

5.0 Transport and Accessibility

5.1 Introduction

This chapter presents the scope, methodology, impact assessments and mitigation measures for the transport and accessibility aspects of the proposed development. The purpose of this chapter is to describe (and, where possible, quantify) the likely effects that the proposed development will have on the surrounding area from a transport and movement perspective, as well as to set out proposed mitigation measures and any residual impacts.

This Chapter has been prepared by Stantec. The author of this document is a transport technical specialist with 40 years of experience and a Member of the Chartered Institution of Highways and Transportation.

A full Transport Assessment (TA) has been prepared in consultation with Hampshire County Council (HCC) as the Local Highway Authority (LHA) and National Highways (NH) as the strategic authority for the trunk road network, to support the outline planning application for the proposed development. The TA details the likely operation of the highway network both prior to and as a result of the proposed development with and without mitigation, and this work has been utilised to inform the forecasts in this chapter as well as the assessment of driver delay. The TA has been submitted as part of the planning application but is not included as an appendix to the ES due to its size.

The TA quantifies the transport and highway impact of the proposed development, but the environmental impact of the road traffic generated by the proposed development requires an assessment against different criteria; therefore, the assessment has been undertaken against the criteria set out in the Institute of Environmental Management and Assessment (IEMA) Guidelines (2023).

A description of the proposed development is included in *Chapter 4* of this ES.

The list of figures is provided below.

Figures	Title
Figure 5.1	Traffic and Transport Initial Study Area
Figure 5.2	PIC Locations
Figure 5.3	Cycle Route Summary
Figure 5.4	Bus Service Summary
Figure 5.5	Wider Road Network
Figure 5.6	Warblington Level Crossing ANPR Cordon
Figure 5.7	Pedestrian and Cycle Network Connections
Figure 5.8	Assessment Study Area
Figure 5.9	Accident and Safety Study Area
Figure 5.10	Propose Off-Site Improvements
Figure 5.11	27 Bus Service Improvement Catchment
Figure 5.12	New Proposed Bus Service Extension Catchment

5.2 Scoping, Consultation and Overview of Potential Effects

Throughout the development of the TA and this corresponding ES chapter, consultation has been ongoing between Stantec, HCC, NH, and HBC.

The pre-application consultation between HCC and Stantec has been undertaken throughout the process with a series of meetings held between the parties since January 2023, along with multiple Technical Notes being submitted and discussed.

A Transport Assessment Scoping Note setting out the methodology of the TA and modelling work was submitted to HCC in March 2023, with a subsequent Technical Note titled 'Trip Forecasting Methodology' submitted to HCC in November 2023 with the view to agreeing the specific methodology behind the modelling to forecast the impact of the development, taking account of a 'vision and validate' approach.

HCC issued formal comments on the 9 January 2024 which have been accounted for through the preparation of the TA and this ES Chapter. Subsequent discussions have been undertaken between Stantec and the Highways Officers at HCC regarding the transport proposals.

It should be noted that following the formal comments from HCC on the 9 January 2024, additional multi-modal travel surveys were carried out locally to the proposed development site to agree the trip rate validation for the proposed development. This validation was agreed with HCC and forms the basis of assessment work included within the TA and this ES Chapter.

Given the proximity of the proposed development to the A27, National Highways (NH) have similarly been consulted on throughout the process. A series of meetings have been held with NH or included in wider highways discussions with HCC since November 2023. NH have been supportive of the 'vision and validate' approach, since this aligns with NH Circular 01/2022 and have noted that the proposed development is likely to have a greater impact on the local highway network rather than the Strategic Road Network.

In addition to the pre-application scoping and consultation carried out with the relevant transport stakeholders, a transport focussed workshop was held with HCC to discuss masterplan principles and potential off site mitigation.

5.3 Assessment Methodology

This section outlines the assessment methodology used to determine the likely significant environmental effects that the development proposals may incur on sensitive receptors within the study area. The methodology has been informed by the Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement.

5.3.1 Study Area

The IEMA Guidelines indicate that the study area for the EIA from a traffic and transport perspective should consider highway links which fall within two rules as a result of the proposed development, as stated below.

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of Heavy Goods Vehicles (HGV) will increase by more than 30%).
- Rule 2: Include any other specifically sensitive area where traffic flows will increase by 10% or more.

Paragraph 2.5 of the IEMA Guidelines explains that 'groups' or 'locations' which may be sensitive to changes in traffic conditions could include the following:

- people at home;
- people in work places;
- sensitive groups including children, the elderly, or the disabled;
- sensitive locations e.g., hospitals, churches, schools, or historical buildings;
- people walking;
- people cycling;
- open spaces, recreational sites, shopping areas;
- sites of ecological/nature conservation value; and
- sites or tourist/visitor attraction.

This Guidance is based upon knowledge and experience of traffic and transport related environmental effects. The 30% threshold of Rule 1 is based upon research and experience, the guidance justifies this when it states '30% can double the delay experienced by pedestrians attempting to cross a road. Whether this is significant in absolute terms requires further assessment. Severance and intimidation are, however, much more sensitive to traffic flow and the Department for Transport, historically, has assumed that 30%, 60% and 90% changes in traffic levels should be considered as 'slight', 'moderate' and 'substantial' impacts respectively.'

The guidance states 'at a basic level, it should be assumed that projected changes in total traffic flow of less than 10% creates no discernible environmental impact', hence the threshold of Rule 2 in particularly for sensitive areas. An HGV is considered as a vehicle with a weight of more than 3.5 tonnes and therefore can include larger rigid vehicles with two or three axles.

For the purposes of the assessment undertaken in this chapter, a 'specifically sensitive area' is a highway link with receptors that have a high sensitivity and will be considered for assessment against 'Rule 2'.

Other highway links with receptors of negligible, low, or medium sensitivity will be considered against the threshold defined in 'Rule 1'. The categories of receptor sensitivity have been defined from the principles set out in the IEMA Guidelines and have been used to outline in broad terms, the sensitivity of receptors to traffic for the categories of effect assessed in this chapter.

The initial study area for the EIA from a traffic and transport perspective is consistent with the scope of assessment covered by the TA, this initial study area is shown in *Figure 5.1* and detailed in *Table 5.1* below.

Figure 5.1: Traffic and Transport Initial Study Area

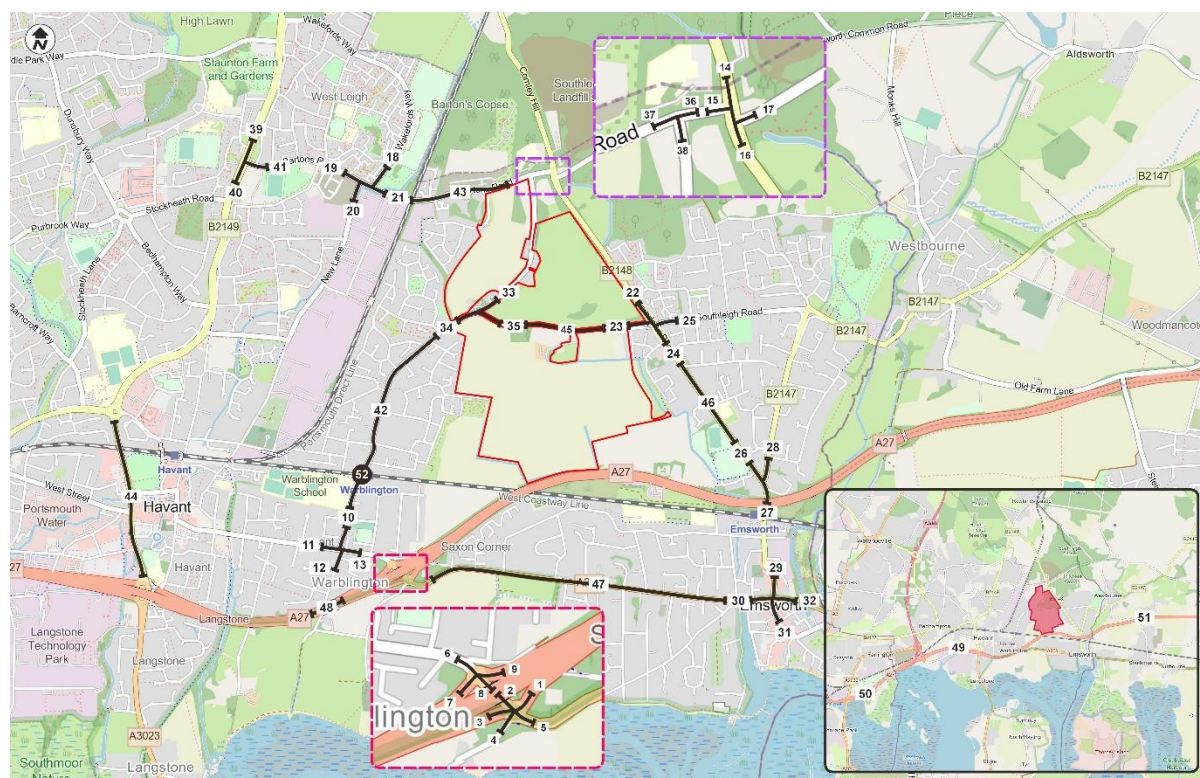


Table 5.1 - Traffic and Transport Initial Study Area

Link Reference	Link Name
1	A27 WB Off Slip
2	A259 underbridge
3	A27 WB On Slip
4	Church Lane
5	A259 – Havant Road
6	Emsworth Road
7	A27 EB Off Slip
8	A259 underbridge
9	A27 EB On Slip
10	Southleigh Road
11	Emsworth Road W
12	Pook Lane
13	Emsworth Road E
14	Comley Hill
15	Bartons Road
16	Horndean Road
17	Emsworth Common Road
18	Wakefords Way
19	Bartons Road W
20	New Lane
21	Bartons Road E
22	Horndean Road N
23	Southleigh Road W
24	Horndean Road S
25	Southleigh Road E
26	Horndean Road N

27	B2148
28	New Brighton Road
29	North Street
30	A259 W
31	High Street
32	A259 E
33	Eastleigh Road
34	Southleigh Road W
35	Southleigh Road E
36	Bartons Road E
37	Bartons Road W
38	Eastleigh Road
39	Petersfield Road (B2149) N
40	Petersfield Road (B2149) S
41	Barton Road
42	Southleigh Road
43	Bartons Road
44	Park Road North
45	Southleigh Road
46	Horndean Road
47	A259 Havant Road
48	A27 West of Site (DfT 36296)
49	A27 West of Site (DfT 99631)
50	A27 West of A3 M (DfT 26299)
51	A27 East of Site (DfT 60080)
52	Southleigh Road Level Crossing

NB: The repetition of link naming is due to multiple sections of certain links being assessed

5.3.2 Baseline Data

Traffic Counts

Traffic Counts were undertaken by a third-party traffic survey company in June 2023 for a number of links and junctions across Havant. These counts provided baseline traffic data for the Transport Assessment. The data collection included a series of Automatic Traffic Counts (ATCs) and Classified Turning Counts (CTCs) as follows:

- **Classified Turning Counts:**
 - A27 WB Off Slip / A259 N / A27 WB On Slip / Church Lane / A259 Havant Road
 - Emsworth Road / A27 EB Off Slip / A27 EB On Slip
 - Southleigh Road / Emsworth Road / Pook Lane
 - Comley Hill / Bartons Road / Horndean Road / Emsworth Common Road
 - Wakefords Way / Bartons Road / New Lane
 - Horndean Road / Southleigh Road
 - Horndean Road / B2148 / New Brighton Road
 - North Street / A259 / High Street
 - Eastleigh Road / Southleigh Road
 - Bartons Road / Eastleigh Road
 - Petersfield Road / Bartons Road

- **Automatic Traffic Counts:**

- Southleigh Road (West of Eastleigh Road)
- Bartons Road (West of Eastleigh Road)
- Park Road North (South of New Road)
- Southleigh Road (West of Horndean Road)
- Horndean Road (South of Southleigh Road)
- A259 Havant Road (East of Warblington Interchange)

- **Automatic Number Plate Recognition:**

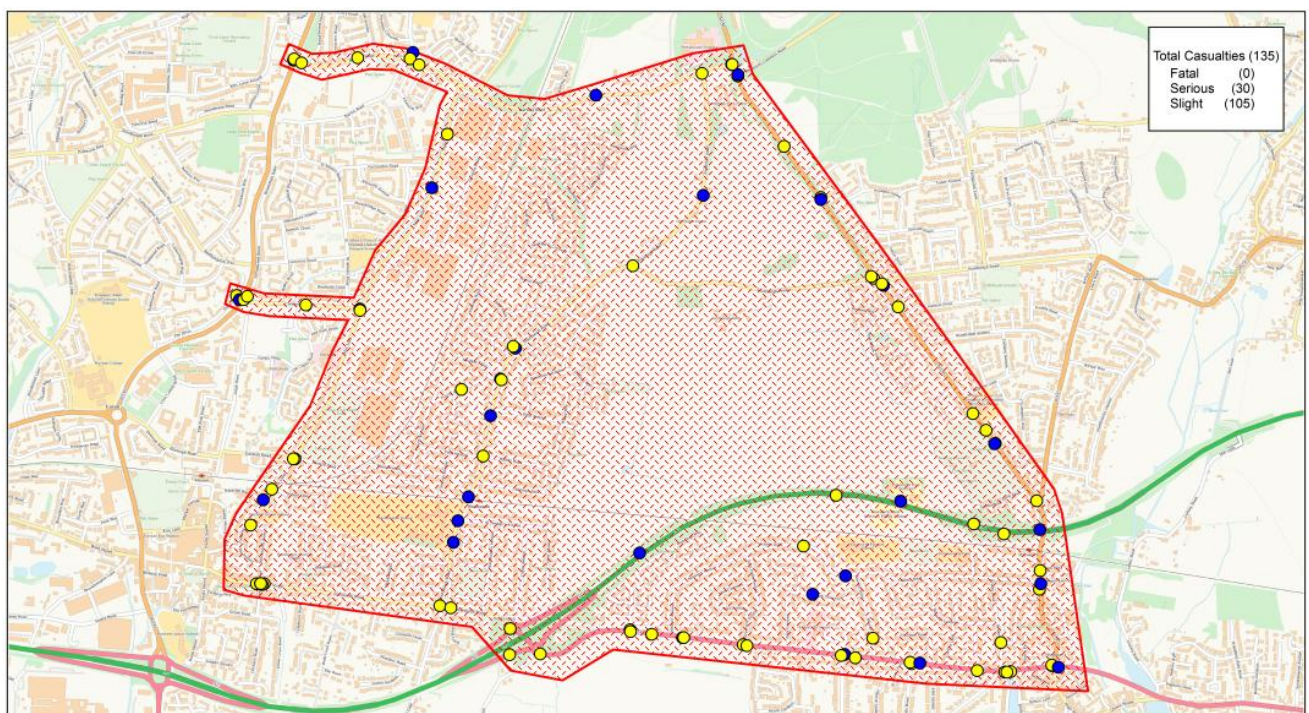
- Southleigh Road (West of Eastleigh Road)
- Level Crossing Northbound
- Level Crossing Southbound
- Emsworth Road East
- Emsworth Road West

Personal Injury Accident Data

Personal Injury Collision (PIC) Data has been obtained from Hampshire Constabulary for the most recently available five-year period between 1 September 2019 and 31 August 2024 for the area shown in *Figure 5.2* below.

