

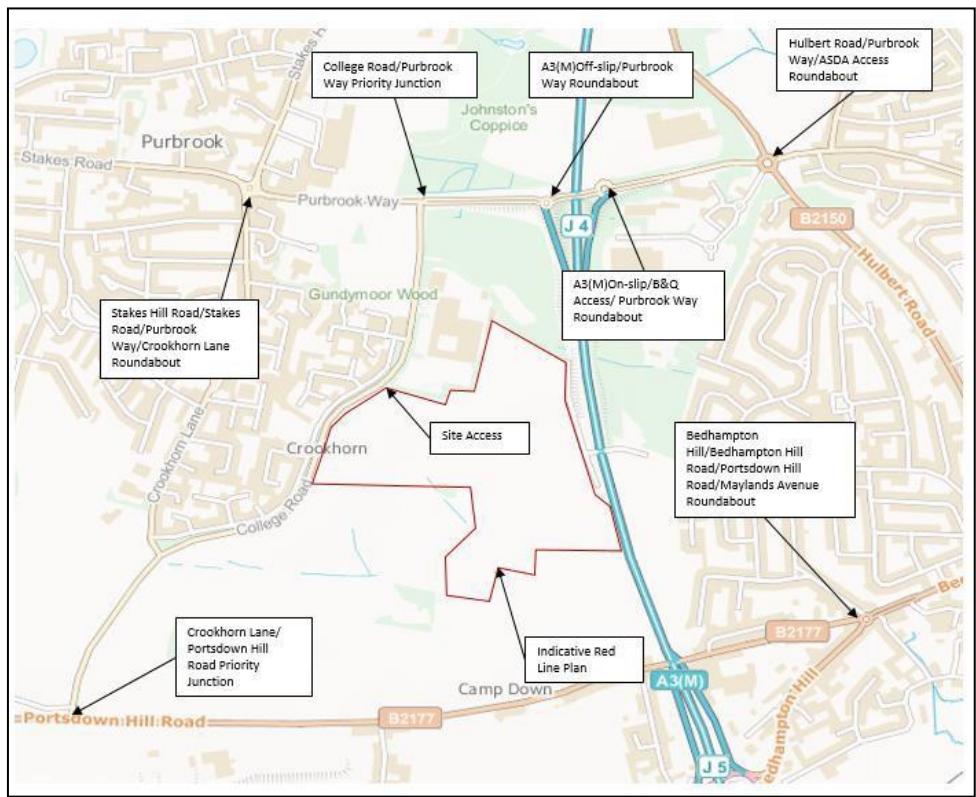


5.0 Transport and Access

5.1 Introduction

- 5.1.1 This chapter of the Environmental Statement (ES) has been produced to assess the impact of the Proposed Development at Land at Campdown in terms of changes to traffic flows and the impact of the development during both construction and once fully built out.
- 5.1.2 The geographical scope for the study area has been agreed with Hampshire County Council (HCC) and Havant Borough Council (HBC) highway officers as part of the pre-application process and covers those junctions where noticeable increases in traffic flows are predicted to result from the Proposed Development. As such, in addition to the Proposed Development’s site access, this includes the following junctions which are illustrated in Figure 5.1:
- College Road/Purbrook Way Priority Junction;
 - Stakes Hill Road/Stakes Road/Purbrook Way/Crookhorn Lane Roundabout;
 - A3(M) Off-slip/Purbrook Way Roundabout;
 - A3(M) On-slip/B&Q Access/Purbrook Way Roundabout;
 - Hulbert Road/Purbrook Way/ASDA Access Roundabout;
 - Crookhorn Lane/Portsdown Hill Road Priority Junction; and
 - Bedhampton Hill/Bedhampton Hill Road/Portsdown Hill Road/Maylands Avenue Roundabout

Figure 5.1 - Area of Junction Assessment



5.2 Methodology and Scope

Policy Background

- 5.2.1 The National Planning Policy Framework (NPPF) explains that all developments that generate significant movements should be supported by a Transport Assessment, which amongst other points should consider whether improvements can be made within the transport network and that *"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."*
- 5.2.2 In addition, the Havant Borough Council Core Strategy (2011) has been implemented to help guide the development of the borough by outlining the long-term vision and the aims and objectives. The strategy also identifies a policy specific to Transport and Access (PCS20) to which developments within the borough follow and adhere wherever possible.
- 5.2.3 More specifically, the transport related statements that are relevant to the Proposed Development include:
- Does not increase congestion and promotes better use of existing transport networks;
 - Improves accessibility to goods, services and employment and promotes equality in the transport system;
 - Provides transport management measures to ensure the safe and efficient operation of the strategic and local road network; and
 - Improves highway, cycling and pedestrian links.
- 5.2.4 In order to meet the policy requirements, Paul Basham Associates have produced a comprehensive Transport Assessment (TA) and Travel Plan (TP), attached as Volume 2, Technical Appendices 5.1 and 5.2. The TA that has been completed in line with each of the policies set out above, by systematically considering the impact upon each junction within the study area’s capacity and safety for both motorised and non-motorised users. The TA then identifies measures to mitigate against the anticipated transport impacts of the Proposed Development where required and incorporates the need for increased accessibility to the Site via sustainable transport modes. This includes consideration of improved pedestrian and cycle links, and the potential for an improved local bus service with additional stops along College Road. The TP sets out the measures that will be introduced to encourage travel via means other than single car occupancy journeys, such as bus vouchers for residents, subsidised by the developer.
- Scoping Assessment Stage**
- 5.2.5 The scope of the highways input required for the Proposed Development was discussed at length with both HBC and HCC highway officers. Pre-application discussions in 2016 agreed certain principles of development including vehicular trip rates, traffic distribution and scope of capacity modelling required.
- 5.2.6 A further pre-application enquiry was undertaken in February 2018 for which a Pre-application Scoping Note (PSN) was prepared and submitted to HBC and HCC beforehand. The PSN sought to consider the scope of the subsequent TA and sought to identify the principles and strategy required to assess the highways impact of the Proposed Development, by considering the local road conditions and accident record, proposed trip rates for each land use type and details of trip assignment, the scope of the junction assessment work and initial access and preliminary junction designs for each junction requiring mitigation works.



