6.0 TRANSPORT & ACCESS

Introduction

6.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of transport and access. This Chapter presents the methodology followed, and provides a review of the baseline conditions in the vicinity of the Site and surrounding area. The Chapter then describes the results of the assessment of the impact of the Development on the baseline in order to determine the anticipated magnitude and significance of effect during construction and operational phases. The effects of any improvement measures that would accompany the proposals have also been assessed.

6.2 The Transport Assessment (TA) is provided in Volume 3 of the ES and contains more detailed transport related information on which this chapter is based. The TA describes the accessibility of the Site in terms of proximity to trip attractors typical of residential development and the availability of alternative modes of travel to the private car. The TA also estimates the travel demands generated by the scale of the development and assesses how these demands can be accommodated within the transport infrastructure that will be in place when the development takes place, identifying any necessary improvements.

Policy Context

National Planning Policy Framework[i]

6.3 The National Planning Policy Framework (the NPPF) sets out the national transport policy context and how it is expected to be applied. The Framework guidance places a focus on sustainable development policy by considering economic, social and environmental aspects of each development scheme. The main thrust of the NPPF guidance is a presumption in favour of sustainable development advocated further by requiring local authorities to meet the development needs of an area while showing an ability to adapt to change when required.

6.4 The core objective of the NPPF that relates to transport is to *"actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus development in locations which are or can be made sustainable."* (paragraph 17).

6.5 Promoting sustainable transport is a key component of the NPPF. Paragraph 29 states that *"Transport Policies have an important role to play in facilitating sustainable development but also in contributing to wider sustainability and health objectives. Smarter use of technology can reduce the need to travel. The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel. However, the Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas."*

6.6 Furthermore *"Encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion. In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport."* (paragraph 30).

6.7 The NPPF also advises that "plans and decisions should take account of whether:

- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Safe and suitable access to the site can be achieved for all people; and
- Improvement can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be refused on transport grounds where the residual cumulative impacts of development are severe." (paragraph 32)

6.8 The NPPF also states that *"planning policies should aim for a balance of land uses within their area so that people can be encourages to minimise journey lengths for employment, shopping, leisure, education and other activities."* (paragraph 37).

6.9 The NPPF builds on the principles of a mix of uses encouraging shorter trips by stating that *"For larger scale residential developments in particular, planning policies should promote a mix of uses in order to provide opportunities to undertake day-to-day activities including work on site. Where practical, particularly with large-scale developments, key facilities such as primary schools and local shops should be located within walking distance of most properties."* (paragraph 38).

Planning Practice Guidance

6.10 The National Planning Practice Guidance identifies the requirements for an EIA, states that the aim is to ensure *"that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effect on the environment, does so in the full knowledge of the likely significant effects, and take this into account in the decision making process."*

London Plan (2015) and Minor Alterations to the London Plan (2015-2016)[ii]

6.11 The London Plan was adopted in January 2011, with revised minor alterations published in January 2014 (REMA), further alterations published in March 2015 (FALP) and brought together into a Consolidated London Plan 2015. Since the publications of the Consolidated London Plan 2015 there have been further, additional minor alterations relating to parking and housing adopted in March 2016. The London Plan sets out the integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years.

6.12 Chapter 6 of the London Plan describes the specific transport policies, the integration of transport and development is the central theme, with an aim to encouraging development that reduces the need to travel, especially by car, and locating development that generates high levels of trips at locations with either current or committed high levels of accessibility to public transport, cycling and pedestrian networks.

6.13 The London Plan identifies that development proposals should support sustainable travel through the inclusion of appropriate cycle parking and facilities, high quality pedestrian environments and consideration of public transport accessibility levels in relation to housing density and car parking standards.

6.14 The London Plan requires that for residential development cycle parking is provided at 1 space per 1 bed unit, 2 spaces for units of 2 bedrooms and bigger and 1 space for every 40 units for visitors. The London Plan residential car parking standards note that all developments in areas of good public transport accessibility (in all parts of London) should aim for significantly less than 1 space per unit and adequate parking spaces for disabled people must be provided preferably on-site. The London Plan also requires 20 percent of all spaces to be allocated for electric vehicles with an additional 20 percent passive provision for electric vehicles in the future.

Local Policy

LBH Local Plan: Part 1 – Strategic Policies Document (2012)[iii]

6.15 The Hillingdon Local Plan: Part 1 – Strategic Policies was adopted in November 2012 and is the key strategic planning policy document for Hillingdon which sets out the long-term vision and objective for the Borough, against which development proposals are assessed.

6.16 With regard to Transport, the SO12 strategic objective promotes the reduction of reliance on the use of the car by promoting safe and sustainable forms of transport, such as improved walking and cycling routes and encouraging travel plans.

6.17 Policy T1 – Accessible Local Destinations states that the council will steer development to the most appropriate location in order to reduce their impact on the transport network and all development should encourage access by sustainable modes including walking and cycling.

Assessment Methodology

Consultation

6.18 A request for an EIA Scoping Opinion was submitted to London Borough of Hillingdon (LBH) in March 2015. The Scoping Opinion is provided in full at Appendix 2.2 to the ES, including the response from Highways England.