The data provided has been used to review the existing safety of the local highway network and inform this chapter. A full analysis of the accident data is provided in the TA.

Figure 5.2: PIC Locations



5.3.3 Assessment

The assessment undertaken in this chapter identifies the likely significant traffic and transport effects of the proposed development, assuming a fully built out allocation of 2,100 dwellings, on the environment during construction and operation. It has been informed by the assessment undertaken as part of the TA.

In cases where Rule 1 thresholds are exceeded, or Rule 2 thresholds for highway links with receptors that have a high sensitivity are exceeded, the IEMA Guidelines set out a list of environmental effects which should be assessed for their magnitude of change. These environmental effects are, as follows:

- Severance;
- Driver Delay;
- Non-Motorised User Delay;
- Non-Motorised User Amenity;
- Fear and Intimidation;
- Accidents and Safety; and
- Hazardous Loads

Each of the above environmental effects has been considered in the context of anticipated changes in traffic volume and composition during both the construction and operational phases of the proposed development. The assessment has considered highway links in the study area that have the potential to be significantly affected by the proposed development, based on criteria included within the IEMA Guidelines as set out above.

The traffic and transport related environmental effects as stated above are defined and have been quantified and assessed on the following basis and informed using professional judgement. 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, on a scale of *high*, *medium*, *low* and *negligible*. The definition of the traffic and transport related environmental effects are defined below.

Severance

The IEMA Guidelines state that “*severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery*” which can be the result of the difficulties of crossing a road with a heavy traffic flow or physical barrier.

The guidance also states that to measure the predicted severance is challenging as the “*extent of severance and the physical barrier of a road is not clear and there are no predictive formulae which give simple relationships between traffic factors and levels of severance*”. Certain factors are listed as being important to consider in order to determine the severance, including road width, traffic flow and composition, traffic speeds, crossing facilities availability, and the number of movements likely to cross the affected route. In addition, different groups may be more affected by severance than other people in the community.

Table 5.2 summarises these thresholds which aim to prevent minor changes on links with low baseline flows from being considered disproportionately significant. A potentially significant

effect is therefore only considered to occur if the baseline traffic flow is increased to any of the levels shown below.

Table 5.2 - Severance Thresholds	
Magnitude of Change	Change in Traffic Flow
High	>90%
Medium	60% - 90%
Low	30% - 60%
Negligible	<30%

Source: IEMA Guidance 2023

Driver Delay

A delay to drivers generally occurs at junctions where opposing vehicle manoeuvres are undertaken, with vehicles having to give or receive priority depending on the type of junction arrangement. The IEMA Guidelines state that computer modelling programmes can be used to assess the changes in driver delay on the network as a result of a development.

Although the Guidelines do not state specific thresholds to calculate the magnitude of the change, they do advise that delays are only likely to be significant when the traffic on the network surrounding a development is already at, or close to, the capacity of the system. This has been informed by the findings of the modelling presented in the TA.

The following criteria has been used to assess the magnitude of impact in driver delay at the assessed junctions:

- Negligible – if in the TA the junction is not deemed to be requiring assessment
- Low – increase in flows but a Ratio of Flow to Capacity (RFC) below 0.85
- Medium – increase in flows resulting in an RFC between 0.85 and 0.99
- High – increase in flows cause an RFC above 1.00

Non-Motorised User Delay

The IEMA guidance advises that assessors use judgement to determine whether non-motorised user delay is a significant impact. The guidance highlights “*changes in the volume, composition or speed of traffic*” may affect the ability of people to cross a road without delay.

There is a relationship between non-motorised user delay and increased traffic volume. On this basis the significance of the change in traffic magnitude on severance has been considered as a suitable measure of the significance of the change in traffic magnitude on non-motorised user delay.

Non-Motorised User Amenity

The IEMA Guidelines state that the ability for pedestrians and cyclists to cross a road can be affected by “*traffic flow, traffic composition and pavement width/separation from traffic*” in an area. This, in addition to level of pedestrian activity, visibility, and physical conditions of crossing points, can affect pedestrian amenity.

The qualitative aspects, such as the quality of the pedestrian environment, in addition to the trip generators served by these environments, also influence the propensity for individuals to

walk. A sense of personal security and safety, gradient, permeability, legibility, and maintenance of pedestrian infrastructure aid in encouraging their use and discouraging the use of the private car. These, in addition to the quantitative aspects of assessment, such as changes to traffic flows, are therefore an important consideration for several of the criteria. The determination of what constitutes a material impact on pedestrian delay is generally left to the judgement of the assessor and knowledge of local factors and conditions.

The amenity of pedestrians is broadly defined as the relative pleasantness of a journey, which is affected by traffic flow, traffic composition and footway width / separation from traffic. The previous IEMA Guidelines in 1993 suggested a “*tentative threshold for judging the significance of changes in pedestrian amenity of where traffic flow (or its lorry component) is halved or doubled*”. This was informed from previous DfT guidance, however this has not been superseded and so this methodology has been used as a starting point to inform this assessment. The magnitude of impact is a matter of professional opinion.

Fear and Intimidation

The level of fear and intimidation that people may experience is dependent on volumes of traffic, its HGV composition, its proximity to people and lack of protection caused by such factors as narrow pavements widths, natural surveillance and street lighting. The Guidelines recommend the following thresholds set out in *Table 5.3* are based upon research, though it is worth noting that there are no commonly agreed thresholds for estimating the levels of danger, fear, and intimidation in terms of traffic and physical conditions.

Table 5.3 - Fear and Intimidation Criteria				
Degree of Hazard	Average Hourly Traffic Flow over 18hr	Total 18hr Heavy Duty Vehicle Flow	Average Vehicle Speed over 18 Hour Period (mph)	Degree of Hazard Score
High	>1,800	> 3,000	> 20	30
Medium	1,200 – 1,800	2,000 – 3,000	15 – 20	20
Low	600 – 1,200	1,200 – 2,000	10 – 15	10
Negligible	<600	<1,200	<10	0

Source: IEMA Guidance 2023

The degree of hazard score is then totalled over the three criteria and given a level of fear and intimidation. The thresholds for this are provided in *Table 5.4* below.

Table 5.4 - Levels of Fear and Intimidation	
Level of fear and intimidation	Total hazard score
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

Source: IEMA Guidance 2023

The magnitude of impact is determined with reference to the changes in level of fear and intimidation. A summary of the fear and intimidation magnitude of impact is provided in *Table 5.5* below.

Table 5.5 - Fear and Intimidation Magnitude of Impact Criteria	
Magnitude of impact	Change in level from baseline conditions
High	Two step changes in level
Medium	One step change in level but with: <ul style="list-style-type: none"> >400 vehicle increase in average 18hr two way flow >500 HGV increase in total 18 hr flow
Low	One step change in level but with: <ul style="list-style-type: none"> <400 vehicle increase in average 18hr two way flow <500 HGV increase in total 18 hr flow
Negligible	No change in level of fear and intimidation

Source: IEMA Guidance 2023

Accidents and Safety

The IEMA 2023 Guidelines state that a collision cluster assessment is the more commonly requested assessment from stakeholders to identify potential impacts at a more detailed level. In relation to collision clusters, the guidelines state:

“Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the highway network. The collision cluster criterion is typically based on a definition of number of personal injury collisions occurring within a defined period in a given spatial radius. Impacts are assessed by examining STATS19 collision data to identify any emerging patterns or factors that could be exacerbated by traffic or movement generation.”

A review of PIA (STATS19) data has been undertaken and summarised within this chapter, with a more detailed assessment provided within the TA. This has been used to assess the impact of the proposed development on accidents and safety of the local highway network within the study area.

Hazardous Loads

The proposed development is not anticipated to generate any hazardous loads either during construction or operation; therefore, this traffic and transport related environmental effect has been scoped out of this assessment.

Determining Significance of Effects

The assessment of environmental effects of the proposed development considers both the construction phase and the operational phase. The significance criteria adopted for likely traffic and transport effects is based on the magnitude of the change as well as the sensitivity of the receptor affected. The magnitude of effects and receptor sensitivity will be compared to estimate the significance of the effect.

To determine the overall significance of the change in traffic flow as a result of the proposed development, the sensitivity of identified receptors along each highway link within the study area and the magnitude of change for each environmental effects are classified in Table 5.6 using a scale set out in the DMRB.

Table 5.6 - Significance of Effect					
		Sensitivity of Receptor to Change/Effect			
		High	Medium	Low	Negligible
Magnitude of Change/Effect	High	Substantial	Substantial	Moderate	Negligible
	Medium	Substantial	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

In addition to the above regarding traffic and movement effects, as the percentage impact is a function of the baseline traffic flows, trigger levels in terms of absolute levels of change have been introduced to prevent very minor changes on links with low baseline flows from being considered as more significant than is justified.

For example, with reference to the above table, a change in traffic flow of greater than 90% on a road with a 'high' sensitive receptor would result in a significance of effect of substantial. However, the existing baseline traffic flows could be very low and an increase of only a few vehicles would produce a large change in magnitude. Whereas, in real terms the increase in traffic is still considered to be negligible. Therefore, reference has been made to the fear and intimidation threshold trigger levels in *Table 5.4* where a significant impact is only considered to occur if the baseline traffic flow is increased to any of the trigger levels identified.

5.3.4 Limitations and Assumptions

The transport related technical assessment work used to support the proposed development is based upon observed traffic survey data, locally committed development transport assessments, industry standard growth factors, and modelling software. Nevertheless, assumptions have been made with respect to the following:

- The assessment uses 18-hour AAWT flows. Where this data was not available from traffic survey data, these have been calculated by using a conversion factor applied to peak hour flow at the junctions surveyed.
- Construction Assessment Traffic Flows are based on an estimated build out period and start date. The phasing and access strategy has not been provided at this stage.

5.4 Baseline Conditions

A full review of the baseline transport conditions is set out in the Transport Assessment.

5.4.1 Active Travel

The proposed development is located along and close to key local cycling routes and existing National Cycle Networks (NCNs). Further signposted cycle routes within the Emsworth and Havant areas can be accessed off the key routes. A comprehensive map of the cycle routes in the local area can be found on the Havant Borough Council Interactive Cycle Map.

Southleigh Road, through the site and towards Havant and Warblington, has a shared footway/cycleway c.1.5–2.0m wide along the southern side of the carriageway from Horndean Road c.60m northeast of Rowan Road, where cyclists are directed to join the carriageway. On the north side of Southleigh Road, there is a short, unprotected cycle lane across the Rowan Road junction to direct cyclists to join a c.2.7m wide shared footway/cycleway that provides the connection on the southern side via a drop kerb crossing with tactile paving. This route is

part of the Westbourne/Havant Cycle Route, the key cycle route running between Southleigh and Havant Town Centre.

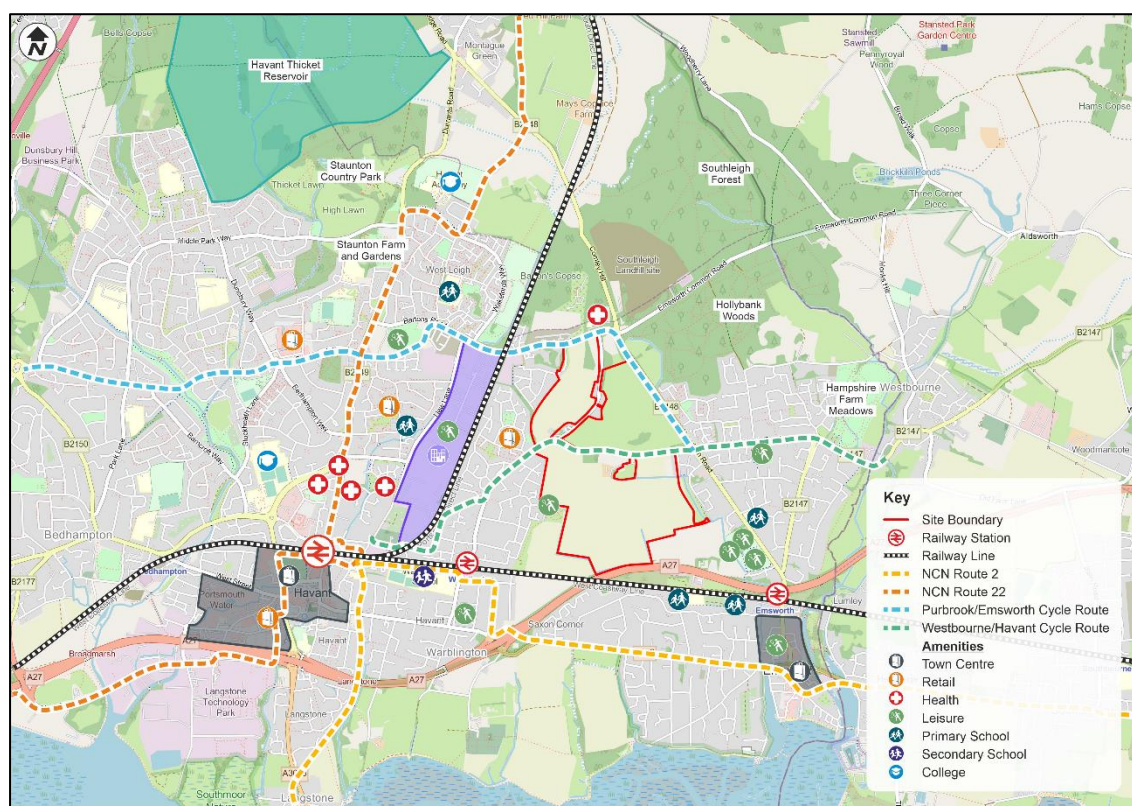
Horndean Road connects towards Emsworth, including Emsworth Park and Emsworth Rail Station. Footways are present on both sides of the Horndean Road carriageway with a width of c.2.3–2.5m. The junctions off Horndean Road have drop kerbed crossings with tactile paving, while a toucan crossing provides access across Horndean Road between Emsworth Park and St James' C of E Primary School.