- 5.2.7 HCC provided a response on 12th June 2018 commenting on various aspects of the meeting and PSN. Additional work was requested with regards to the suitability of the existing pedestrian/cycle infrastructure in the vicinity of the site and more detailed percentage impacts of the Proposed Development on some of the local junctions.
- 5.2.8 The scope of junction assessment was considered suitable for the scale of the development, pending the further information requested as described above. Further alterations to junction models and design works were requested and have been taken into account with the Transport Assessment.
- 5.2.9 In addition to pre-application discussions, comments received at both a Development Consultation Forum (DCF) and Public Consultation (PC) with regards to the layout and areas requiring improvement have been taken into consideration throughout the TA and TP reports.

Assessment Methodology

- 5.2.10 The assessment of the environmental impact of the traffic associated with the Proposed Development has been informed by both the Institute of Environmental Assessment (IEA)'s 'Guidelines for the Environmental Assessment of Road Traffic (Guidance Note No. 1)' and the Design Manual for Roads and Bridges (DMRB) Volume 13 – Environmental Assessment documents.
- 5.2.11 The following assessment is in two phases, initially considering construction traffic and subsequently development traffic, as per best practice as prescribed by the IEA. However, given the large nature of the Site and associated phasing plan, there will be some overlap between the two phases where some elements will be fully occupied whilst others are still being constructed. Where appropriate, the combined impacts of the two phases have been considered.
- 5.2.12 The IEA guidelines suggest two rules of thumb for defining the geographical extent of the assessment, which are as follows:
- Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
 - Include any other specifically sensitive areas where traffic flows have increased by 10% or more.
- 5.2.13 Paragraph 3.2 of the IEA guidelines states that sensitive locations include: *"accident blackspots, conservation areas, hospitals, links with high pedestrian flows etc. Normally it would not be appropriate to consider links where traffic flows have changed by less than 10% unless there are significant changes in the composition of traffic, e.g. a large increase in the number of heavy goods vehicles."* A more comprehensive list of the sensitive location types is provided in Table 5.1, with specific instances of each type potentially affected by the Proposed Development identified subsequently within section 5.4 'Baseline Environment.'
- 5.2.14 The geographical scope of assessment previously set out in paragraph 5.1.2 accords with these principles and is thus an appropriate extent for this EIA. To quantify the impact of the Proposed Development, receptor sensitivity and the magnitude of the effect are compared to determine the overall significance.

Receptor Sensitivity

Table 5.1 - Receptors and Their Sensitivity

Receptor Sensitivity	Receptor Type
Very High	Schools, colleges, playgrounds, accident blackspots, retirement homes, urban/residential roads without footways that are used by pedestrians
High	Congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, un-segregated cycleways, community centres, parks, recreation facilities.
Medium	Places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision
Low	Any with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.

Effect Magnitude

- 5.2.15 The IEA guidelines identify a number of environmental impacts that could result from changes to traffic flows. A number of these have been scoped out from the EIA whilst some are dealt with in other chapters and are not included here. Those that are assessed within this chapter include Severance, Driver Delay, Pedestrian Delay, Pedestrian Amenity, Fear and Intimidation, Accidents and Safety and Hazardous Loads. For each impact, an explanation of the quantification of the effect's magnitude is provided.
- 5.2.16 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic route. The assessment of this includes consideration of local conditions, including the presence of pedestrian routes to local facilities and pedestrian crossing points. The IEA guidelines suggest that a 30%, 60% and 90% increase in traffic flow will have a slight, moderate and substantial change in severance respectively.
- 5.2.17 Driver Delay can occur for non-development traffic at the site entrances where there will be additional turning movements, on the highways adjacent to the site where there may be additional flow resulting from the Proposed Development and at key junctions on the local highway network. Driver Delay is quantified through the use of junction capacity modelling software such as ARCADY for roundabouts, PICADY for priority junctions and LinSig for traffic signal-controlled junctions.
- 5.2.18 Pedestrian Delay could potentially increase as a result of the Proposed Development, given increases to both traffic levels and pedestrian numbers. The IEA guidelines recommend that the assessor should use their judgement to determine whether there will be a significant impact upon pedestrian delay.
- 5.2.19 Pedestrian Amenity is broadly defined as the relative pleasantness of a journey, and is affected by traffic flow, traffic composition, pavement width and separation from traffic. An indicative threshold for alterations to pedestrian amenity are where traffic flows are halved or doubled.
- 5.2.20 Fear and Intimidation could alter as a result of changes to traffic flows. This is dependent upon the volume of traffic, HGV percentage and the proximity of the traffic to pedestrians. The IEA guidelines

suggest thresholds based on 18-hour daily flow, 18-hour HGV flows and vehicle speeds, as illustrated in Table 5.2.

Table 5.2 - Fear and Intimidation Thresholds

Degree of Hazard	Average traffic flow over 18-hour day (vehicle/hour)	Total 18-hour HGV flow	Average speed over 18-hour day (mph)
Extreme	1800+	3000+	20+
Great	1200-1800	2000-3000	15-20
Moderate	600-1200	1000-2000	10-15

5.2.21 There is potential for the additional traffic and mitigation works resulting from the Proposed Development to affect the Safety and Accident Record for the local road network, in the context of the existing accident record.

5.2.22 The IEA guidelines recognise that most development will not result in increases in the number of movements of hazardous and or dangerous loads. 'The Carriage of Dangerous Goods in the UK,' sets out materials which can represent a hazard when being transport and provides regulation in relation to this. The Proposed Development has been evaluated to assess the likelihood of this happening.

Effect Significance

5.2.23 The magnitude of effect for each environmental impact will be based on the following definitions, with judgement based on the IEA guidelines and the expertise of the assessor. An impact's magnitude will be increased if it is likely to affect any local high sensitivity receptors, as listed in paragraph 5.4.16. Moderate and Substantial Impacts are deemed to be significant:

- Substantial Impact – a large change compared to natural variations in background level
- Moderate Impact – change which is noticeable and possibly a breach of limits/standards
- Slight Impact – change which when compared to background levels is only just noticeable
- Negligible Impact – minor change to baseline environment that is imperceptible
- No Impact – no change to baseline environment

Limitations of the Assessment

5.2.24 The assessment presented here accompanies a hybrid application given that Phase 1 is for a full application and the remainder of the Site is submitted as an outline application. Although it is intended to agree access at this stage, other elements of the proposed masterplan and off-site mitigation works could be subject to minor modification after permission is granted. This ES is therefore based on the proposed design at the time of writing.

5.2.25 The environmental effects discussed within this ES and the mitigation works described will be the minimum required to mitigate against the impact of the Proposed Development.