6.19 Subsequent to receipt of the Scoping Opinion, an extensive dialogue with LBH and Transport for London took place regarding the scope of the TA. This included discussing the modelling methodology for the TA, its geographic scope, survey requirements and committed developments to be included. Further details of this are available within the TA (see Volume 3 of the ES), with the areas relevant to this chapter covered in more detail under Assessment Methodology.

Sources of Information

6.20 The following data sources have been used in the compilation of this assessment:

- Junction turning count data from surveys undertaken in April 2016; and
- Automatic Traffic Counts (ATC's) undertaken in May 2016.

6.21 Further details of these are available in the TA.

Study Area

6.22 The study area for the ES assessment has been defined following the guidance set out in the Guidelines for the Environmental Assessment of Road Traffic published by the IEMA[iv], which identifies that highway links that experience an increase in traffic flows of more than 30% should be included. An assessment of the trip generation associated with the Site identified that this could potentially include:

- The Parkway North and South of Hayes Road;
- Hayes Road;
- North Hyde Road between The Parkway and Station Road;
- North Hyde Garden;
- Nestles Avenue;
- Harold Avenue; and
- Station Road south of North Hyde Road.

6.23 For this ES, junction assessment has been undertaken where the two way flow on adjacent links have been found to increase by 10% or more as a result of the Development. Further information on the 30% and 10% thresholds used in the assessment is provided below.

Assessment Process

6.24 The methodology utilised in this assessment reflects the standard guidance for preparing an ES assessment contained within:

- the Guidelines for the Environmental Assessment of Road Traffic published by the Institute of Environmental Assessment (1993) – now the Institute for Environmental Management and Assessment (IEMA); and
- the Planning Practice Guidance on Travel Plans, Transport Assessments and Statements in Decision-taking- Department for Communities and Local Government (March 2014)

6.25 This ES reviews the existing situation relevant to the Site, a future year baseline situation at 2024 (the anticipated opening year of the Development) and then assesses the effect of the Development in 2024. The 2024 baseline scenario includes the assumption that some 62040sqm of the existing B2 (general industrial) floorspace on the Site is re-occupied. This reflects the proportion of the total floorspace that there is a realistic demand in the area for B2 users to take up. Potential changes likely as a result of the Development have been examined. Further assessments of the cumulative impact of Development in the area around

the Site have also been undertaken. Finally, a sensitivity test on the basis that the existing buildings on the Site remain unoccupied in the future baseline scenario has also been carried out.

6.26 The scale and extent of the assessment has been selected based on advice from LBH and Transport for London and with reference to the IEMA Guidelines. These guidelines state that the assessment should be limited to highway links subject to traffic flow increases of more than 30% or where the number of Heavy Goods Vehicles (HGVs) will increase by more than 30%. These guidelines also state the specifically sensitive areas or receptors should be included where traffic flows are predicted to increase by 10% or more. Sensitive areas or receptors could include schools or hospitals, accident hotspots and / cyclists and pedestrians.

6.27 The April 2016 junction turning counts have been used to establish the existing peak hour traffic flows at various locations, whilst the ATC's have been used to identify the proportion of traffic that is made up of HGVs to enable the initial identification of locations where the development would result in a greater than 10% change in traffic flows or proportion of HGVs. Tables 6.1 and 6.2 show these initial screening locations and the change in traffic flows as a result of the Development in 2024.

Table 6.1: Identification of Geographic Scope of Assessment – Change in Peak Hour Flow

Location	2024 AM Peak			2024 PM Peak		
	Base	With Dev	% change	Base	With Dev	% change
The Parkway North of Hayes Road	4733	4731	-0.042256	5263	5299	0.684021
Hayes Road	2854	2869	0.5255781	2882	2914	1.11034
The Parkway South of Hayes Road	4708	4522	-3.950722	4680	4733	1.132479
North Hyde Road (East of North Hyde Gardens)	2279	2284	0.2193945	2222	2316	4.230423
North Hyde Gardens	508	280	-44.88189	386	217	-43.7824
Nestles Ave East of Harold Ave	75	75	0	57	57	0
Harold Ave	291	490	68.38488	218	477	118.8073
Nestles Ave East of Station Road	346	473	36.705202	309	465	50.48544
Location	2024 AM Peak			2024 PM Peak		

	Base	With Dev	% change	Base	With Dev	% change
North Hyde Road East of Station Road	1283	1245	-2.961808	1272	1244	-2.20126
Station Road North of Crowland Avenue	1210	1260	4.1322314	1154	1230	6.585789

Table 6.2: Identification of Geographic Scope of Assessment – Change in Daily HGV Levels

Location	2024		
	Base	With Dev	% change
The Parkway North of Hayes Road	9860	9801	-0.6
Hayes Road	6300	6282	-0.3
The Parkway South of Hayes Road	10140	10043	-0.96
North Hyde Road (East of North Hyde Gardens)	3100	2937	-5.26
North Hyde Gardens	955	742	-22.3
Nestles Ave East of Harold Ave	36	36	0
Harold Ave	269	269	0
Nestles Ave East of Station Road	284	284	0
North Hyde Road East of Station Road	2133	2094	-1.83
Station Road North of Crowland Avenue	1873	1856	-0.9