Southleigh Road, to the south, connects to NCN Route 2, which runs between Havant, Warblington, and Emsworth, and beyond to Chichester. Within Chichester, NCN Route 2 connects to NCN Route 288. Additionally, NCN Route 2 connects Havant to Hayling Island and accesses NCN Route 22 in Havant. Beyond Havant, NCN Route 22 connects to the NCN Route 236 and Route 222, providing a route to the west of Portsmouth and a route around the perimeter of Portsmouth.

Two footbridges facilitating the crossing of the rail line are present to the west of Southleigh; these are accessed from Nutwick Road and Third Avenue, with the Third Avenue connection being a ramped shared pedestrian/cycle bridge. These existing connections help to significantly reduce the potential severance between the site and Havant Town Centre of the rail line for pedestrians and cyclists.

A cycle route summary in the wider context is presented in *Figure 5.3*.

Figure 5.3: Cycle Route Summary



5.4.2 Public Transport

Bus

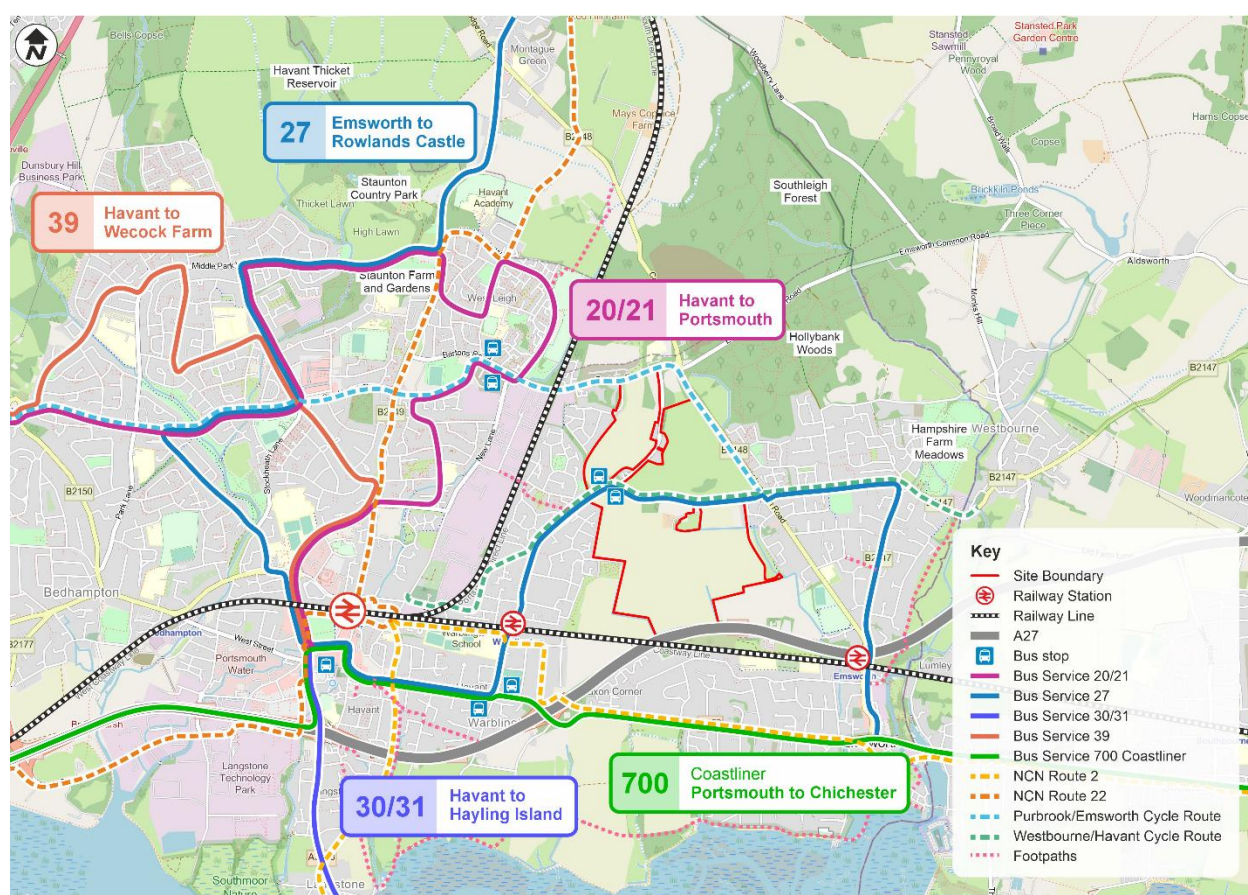
A pair of bus stops is currently present at the Southleigh Road / Eastleigh Road junction. These provide access to the 27-bus service, an irregular service that runs only during off-peak hours.

Further bus stops are located on the A259 south of the Site. These stops in both Warblington and Emsworth provide access to the 700 Coastliner, a service that runs every 20 minutes between Portsmouth and Chichester via Havant.

Additional local bus routes 20/21, 30/31, and 39 run from Havant Bus Station.

The existing bus routes are shown in *Figure 5.4* below.

Figure 5.4: Bus Service Summary



The frequency of the accessible services is summarised in *Table 5.7* below, while further services are accessible from Havant Bus Station.

Table 5.7 - Bus Service Summary			
Service	Route	Weekday Peak	Saturday Frequency
20	Havant – Portsmouth	Every 20 Minutes	Every 20 Minutes (Sat) Every 30 Minutes (Sun)
21	Anchorage Park – Portsmouth	Every 12 Minutes	Every 12 Minutes (Sat) Every 20 Minutes (Sun)
27	Rowlands Castle – Havant - Emsworth	Every 2 Hours	No Service
30/31	Havant – Hayling Island	Every 15 Minutes	Every 15 Minutes (Sat) Every 30 Minutes (Sun)
39	Wecock Farm – Havant	Every 15 Minutes	Every 15 Minutes (Sat) Every 30 Minutes (Sun)
641	Southbourne – Oaklands School	School Service	No Service
700 Coastliner (A259)	Portsmouth – Havant – Emsworth – Southbourne – Chichester	Every 20 Minutes	Every 20 Minutes (Sat) Every 30 Minutes (Sun)

Havant Bus Station is located c. 2.3km southwest of the proposed development. The journey to the bus station route can be completed by a 30-minute walk or an 8-minute cycle.

Rail

The Site is within relatively close proximity to three railway stations: Emsworth Station (1.8km southeast, c. 25-minute walk), Warblington Station (1.5km southwest, c. 20-minute walk) and Havant Station (2.4km southwest, c.30-minute walk).

Emsworth and Warblington Stations are located on the West Coastway line and operated by Southern, while Havant Station is also located on the Portsmouth Direct Line and operated by South Western Railway.

These stations are all located within reasonable walking/cycling distance of Southleigh and provide rail connections to key destinations such as Portsmouth, Southampton, Brighton, and London

Havant Railway Station is located c.450m north of the Havant Bus Station, which can be completed by a 5-minute walk.

Table 5.8 displays the services available at these railway stations.

Table 5.8 - Rail Service Summary

Station	Destination	Weekday Peak Frequency	Weekday Off-Peak Frequency	Weekend Frequency
Havant	London Waterloo	4	2	3
Havant / Emsworth / Warblington	Brighton	3	3	3
	London Victoria	4	4	4
	Portsmouth Harbour	5	5	5
	Southampton Central	2	2	2

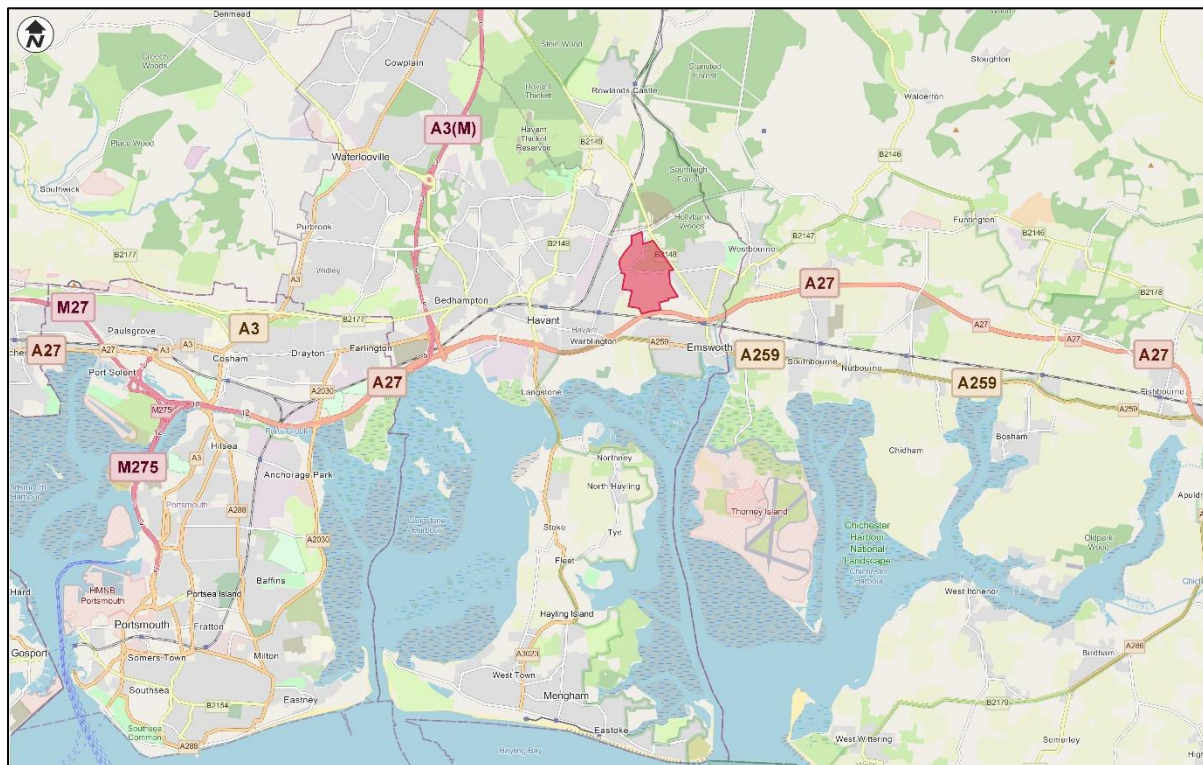
5.4.3 Highway Network

The highway network in the region includes major roads and motorways as part of the wider strategic road network that supports both local and long-distance travel.

The A27 provides an east-west route along the south coast, connecting several towns and cities. The A3 (M) and A3 provide north-south links, facilitating travel between London and Portsmouth. The A259 runs parallel to the coast, offering an alternative route to the A27. The M275 and M27 motorways are essential for regional connectivity, with the M27 linking Southampton and Portsmouth.

A highway network plan is provided in *Figure 5.5*.

Figure 5.5: Wider Road Network



Receptor Sensitivity

The sensitivity for each receptor outlined in the initial study area is summarised in *Table 5.9* below.

Table 5.9 - Receptor Sensitivity		
Receptor	Sensitivity	Reason
A27 WB Off Slip	Low	Roads not used by pedestrians
A259 underbridge	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
A27 WB On Slip	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Church Lane	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
A259 – Havant Road	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Emsworth Road	Medium	Residential
A27 EB Off Slip	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
A259 underbridge	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
A27 EB On Slip	Low	Roads not used by pedestrians
Southleigh Road	Medium	Residential
Emsworth Road W	Medium	Residential
Pook Lane	Medium	Residential
Emsworth Road E	Medium	Residential
Comley Hill	Low	Roads not used by pedestrians
Bartons Road	Medium	Hospital
Horndean Road	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Emsworth Common Road	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Wakefords Way	Medium	Park and recreation area
Bartons Road W	Low	Roads with high quality pedestrian/cycling facility
New Lane	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Bartons Road E	Low	Roads with high quality pedestrian/cycling facility
Horndean Road N	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Southleigh Road W	Low	Roads with high quality pedestrian/cycling facility
Horndean Road S	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Southleigh Road E	Medium	Residential
Horndean Road N	Medium	Park and recreation area
B2148	Medium	Residential
New Brighton Road	Medium	Residential
North Street	Medium	Residential
A259 W	Medium	Residential
High Street	Medium	Residential
A259 E	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Eastleigh Road	High	Roads with no footway that may be used by pedestrians
Southleigh Road W	Medium	Residential

Southleigh Road E	Low	Open space
Bartons Road E	Medium	Hospitals, surgeries and clinics
Bartons Road W	Medium	Hospitals, surgeries and clinics
Eastleigh Road	Medium	Roads with narrow footway/poor crossing that may be used by pedestrians
Petersfield Road (B2149) N	Low	Roads with high quality pedestrian/cycling facility
Petersfield Road (B2149) S	Low	Roads with high quality pedestrian/cycling facility
Barton Road	Medium	Residential
Southleigh Road	Low	Open space
Bartons Road	Medium	Hospital
Park Road North	Medium	Commercial
Southleigh Road	Low	Open space
Horndean Road	High	School
A259 Havant Road	Medium	Residential
A27 West of Site (DfT 36296)	Low	Roads not used by pedestrians
A27 West of Site (DfT 99631)	Low	Roads not used by pedestrians
A27 West of A3 M (DfT 26299)	Low	Roads not used by pedestrians
A27 East of Site (DfT 60080)	Low	Roads not used by pedestrians
Southleigh Road Level Crossing	High	Level Crossing

Level Crossing

The level crossing located on Southleigh Road at Warblington Rail Station, approximately 1.5km from the access to the Proposed Development, is a constraint on the local network that has been consistently raised in public consultation and so requires specific attention in this chapter. A queue and down time survey, a site visit, and an Automotive Number Plate Recognition (ANPR) journey time study have all been undertaken to understand the existing effect that the Level Crossing has on the local highway network. An overview of these surveys and observations of the Level Crossing is included in this section.