5.3 Baseline Environment

Existing baseline

- 5.3.1 The Site is well located with regards to the local road network and public facilities/services. A Non-Motorised User (NMU) Audit has been undertaken to establish the pedestrian and cycle network in the vicinity of the Site, considering the locations of local facilities. The Chartered Institution of Highways & Transportation (CIHT) document "Guidelines for Providing for Journeys on Foot (2000)" contains guidance on acceptable walking distance for pedestrians to local facilities, with a 'Preferred Maximum' distance of 2km. A map of the local cycle network is shown as Figure 5.2, and an accessibility map demonstrating the local facilities is included as Figure 5.3. New residents will therefore have ample opportunity to travel via sustainable transport modes, discussed further in the TA and TP.
- 5.3.2 A summary of the key features of the existing site access point and important junctions on the local road network is presented here, whilst a more detailed assessment is provided in the TA. The Site access will be provided via a new signalised junction in the north western corner of the Site. Junction visibility has been assessed as part of the TA and is considered to be acceptable. A pedestrian phase will be provided to ensure a continuous and safe route is maintained along the eastern edge of College Road.
- 5.3.3 College Road/ Purbrook Way is a priority junction, located approximately 500m north of the development site, which will become signalised as part of the West of Waterlooville development scheme (*application reference: 10/02862/OUT*). In addition, the Purbrook Way arms will become dual carriageway in both directions.
- 5.3.4 The 'Stakes Hill Road' roundabout is a four-arm roundabout, c.900m north west of the Site, and links Purbrook Way to the east to Stakes Road in the west. Stakes Hill Road is the northern arm on the roundabout and provides direct access to Crookhorn College and Waterlooville Town Centre. The southern arm (Crookhorn Lane) provides access to local facilities and amenities including a pharmacy and convenience store. As part of the development at West of Waterlooville, this junction is to become signalised.
- 5.3.5 The Junction 4 on-slip and off-slip roundabouts located approximately 850m northeast of the Site, form dumbbell roundabouts linking Bedhampton and Purbrook. The on-slip provides southbound access on to the A3(M) to Portsmouth, whilst the off-slip provides access to Purbrook and Waterlooville. Crossing points, supported by dropped kerbs, are situated on the roundabouts. In addition, footways c.3m wide flank the carriageway as it passes over the A3(M).
- 5.3.6 Situated approximately 1.6km north east of the site, the ASDA roundabout provides access to an ASDA superstore, employment space and a commuter route through to Bedhampton and Havant. The roundabout has recently been upgraded to a five-arm, signalised roundabout with each arm comprising a minimum of two entry lanes. Pedestrian crossing points are provided and are complete with tactile paving and dropped kerbs.
- 5.3.7 Crookhorn Lane/ Portsdown Hill Road is a priority junction located approximately 1.2km south of the Site access. Crookhorn Lane is approximately 7m in width, with a 2m wide footway flanking both sides of the carriageway. A pedestrian refuge island is situated at the junction and is supported by tactile paving and dropped kerbs, facilitating the movements of all non-motorised users in this area. A right-turn lane is provided on Portsdown Hill Road for those waiting to travel onto Crookhorn Lane.
- 5.3.8 Bedhampton Hill roundabout is a four-arm roundabout located approximately 3km south east of the site access and provides a direct link between Portsdown Hill and Bedhampton. Bedhampton Hill is the southern arm on the roundabout and provides access to the A27/A3(M) interchange junction. The northern arm provides access to residential dwellings. Each entry arm is one lane wide, except Bedhampton Road which is provided as two.