6.28 It can be seen that the only locations where a greater than 10% change in two-way peak hour flow is expected is at North Hyde Gardens, Harold Avenue and Nestles Avenue east of Station Road. With regard to HGV levels, the Development results in a reduction in HGV's, this is due to the level of HGV traffic that the Site would generate if 62,040 sqm of existing floorspace were re-occupied for B2 use. This ES chapter therefore focuses on those links where there is a greater than 10% change in flow and related junctions (Harold Avenue / North Hyde Road, Harold Avenue / Nestles Avenue, Nestles Avenue / Station Road and North Hyde Road / North Hyde Gardens).

6.29 As a result of the range of construction projects and processes occurring on any one day there is some variation in the flows occurring in the construction of the Development. Typically, the final rate of project completion reflects many competing factors, such as access

to labour and materials as well as maintaining a quality environment within the early phases of the Development during these construction phases. Nothwithstanding this, a reasonable worst case assessment of the likely extent of construction activities occurring at any one time has been undertaken for the purposes of assessing environmental effects.

6.30 It is anticipated that the Development will be completed and fully occupied by 2024. Assessment year traffic flows for the future baseline of 2024 have been derived for traffic flows observed in 2016 that have had growth factors applied from TEMPRO 7 and traffic associated with the reuse of existing B2 space on Site has been added on. 2024 with Development traffic flows have been derived using appropriate trip rates and assignment assumptions based on 2011 Census Journey to Work data. The Development traffic flows have been added to the 2024 background traffic flows. Cumulative development traffic flows in 2024 have been derived by the addition of traffic associated with the following consented developments:

- Southall Gas Works;
- Old Vinyl Factory including the change from cinema to UTC college;
- EMI Prologis Site;
- 20 Blyth Road;
- ASDA development – industrial component only as the store was operational at the time of the surveys;
- Hyde Park Hayes Unit 4;
- Hayes High Street improvement scheme;
- Enterprise House, Blyth Road;
- Trident House, Station Road;
- Union House, Clayton Road;
- Plot 6 Rackspace City North Hyde Road;
- Unit 3 Millington Road Hayes;
- Silverdale Road, Hayes and
- Gatefold Building, Blyth Road.

6.31 The list of cumulative developments is based on the developments identified in the response to the ES scoping discussions and additional sites identified by the LBH's transport development control officer as part of the TA scoping discussions.

6.32 Development at Lake Farm School Botwell Lane and Costco at West International Market were also examined and it was found that these were opened in 2014 and would therefore have been picked up in the 2016 survey data and form part of the baseline. The M4 Smart Motorways scheme was also examined and information submitted to the Examination in Public identified that this made no material change to the traffic flow on Parkway north of the M4 and therefore would not affect the area around the Site. Similarly, the evidence supporting the Crossrail proposals did not identify any change in traffic flows in the area as a result of its introduction.

6.33 In addition, it has been agreed that the redevelopment of the remainder of the land north of Nestles Avenue to the west of the sites that is allocated for development is also considered as part of the cumulative assessment. Further details on the assumptions made regarding the allocated sites is included in Chapter 2 of the ES.

6.34 As explained above, additional sensitivity tests using a baseline that does not incorporate the traffic associated with the re-occupation of the existing building has also been undertaken.

6.35 The impact of the Development has been assessed against the following effect categories:

- Severance;
- Driver Delay;
- Pedestrian Delay;
- Pedestrian Amenity; and
- Road Safety.

6.36 Chapter 7 of this ES consider, inter alia, traffic effects in the context of potential significant air quality effects of the Development. Noise and vibration effects were not considered to be significant and have been scoped out of the ES, but a number of reports assessing noise and vibration have been submitted with the planning application.

6.37 The significance level attributed to each effect of the Development has been assessed based on the magnitude of change as a result of the Development and the sensitivity of the affected receptor to change. The assessment of potential effects of the Development has taken into account both the construction and operational phases. Any effect during the construction phase is considered to be short to medium term, with effects associated with the operational phase considered to be long term.

6.38 The IEMA Guidelines set out the broad principles of how to assess the magnitude of impact for each of the above categories. The guidance makes it clear that a *"critical feature of environmental assessment is determining where a given impact is significant*". In addition, it states that *"for many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor backed up by data or quantified information where possible*" and "*the assessment of certain impacts may therefore depend more upon description and judgement than any commonly agreed method*". The guidelines also state that *"those preparing the Environmental Statement will need to make it clear how they have defined whether a change is considered significant or not."*

6.39 The thresholds that have been adopted to determine the magnitude of change as a result of the Development are set out in Table 6.3 for each of the categories identified above.