A queue and down time survey was undertaken on Wednesday, 14th June 2023. The largest queues observed at the Level Crossing were during the morning peak period at 08:53, where 44 vehicles queued travelling Northbound (c.264m) and 47 Southbound (c.282m) along Southleigh Road. During the afternoon peak periods, at 15:29, the queues were 47 vehicles Northbound (c.282m) and 48 vehicles Southbound (c.288m) and at 17:55, the queues were 45 vehicles Northbound (c.270m) and 47 vehicles Southbound (c.282m).

An in-person site visit was undertaken on Thursday, 10th July 2025. This visit consisted of observing and recording the down time frequencies and durations of the Level Crossing, along with the vehicle queuing resulting from the down periods. The findings from the site visit found that the average duration of closures is 2 minutes and 49 seconds. The maximum recorded duration is 4 minutes and 48 seconds, while the minimum recorded duration is 51 seconds.

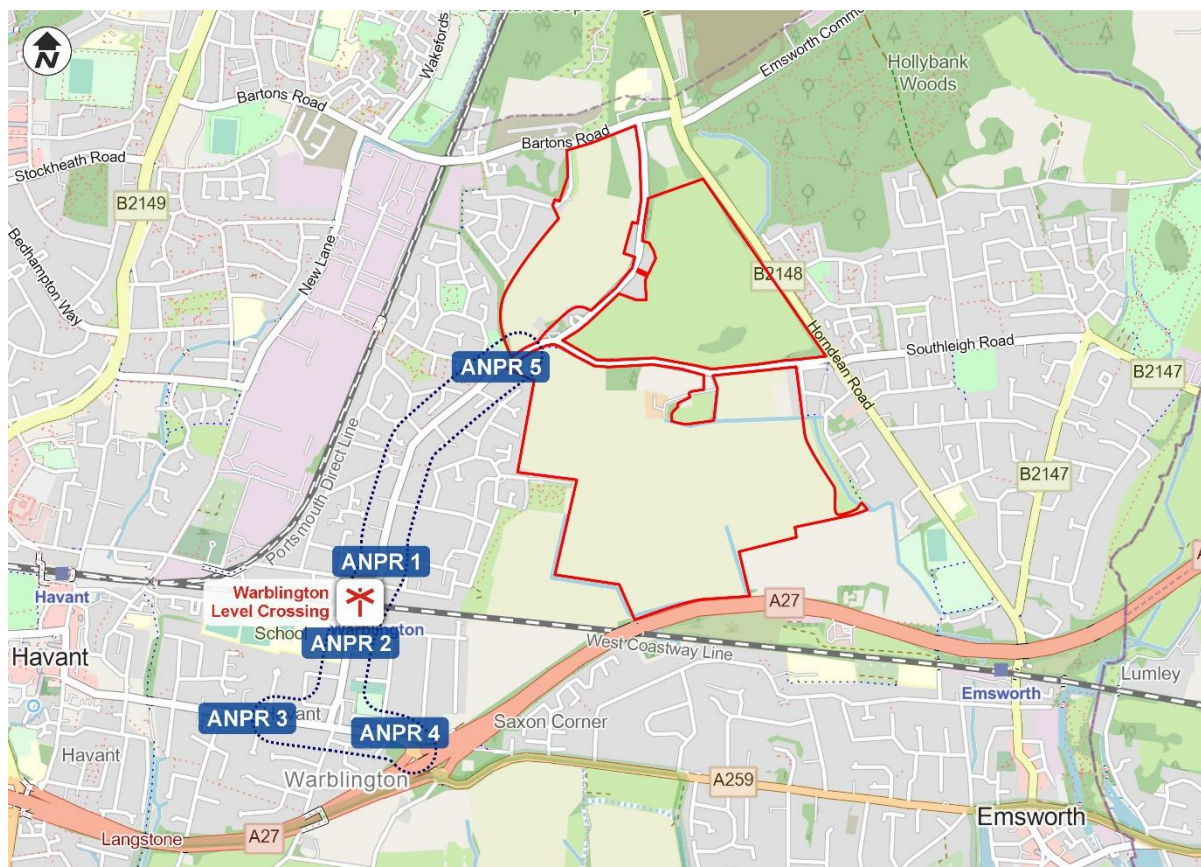
The barrier was observed to go down 11 times between 07:30-09:00, 8 times between 12:00-13:00 and 11 times between 14:30-16:00. The maximum observed queue length to the north was c. 200m (33 vehicles), while the maximum observed queue length on the south side was c. 430m (72 vehicles).

The maximum queue length on the southside was observed at 07:44 during the morning survey. This peak occurred when the barrier was lowered for a duration of 3 minutes and 26 seconds. During this time, 4 vehicles were observed waiting within the right-turn area of the Emsworth Road / Southleigh Road junction. The disruption across the highway network and onto the Emsworth Road / Southleigh Road junction was limited in both duration and extent,

with traffic conditions returning to free flow approximately 2 minutes after the barrier was raised.

The ANPR journey time survey was undertaken on Wednesday, 17th September 2025. The ANPR cordon surveyed is provided in Figure 5.6 below.

Figure 5.6: Warblington Level Crossing ANPR Cordon



The two-way vehicle flows entering/exiting the cordon at sites 3, 4, and 5 have been compared to the count data collected in June 2023. This has been carried out to validate that the ANPR survey was undertaken on a 'typical day'. This comparison is provided in *Table 5.10* below.

Table 5.10 - ANPR 'Typical Day' Comparison				
Location	2023 Data		2025 ANPR data	
	AM	PM	AM	PM
Emsworth Road (E)	781	662	797	704
Emsworth Road (W)	952	1133	893	1038
Southleigh Road	792	685	746	607

The ANPR data can be considered a 'Typical Day' as all three links in both peak periods are within the expected 10% daily variance in traffic flow (with the exception of Southleigh Road PM, which is slightly outside this threshold); therefore, the journey time data recorded from the ANPR survey is used within this chapter to establish the existing situation of the Warblington Level Crossing.

A summary of the mean, 85th percentile, and maximum journey times for the AM and PM peak hours is provided below in *Table 5.11*.

Table 5.11 - Mean, 85th Percentile and Maximum Journey Times through Level Crossing							
Journey		AM (0800-0900)			PM (1700-1800)		
Origin	Destination	Mean	85th Percentile	Maximum	Mean	85th Percentile	Maximum
Level Crossing (N)	Emsworth Road (W)	03:50	06:39	13:11	01:51	01:59	05:50
Level Crossing (N)	Emsworth Road (E)	04:23	09:27	11:49	02:04	02:48	07:15
Level Crossing (S)	Southleigh Road	03:11	04:41	11:00	01:56	01:47	09:13
Emsworth Road (W)	Southleigh Road	04:55	07:49	10:38	04:46	08:28	13:33
Emsworth Road (W)	Level Crossing (N)	02:42	03:49	07:03	02:13	03:09	07:42
Emsworth Road (E)	Southleigh Road	03:55	05:41	09:05	04:18	05:59	13:29
Emsworth Road (E)	Level Crossing (N)	02:27	04:01	05:45	02:36	04:38	09:25
Southleigh Road	Level Crossing (S)	02:35	03:13	10:08	02:31	04:22	06:08
Southleigh Road	Emsworth Road (W)	05:30	09:04	12:41	04:29	06:36	13:39
Southleigh Road	Emsworth Road (E)	06:38	10:32	12:59	04:20	06:01	13:56

It should be noted that while there are journeys that exceed 10 minutes, it is not possible to discern between those journeys that are extended due to congestion and journeys where the vehicle has stopped by choice.

Table 5.11 shows that the mean journey time for 8 out of the 10 journeys is longer in the AM peak than in the PM peak. This is likely due to the overlap between commuter movements and school drop-off movements that occur in the AM peak but not the PM peak. Further interrogation of the ANPR data shows that the journey times are significantly longer between 0800-0830 than between 0830-0900. A comparison of the mean journey times between the two periods is provided in *Table 5.12* below.

Table 5.12 - AM Peak Mean Journey Time Analysis				
Direction	Movement		Mean Journey Time	
	Origin	Destination	0800-0830	0830-0900
Southbound	Level Crossing (N)	Emsworth Road (W)	04:54	01:18
Southbound	Level Crossing (N)	Emsworth Road (E)	06:05	01:55
Northbound	Level Crossing (S)	Southleigh Road	02:19	04:54
Northbound	Emsworth Road (W)	Southleigh Road	06:03	03:13
Northbound	Emsworth Road (W)	Level Crossing (N)	03:27	02:34
Northbound	Emsworth Road (E)	Southleigh Road	04:23	03:25
Northbound	Emsworth Road (E)	Level Crossing (N)	03:12	02:05
Southbound	Southleigh Road	Level Crossing (S)	02:54	02:00
Southbound	Southleigh Road	Emsworth Road (W)	07:42	03:31
Southbound	Southleigh Road	Emsworth Road (E)	09:28	03:49

Table 5.12 shows that in 9 out of the 10 movements, the mean journey time was larger in the 0800-0830 period. It should also be noted that the Level Crossing (S) to Southleigh Road movement only had two captures between 0800-0830, which may be anomalous. Many of the mean journey times were 2-5 minutes longer during the 0800-0830 period, showing that the worst congestion is in a concentrated peak period.

The data also showed differences between the movements from the north to Emsworth Road (E) and Emsworth Road (W). If the level crossing was the cause of the level of congestion along Southleigh Road, it would be expected that mean journey times to these destinations would be similar; however, the 0800-0830 Mean Journey Time for the southbound movements is approximately 1-2 minutes longer for vehicles travelling to Emsworth Road (E) than Emsworth Road (W). Following a review of the video footage that was recorded on the same day as the ANPR survey (which is available on request), it showed that during the 0800-0830 peak, there were periods where traffic queued from the Warblington Interchange junction to the Level Crossing, preventing traffic from proceeding through the Level Crossing when the gates were open.

This would suggest that despite the queues northbound being similar (or even worse as seen on the site visit) compared to the southbound traffic, the delay for vehicles travelling southbound is longer as the northbound queues are able to clear once the Level Crossing gates open, whereas the southbound queues are not able to do so.

This shows that although the Level Crossing contributes to delay on the local network, it is not the most important factor, because even if the Level Crossing were not there, southbound queues from the Warblington Interchange would still occur during the busiest periods.

5.5 Embedded and Standard Mitigation Measures

5.5.1 Embedded Mitigation Measures

Masterplan – Onsite Design Features

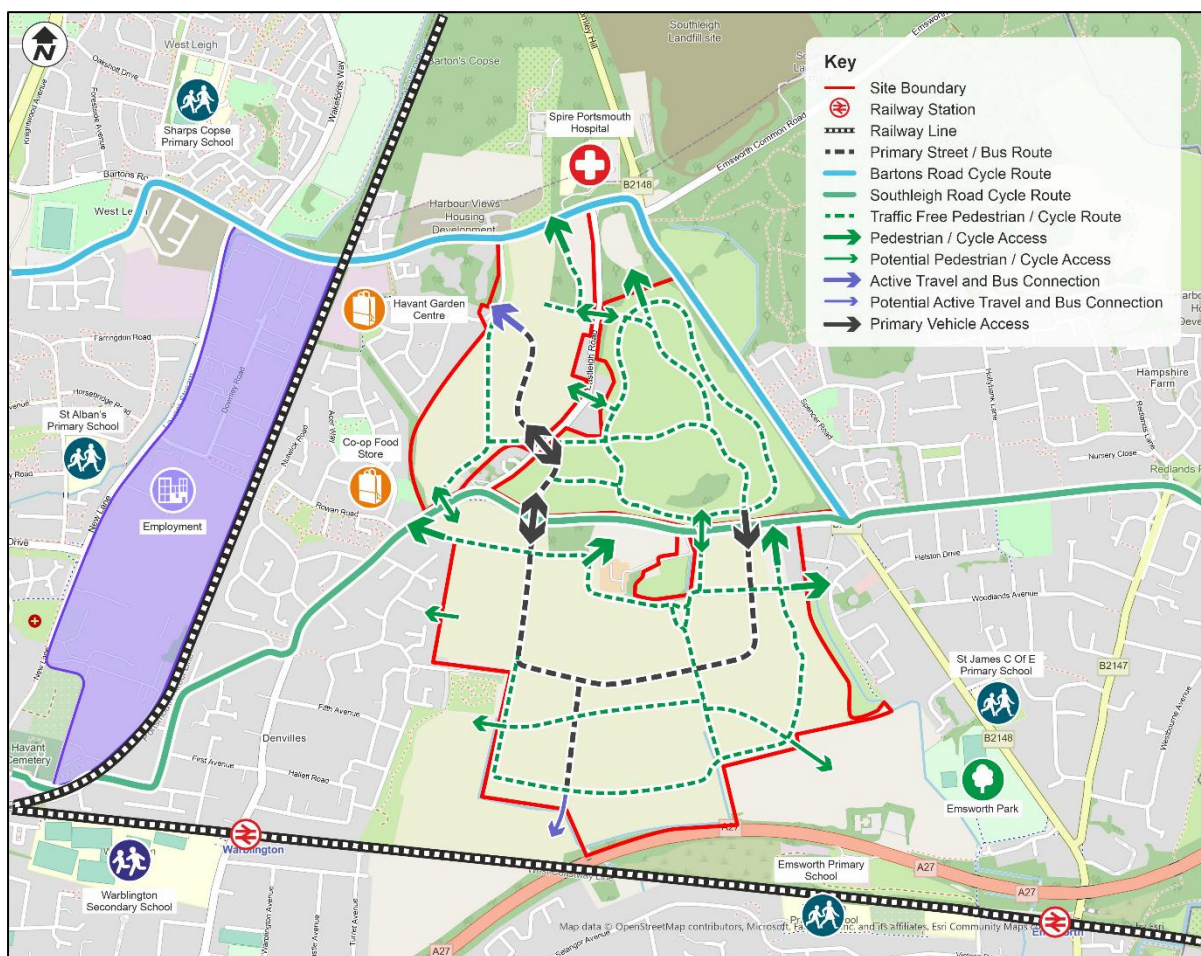
The Masterplan for the proposed development has been designed in accordance with a number of access and movement principles underpinning the transport strategy. These are an inherent part of the development and which the assessment undertaken in this chapter has taken into consideration. These principles are summarised below:

- Designed with a people first hierarchy to be highly permeable, allowing for movements north to south and east to west through the site and to the wider community.
- Priority given to active travel movements through the creation of largely traffic-free, comprehensive, connected, and a direct network of routes for safe walking and cycling.
- Provision of segregated walking and cycle routes alongside primary street corridors to compliment the network of traffic-free routes.
- The primary street corridor is to facilitate a bus route through the site, with bus stops suitably located throughout the development. All dwellings will be located within 400m of a bus stop as part of the accessible public transport provision.
- Bus priority provision at the Normandy Way access to promote bus use over general car use. This having the potential to improve bus journey times and the reliability of bus services through Southleigh, avoiding conflict with general vehicle traffic.
- Creation of a clear hierarchy of street types from the primary street down to residential lanes.