Figure 5.2 - Local Cycle Network

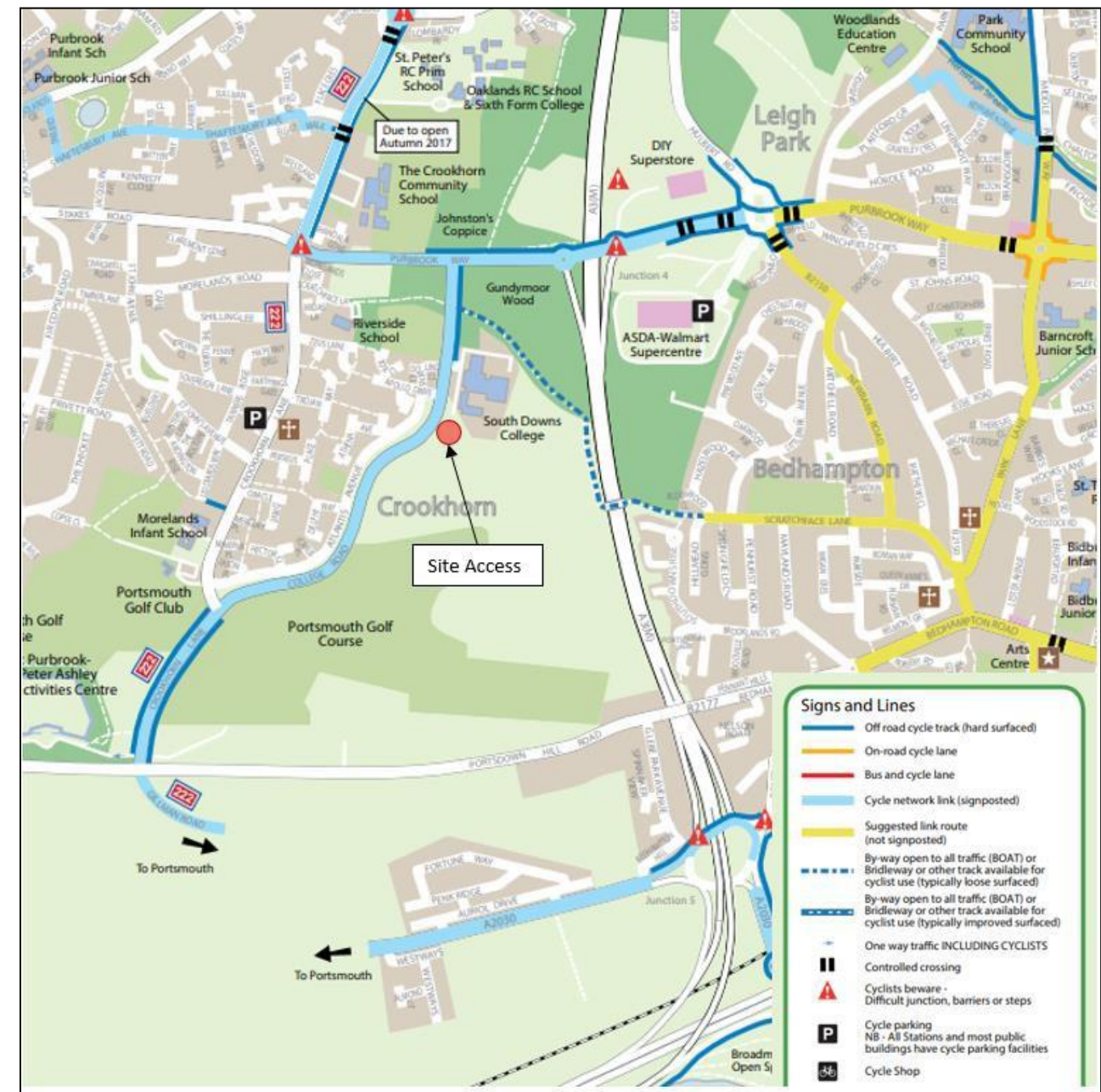
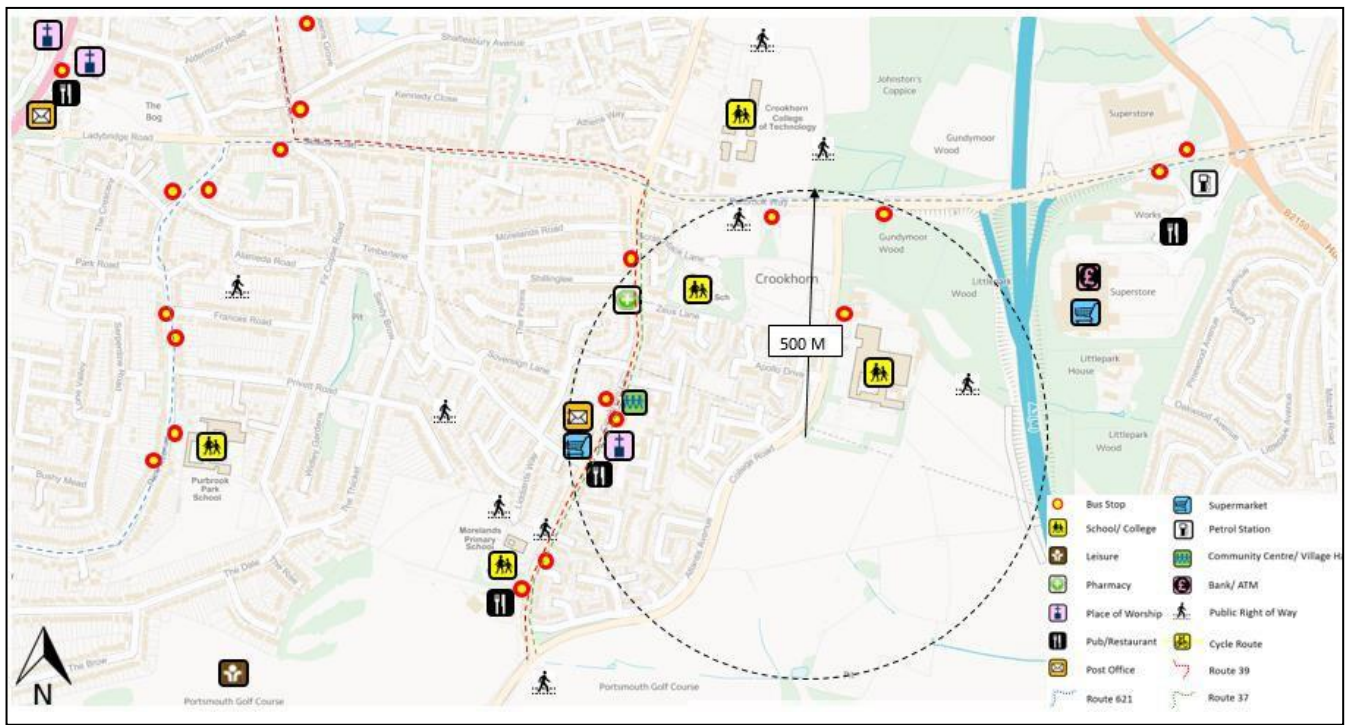


Figure 5.3 - Accessibility Map



- 5.3.9 In order to establish the baseline traffic flows on the local road network, an Automated Traffic Count (ATC) survey was undertaken on College Road between 11th – 19th October 2016. In addition, Manual Classified Count (MCC) surveys were undertaken on 13th October 2016 between 0700 – 1000 and 1600 – 1900, recording the turning counts of each movement through the following junctions;
- Crookhorn Lane/Portsmouth Hill Road;
 - Bedhampton Hill/Portsmouth Hill Road/Bedhampton Hill Road;
 - College Road/Purbrook Way;
 - Stakes Hill Road/Stakes Hill Road/Purbrook Way/Crookhorn Lane;
 - A3(M) Off slip/Purbrook Way; and
 - A3(M) On slip/ Purbrook Way/B&Q.
- 5.3.10 A LinSig model has been obtained from HCC to ascertain the baseline traffic conditions as the Hulbert Road/Purbrook Way/ASDA roundabout.
- 5.3.11 A baseline year of 2018 has been used. The various traffic surveys were grown up from their respective years using factors derived from TEMPRO for the Havant area, as detailed within the TA.
- 5.3.12 Accurate plans of the existing junctions were obtained via topographical surveys.
- 5.3.13 Extensive five-year (2012-2017) Personal Injury Accident (PIA) records were obtained from Hampshire Constabulary for the area of the local road network surrounding the Site, in order to establish the safety of the existing conditions. The full data received, including a map of the accidents, is included within the TA, although no accident blackspots were revealed.



- 5.3.14 By combining the existing physical arrangements of the junctions and links to be assessed with the surveyed traffic flows, it was possible to establish baseline conditions against which the impact of the Proposed Development could be assessed.
- 5.3.15 In addition to the baseline conditions it was confirmed through the pre-application process that no additional Committed Developments are required to be taken into account for the traffic flows on the local road network.
- 5.3.16 Through the course of the baseline surveys undertaken, various site visits and desk-based research, a number of receptors of the sensitivity types identified in Table 5.1 are located within the geographical scope of the Environmental Impact Assessment. The following receptors and their sensitivity have been considered when assessing the magnitude of any environmental impacts:
- **Very High:** Moreland's Primary School, Havant and South Downs College, Crookhorn College, Oaklands Catholic School;
 - **High:** College Road/Purbrook Way junction, Stakes Hill Road/Stakes Hill/Purbrook Way junction, A3(M) roundabouts, ASDA/Hulbert Road junction, Crookhorn Lane/Portsdown Hill Road junction, Bedhampton Hill Road/Portsdown Hill Road roundabout, Crookhorn Village facilities, Crookhorn Lane surgery, Phoenix Community Centre; and,
 - **Medium:** Portsmouth Golf Club, Church of the Good Shepherd.