Table 6.3: Assessment Criteria for Magnitude of Effect

Effect	Negligible	Minor	Moderate	Major
Severance, Pedestrian Amenity and Road Safety – Change in Peak Hour Two-way Traffic Flows	Less than 10%	More than 10% less than 30%	More than 30% less than 90%	More than 90%
Driver Delay – Change in Delay Per Vehicle at Junctions	Less than 10 seconds	More than 10 seconds less than 20 seconds	More than 20 seconds less than 60 seconds	More than 60 seconds
Pedestrian Delay – Increase in pedestrian crossing delay	Less than 5 seconds	More than 5 seconds less than 20 seconds	More than 20 seconds less than 40 seconds	More than 40 seconds

6.40 The IEMA Guidelines identify groups and special interest which should be considered:

- People at home;
- People in workplaces;
- Sensitive groups including children, the elderly and disabled;
- Sensitive locations e.g. hospitals, churches, schools, historical buildings;
- People walking
- People cycling;
- Open spaces, recreational sites, shopping areas;
- Sites of ecological / nature conservation value; and
- Sites of tourist visitor attraction.

6.41 Categories of receptor sensitivity have been defined from the principles set out in the Guidelines for the Environmental Assessment of Road Traffic, and include the following:

- The need to identify particular groups or locations which may be sensitive to changes in traffic conditions;
- The list of affected groups and special interests set out in the guidance;
- The identification of links or locations where it is felt that specific environmental problems may occur;
- Such locations *"… would include accident black-spots, conservation areas, hospitals, links with high pedestrian flows etc*."

6.42 These categories have been used to outline in broad terms the sensitivity of receptors to traffic for the categories assessed in this chapter, although in detail, each receptor will have a different sensitivity to each specific effect.

6.43 High sensitivity receptors would include roads used by pedestrians with no footways and road safety black-spots. Medium sensitivity receptors include quiet residential roads, roads with high pedestrian demand, locations with higher than locally typical accident frequency. Low sensitivity receptors include strategic road links, roads fronted by open space / agricultural land and roads and junctions with typical accident rates for the local area.

6.44 On the basis of the above, all of the receptors under consideration would be considered to be of medium sensitivity with regard to severance, pedestrian amenity and driver and pedestrian delay. With regards to road safety they are all considered to be of low sensitivity.

6.45 When the magnitude of change and sensitivity of a receptor is considered together, the significance matrix set out in Table 6.4 is applicable to determine the significance of the effect.

Table 6.4: Assessment Criteria for Significance of Effect

Sensitivity	Magnitude of Effect			
	Major	Moderate	Minor	Negligible
High	Major	Moderate	Moderate	Negligible
Medium	Moderate	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible

6.46 Effects, which are beneficial or adverse, have therefore been identified as either:

- Major effect: where the Development could be expected to have a very significant, long term effect on the highway network;
- Moderate effect: where the Development could be expected to have a noticeable long term effect on the highway network;
- Minor effect: where the Development could be expected to result in a small, barely noticeable, localised or short term effect on the highway network; and
- Negligible: where no discernible effect is expected as a result of the Development on the highway network.

6.47 Moderate and major effects are considered 'significant' for the purposes of this assessment.

Limitations and Assumptions

6.48 For the purposes of this assessment the following assumptions are made:

- The non-residential uses in the residential section of the development area assumed to consist of a 583 sqm nursery, 955 sqm gym and 545 sqm office. The proposed café use is not expected to generate any vehicular traffic.
- Committed development sites considered as part of the cumulative assessment are assessed using publicly available information within supporting planning applications. Where this information is not available, assumptions have been made regarding operational trip generation using the methodologies that have been adopted within the TA for this site.

Baseline Conditions

Existing Situation

6.49 A plan showing the local highway network is provided at Figure 6.1. Peak hour two-way traffic flows from the junction turning count surveys are summarised in Table 6.5.

Table 6.5: 2016 Observed Peak Hour Two Way Flows

Location	2016 Observed Flows	
	AM Peak	PM Peak
North Hyde Gardens	170	122
Harold Avenue	267	202
Nestles Avenue east of Station Road	320	285

6.50 It can be seen from Table 6.5 that on the roads that would experience a greater than 10% increase in two-way traffic flow as a result of the Development the existing traffic flows are very low and link capacity is not currently an issue.

6.51 The detailed junction capacity models carried out in the TA (see Volume 3 of the ES) have been used to assess the performance at a number of junctions around the Site under observed traffic flows. Table 6.6 shows the peak hour average junction delay per vehicle from those detailed models.

Table 6.6: 2016 Junction Delay (Seconds)

Location	2016 Modelled Delays	
	AM Peak	PM Peak
Harold Avenue / North Hyde Road	1.65	1.02
Harold Avenue / Nestles Avenue	5.37	5.08
Nestles Avenue / Station Road	2.19	1.97
North Hyde Gardens / North Hyde Road	20.0	19.1

6.52 It can be seen from the above table that the average delay per vehicle at the Harold Avenue / North Hyde Road, Harold Avenue / Nestles Avenue and Nestles Avenue / Station Road priority junctions is currently very small at around 5 seconds or less. As would be expected at a signal controlled junction, average delays are higher at the North Hyde Gardens / North Hyde Road junction.