- Traffic calming bends and public realm design will be utilised to ensure vehicle movements through the site are maintained below the proposed internal 20mph speed limit. The internal design will manage vehicle speeds and contribute to a people first hierarchy.
- Safe and controlled pedestrian and cycle crossing facilities will be implemented across Southleigh Road and Eastleigh Road to ensure these existing roads do not sever the accessibility of the Site.
- All shared footway / cycleway facilities have been designed to be compliant with LTN 1/20 standards.

The broad proposed internal site arrangement and external connections is presented in *Figure 5.7*.

Figure 5.7: Pedestrian and Cycle Network Connections



Other Embedded Mitigation

To further promote the people first hierarchy throughout the proposed development and the location area, Southleigh Road and Eastleigh Road through the proposed development area would see a speed limit reduction from 40mph to 30mph.

A Framework Travel Plan has been prepared for the development including numerous measures to minimise the number of single occupancy car journeys made by residents of the

proposed development. This will guide the preparation of the subsequent Travel Plans for the Site.

5.5.2 Standard Mitigation Measures

A Construction Traffic Management Plan (CTMP) will be provided by the works contractor. This will need to be approved by HCC prior to any construction works commencing. The CTMP will be integrated within the Construction Environmental Management Plan (CEMP) and secured by Planning Conditions upon Planning Consent.

A Framework CEMP is included in *Appendix 4.1* of this ES.

The CTMP aims to reduce the impact of construction vehicle trips to and from the proposed development. A CTMP typically includes the following measures to reduce adverse effects generated by construction activities:

- Any bulk transit trips will be undertaken during off-peak periods in order to minimise road user delays;
- If lane closures on the local highway network are deemed necessary, these will take place during off-peak periods; and
- Designated construction routes will be utilised by all construction vehicles.

As a result, it is likely that construction vehicle movements will predominantly occur outside of peak hours such that operatives can avoid busy periods on the external network and avoid late nights/early hours to reduce the disturbance of nearby residents.

5.6 Assessment of Environmental Impacts

5.6.1 Construction Phase

At this stage the phasing and vehicle trips associated with the construction of the proposed development is unknown and so the level of construction has been derived on a first principles approach. As construction is going to take place over a number of years, the construction traffic generated is likely to vary. However, at this time it is difficult to calculate when the peaks are likely to happen.

Instead, the volume of daily construction traffic has been based on the average number of dwellings constructed per year. The assessment has been undertaken for the proposed allocation as a whole (i.e. 2,100 dwellings) as a reasonable worst case, rather than 1,800 dwellings. Based on the construction of 2,100 dwellings over a ten-year period between 2028 and 2038, this equates to an average of 210 dwellings constructed per year.

Using an estimate, based on previous experience, of 1 daily HGV per 8 units and 1 daily LGV per 1.3 units, this results in an expected 27 HGVs per day and 162 LGVs per day. Assuming a working day of 08:00 – 18:00, it is expected there would be 3 HGVs and 16 LGVs per hour.

Although this is not certain, construction traffic is likely to travel, as far as possible, on the A3 (M), the A27 and main roads within Havant. The roads that are likely to be included within the construction routing are:

- B2149 Park Road

- B2149 Petersfield Road
- Bartons Road

The greatest impact to traffic levels would be in the AM and PM peak hours when the majority of construction worker traffic movements would take place. The number of movements is difficult to assess at this time as this could vary substantially depending on the contractor / sub-contractor and where the workforce is coming from. The trips associated with this would be substantially less than those generated when the development is fully occupied.

Overall, the traffic level impact associated with the construction of the development would be **negligible** across all criteria and therefore would not result in a significant impact with a Construction Traffic Management Plan implemented.

5.6.2 Occupation Phase

Assessment Scenarios

The assessment scenarios used to assess the traffic and transport impacts of the proposed development within the study area for the ES are as follows:

- 2038 Future Baseline + Committed Development
- 2038 Future Baseline + Committed Development + proposed development (i.e. 2,100 dwellings) – Business as Usual (BaU)

The 2038 future year has been selected as it represents the assumed first year of full occupation. The Business-as-Usual scenario represents the full development with embedded mitigation included but no further sustainable measures incorporated.

The full detail on how the development flows for these scenarios have been calculated is included in the Transport Assessment.

Occupation Phase Assessment Study Area

Using Rule 1 and Rule 2 outlined in the Assessment Methodology, *Table 5.13* below sets out which links within the initial forward have been carried forward from the Initial Study Area into the Assessment Study Area.

Link Reference	Link Name	2038 + Committed Dev AAWT Flows	2038 + Committed Dev + Proposed Dev (BaU) AAWT Flows	% Impact AAWT Flows	Included in Assessment Study Area?
1	A27 WB Off Slip	4,146	4,346	4.8%	NO
2	A259 (N)	24,106	25,390	5.3%	NO
3	A27 WB On Slip	15,646	16,931	8.2%	NO

Table 5.13 - Occupation Phase Assessment Study Area Review

Link Reference	Link Name	2038 + Committed Dev AAWT Flows	2038 + Committed Dev + Proposed Dev (BaU) AAWT Flows	% Impact AAWT Flows	Included in Assessment Study Area?
4	Church Lane	490	490	0.0%	NO
5	A259 – Havant Road	15,957	16,535	3.6%	NO
6	Emsworth Road	18,780	21,013	11.9%	NO
7	A27 EB Off Slip	16,031	17,007	6.1%	NO
8	Link Road	24,129	25,414	5.3%	NO
9	A27 EB On Slip	1,309	1,660	26.8%	NO
10	Southleigh Road	11,633	14,874	27.9%	NO
11	Emsworth Road W	13,251	14,260	7.6%	NO
12	Pook Lane	1,083	1,083	0.0%	NO
13	Emsworth Road E	16,669	18,902	13.4%	NO
14	Comley Hill	10,613	12,023	13.3%	NO
15	Bartons Road	15,215	15,668	3.0%	NO
16	Horndean Road	14,146	15,134	7.0%	NO
17	Emsworth Common Road	9,966	9,997	0.3%	NO
18	Wakefords Way	3,430	3430	0.0%	NO
19	Bartons Road W	13,280	17,674	33.1%	YES
20	New Lane	8,660	9,332	7.8%	NO
21	Bartons Road E	17,449	22,515	29.0%	NO
22	Horndean Road N	14,117	15,105	7.0%	NO
23	Southleigh Road W	5,485	8,549	55.9%	YES

Table 5.13 - Occupation Phase Assessment Study Area Review

Link Reference	Link Name	2038 + Committed Dev AAWT Flows	2038 + Committed Dev + Proposed Dev (BaU) AAWT Flows	% Impact AAWT Flows	Included in Assessment Study Area?
24	Horndean Road S	11,864	13,325	12.3%	NO
25	Southleigh Road E	9,993	10,609	6.2%	NO
26	Horndean Road N	14,638	16,100	10.0%	NO
27	B2148	13,138	14,599	11.1%	NO
28	New Brighton Road	6,795	6,795	0.0%	NO
29	North Street	17,555	19,016	8.3%	NO
30	A259 W	26,141	26,719	2.2%	NO
31	High Street	5,105	5,105	0.0%	NO
32	A259 E	23,046	23,398	1.5%	NO
33	Eastleigh Road	5,618	9,437	68.0%	YES
34	Southleigh Road W	10,675	13,916	30.4%	YES
35	Southleigh Road E	5,957	9,022	51.4%	YES
36	Bartons Road E	15,141	15,594	3.0%	NO
37	Bartons Road W	17,522	22,588	28.9%	NO
38	Eastleigh Road	5,590	9,409	68.3%	YES
39	Petersfield Road N	12,618	12,618	0.0%	NO
40	Petersfield Road S	20,881	25,275	21.0%	NO
41	Barton Road	15,762	20,157	27.9%	NO
42	Southleigh Road	8,970	12,211	36.1%	YES
43	Bartons Road	13,916	18,982	36.4%	YES

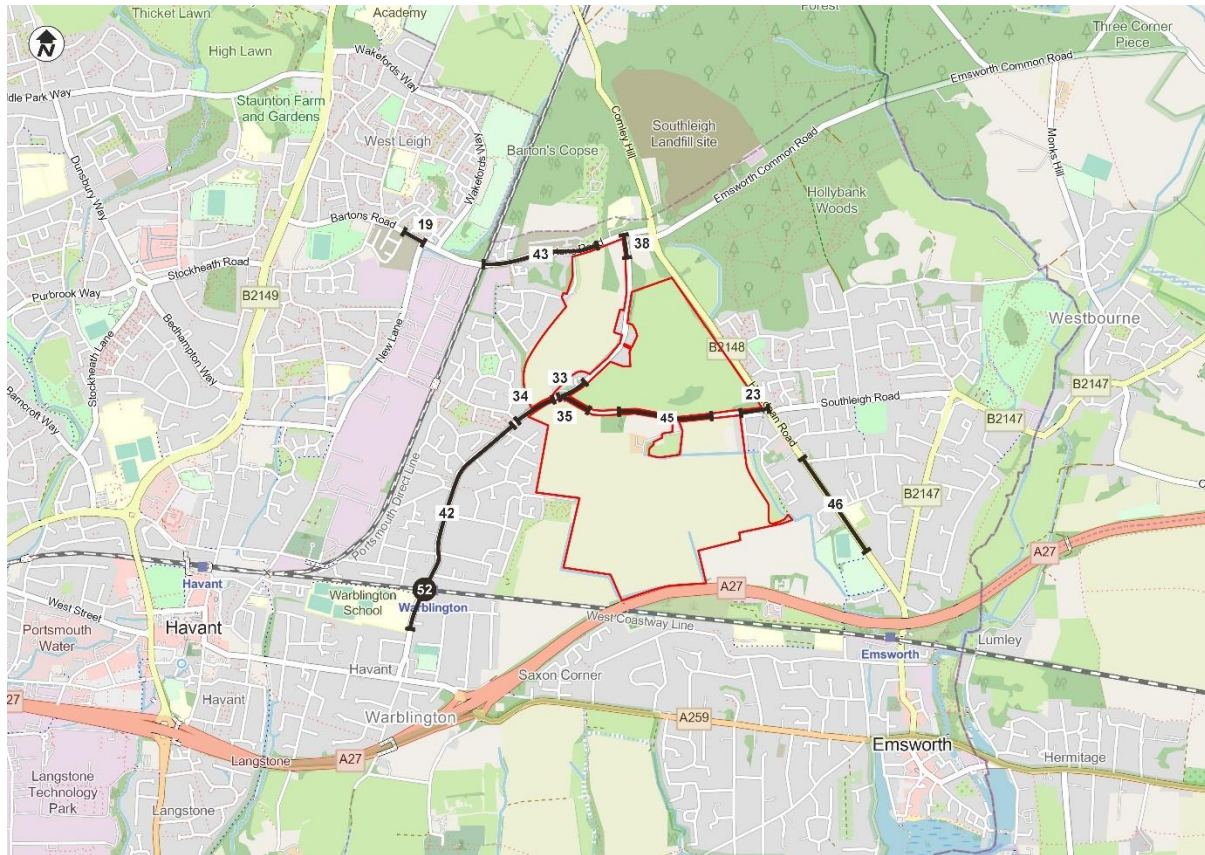
Table 5.13 - Occupation Phase Assessment Study Area Review					
Link Reference	Link Name	2038 + Committed Dev AAWT Flows	2038 + Committed Dev + Proposed Dev (BaU) AAWT Flows	% Impact AAWT Flows	Included in Assessment Study Area?
44	Park Road North	29,940	32,531	8.7%	NO
45	Southleigh Road	4,853	7,918	63.1%	YES
46	Horndean Road	9,686	11,147	15.1%	YES
47	A259 Havant Road	24,836	25,414	2.3%	NO
48	A27 West of Site (DFT 36296)	87,411	87,896	0.6%	NO
49	A27 West of Site (DFT 99631)	102,308	104,295	1.9%	NO
50	A27 West of A3 M (DFT 26299)	203,040	205,027	1.0%	NO
51	A27 East of Site (DFT 60080)	58,995	59,051	0.1%	NO
52	Southleigh Road Level Crossing	10,324	13,566	31.4%	YES

NB: Please note that this table shows the BaU development scenario – this is the worst case and shows the largest number of links included in the assessment study area

Table 5.14 and Figure 5.8 below show the links from the initial study area that exceed the threshold under the BaU scenario, and have been carried forward to the assessment.

Table 5.14 - BaU Study Area		
Link Reference	Link	BaU
19	Bartons Road W	✓
23	Southleigh Road W	✓
33	Eastleigh Road	✓
34	Southleigh Road W	✓
35	Southleigh Road E	✓
38	Eastleigh Road	✓
42	Southleigh Road	✓
43	Bartons Road	✓
45	Southleigh Road	✓
46	Horndean Road	✓
52	Southleigh Road Level Crossing	✓

Figure 5.8: Assessment Study Area



It is acknowledged that there would be HGV trips generated that are associated with the servicing of the residential, local centre and school elements of the development. Following a review of three similarly sized residential developments in TRICS, the HGV trip generation from these land uses would have a **negligible** impact on the local highway network.