Future baseline

- 5.3.17 In the interest of providing a robust assessment, a future year of 2029 has been utilised. This will allow the impacts of the Proposed Development to be assessed when it is fully built out. In order to generate a baseline 2029 scenario, growth factors derived from TEMPRO have been applied to the baseline 2016 traffic flows, using with and without the development scenarios. This is a standard approach and has been agreed as appropriate with HCC.

5.4 Mitigation within the Submitted Design

- 5.4.1 The design of the Proposed Development has been informed by the likely trip generation and traffic impacts, and the masterplan therefore incorporates elements of mitigation against the associated traffic impact.

Construction

- 5.4.2 The proximity of the Site to the Strategic Road Network (SRN) is such that HGV movements associated with the Construction phase of the Proposed Development will not be required to travel through residential areas. A road signage strategy will be devised to ensure that all construction traffic follows the prescribed route from the A3(M) Junction 4, along Purbrook Way and southbound along College Road to the Site. The phasing plan is such that construction vehicles will only ever enter the Site through the one point of vehicular access onto College Road.
- 5.4.3 Construction traffic will be managed to minimise impact upon the network AM and PM traffic peaks, and deliveries staggered so as to avoid obstruction of the public highway. These details will form part of a Construction Traffic Management Plan (CTMP) which is to be conditioned should the scheme be given approval.

Operation

- 5.4.4 The Proposed Development includes a small percentage of land uses that generally generate a high number of trips, such as public open space. By providing these on-site, the need for residents to travel

off-site (and therefore onto the existing highway) is reduced. This also provides facilities for existing residents, who will also benefit from improved pedestrian/cycle access to the Site.

- 5.4.5 As the Proposed Development is anticipated to generate a significant volume of pedestrian movements, the existing pedestrian infrastructure has been assessed. The Proposed Development would implement a new crossing point supported by dropped kerbs and tactile paving, as well as bus provision such as high-quality bus shelters as part of the S278 measures package. The new facility would be located approximately 220m south of the vehicular Site access, therefore reducing the walking distances between the southern section of the site and the amenities located in Crookhorn Village.
- 5.4.6 Whilst the operation of College Road will be affected through the addition of the development and its associated traffic, the impact of the development will be mitigated against by providing a new signalised junction. The design of the access arrangements to the Site itself have taken into consideration delay to motorists using the existing roads, by modelling the proposed arrangements in junction capacity software.
- 5.4.7 Given the traffic volumes associated with the Proposed Development, a number of junction improvement designs have been identified and suggested to HBC, HCC and PCC where appropriate to improve capacity, operation and safety.
- 5.4.8 The College Road/Purbrook Way junction will be improved and become signalised as part of the Berewood (West of Waterloo) development, however further mitigation works are required as part of this scheme. The additional works would likely involve the addition of a second lane on the College Road approach arm for approximately 50m. The addition of this arm would make the capacity on College Road significantly better and enable two lanes to travel eastbound onto the dual carriageway.
- 5.4.9 The Stakes Hill Road roundabout is also to become signalised as part of the Berewood/West of Waterloo development. As the roundabout is to still operate over capacity further improvements have been explored and includes revising the cycle length from 90 seconds to 120 seconds.
- 5.4.10 The A3(M) roundabouts operate over capacity in the baseline scenarios and therefore mitigation measures have been explored to improve the capacity. These improvements are summarised below;



Junction 1: A3(M) Off-slip

- Increasing the entry width of A3(M) off-slip from 7.7m to 8.83m;
- Increasing the effective flare length of A3(M) off-slip from 8m to 24m;
- Reducing the entry width from 34m to 30m;
- Increasing the entry width of Purbrook Way (EB) from 6.3m to 8m; and
- Increasing the effective flare length of Purbrook Way (EB) from 2.5m to 19m;

Junction 2: A3(M) On-slip

- Increasing the entry width of Purbrook Way (westbound) from 7m to 8.83m;
- Increasing the effective flare length of Purbrook Way (westbound) from 10m to 13m;
- Increasing the entry width of Purbrook Way (eastbound) from 7m to 8m;
- Increasing the effective flare length of Purbrook Way (eastbound) from 0m to 18m;
- Increasing the entry width of the B&Q access from 3.7m to 5.9m; and
- Increasing the effective flare length of the B&Q access from 2m to 10m

- 5.4.11 The Crookhorn Lane/Portsmouth Hill Road junction to the south of the site is currently provided as a priority junction. Improvement works to increase the capacity and operation of this junction have been explored and include widening the two Crookhorn Lane arms and signalling the junction. Portsmouth City Council (PCC) highway officers also requested the suitability of a roundabout to be implemented however, given land constraints, this option has been dismissed (as discussed in more detail in the TA).

5.5 Likely Significant Environmental Effects of the Scheme

- 5.5.1 This section identifies the potential environmental impacts of the Proposed Development, by assessing them against the baseline conditions, which include traffic generated by the committed developments.

Construction Phase Effects

- 5.5.2 The construction period for the Site as a whole will be from 2020 until 2029. It is proposed that the first phase of construction will include a pocket of residential development in the north west corner of the Site (Phase 1). The sole vehicular access will also be constructed at this stage onto College Road.
- 5.5.3 A worst-case scenario has been used in terms of construction traffic, with up to 90 HGV movements per day during the peak construction period, assumed to be 2020 when 130 dwellings will be in construction. It should be noted that construction staff will commence work at 08:00 and therefore be travelling to the Site outside of the network morning peak hour.
- 5.5.4 The above figure of 90 HGV movements per day represents a worst-case estimate, and the actual number of HGV movements per day will vary depending upon the construction phase and the particular activities taking place on site (outlined in Chapter 3).
- 5.5.5 IEA Guidelines set out that highway links should be assessed where traffic flows have increased by more than 30% or in sensitive areas by at least 10%. Construction traffic would be routed via the A3(M) Junction 4 and then the short distance to the Site on the local road network via Purbrook Way and College Road. This would impact on the Havant and South Downs College which was identified as a very high sensitive receptor. The predicted increases in flows do not exceed the above thresholds and as such

the construction period of the Proposed Development would have **negligible adverse** impacts in terms of severance, pedestrian delay/amenity, fear/intimidation, accidents/safety and carriage of hazardous loads.