6.53 The TA provides detailed information regarding the availability of public transport in the area around the Site and identifies the main pedestrian and cycle connections in the area, as well as providing information on various trip attractors that fall within walking and cycling distance of the Site. In summary:

- The Site is within comfortable walking and cycling distance of a wide range of social infrastructure that will be accessed by future residents and employees at the Site;
- Pedestrian and cycle facilities around the Site are generally of good quality, as identified by detailed PERS and CERS audits;
- A total of nine bus routes are within approximately 400m of the nearest point on the Site, serving destinations including Northolt, Heathrow, Uxbridge, Brentford, Ickenham and Greenford;

- Hayes and Harlington Station is located approximately 420m from the western limit of the Site. This currently provides access to Heathrow Connect and Great Western Railway services to Paddington, Heathrow Central Terminal Area, Reading and Oxford. Crossrail has planned improvements to the station and the opening of the Elizabeth Line will result in even better connections towards central and east London;

- The Site has a Public Transport Accessibility Level of 4 (Good) at its western edge down to 1b (Very Poor) at its eastern edge. The higher density residential development is focused in the part of the site with better public transport accessibility and the lower density employment uses are in the part of the Site that is less accessible.

6.54 Making reference to DMRB Volume 11 Section 3 Part 8 Pedestrians, Cyclists, Equestrians and Community Effects, Figure 1 on page 3/2 of that document provides a graph for estimating mean pedestrian crossing delay related to two-way traffic flows. Using the two-way traffic flows set out in Table 6.5 the mean pedestrian crossing delay on Nestles Avenue, Harold Avenue and North Hyde Gardens would be less than 5 seconds at locations without any formal crossing facilities.

6.55 The TA also provides information on road traffic accidents in the area around the Site for a five year period. This identified that no fatalities occurred within the study area and no high risk accident sites were identified.

Likely Significant Effects

Construction Phase

6.56 Likely transport and access related effects that may arise from construction include:

- Increase in vehicle movements associated with construction staff accessing the Site:
- Increase in proportion of HGV movements within the local highway network on the route that construction vehicles are most likely to use and that will be agreed with LBH;
- Increased delay associated with any traffic management measures required to accommodate work on the public highway; and
- Reduction in amenity and safety for pedestrians and cyclists.

6.57 The assessment of indicative peak daily two-way construction flows arising from the Development has been completed in advance of appointing a Contractor. However, indicative estimates of daily traffic levels during the demolition and construction phases of development are 15-20 HGVs per day and 35-40 cars and light goods vehicles per day.

6.58 The level of construction traffic on the Site will be substantially less than the level of traffic generated by the Development when it is fully operational. In fact, the daily traffic generation associated with construction is lower than the peak hour traffic of the fully occupied Site. The impact of the construction process on vehicles numbers will therefore be substantially less than the impact of the fully operational Development.

6.59 The change in traffic flows during the demolition and construction phases would be less than 10% of existing flows, even on the lightly trafficked Nestles Avenue immediately adjacent to the Site. On this basis the environmental impact of construction traffic on severance, pedestrian and driver delays, pedestrian amenity and road safety would be negligible.

Operational Phase

6.60 The operational phase of the Development will see the occupation of up to 1381 dwellings, office, retail, community and leisure uses, 22663 sqm of commercial floorspace, amenity and playspace, allotments, landscaping, access, service yards, associated car parking and other engineering works.

6.61 The potential effects of the proposals are the increase in traffic associated with the Development, which would affect severance, road safety, junction delays, pedestrian crossing delays and impact on pedestrian amenity.

6.62 Looking firstly at the changes in traffic flows as a result of the Development, Table 6.7 identifies the numeric and percentage change in two-way peak hour flows at the locations previously identified as experiencing more than 10% change in two-way peak hour flows. It also identifies the significance of the effect.

Table 6.7 : 2024 Change Peak Hour Two Way Flows as a Result of Development

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	% change	Base	With Dev	% change	
North Hyde Gardens	508	280	-44.9	386	217	-43.8	Moderate beneficial
Harold Avenue	291	490	68.4	218	477	118.8	Major adverse
Nestles Avenue east of Station Road	346	473	36.7	309	465	50.5	Moderate adverse

6.63 It can be seen that the potential reduction in traffic that would occur on North Hyde Gardens if the existing uses were replaced with the Development would represent a moderate beneficial impact in terms of severance, pedestrian amenity and road safety. On Harold Avenue and Nestles Avenue east of Station Road, the Development would result in major and moderate adverse impact, respectively in terms of severance, pedestrian amenity and road safety. It should be noted that the base flows in Table 6.7 are higher than the 2016 baseline presented earlier as they incorporate traffic growth and committed development traffic flows.

6.64 Turning next to the change in average junctions delays as a result of the Development, Table 6.8 sets out the mean junction delays taken from models of the junctions constructed using 2024 baseline and with Development traffic flows. The change in delay is also shown.

