a School Travel Plan within 3 months of occupation. The School Travel Plans will accord with the aims and objectives of the Site Travel Plan.

The primary school will have limited parking for staff and it is expected that the vast majority of pupils will live within the site and travel to school by sustainable modes. Notwithstanding this, the school will be required to develop a Travel Plan that looks at ways of continuing the use of sustainable modes of travel such as the implementation of 'walking buses' (i.e. a group of children walk to school together with accompanying adults), cycling proficiency courses, road safety lessons etc. Children can positively influence their parents travel behaviour and therefore it will be important to educate the school pupils of the benefits of walking, cycling and public transport.

#### *12.5.3.1 Parking Strategy*

The availability of parking both at the origin (e.g. residential units) and destination (e.g. employment, retail, leisure facilities) is a key determinant in the proportion of trips that are undertaken using private car.

The parking strategy has two particular features:

- The parking provision will be within the Local Authority standards therefore restricting the availability of parking spaces. This approach recognises the need to provide sufficient parking spaces to avoid parking that would adversely affect the operation of surrounding streets, but not providing parking to a level that would encourage car usage. This is a balanced approach that is consistent with the aspirations of the national Guidance.
- The layout of the parking spaces will create a good quality urban environment. Parking will be provided to ensure that it is well located to the houses that it serves to ensure that on-street parking does not occur to any significant degree. This means that access

to all parts of the site will be maintained at all times for larger vehicles (refuse lorries and delivery vehicles) and for the emergency services.

Cycle parking will be provided at a minimum standard of 1 space per unit.

#### *12.5.3.2 Bus Strategy*

The provision of a quality bus system is one of the key elements of the Sustainable Transport Strategy for the development site.

Either new or extended bus services will be provided into the site. The location of bus stops will be coordinated with the network of pedestrian routes to ensure that access is provided within a 400 metre (5 minutes) walk of a bus stop.

It is necessary to ensure that adequate provision is made for frequent bus services destined for the town centre and Hatfield railway station, which is located 2.6km to the east. Bus services will be provided at a frequency of at least 15-20 minutes during peak periods wherever possible. Where new bus services are proposed within the site or surrounding area to serve the site, adequate bus infrastructure will be provided in the form of bus shelter, seating, information provision and the potential for real time information at busier stops. To-date, initial discussions have been held with bus operating companies who believe it will be possible to direct bus services through the development.

The introduction of the bus services will be phased in accordance with the occupation of the site. The bus service phasing will be agreed with the local authorities and will balance the need to provide a high quality service from commencement with the efficient use of resources.

#### *12.5.3.3 Pedestrian Facilities*

The following measures are proposed in order to promote walking, particularly for trips within the development site:

- All residents will be within easy walking distance of a bus stop;
- All residents will be within a reasonable walking distance of the shops, primary school and provided on the site;
- The streetscape will be designed to provide a legible and convenient hierarchy of pedestrian routes;
- Pedestrians would be given priority over motor vehicles through 20 mph speed limits and through designing the internal layout in accordance with Manual for Streets and other relevant guidance;
- Accessibility and orientation will be assisted through consistent treatment of the public domain and way-finding signage;
- All residents and employees will be provided with an Information Pack which will include maps of local walking routes and information; and
- The Transport Co-ordinator will raise awareness of the benefits of walking.

#### *12.5.3.4 Cycle Facilities*

In order to promote cycling the following measures will be implemented:

- A high quality network of cycle routes will be provided throughout the site;

- The design of the streetscape will encourage low vehicle speeds and provide priority for cyclists;
- High quality cycle parking will be provided in accordance with the minimum cycle standards;
- All residents and employees will be provided with an Information Pack containing maps of cycle routes in the local area;
- The Transport Co-ordinator will raise awareness of the benefits of cycling;
- Cycle repair facilities will be provided on site to enable cyclists to undertake maintenance;
- A Bicycle User Group (BUG) will be set up by the Transport Co-ordinator to provide suggestions for further improvements to encourage cycle use; and
- Showers, lockers and changing facilities will be provided in all employment space.

## 12.6 RESIDUAL EFFECTS

### 12.6.1 During Construction

The residual effects of the Proposed Development during the construction phase, following mitigation outlined previously, are unchanged from those presented in Table 12.21. It should be noted that these residual effects are Temporary. The residual effects are summarised below in **Table 12.26**.

**Table 12.26: Summary of Residual Effects during Construction**

Description of Effect	Significance of Effect
Severance	Minor Adverse (Temporary) (not significant)
Pedestrian Delay	Negligible (Temporary) (not significant)
Pedestrian Amenity	Negligible (Temporary) (not significant)
Driver Delay	Negligible (Temporary) (not significant)
Accidents & Safety	Negligible (Temporary) (not significant)
Public Transport	Negligible (Temporary) (not significant)

### 12.6.2 During Operation

The residual effects of the Proposed Development during the construction phase, following mitigation outlined previously, are unchanged from those presented in Table 12.25. It should be noted that these residual effects are Temporary. The residual effects are summarised below in **Table 12.27**.

**Table 12.27: Summary of Residual Effects of the Completed Development**

Description of Effect	Significance of Effect
Severance	Minor Adverse (not significant)
Pedestrian Delay	Negligible (not significant)
Pedestrian Amenity	Minor Adverse (not significant)
Driver Delay	Negligible (not significant)
Accidents & Safety	Negligible (not significant)
Public Transport	Negligible (not significant)

## 12.7 SUMMARY OF EFFECTS

The potential transport impacts have been assessed using established methodologies set out in the IEMA Guidelines.

A summary of the effects during the construction phase and during operation is presented in **Table 12.28**.

**Table 12.28: Summary of Effects**

Description of Effect	Effect	Mitigation	Residual Effect
<b>During Construction (Temporary)</b>			
Severance	Minor Adverse (not significant)	CTMP	Minor Adverse (not significant)
Pedestrian Delay	Negligible (not significant)		Negligible (not significant)
Pedestrian Amenity	Negligible (not significant)		Negligible (not significant)
Driver Delay	Negligible (not significant)		Negligible (not significant)
Accidents & Safety	Negligible (not significant)		Negligible (not significant)
Public Transport	Negligible (not significant)		Negligible (not significant)
<b>During Operation (Permanent)</b>			
Severance	Minor Adverse (not significant)	Cycle parking, diversion of bus services, pedestrian and cycle links, Travel Plans	Minor Adverse (not significant)
Pedestrian Delay	Negligible (not significant)		Negligible (not significant)
Pedestrian Amenity	Minor Adverse (not significant)		Minor Adverse (not significant)
Driver Delay	Negligible (not significant)		Negligible (not significant)
Accidents & Safety	Negligible (not significant)		Negligible (not significant)
Public Transport	Negligible (not significant)		Negligible (not significant)

## 12.8 CONCLUSIONS

In conclusion, the assessment demonstrates that during the operation of the Development the residual impact will be negligible in relation to pedestrian delay, accidents and safety and public transport, and will be Minor Adverse in relation to severance and pedestrian amenity.