- 5.5.6 In terms of driver delay, the construction period will be ongoing when the first residential units are occupied. The combination of the construction traffic with that generated by the first phase of dwellings has the potential for a **slight adverse** impact in terms of driver delay.

Operational Phase Effects

- 5.5.7 In order to quantify the operational phase effects of the Proposed Development, trip rates were agreed with HCC for each proposed land use. Chapter 6 of the TA sets out this process in further detail, with the total external trip generation for the Site during the network peak periods as a whole summarised in Table 5.3.

Table 5.3 - Total Proposed Development External Trip Generation

TRICS	AM Peak (0800-0900)		PM Peak (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Trip Rates per Dwelling	0.149	0.385	0.371	0.218
780 Dwellings Trip Generation	116	300	289	170

- 5.5.8 The PSN and TA set out trip distributions for the Proposed Development traffic, agreed with HCC and HBC officers. External trips were distributed across the local road network using 2011 Journey to Work Census data for the Havant 011 ward. It was then possible to estimate the % increase in traffic through junctions and links within the study area, as illustrated in Figure 5.4. In accordance with the IEA guidelines, the following area of the local road network needs to be assessed as it is likely to experience an increase in traffic of 30% or more:

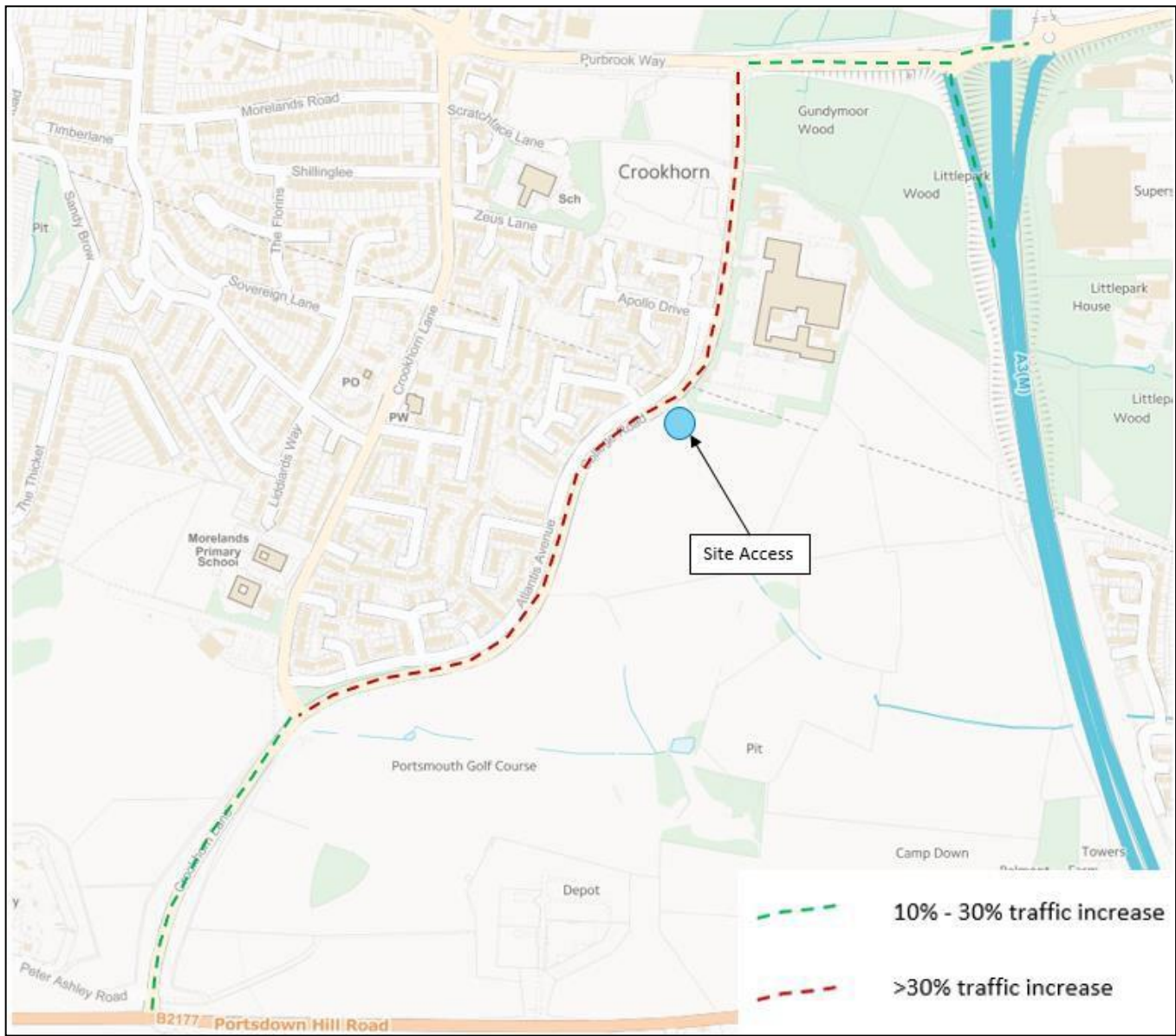
- College Road

- 5.5.9 In addition, the following links will experience between a 10% and 30% increase in traffic:

- Crookhorn Lane – from the junction with College Road to Portsmouth Hill Road;
- Purbrook Way (WB) – from A3(M) off-slip to junction with College Road;
- Purbrook Way (EB) – from College Road to junction with A3(M) Off-slip;
- A3(M) Off-slip;
- Purbrook Way (EB) – from A3(M) off-slip to A3(M) on-slip.



Figure 5.4 - Traffic % Increases (IEA Thresholds)



- 5.5.10 For robustness, all of the above junctions have been assessed in terms of the Proposed Development’s environmental impact during the operational phase, rather than only those that meet the sensitivity criteria.
- 5.5.11 The IEA guidelines refer to severance as “*the perceived division that can occur within a community when it becomes separated by a major traffic artery,*” and that 30, 60 & 90% increases in traffic flow will have a slight, moderate and substantial change in severance respectively, although pedestrian crossing facilities should be taken into account. Purely from a numbers perspective, this would suggest there will be a **substantial adverse** impact upon College Road, with an average >90% increase in two-way traffic. However, given the existing nature of the local area (lack of sensitive receptors) and the carriageway alteration works proposed at this location (including pedestrian crossing options) the impact of the

proposed scheme is such that the overall level of change to severance is considered to be **moderate beneficial**.