Table 6.8: 2024 Change in Junction Delays as a Result of Development

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	Change	Base	With Dev	Change	
Harold Avenue / North Hyde Road	1.85	4.18	2.33	1.08	4.99	3.91	Negligible
Harold Avenue / Nestles Avenue	5.49	8.79	3.3	5.19	8.82	3.63	Negligible
Nestles Avenue / Station Road	2.33	3.47	1.14	2.09	3.37	1.28	Negligible
North Hyde Gardens / North Hyde Road	18.6	15.5	-3.1	33.7	27.9	-5.8	Negligible

6.65 It can be seen that the change in average junction delay per vehicle for all vehicles using the junctions is less than 6 seconds and is therefore negligible.

6.66 With regard to pedestrian delay, these remain below 5 seconds in the 2024 baseline and with Development scenarios and the Development therefore has a negligible effect.

Sensitivity Assessment

6.67 This sensitivity assessment repeats the analysis using a baseline where the existing buildings on Site are not re-occupied. Looking firstly at change in peak hour two-way traffic flows, Table 6.9 set these out, along with the resultant change in flow and magnitude of impact.

Table 6.9: 2024 Change Peak Hour Two Way Flows as a Result of Development – Sensitivity Test

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	% change	Base	With Dev	% change	
North Hyde Gardens	184	280	52.2	132	217	64.4	Moderate adverse
Harold Avenue	291	490	68.4	218	477	118.8	Major adverse
Nestles Avenue east of Station Road	346	473	36.7	309	465	50.5	Moderate adverse

6.68 The impact on Harold Avenue and Nestles Avenue is unchanged in this sensitivity test using a future 2024 baseline with additional projected traffic flows. However, the impact on North Hyde Gardens changes from moderate beneficial to moderate adverse in terms of severance, pedestrian amenity and road safety. This is because the baseline does not assume re-use of the existing Site in this scenario and therefore the traffic associated with the new industrial use would result in an increase in flow on North Hyde Gardens.

6.69 Looking next at junction delay, Table 6.10 sets out the change in average junction delay for all vehicles passing through the junctions assuming that the Site remains vacant in the 2024 baseline.

Table 6.10: 2024 Change in Junction Delays as a Result of Development – Sensitivity Test

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	Change	Base	With Dev	Change	
Harold Avenue / North Hyde Road	1.83	4.18	2.35	1.09	4.99	3.9	Negligible
Harold Avenue / Nestles Avenue	5.49	8.79	3.3	5.19	8.82	3.63	Negligible
Nestles Avenue / Station Road	2.33	3.47	1.14	2.09	3.37	1.28	Negligible
North Hyde Gardens / North Hyde Road	18.3	15.5	-2.8	21.7	27.9	6.2	Negligible

6.70 The impact at these junction remains negligible under this sensitivity scenario.

6.71 Pedestrian crossing delays would remain less than five seconds under the baseline and with Development scenarios and the impact of the Development is therefore negligible.

Mitigation Measures

Construction Phase

6.72 A number of measures will be implemented to ensure that the general effect of construction traffic flows is as predicted. These will be set out within a Construction Management Plan (CMP) which will include:

- Planning and management of both vehicle and pedestrian routes;
- The elimination of reversing wherever possible;
- Safe driving and working practices;
- Protection to the public;
- Adequate visibility splays and sight lines;
- Provision of signs and barriers; and
- Adequate parking for off-loading storage areas.

6.73 Construction traffic access for the residential element of the Development will be via the existing access on Nestles Avenue. The commercial element will take access from North Hyde Gardens. Construction vehicles will access the Site using the strategic road network (A312 and A437) as far as possible to minimise the impacts on the local road network. All traffic will be encouraged to avoid Hayes town centre.

Operational Phase

6.74 The mitigation strategy for the Development is set out in full in Section 9 of the TA (see Volume 3 of the ES). The main improvement measures relate to localised highway improvements. The only one of these that affects the junctions under consideration in this chapter is the introduction of a right turn refuge in the centre of North Hyde Road at Harold Avenue, which will be delivered either under a S278 Agreement or as part of the S106 Agreement for the Site. This would result in the average delay at this junction with the Development in place reducing from 4.18 seconds to 3.48 seconds in the AM peak and from 4.99 seconds to 2.26 seconds in the PM peak. The Development impact at this junction therefore remains negligible.

6.75 In addition to the implementation of a physical improvement measure in this location, the level of parking on the Site has been constrained and financial contributions to the delivery of a residents parking permit scheme (CPZ) on the neighbouring road network are proposed.

This has the potential to reduce the level of traffic generated by the Development below the levels used in this assessment.

6.76 The Development will also provide funding for 5 car club vehicles on or adjacent to the site. These will be available to existing residents in the area as well as new residents of the Development. Each car club vehicle has the potential to replace 8 privately owned vehicles. They encourage the use of sustainable modes of transport (car club members use public transport, walk and cycle more than the average Londoner) and free up parking spaces.

6.77 The implementation of Travel Plan will also encourage the use of sustainable modes of transport and assist in reducing the car trip generation of the Site. The Travel Plan will either be conditioned or form part of the S106 Agreement.