Table 5.15 - Summary of Impact Assessment – Occupation Phase – BaU						
Receptor	Sensitivity/Importance/Value	Description of Impact	Embedded & Standard Mitigation Measures	Magnitude of Effect	Type of Effect	Significance of Effect
Link 19 – Bartons Road W	Low	The increase in traffic flows on the local network as a result of the development on Severance, Driver Delay, Non-Motorised User Delay, Non-Motorised User Amenity, Fear and Intimidation and Accidents and Safety.		Severance/Non-Motorised User Delay – Low Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety - Negligible	Direct and Permanent	Severance/Non-Motorised User Delay – Minor Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety - Negligible
Link 23 – Southleigh Road W	Low		Speed Limit change from 40mph to 30mph	Severance/Non-Motorised User Delay – Low Adverse Driver Delay – High Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety – Low Adverse	Direct and Permanent	Severance/Non-Motorised User Delay – Minor Adverse Driver Delay – Moderate Adverse Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety – Minor Adverse
Link 33 – Eastleigh Road	High		Speed Limit change from 40mph to 30mph	Severance/Non-Motorised User Delay – Medium Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible	Direct and Permanent	Severance/Non-Motorised User Delay – Substantial Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible

Table 5.15 - Summary of Impact Assessment – Occupation Phase – BaU

Receptor	Sensitivity/ Importance/ Value	Description of Impact	Embedded & Standard Mitigation Measures	Magnitude of Effect	Type of Effect	Significance of Effect
				Fear and Intimidation – Low Benefit Accidents and Safety - Negligible		Fear and Intimidation – Moderate Benefit Accidents and Safety - Negligible
Link 34 – Southleigh Road W	Medium			Severance/Non- Motorised User Delay – Low Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Low Adverse Accidents and Safety - Negligible	Direct and Permanent	Severance/Non-Motorised User Delay – Minor Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Minor Adverse Accidents and Safety - Negligible
Link 35 Southleigh Road E	Low		Speed Limit change from 40mph to 30mph	Severance/Non- Motorised User Delay – Low Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety - Negligible	Direct and Permanent	Severance/Non-Motorised User Delay – Minor Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety - Negligible
Link 38 – Eastleigh Road	Medium		Speed Limit change from 40mph to 30mph	Severance/Non- Motorised User Delay – Medium Adverse	Direct and Permanent	Severance/Non-Motorised User Delay – Moderate Adverse

Table 5.15 - Summary of Impact Assessment – Occupation Phase – BaU						
Receptor	Sensitivity/ Importance/ Value	Description of Impact	Embedded & Standard Mitigation Measures	Magnitude of Effect	Type of Effect	Significance of Effect
				Driver Delay – High Non-motorised User Amenity – Negligible Fear and Intimidation – Low Benefit Accidents and Safety - Negligible		Driver Delay – Substantial Adverse Non-motorised User Amenity – Negligible Fear and Intimidation – Minor Benefit Accidents and Safety - Negligible
Link 42 – Southleigh Road	Low			Severance/Non- Motorised User Delay – Low Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Low Adverse Accidents and Safety - Medium	Direct and Permanent	Severance/Non-Motorised User Delay – Minor Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Minor Adverse Accidents and Safety – Minor Adverse
Link 43 – Bartons Road	Medium			Severance/Non- Motorised User Delay – Low Adverse Driver Delay – Medium Adverse Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible	Direct and Permanent	Severance/Non-Motorised User Delay – Minor Adverse Driver Delay – Moderate Adverse Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible

Table 5.15 - Summary of Impact Assessment – Occupation Phase – BaU

Receptor	Sensitivity/ Importance/ Value	Description of Impact	Embedded & Standard Mitigation Measures	Magnitude of Effect	Type of Effect	Significance of Effect
				Accidents and Safety - Negligible		Accidents and Safety - Negligible
Link 45 – Southleigh Road	Low		Speed Limit change from 40mph to 30mph	Severance/Non- Motorised User Delay – Medium Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety - Negligible	Direct and Permanent	Severance/Non-Motorised User Delay – Minor Adverse Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety - Negligible
Link 46 – Horndean Road	High			Severance/Non- Motorised User Delay – Negligible Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety - Low	Direct and Permanent	Severance/Non-Motorised User Delay – Negligible Driver Delay – Negligible Non-motorised User Amenity – Negligible Fear and Intimidation – Negligible Accidents and Safety – Moderate Adverse
Link 52 – Southleigh Road Level Crossing	High			Severance/Non- Motorised User Delay – Low Adverse Driver Delay – Medium Adverse	Direct and Permanent	Severance/Non-Motorised User Delay – Moderate Adverse Driver Delay – Substantial Adverse

Table 5.15 - Summary of Impact Assessment – Occupation Phase – BaU						
Receptor	Sensitivity/ Importance/ Value	Description of Impact	Embedded & Standard Mitigation Measures	Magnitude of Effect	Type of Effect	Significance of Effect
				Non-motorised User Amenity – Negligible Fear and Intimidation – Low Adverse Accidents and Safety - Negligible		Non-motorised User Amenity – Negligible Fear and Intimidation – Moderate Adverse Accidents and Safety – Negligible

Severance/NMU Delay Assessment Results

Table 5.16 - Severance Results - BaU					
Link ID	Link	Baseline	With Dev	% Impact	Magnitude
19	Bartons Road W	13,280	17,674	33.1%	Low
23	Southleigh Road W	5,485	8,549	55.9%	Low
33	Eastleigh Road	5,618	9,437	68.0%	Medium
34	Southleigh Road W	10,675	13,916	30.4%	Low
35	Southleigh Road E	5,957	9,022	51.4%	Low
38	Eastleigh Road	5,590	9,409	68.3%	Medium
42	Southleigh Road	8,970	12,211	36.1%	Low
43	Bartons Road	13,916	18,982	36.4%	Low
45	Southleigh Road	4,853	7,918	63.1%	Medium
46	Horndean Road	9,686	11,147	15.1%	Negligible
52	Southleigh Road Level Crossing	10,325	13,566	31.4%	Low

Driver Delay Assessment Results

Table 5.17 - Driver Delay Results				
Link ID	Link	RFC/DOS		Magnitude
		AM	PM	
19	Bartons Road W	N/A	N/A	Negligible
23	Southleigh Road W	1.40	0.98	High
33	Eastleigh Road	N/A	N/A	Negligible
34	Southleigh Road W	N/A	N/A	Negligible
35	Southleigh Road E	N/A	N/A	Negligible
38	Eastleigh Road	1.52	1.23	High
42	Southleigh Road	N/A	N/A	Negligible
43	Bartons Road	0.53	0.95	Medium
45	Southleigh Road	N/A	N/A	Negligible
46	Horndean Road	N/A	N/A	Negligible
52	Southleigh Road Level Crossing	Assessed Below		

Please note where in the table it states N/A, this is due to the associated junction link not being modelled in the Transport Assessment as it was not deemed necessary.

Level Crossing

It is understood that the Southleigh Road Level Crossing at Warblington Rail Station is a key existing infrastructure constraint when it comes to driver delay. This is an existing constraint on the local highway network and one which additional vehicle movements from the operational development proposals will have to navigate. It is not relevant to provide an RFC or DOS since the crossing has a capacity of zero when the barriers are closed, hence an infinite RFC or DOS would apply at these times.

The AM and PM peak hours have been used as a worst-case scenario to assess the driver delay associated with the level crossing. The table below shows the three largest queues generated in the survey data.

Table 5.18 - Longest Recorded Queues at Level Crossing		
Time Recorded	Queues (vehicles)	
	Northbound	Southbound
08:53	44	47
15:29	47	48
17:55	45	47

As the queues at 15:29 are outside the peak hours (and only exceed the other queues by 2 and 1 vehicle respectively) this has not been included in assessment as the flows generated by the development would cause the queues in the peak hours to exceed those at the time of the 15:29 observation in the future scenario, especially as much of the proposed development would be within walking/cycling distance of schools (including Warblington School), which will be the main trip generators during that period.

To calculate the additional queues at the level crossing, the following methodology has been used. The additional flows in the assessment scenario (from background growth and the development) have been converted to additional vehicles per minute. This was then multiplied by the amount of time that the barrier was down for during the period when the longest queues were recorded. The results of this are detailed in *Table 5.19* below.

Table 5.19 - Queues at Level Crossing in the BaU Scenario		
Time Recorded	Queues (vehicles)	
	Northbound	Southbound
08:53	55 (+11)	75 (+28)
17:55	60 (+15)	55 (+8)

In the northbound direction, the additional queue would not cause the queuing from the Level Crossing to back up to the Southleigh Road / Emsworth Road junction, which could prevent vehicles from accessing Southleigh Road during a green phase, and so has a low magnitude of impact as all vehicles would then continue once the crossing opens. This equates to a **moderate adverse** effect.

The calculation for the southbound direction assumes that once the barriers open, traffic would flow freely through the level crossing. This would increase the additional queues further than the 75 vehicles shown in *Table 5.16* and increase the possibility of vehicles having to stop multiple times for the lowering of the barriers which would increase the delay.

It is considered that the proposed development would have a medium magnitude of change in the southbound direction as the queuing from Warblington Interchange along Emsworth Road would only be exacerbated in the morning peak hour and would not have the same impact over the rest of the day. As the level crossing has a high sensitivity, the proposed development would have a **substantial adverse** significance of effect on the network local to the Level Crossing in the BaU Scenario.

NMU Amenity Assessment Results

Table 5.20: NMU Amenity Results - BaU					
Link ID	Link	Baseline	With Dev	Halved?	Doubled?
19	Bartons Road W	13,280	17,674	NO	NO
23	Southleigh Road W	5,485	8,549	NO	NO
33	Eastleigh Road	5,618	9,437	NO	NO
34	Southleigh Road W	10,675	13,916	NO	NO
35	Southleigh Road E	5,957	9,022	NO	NO
38	Eastleigh Road	5,590	9,409	NO	NO
42	Southleigh Road	8,970	12,211	NO	NO
43	Bartons Road	13,916	18,982	NO	NO
45	Southleigh Road	4,853	7,918	NO	NO
46	Horndean Road	9,686	11,147	NO	NO
52	Southleigh Road Level Crossing	10,325	13,566	NO	NO

NMU Fear and Intimidation Assessment Results

Table 5.21: Fear and Intimidation – Average Hourly Flow - BaU					
Link ID	Link	Baseline	Degree of Hazard Score	With Dev	Degree of Hazard Score
19	Bartons Road W	738	10	982	10
23	Southleigh Road W	305	0	475	0
33	Eastleigh Road	312	0	524	0
34	Southleigh Road W	593	0	773	10
35	Southleigh Road E	331	0	501	0
38	Eastleigh Road	311	0	523	0
42	Southleigh Road	498	0	678	10
43	Bartons Road	773	10	1,055	10
45	Southleigh Road	270	0	440	0
46	Horndean Road	538	0	619	10
52	Southleigh Road Level Crossing	574	0	754	10

Table 5.22 - Fear and Intimidation – Average 18 Hour HGV Flow - BaU					
Link ID	Link	Baseline	Degree of Hazard Score	With Dev	Degree of Hazard Score
19	Bartons Road W	448	0	448	0
23	Southleigh Road W	129	0	129	0
33	Eastleigh Road	76	0	76	0
34	Southleigh Road W	187	0	187	0
35	Southleigh Road E	125	0	125	0
38	Eastleigh Road	76	0	76	0
42	Southleigh Road	555	0	555	0
43	Bartons Road	893	0	893	0
45	Southleigh Road	324	0	324	0
46	Horndean Road	1,143	10	1,143	10
52	Southleigh Road Level Crossing	239	0	239	0

Table 5.23 - Fear and Intimidation – Average Vehicle Speed - BaU

Link ID	Link	Baseline	Degree of Hazard Score	With Dev	Degree of Hazard Score
19	Bartons Road W	30	20	30	20
23	Southleigh Road W	36	20	30	20
33	Eastleigh Road	40	30	30	20
34	Southleigh Road W	29	10	30	20
35	Southleigh Road E	29	10	30	20
38	Eastleigh Road	40	30	30	20
42	Southleigh Road	29	10	30	20
43	Bartons Road	32	20	32	20
45	Southleigh Road	36	20	30	20
46	Horndean Road	32	20	32	20
52	Southleigh Road Level Crossing	30	20	30	20

Table 5.24 - Level of Fear and Intimidation

Link ID	Link	Base - Degree of Hazard Total Score	Level	Development - Degree of Hazard Total Score	Level
19	Bartons Road W	30	Moderate	30	Moderate
23	Southleigh Road W	20	Small	20	Small
33	Eastleigh Road	30	Moderate	20	Small
34	Southleigh Road W	10	Small	30	Moderate
35	Southleigh Road E	10	Small	20	Small
38	Eastleigh Road	30	Moderate	20	Small
42	Southleigh Road	10	Small	30	Moderate
43	Bartons Road	30	Moderate	30	Moderate
45	Southleigh Road	20	Small	20	Small
46	Horndean Road	30	Moderate	40	Moderate
52	Southleigh Road Level Crossing	20	Small	30	Moderate

Table 5.25 - Fear and Intimidation – Magnitude of Impact				
Link ID	Link	Base Level	Development Level	Magnitude
19	Bartons Road W	Moderate	Moderate	Negligible
23	Southleigh Road W	Small	Small	Negligible
33	Eastleigh Road	Moderate	Small	Benefit
34	Southleigh Road W	Small	Moderate	Low
35	Southleigh Road E	Small	Small	Negligible
38	Eastleigh Road	Moderate	Small	Benefit
42	Southleigh Road	Small	Moderate	Low
43	Bartons Road	Moderate	Moderate	Negligible
45	Southleigh Road	Small	Small	Negligible
46	Horndean Road	Moderate	Moderate	Negligible
52	Southleigh Road Level Crossing	Small	Moderate	Low

Accident and Safety Assessment Results

A different study area has been used to analyse the PIC data as accidents are more likely at junctions than on links where there are a greater number of conflict possibilities. *Figure 5.9* below shows the accidents and safety study area.