- 5.5.12 Chapter 8 of the TA (Appendix 5.1) assesses the detailed traffic impacts of the fully built out Proposed Development on the local road network, comparing a ‘baseline 2029’ scenario to a ‘with development baseline 2029’ scenario, identifying improvements where necessary to mitigate against the impact of the Proposed Development. The impact in terms of traffic delay on each of the six areas identified in paragraphs 5.6.8-5.6.9 as worthy of assessment will be dealt with in turn.
- 5.5.13 College Road is demonstrated as operating within capacity in both the 2029 baseline and 2029 with development scenarios, even with the introduction of a new signalised junction and a third arm provided for access into the site. Whilst the Proposed Development will result in substantial adverse impact on traffic flows along this section of the carriageway, the junction will still operate well within capacity with vehicles queues of less than 13 PCUs and delays of approximately 30 seconds. The introduction of a signalised junction here would therefore have a **slight adverse** impact for all cars along College Road, with regards to driver delay but given the phasing of the lights and pedestrian provision provided at the junction, on balance the proposals at the junction will have a net **moderate beneficial** impact (particularly given the location of the junction in relation to the very high sensitivity receptor of the College).
- 5.5.14 The Crookhorn Lane/Portsdown Hill Road is significantly over capacity in the 2029 baseline scenario on the Crookhorn Lane arm with a queue of 134 vehicles in the AM peak. The addition of the Proposed Development traffic does worsen this but modelling of an indicative junction improvement scheme shows that the queue will be reduced to 15 vehicles. Given that this is an existing problem, it is proposed a transport contribution to mitigate any impact as a result of this Proposed Development could be made to HCC to implement this. There will therefore be a **significant beneficial** impact in terms of reducing driver delay here.
- 5.5.15 The A3(M) roundabouts are demonstrated to be operating over capacity with queues along the Purbrook Way (EB), A3(M) off-slip and Purbrook Way (Eastbound) arms of 120 vehicles, 16 vehicles and 22 vehicles respectively. Whilst the B&Q access is also operating significantly over capacity in the 2029 baseline scenario with queues of 16 vehicles, the Proposed Development will not place any traffic through this arm of the junction. Improvements to arms on the junctions have been identified which will help to increase the capacity and subsequent reduction in queues. The improvements would therefore result in queues along the Purbrook Way (EB), A3(M) off-slip and Purbrook Way (Eastbound) arms of 11 vehicles, 6 vehicles and 16 vehicles respectively. There is therefore a **significant beneficial** impact on driver delay at this junction.
- 5.5.16 Pedestrian Delay can result where changes in the volume, composition or speed of traffic may affect the ability of people to crossroads. The Proposed Development will result in an increase in both pedestrian and vehicle trips, mitigated against by the introduction of new/improved pedestrian crossing facilities. The IEA guidelines suggest the assessor should use their judgement to determine the impact upon pedestrian delay. Each junction of the local road network to be assessed will be dealt with in turn.
- 5.5.17 Pedestrian delay around the College Road/site access will be impacted upon in a **slight beneficial** manner. Whilst the existing continuous pedestrian route along the eastern edge of College Road will be disrupted with the implementation of a new junction arm, improved pedestrian infrastructure will be provided with an individual phase of junction lighting, dropped kerbs, tactile paving and pedestrian refuge islands. Therefore, although there may be longer pedestrian delays the infrastructure and safety around the junction will be significantly improved. The impact is considered **slight**, however could potentially be classified as **moderate** given the location of the site to the ‘very high’ receptor of Havant and South Downs College which is likely to generate a substantial amount of pedestrian activity.
- 5.5.18 Pedestrian movements to the south of the Site, in particular along Portsdown Hill Road are likely to be relatively low considering that there are no real amenities and facilities in the area. There is however existing pedestrian and cycle infrastructure along Portsdown Hill Road and Crookhorn Lane that would be



tied into as part of any improvements in this location, thus providing a **slight beneficial** impact upon pedestrian delay.

- 5.5.19 Pedestrian movements to the north of the site are likely to be relatively high given that the closest secondary school is located in this direction. The proposed improvements at the College Road/Purbrook Way junction as part of the West of Waterloo development will provide improved pedestrian infrastructure with staggered crossing points and 'walk with' signal phasing. Therefore, the pedestrian delay at this junction would be **slight adverse**, but with the proposed improvements is likely to become a **slight beneficial** impact.
- 5.5.20 Very few pedestrian trips are expected to be associated with the A3(M) roundabouts although there will be an increase in two-way traffic around the junction itself associated with the development traffic. There may therefore be a **slight adverse** impact upon pedestrian delay across this part of the network, where the existing situation will be maintained.
- 5.5.21 The IEA guidelines suggest a tentative threshold for changes in pedestrian amenity where traffic flows are halved or doubled. The only location where this will come close to occurring is at the College Road junction. However, given the raft of pedestrian improvements proposed and detailed previously, it is considered there is a **slight beneficial** impact in terms of pedestrian amenity at this location.
- 5.5.22 Fear and Intimidation can result from increased traffic, HGV% mix and proximity to people, particularly where there are inadequate pedestrian facilities. The IEA guidelines suggest thresholds based on 18-hour daily flow/hour, 18-hour HGV flow and vehicle speeds. All of the assessed links, except the Purbrook Way (EB) arm show no greater degree of hazard category than *moderate*, as illustrated in Table 5.4. There is therefore a **slight beneficial impact**, considering the improved pedestrian facilities being proposed and the existing situation.
- 5.5.23 A review of the Personal Injury Accident record for the local road network showed that the accident record was not unusual for the highway network. The Proposed Development is therefore only expected to have a **slight adverse** impact upon accidents and safety, by virtue of increased traffic and pedestrian levels only, and not as a result of any proposed design.
- 5.5.24 There will be no hazardous loads associated with the proposed development, and therefore the impact of the Proposed Development in this respect will be **negligible**.