Residual Effects

Construction Phase

6.78 The residual effects of the construction phase of the Development are anticipated to be short-term in nature and of negligible significance.

Operational Phase

6.79 For the operational phase of the Development, the change in two-way traffic flow (and hence the effect on severance and pedestrian amenity) on North Hyde Gardens would result in a long-term beneficial impact of moderate significance. On Harold Avenue and Nestles Avenue east of Station Road a long-term adverse impact of moderate significance would be expected. However, it should be noted that in capacity terms these roads continue to operate acceptably.

6.80 The residual effect on road safety would be a long term minor beneficial effect on North Hyde Gardens, a long term minor adverse effect on Nestles Avenue east of Station Road and a long term moderate adverse effect on Harold Avenue.

6.81 In terms of pedestrian and driver delay, impacts were found to be negligible.

6.82 Under the sensitivity test scenario, the only change to these conclusions relates to North Hyde Gardens where the residual effect on severance, pedestrian amenity and road safety would be moderate adverse.

Cumulative Effects

Construction Phase

6.83 The cumulative effects of construction traffic will be dependent upon the phasing of other developments in the area. However, in all cases the construction vehicle numbers will be substantially less than the final trip generation associated with the various cumulative development schemes and the overall cumulative impact of construction traffic will be negligible in comparison.

Operational Phase

6.84 Tables 6.11 and 6.12 set out the magnitude of impact of the Development and cumulative schemes identified compared to the baseline scenario that assumes that the existing buildings on Site are re-occupied.

Table 6.11: 2024 Change Peak Hour Two Way Flows as a Result of Development – Cumulative Assessment

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	% change	Base	With Dev	% change	
North Hyde Gardens	508	360	-29.1	386	290	-24.9	Minor beneficial
Harold Avenue	291	640	119.9	218	671	207.8	Major adverse
Nestles Avenue east of Station Road	346	551	59.2	309	549	77.7	Moderate adverse

Table 6.12: 2024 Change in Junction Delays as a Result of Development – Cumulative Assessment

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	Change	Base	With Dev	Change	
Harold Avenue / North Hyde Road	1.85	87.20	85.35	1.08	9999999	9999998	Major adverse
Harold Avenue / Nestles Avenue	5.49	10.75	5.26	5.19	12.40	7.21	Negligible
Nestles Avenue / Station Road	2.33	4.98	2.65	2.09	4.44	2.35	Negligible
North Hyde Gardens / North Hyde Road	18.6	15.5	-3.1	33.7	28.2	-5.5	Negligible

6.85 Looking firstly at the two-way change in traffic flow, the magnitude of change indicates a minor beneficial change on North Hyde Gardens, a major adverse change on Harold Avenue and a moderate adverse change on Nestles Avenue east of Station Road.

6.86 In terms of changes to junction delay, the cumulative schemes would result in a major adverse change in delay at the Harold Avenue / North Hyde Road junction and a negligible change elsewhere.

6.87 In terms of pedestrian delay the magnitude of change in delay would be negligible.

6.88 The introduction of the proposed right turn lane in the centre of North Hyde Road at Harold Avenue, would reduce the driver delay in the AM peak to 26.63 seconds and to 8.02 seconds in the PM peak. The residual change in delay as a result of the cumulative developments would therefore reduce to 24.78 seconds in the AM peak and 6.94 seconds in the PM peak.

6.89 The residual cumulative impact of on severance, pedestrian amenity and road safety would be of minor beneficial significance on North Hyde Gardens and moderate adverse significance on Harold Avenue and Nestles Avenue. The impact on pedestrian delay would be negligible and on driver delay it would be a moderate adverse impact at the Harold Avenue / North Hyde Road junction and negligible elsewhere.

6.90 Carrying out a sensitivity test using a baseline scenario where the existing buildings on Site are not re-used gives the results shown in Tables 6.13 and 6.14.

Table 6.13: 2024 Change Peak Hour Two Way Flows as a Result of Development – Cumulative Assessment – Sensitivity Test

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	% change	Base	With Dev	% change	
North Hyde Gardens	184	360	+98.7	132	290	+119.7	Major adverse
Harold Avenue	291	640	119.9	218	671	207.8	Major adverse
Nestles Avenue east of Station Road	346	551	59.2	309	549	77.7	Moderate adverse

Table 6.14: 2024 Change in Junction Delays as a Result of Development – Cumulative Assessment – Sensitivity Test

Location	AM Peak			PM Peak			Magnitude of change
	Base	With Dev	Change	Base	With Dev	Change	
Harold Avenue / North Hyde Road	1.83	87.20	85.37	1.09	9999999	9999998	Major adverse
Harold Avenue / Nestles Avenue	5.49	10.75	5.26	5.19	12.40	7.21	Negligible
Nestles Avenue / Station Road	2.33	4.98	2.65	2.09	4.44	2.35	Negligible
North Hyde Gardens / North Hyde Road	18.3	15.5	-3.1	21.7	28.2	-6.5	Negligible

6.91 The only changes when compared to the original cumulative assessment relate to North Hyde Gardens. In terms of severance, pedestrian amenity and road safety the magnitude of change alters from minor beneficial to moderate adverse.