Figure 5.9: Accidents and Safety Study Area

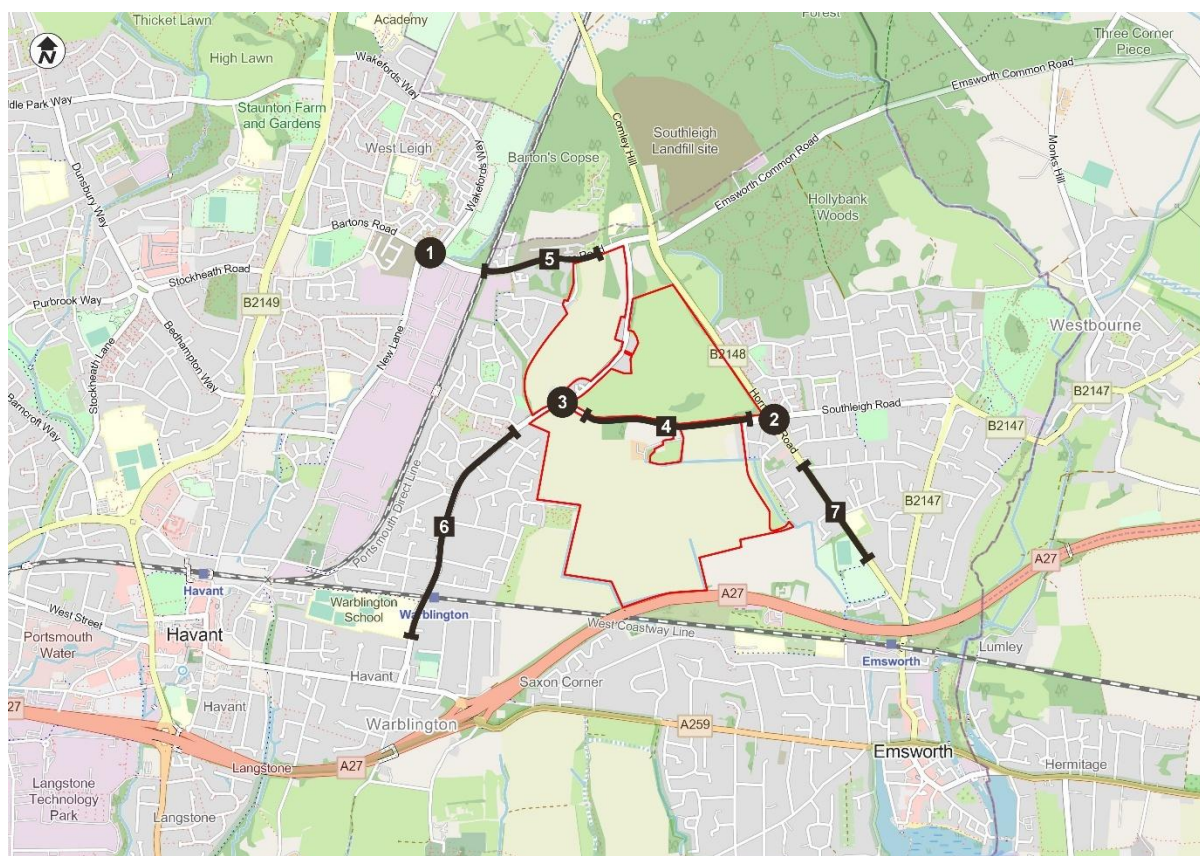


Table 5.26 - Accidents and Safety Results					
Junction/Link	Link	Slight	Serious	Fatal	Total
1	Wakefords Way/ Bartons Road/ New Lane	0	0	0	0
2	Horndean Road/ Southleigh Road	3	1	0	4
3	Southleigh Road/ Eastleigh Road	1	0	0	1
4	Southleigh Road	0	0	0	0
5	Bartons Road	0	1	0	1
6	Southleigh Road (including Level Crossing)	3	6	0	9
7	Horndean Road	3	1	0	4

With the exception to Link 6, there has been no more than one serious accident over the most recent 5-year period available. It is considered that these junction/links are safe and the impact from the development would be **negligible** and so not significant.

On Link 6, one serious incident occurred within close proximity to the level crossing. However, the incident was unrelated to the operation of the level-crossing, with the factor being that the driver 'failed to look properly'.

Table 5.27 - Pedal Cycle and Pedestrian Incident Totals				
Junction/Link	Link	Pedestrian	Pedal Cycle	Total
1	Wakefords Way/ Bartons Road/ New Lane	0	0	0
2	Horndean Road/ Southleigh Road	0	1	1
3	Southleigh Road/ Eastleigh Road	0	1	1
4	Southleigh Road	0	0	0
5	Bartons Road	0	0	0
6	Southleigh Road (including Level Crossing)	1	1	2
7	Horndean Road	0	3	3

5.7 Additional Mitigation Measures

To further mitigate the environmental impacts of the development beyond the embedded mitigation with the development proposals, additional measures are proposed as part of the wider transport and accessibility strategy for the Southleigh site.

5.7.1 Off-site Active Travel Improvements

Safe and controlled pedestrian / cycle crossings are to be implemented on Southleigh Road and Eastleigh Road.

Improvements along the Southleigh Road cycle route are proposed between the site's western boundary and the Southleigh Road junction with Fourth Avenue. This is proposed to provide a segregated cycle provision and a controlled parallel crossing point north of Fourth Avenue, improving the connectivity to the existing signposted cycle route (Westbourne/Havant) using the Third Avenue rail crossing and towards Havant Town Centre and Rail Station.

It is understood that pedestrian / cycle improvements are currently being implemented along Bartons Road due to adjacent developments coming forward, these active travel improvements will be tied into and improved upon where possible following discussion with HCC and HBC.

Along with the two routes identified above, further localised active travel improvements are proposed at the following specific junctions to improve safety and accessibility of users:

- Horndean Road / Bartons Road – Pedestrian and Cycle Improvements and Signalisation
- Horndean Road / Southleigh Road – Pedestrian and Cycle Improvements and Signalisation
- Bartons Road / Eastleigh Road – Pedestrian and Cycle Improvements and Signalisation
- Warblington Interchange – Signalisation

The proposed development and proposed off-site improvements will offer permanent beneficial effects to the local highway network. The delivery of new active travel infrastructure and improvements will reduce non-motorised user delay, improvement amenity, and reduce fear and intimidation for users.

5.7.2 Off-Site Highway Improvements

Although the primary forms of mitigation included as part of the development proposals are focused on sustainable and active travel, off-site highway capacity improvements with a focus on embedding pedestrian/cycle improvements into them are also proposed to accommodate the additional people movements associated with the proposed development.

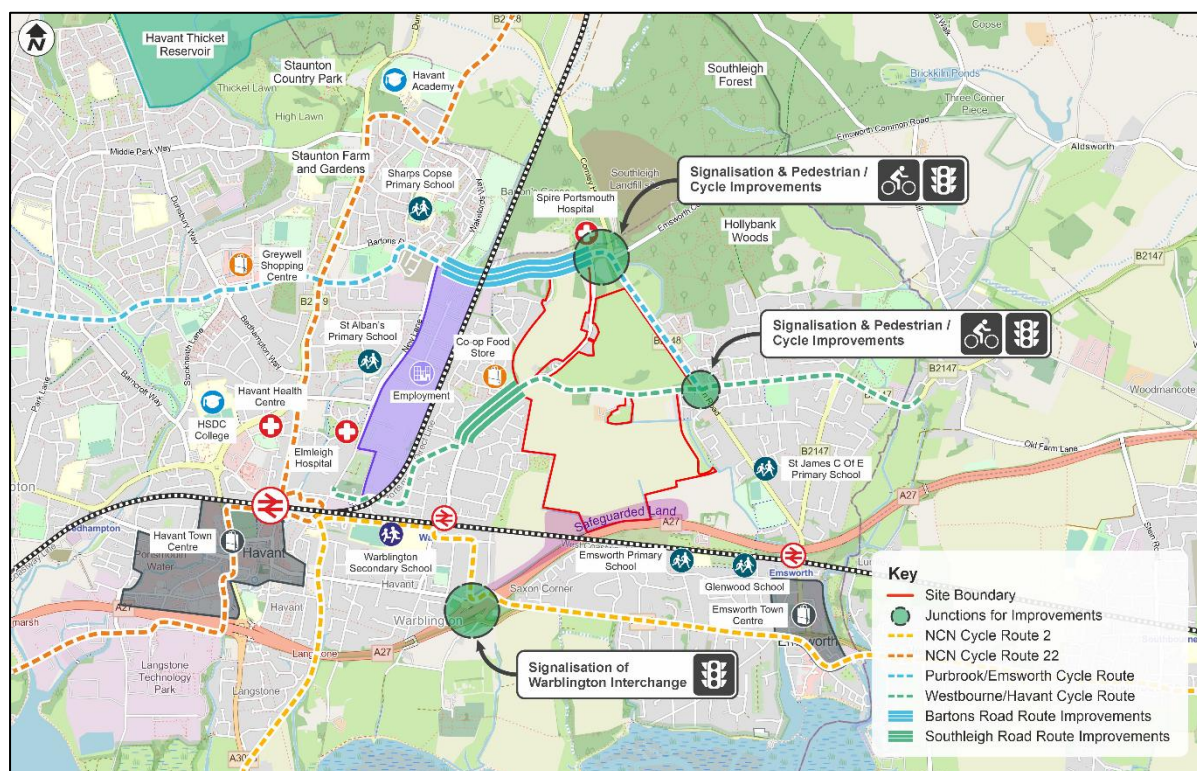
The proposed junction improvements will include the signalisation of junctions and enhancements to cycle routes and crossing facilities, incorporating local widening of routes. Additionally, there will be improvements to the Westbourne/Havant cycle route along a section of Southleigh Road, as well as general enhancements to the Purbrook/Emsworth cycle route. These measures aim to improve safety and accessibility for cyclists and pedestrians.

Listed below are the proposed junctions to be enhanced:

- Horndean Road / Southleigh Road Junction
- Horndean Road / Bartons Road Junction
- Bartons Road / Eastleigh Road Junction
- Warblington Interchange (junction for the A27)

A summary of the proposed off-site improvements is presented in *Figure 5.10*.

Figure 5.10: Proposed Off-site Improvements



5.7.3 Public Transport Strategy

The development includes two new / enhanced bus services.

- Service 27 – Enhancement
- New Route (Emsworth – Southleigh – Havant)

The enhancement to the 27 service includes a frequency increase to once per hour from the existing once every two hours (off-peak only), and a two-hourly service introduced on Saturday. There may be the potential to further increase the frequency of this service as part of the proposed Monitor and Manage approach.

An increase in the frequency of this service would benefit the new residents of the site as well as the wider existing community. There are an existing c.30,000 residents within the catchment of the 27 bus route who could benefit from the increase in frequency. Benefitting these residents has the potential to lead to a reduction in existing car trips, while also having further environmental benefits.

Figure 5.11 shows the 27 bus route in relation to the development.

The map displays the Havant area with a focus on the proposed bus service catchment. Key features include:

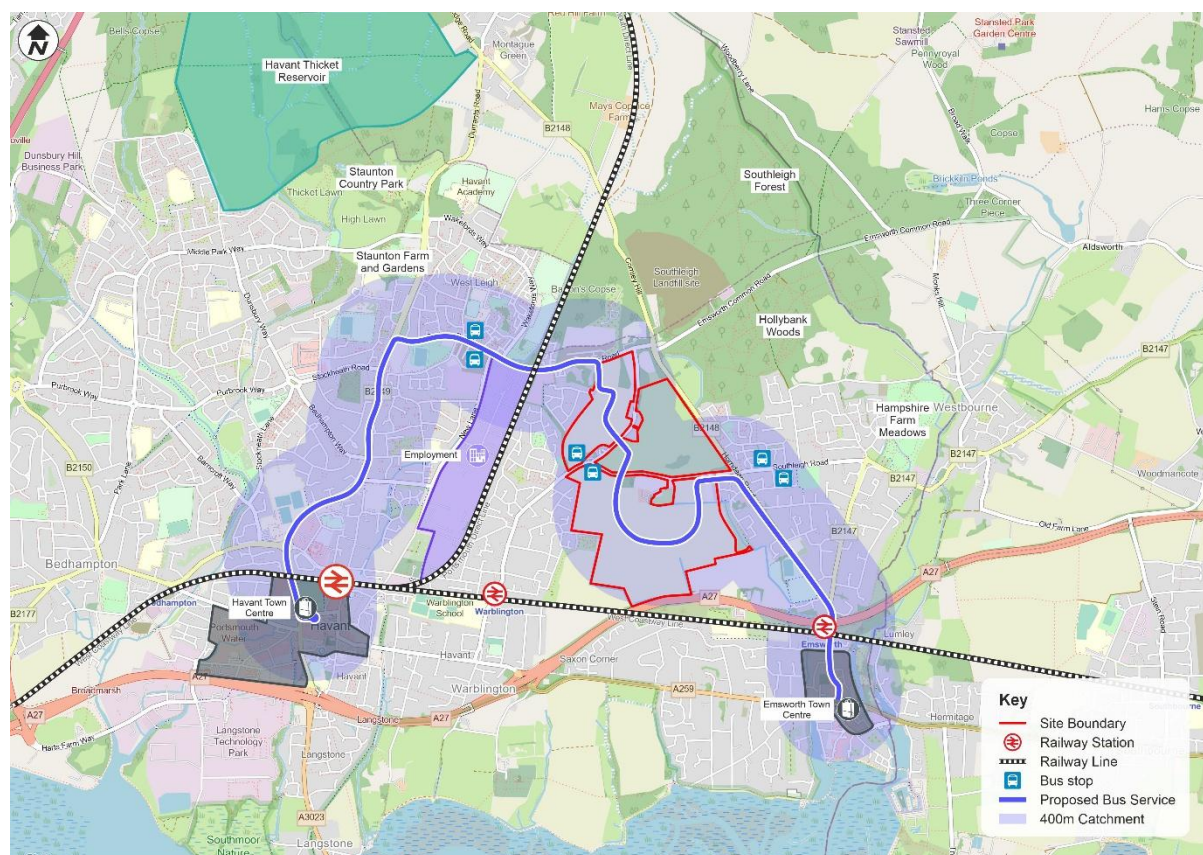
- Site Boundary:** Indicated by a red line, showing the area covered by the proposed bus service.
- Railway Station:** Marked with a red circle and cross symbol, including Havant Town Centre and Emsworth Town Centre.
- Railway Line:** Shown as a black line with cross-ticks.
- Bus stop:** Represented by a blue square with a white bus icon.
- Bus Service 27:** Indicated by a blue line.
- 400m Catchment:** Shown as a light blue shaded area surrounding the bus stops and service line.

Other notable locations and features on the map include Havant Thicket Reservoir, Staunton Country Park, Southleigh Forest, and various residential areas like Bedhampton, Warblington, and Havant. The map also shows major roads such as the A27 and A3023.

This will increase the catchment of the services by approximately 15,000 existing residents, facilitating key connections to both Havant Town Centre and Emsworth Rail Station.

This benefit in public transport connectivity would lead to a reduction in car trips that would be generated from the site, and from the local area.