Table 5.4 - Fear And Intimidation 18-Hour Flows/Hour & Total 18-Hour HGV Flows 2025 + Development

Junction	Average traffic flow over 18-hour day (vehicle/hour)	Fear and Intimidation Hazard Category	Total 18-hour HGV flow	Fear and Intimidation Hazard Category
College Road Northbound	210	Less than Moderate	254	Less than Moderate
College Road Southbound	173	Less than Moderate	146	Less than Moderate
Crookhorn Lane Southbound	310	Less than Moderate	335	Less than Moderate

Purbrook Way Westbound	883	Moderate	620	Less than Moderate
Purbrook Way Eastbound	865	Moderate	950	Less than Moderate
A3(M) Off-slip	787	Moderate	241	Less than Moderate
Purbrook Way (EB)	1,247	Great	1,235	Moderate

5.6 Additional Mitigation, Compensation and Enhancement Measures

- 5.6.1 The greatest adverse impact identified to result from the Proposed Development is of slight magnitude, in either the Construction Phase or the Operational Phase. This is not considered to represent a significant impact and thus no additional measures are required over and above those already included within the designed scheme.

5.7 Assessment Summary and Likely Significant Residual Environmental Effects

Construction Phase

- 5.7.1 Construction activities would be managed to minimise impacts, and hence mitigation of these effects is an inherent part of the planning application. Any residual effects would therefore be negligible, adverse and temporary.

Operational Phase

- 5.7.2 The Proposed Development has inherent mitigation against Severance in the design, chiefly through a raft of pedestrian environment improvements and modifications on College Road and Scratchface Lane, designed to emphasise the links from the Site to the facilities in the local area. This will help to minimise the environmental impact upon sensitive receptors potentially affected. In addition, the provision of excellent walking and cycling routes through the masterplan will encourage existing residents to use the on-site facilities. The residual effects in relation to severance would therefore be **slight**, beneficial and permanent in nature.
- 5.7.3 As detailed extensively within the TA and outlined above, the designs of the access points to the Site have taken into consideration impacts upon drivers, seeking to minimise delay where possible. A number of off-site schemes have also been considered, particularly where sensitive receptors were identified nearby.
- 5.7.4 Pedestrian Delay and Amenity will not be significantly impacted upon. The enhancement of pedestrian facilities around the Site will likely result in a **slight** beneficial effect upon pedestrian amenity, although pedestrian delay will be impacted upon in a **slight** adverse manner due to the increase in traffic levels resulting from the Proposed Development.
- 5.7.5 Impact upon Fear and Intimidation will be **slight** beneficial, given the improvements to pedestrian facilities outlined above, and the fact that traffic levels (except the Purbrook Way (EB) arm) are within the 'moderate' category in the IEA guidelines. Although the Purbrook Way (EB) arm is within the 'great' category, pedestrian movements in this area are anticipated to be low.
- 5.7.6 All proposed highway works to be delivered by the development will have been assessed by an independent Road Safety Auditor (RSA) to ensure that no issues are found with the proposals. However,



the Proposed Development will have a **slight** adverse impact upon road safety, purely in terms of increased traffic and pedestrian levels.

5.7.7 There will be a **negligible** impact in terms of increases to hazardous loads.

Climate change

Effects on Climate

5.7.8 The proposed improvements along College Road would likely have an adverse effect on emissions and climate change due to vehicles stop/starting for the junction as opposed to the existing free flow along College Road.

5.7.9 The rest of the improvements would result in a reduction in congestion, reduced idling and encourage a freer flow of traffic, thus contributing to an overall benefit in regard to Greenhouse Gas emissions.

**Table 5.5 Assessment Summary and Residual Environmental Effects (Traffic and Transport)**

Summary description of the identified impact	Sensitivity of Receptor	Impact Magnitude	Significance and Nature of Effect	Additional Mitigation	Residual Impact Magnitude	Residual Significance and Nature of Effect	Confidence Level
Construction							
Severance	High	Negligible Adverse	Temporary	-	Negligible Adverse	Temporary	High
Driver Delay	Very High	Negligible Adverse - Slight Adverse	Temporary	-	Negligible Adverse - Slight Adverse	Temporary	High
Pedestrian Delay	High	Negligible Adverse	Temporary	-	Negligible Adverse	Temporary	High
Pedestrian Amenity	High	Negligible Adverse	Temporary	-	Negligible Adverse	Temporary	High
Fear and Intimidation	Medium	Negligible Adverse	Temporary	-	Negligible Adverse	Temporary	High
Accidents and Safety	Medium	Negligible Adverse	Temporary	-	Negligible Adverse	Temporary	High
Hazardous Loads	Low	Negligible Adverse	Temporary	-	Negligible Adverse	Temporary	High
Operation							
Severance	High	Slight Beneficial	Permanent	-	Slight Beneficial	Permanent	High
Driver Delay	Very High	Slight Adverse – Significant Beneficial	Permanent	-	Slight Adverse – Significant Beneficial	Permanent	High
Pedestrian Delay	High	Slight Adverse – Slight Beneficial	Permanent	-	Slight Adverse – Slight Beneficial	Permanent	High
Pedestrian Amenity	High	Slight Beneficial	Permanent	-	Slight Beneficial	Permanent	High
Fear and Intimidation	Medium	Slight Beneficial	Permanent	-	Slight Beneficial	Permanent	High
Accidents and Safety	Medium	Slight Adverse	Permanent	-	Slight Adverse	Permanent	High
Hazardous Loads	Low	Negligible	Permanent	-	Negligible	Permanent	High



5.8 References

- 5.8.1 Department for Transport (2007) Manual for Streets
- 5.8.2 Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic
- 5.8.3 The Highways Agency (1995) Geometric Design of Major/Minor Priority Junctions, TD42/95, Design Manual for Roads and Bridges

5.9 Glossary

Term	Definition
ATC	Automatic Traffic Counter
CIHT	Chartered Institute of Highways and Transportation
CTMP	Construction Traffic Management Plan
DCF	Development Consultation Forum
DfT	Department for Transport
DMRB TD42/95	Design Manual for Roads and Bridges Technical Document 42/95 – ‘Geometric Design of Major/Minor Priority Junctions’
ES	Environmental Statement
HBC	Havant Borough Council
HCC	Hampshire County Council
IEA	Institute of Environmental Assessment
MCC	Manual Classified Count
NMU	Non-Motorised User
NPPF	National Planning Policy Framework
PC	Public Consultation

PCC	Portsmouth City Council
PIA	Personal Injury Accident
PSN	Pre-application Scoping Note
RSA	Road Safety Audit (Auditor)
SRN	Strategic Road Network
TA	Transport Assessment
TEMPRO	Trip End Model Presentation Program
TP	Travel Plan
TRICS	Trip Rate Information Computer System