Summary

Construction Phase

6.92 The residual effects of the construction phase of the Development are anticipated to be short-term in nature and of negligible significance.

Operational Phase

6.93 For the operational phase of the Development, the change in two-way traffic flow (and hence the effect on severance and pedestrian amenity) on North Hyde Gardens would result in a long-term beneficial impact of moderate significance. On Harold Avenue and Nestles Avenue

east of Station Road a long-term adverse impact of moderate significance would be expected. However, it should be noted that in capacity terms these roads continue to operate acceptably.

6.94 The residual effect on road safety would be a long term minor beneficial effect on North Hyde Gardens, a long term minor adverse effect on Nestles Avenue east of Station Road and a long term moderate adverse effect on Harold Avenue.

6.95 In terms of pedestrian and driver delay, impacts were found to be negligible.

6.96 Under the sensitivity test scenario, the only change to these conclusions relates to North Hyde Gardens where the residual effect on severance, pedestrian amenity and road safety would be moderate adverse.

6.97 Table 6.15 contains a summary of the likely significant effects of the Development, based on the assumption that the existing buildings on Site are re-occupied in the baseline scenario. For the sensitivity test scenario with the baseline assuming the Site is vacant the summary of likely significant effects is shown in Table 6.16

Table 6.15: Table of Significance - Transport & Access

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Severance, pedestrian and driver delay, pedestrian amenity and road safety	Temporary	Negligible	Implementation of CMP								Negligible
Completed Development											
Pedestrian amenity and severance – North Hyde Gardens	Permanent	Moderate beneficial	Travel Plan							✓	Moderate beneficial
Pedestrian amenity and severance – Harold Avenue and Nestles Avenue	Permanent	Moderate adverse	Travel Plan							✓	Moderate adverse
Road Safety and pedestrian delay	Permanent	Negligible	N/A							✓	Negligible
Driver delay	Permanent	Negligible	Introduction of right turn lane on North Hyde Road at Harold Avenue							✓	Negligible
Cumulative Effects											
Construction											
Severance, pedestrian and driver delay, pedestrian amenity and road safety	Temporary	Negligible	Implementation of CMP								Negligible
Operation											
Pedestrian amenity and severance – North Hyde Gardens	Permanent	Minor beneficial	Travel Plan							✓	Minor beneficial
Pedestrian amenity and severance – Harold Avenue and Nestles Avenue	Permanent	Moderate adverse	Travel Plan							✓	Moderate adverse

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Road safety and pedestrian delay	Permanent	Negligible	Travel Plan							✓	Negligible
Driver delay – North Hyde Road / Harold Avenue	Permanent	Moderate adverse	Introduction of right turn lane on North Hyde Road at Harold Avenue						✓		Moderate adverse
Drive delay - elsewhere	Permanent	Negligible	None							✓	Negligible

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

Table 6.26: Table of Significance - Transport & Access – Sensitivity Test

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Severance, pedestrian and driver delay, pedestrian amenity and road safety	Temporary	Negligible	Implementation of CMP								Negligible
Completed Development											
Pedestrian amenity and severance – North Hyde Gardens	Permanent	Moderate beneficial	Travel Plan							✓	Moderate adverse
Pedestrian amenity and severance – Harold Avenue and Nestles Avenue	Permanent	Moderate adverse	Travel Plan							✓	Moderate adverse
Road Safety, pedestrian and driver delay	Permanent	Negligible	Introduction of right turn lane on North Hyde Road at Harold Avenue							✓	Negligible
Cumulative Effects											
Construction											
Severance, pedestrian and driver delay, pedestrian amenity and road safety	Temporary	Negligible	Implementation of CMP								Negligible
Operation											
Pedestrian amenity and severance – North Hyde Gardens	Permanent	Minor beneficial	Travel Plan							✓	Major adverse
Pedestrian amenity and severance – Harold Avenue and Nestles Avenue	Permanent	Moderate adverse	Travel Plan							✓	Moderate adverse
Road safety and pedestrian delay	Permanent	Negligible	Travel Plan							✓	Negligible

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Driver delay – North Hyde Road / Harold Avenue	Permanent	Moderate adverse	Introduction of right turn lane on North Hyde Road at Harold Avenue						✓		Moderate adverse
Drive delay - elsewhere	Permanent	Negligible	None							✓	Negligible

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

Guidelines for the Environmental Assessment of Road Traffic – Institute of Environmental Assessment (1991)

National Planning Policy Framework – Department for Communities and Local Government (March 2012)

Design Manual for Roads and Bridges Volume 11 Section 3 Pedestrian, Cyclists, Equestrians and Community Effects – Department for Transport (June 1993).

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[i] Endnote
[ii]London Plan (2015) and Minor Alterations to the London Plan (2015-2016)
[iii]LBH Local Plan: Part 1 – Strategic Policies Document (2012)
[iv]Guidelines for the Environmental Assessment of Road Traffic – Institute of Environmental Assessment (1991)