Figure 5.12: New proposed bus service catchment



5.7.4 Rail Crossing

As stated previously within this chapter, the Southleigh Road Level Crossing at Warblington represents a constraint on the network which inhibits non-motorised user movements, and acts as a point of delay due to the severance effect of the rail line.

The implementation of a pedestrian bridge with wheeling ramp for cyclists at the Southleigh Road Level Crossing was previously considered but is no longer a funding priority for HBC or HCC.

5.8 Residual Impact Assessment

To understand the Residual Impact, Scenario 2 (S2) from the TA has been used to inform the traffic flows for the assessment. Scenario 2 represents a scenario where the embedded, standard, and additional mitigation measures have been implemented to reflect the sustainable development proposals.

5.8.1 Scope of Assessment

As a result of the additional mitigation considered intrinsic to the sustainable development proposals, there is a reduction in car flows across the scope of the assessment. A comparison of the Scenario 1 (Business as Usual) and Scenario 2 flows has been provided below.

Table 5.28 - BaU vs S2 Development Flows				
Link ID	Link	18 Hour AAWT		
		S1 (BaU)	S2	Difference
19	Bartons Road W	17,674	16,978	-696
23	Southleigh Road W	8,549	8,179	-370
33	Eastleigh Road	9,437	8,866	-571
34	Southleigh Road W	13,916	13,402	-514
35	Southleigh Road E	9,022	8,651	-370
38	Eastleigh Road	9,409	8,838	-571
42	Southleigh Road	12,211	11,697	-514
43	Bartons Road	18,982	18,169	-813
45	Southleigh Road	7,918	7,548	-370
46	Horndean Road	11,147	10,961	-186
52	Southleigh Road Level Crossing	13,566	13,052	-514

As a result, the reduction in car trips generated from the development under the sustainable scenario (S2), there is a reduction in scope of assessment required when Rule 1 and Rule 2 is applied. This is shown in *Table 5.29* below.

Table 5.29 - S2 Study Area		
Link ID	Link	S2
19	Bartons Road W	×
23	Southleigh Road W	✓
33	Eastleigh Road	✓
34	Southleigh Road W	×
35	Southleigh Road E	✓
38	Eastleigh Road	✓
42	Southleigh Road	✓
43	Bartons Road	✓
45	Southleigh Road	✓
46	Horndean Road	✓
52	Southleigh Road Level Crossing	✓

5.8.2 Severance

The impact that the reduction in traffic flows has as a result of the mitigation in Scenario 2 is shown in *Table 5.30* below.

Table 5.30 - Severance Significance change between BaU and S2			
Link ID	Link	BaU	S2
23	Southleigh Road W	Minor Adverse	Minor Adverse
33	Eastleigh Road	Substantial Adverse	Moderate Adverse
35	Southleigh Road E	Minor Adverse	Minor Adverse
38	Eastleigh Road	Moderate Adverse	Minor Adverse
42	Southleigh Road	Minor Adverse	Minor Adverse

43	Bartons Road	Minor Adverse	Minor Adverse
45	Southleigh Road	Minor Adverse	Minor Adverse
46	Horndean Road	Negligible	Negligible
52	Southleigh Road Level Crossing	Moderate Adverse	Negligible

The additional mitigation results in Link 33 – Eastleigh Road reducing from substantial adverse to **moderate adverse**, Link 38 – Eastleigh Road reducing from moderate adverse to **minor adverse**, and Link 52 – Southleigh Road Level Crossing reducing from moderate adverse to **negligible**. Link 33 is the only link to now exceed a minor adverse effect according to the IEMA criteria.

The Southleigh Road Level Crossing has reduced in significance because the magnitude of change at the Level Crossing has reduced from low to negligible, due to the increase in flows reducing to 26.4%. This reduction in impact brings the increase to below the 30% severance threshold, resulting in a negligible magnitude of impact and as a result, negligible significance.

The IEMA criteria for severance impact does not consider the provision of the proposed crossings. The severance on Eastleigh Road (Links 33 and 38), and Southleigh Road (Links 23, 35, 42 and 45) will be reduced as a result of the proposed crossings, facilitating safe active travel movements cross these links. The locations of which are shown in *Figure 5.5*.

The pedestrian crossings are located to improve the connection between the central and southern parcels that are bisected by Southleigh Road (Links 23 and 45), the northern and central parcels that are bisected by Eastleigh Road (Links 33 and 38) and to the wider Havant area through the crossing on Southleigh Road (Links 35 and 42).

5.8.3 Driver Delay

Table 5.31 - Driver Delay Results				
Link ID	Link	RFC/PRC		Magnitude
		AM	PM	
19	Bartons Road W	N/A	N/A	Negligible
23	Southleigh Road W	-11.3%	11.3%	High
33	Eastleigh Road	N/A	N/A	Negligible
35	Southleigh Road E	N/A	N/A	Negligible
38	Eastleigh Road	12.9%	6.4%	Low
42	Southleigh Road	N/A	N/A	Negligible
43	Bartons Road	12.9%	6.4%	Low
45	Southleigh Road	N/A	N/A	Negligible
46	Horndean Road	N/A	N/A	Negligible
52	Southleigh Road Level Crossing	N/A	N/A	Low

Please note where in the table it states N/A, this is due to the associated link not being modelled in the Transport Assessment as it was not deemed necessary.

The results show that with the additional mitigation and implementation of sustainable transport measures there is a reduction in RFC at the modelled junctions. Although there is a reduction in RFC, the junctions continue to exceed capacity and so have a High magnitude of impact.

As part of the development proposals the Horndean Road / Southleigh Road junction, will be improved to mitigate the effect of the proposed development and to improve its function and safety for pedestrians and cyclists. The mitigation involves the signalisation of all arms and the signalisation of the existing uncontrolled pedestrian crossings to Toucan crossings. The stop lines also include ASL's for cyclists. The central island of the staggered junction will be sufficiently wide for pedestrians and cycles to wait if required, and appropriate tactile paving will be provided.

The Eastleigh Road/Bartons Road junction will be improved to mitigate the effect of the proposed development and to improve its function and safety for pedestrians and cyclists. The mitigation involves the signalisation of all arms and the implementation of a 'single stage' crossing of Eastleigh Road. The Eastleigh Road approach is to be widened to accommodate two lanes of traffic on the approach.

Level Crossing

Following the proposed improvements at the Warblington Interchange junction, which would prevent queues from backing up to the Level Crossing from Emsworth Road, the AM peak southbound movements would have a reduced magnitude of impact from medium to low. This magnitude of impact would be in line with the assessment of the northbound movements where there would be additional queuing along Southleigh Road; however, the queues would not impact any other major junctions and would not cause vehicles to wait through multiple closures of the barriers.

As the impact on this receptor is low and the sensitivity is high, the residual significance of effect at the Level Crossing would be **moderate adverse**.

5.8.4 NMU Amenity

The impact on NMU Amenity continues to be **negligible** for all links in this scenario.

5.8.5 NMU Fear and Intimidation

The impact the mitigation has on the fear and intimidation assessment is shown in *Table 5.32*.

Table 5.32 - Fear and Intimidation Magnitude and Significance change between BaU and S2			
Link ID	Link	BaU	S2
Change in Magnitude			
23	Southleigh Road W	Negligible	Negligible
33	Eastleigh Road	Low Benefit	Low Benefit
35	Southleigh Road E	Negligible	Negligible
38	Eastleigh Road	Low Benefit	Low Benefit
42	Southleigh Road	Medium Adverse	Low Adverse
43	Bartons Road	Negligible	Negligible
45	Southleigh Road	Negligible	Negligible
46	Horndean Road	Negligible	Negligible
52	Southleigh Road Level Crossing	Medium Adverse	Low Adverse
Change in Significance			
23	Southleigh Road W	Negligible	Negligible
33	Eastleigh Road	Moderate Benefit	Moderate Benefit
35	Southleigh Road E	Negligible	Negligible
38	Eastleigh Road	Minor Benefit	Benefit
42	Southleigh Road	Minor Adverse	Minor Adverse

43	Bartons Road	Negligible	Negligible
45	Southleigh Road	Negligible	Negligible
46	Horndean Road	Negligible	Negligible
52	Southleigh Road Level Crossing	Moderate Adverse	Moderate Adverse

Although there is no change in significance of effect between the two scenarios, there is a reduction in the magnitude of impact on links 42 and 52 (Southleigh Road).

5.8.6 Accident and Safety

The proposals to improve the pedestrian and cycling infrastructure will help to improve safety for these users. Currently Horndean Road and Southleigh Road have a number of pedestrian and cycle accidents, coinciding where pedestrian and cycle infrastructure improvements have been proposed.

5.9 Cumulative Impact Assessment

The cumulative schemes identified have already been included in the assessment for the construction phase and the operational base as the assessment is based on 2,100 dwellings (i.e. the full allocation) and the 2038 future baseline included committed development traffic within it. Therefore, there are no additional residual cumulative effects.

5.9.1 Inter-relationship Effects

There are inter-relationships with the transport chapter as identified through the use of traffic data within the assessment. These effects are considered as part of the assessment, and the traffic flows are included within the noise and air quality modelling. There are no identified inter-relationship effects with other topics.

5.10 Summary

A comparison between the impact of the proposed development including the additional mitigation proposed and the Business-as-Usual scenario is provided in *Table 5.33* below.

Table 5.33 – Residual Impact Summary			
Link ID	BaU Impact	Mitigation Proposed	Residual Impact
Severance			
19	Minor Adverse	Active travel improvements. New bus route implementation.	Not Assessed
23	Minor Adverse	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and signalisation. 27 route improvement and new bus route implementation.	Minor Adverse
33	Substantial Adverse	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Moderate Adverse

34	Minor Adverse	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Not Assessed
35	Minor Adverse	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Minor Adverse
38	Moderate Adverse	Bartons Road/Eastleigh Road pedestrian and cycle improvements and signalisation and new bus route implementation.	Minor Adverse
42	Minor Adverse	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Minor Adverse
43	Minor Adverse	Bartons Road/Eastleigh Road pedestrian and cycle improvements and signalisation and new bus route implementation.	Minor Adverse
45	Minor Adverse	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and signalisation. 27 route improvement and new bus route implementation.	Minor Adverse
46	Negligible	Road pedestrian and cycle improvements and signalisation.	Negligible
52	Moderate Adverse	27 route improvement	Negligible
Driver Delay			
19	Negligible	Active travel improvements. New bus route implementation.	Not Assessed
23	Moderate Adverse	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and signalisation. 27 route improvement and new bus route implementation.	Moderate Adverse
33	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Negligible
34	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Not Assessed
35	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Negligible
38	Substantial Adverse	Bartons Road/Eastleigh Road pedestrian and cycle improvements and signalisation and new bus route implementation.	Minor Adverse

42	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Negligible
43	Moderate Adverse	Bartons Road/Eastleigh Road pedestrian and cycle improvements and signalisation and new bus route implementation.	Minor Adverse
45	Negligible	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and signalisation. 27 route improvement and new bus route implementation.	Negligible
46	Negligible	Road pedestrian and cycle improvements and signalisation.	Negligible
52	Substantial Adverse	27 route improvement	Moderate Adverse
NMU Amenity			
19	Negligible	Active travel improvements. New bus route implementation.	Not Assessed
23	Negligible	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and signalisation. 27 route improvement and new bus route implementation.	Negligible
33	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Negligible
34	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Not Assessed
35	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Negligible
38	Negligible	Bartons Road/Eastleigh Road pedestrian and cycle improvements and signalisation and new bus route implementation.	Negligible
42	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Negligible
43	Negligible	Bartons Road/Eastleigh Road pedestrian and cycle improvements and signalisation and new bus route implementation.	Negligible
45	Negligible	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and	Negligible

		signalisation. 27 route improvement and new bus route implementation.	
46	Negligible	Road pedestrian and cycle improvements and signalisation.	Negligible
52	Negligible	27 route improvement	Negligible
NMU Fear and Intimidation			
19	Negligible	Active travel improvements. New bus route implementation.	Not Assessed
23	Negligible	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and signalisation. 27 route improvement and new bus route implementation. Reduction in speed limit	Negligible
33	Moderate Benefit	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation. Reduction in speed limit	Moderate Benefit
34	Minor Adverse	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Not Assessed
35	Negligible	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation. Reduction in speed limit	Negligible
38	Minor Benefit	Bartons Road/Eastleigh Road pedestrian and cycle improvements and signalisation. new bus route implementation. Reduction in speed limit	Minor Benefit
42	Minor Adverse	Safe and controlled pedestrian crossings points. 27 route improvement and new bus route implementation.	Minor Adverse
43	Negligible	Active travel improvements. New bus route implementation.	Negligible
45	Negligible	Safe and controlled pedestrian crossings points. Horndean Road/Southleigh Road pedestrian and cycle improvements and signalisation. 27 route improvement and new bus route implementation. Reduction in speed limit	Negligible
46	Negligible	Road pedestrian and cycle improvements and signalisation.	Negligible
52	Moderate Adverse	27 route improvement	Moderate Adverse

The methodology used in this chapter to assess the likely significant environmental effects of the proposed development relating to traffic and transport has been developed to fulfil the appropriate regulations and guidance.

The assessment undertaken in this chapter considers the effect the proposed development would have on 'severance', 'driver delay', 'non-motorised user delay and amenity', 'fear and intimidation', and 'accidents and safety' during both the construction phase and operational phase of the proposed development on the local highway network. It considers that the environmental effects relating to traffic and transport are likely where traffic flows are predicted to increase by more than 30%, or other specifically sensitive areas where traffic flows will increase by more than 10% as a result of the proposed development.

It is forecast that construction traffic will have a negligible effect and no significant effects are likely as a result of the construction of the proposed development from a traffic and transport perspective. The implementation of a CTMP would ensure that all construction activities are controlled appropriately, and appropriate measures are enforced to mitigate the impact.

Once the proposed development is occupied, it is forecast that the proposed development would have negligible to moderate adverse and moderate beneficial effects on highway links within the study area, with embedded and additional mitigation implemented.

The proposed development will offer permanent beneficial effects to the local highway network. The delivery of new crossing points across Southleigh Road and Eastleigh Road, along with pedestrian / cycle infrastructure improvements at adjacent junctions and along key links will reduce severance, reduce non-motorised user delay, improve amenity, and reduce fear and intimidation for users. The new dedicated public transport services routing through the proposed development will reduce car dependency for the development site and subsequently provide an environmental benefit as part of the development proposals.