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**BROADFIELDS INNOVATION & BUSINESS PARK
TILBURY ROAD
EAST HORNDON
BRENTWOOD
ESSEX
CM13 3LS**

TRANSPORT ASSESSMENT

Volume 1 of 5

on behalf of
MM PROPERTIES (LONDON) LIMITED

PMcL/3386d5/September 2022



Volume 1 of 5

CONTENTS

SECTION	Page
1.0 Introduction	1
2.0 Transport Planning Policy	6
3.0 Existing Highway & Accessibility	13
4.0 Development Proposals	20
5.0 Travel Assessment	32
6.0 Summary & Conclusions	56

Volume 2 of 5

DRAWINGS

NWA-0503-A20-007 - Indicative Site Layout (Nicholas Webb Architects plc)
REDW-3386-404 – A128 Tilbury Road / Station Road Traffic Signals Layout

Volume 3 of 5

REDW-3386-405 – Site Access Plan
REDW-3386-406 - Accessibility Plan
REDW-3386-407 - Bus Services Accessibility Plan

Volume 4 of 5

REDW-3235-104-B- Approved Roundabout - A128 Tilbury Road/Tilbury Road junction

APPENDIX A

Figure A1	Site Location Plan
Figure A2	Transport Links Plan
Figure A3	Bus Transport Plan
Figure A4	5-mile cycle Isochrone to site
Figure A5	Car park accumulation table
Figure A6	ONS - Travel to Work Data
Figure A300	Existing peak hour traffic flows – A128 Tilbury Road/Old Tilbury Road
Figure A301	Existing peak hour traffic flows PCUs – A128 Tilbury Rd/Old Tilbury Road
Figure A302	Development Traffic Distribution
Figure A303	Development traffic & diverted movements - A128 Tilbury Rd/Old Tilbury Road



Figure A304	Nett development & EHIP traffic flows – A128 Tilbury Road/Old Tilbury Road
Figure A305	Total Traffic Flows 2023 – A128 Tilbury Road/Old Tilbury Road
Figure A306	Total Traffic Flows 2031 – A128 Tilbury Road/Old Tilbury Road
Figure A307	Existing peak hour traffic flows – A128 Tilbury Road/Station Road
Figure A308	Growthed traffic flows – A128 Tilbury Road/Station Road
Figure A309	Existing peak hour traffic flows – A128 Tilbury Road/A127 Interchange
Figure A310	Existing peak hour traffic flows PCUs – A128 Tilbury Rd/A127 Interchange
Figure A311	Growthed traffic flows 2023 - A128 Tilbury Road/A127 Interchange
Figure A312	Growthed traffic flows 2031 - A128 Tilbury Road/A127 Interchange
Figure A313	Development % distribution - A128 Tilbury Road/A127 Interchange
Figure A314	EHIP & Development % distribution - A128 Tilbury Road/Station Road
Figure A315	West Horndon Industrial Park - % Distribution
Figure A316	West Horndon Industrial Park – Existing Industrial Trips
Figure A317	West Horndon Industrial Park – Proposed Residential Trips
Figure A318	West Horndon Industrial Park – Existing Diverted Movements
Figure A319	West Horndon Industrial Park – Peak Hour Residential Trips
Figure A320	Peak Hour Development & EHIP Traffic - A128 Tilbury Road/A127 Interchange
Figure A321	Total traffic flows – A128 Tilbury Road/Station Road
Figure A322	Total traffic flows + West Horndon – A128 Tilbury Road/Station Road
Figure A323	Total Traffic Flows 2023+West Horndon – A128 Tilbury Rd/Old Tilbury Rd
Figure A324	Total Traffic Flows 2031+West Horndon – A128 Tilbury Rd/Old Tilbury Rd
Figure A325	Total Traffic Flows 2023 – A128 Tilbury Rd/A127 Interchange
Figure A326	Total Traffic Flows 2031 – A128 Tilbury Rd/A127 Interchange
Figure A327	Total Traffic 2023+West Horndon – A128 Tilbury Rd/A127 Interchange
Figure A328	Total Traffic 2031+West Horndon – A128 Tilbury Rd/A127 Interchange
Figure A329	DHGV Traffic Distribution
Figure A330	DHGV Peak Hour Traffic Flows

APPENDIX B

Arcady Results – EHIP Roundabout

Arcady Results – DHGV Roundabout

Arcady Results – A127/A128 Interchange

APPENDIX C

Picady Results existing layout – A128 Tilbury Road/Station Road

Picady Results proposed layout– A128 Tilbury Road/Station Road

APPENDIX D

Linsig Results – A128 Tilbury Road/Station Road Pre-DHGV Development

Linsig Results – A128 Tilbury Road/Station Road Post-DHGV Development

APPENDIX E

Personal Injury Accident Data



Volume 5 of 5

APPENDIX F

TRICS Assessment



1.0 INTRODUCTION

- 1.1 The Redwood Partnership has been appointed by MM Properties (London) Limited to prepare a Transport Assessment for a new development to be named 'The Broadfields Innovation & Business Park'. The proposal comprises the demolition of existing buildings and yard and the erection of a new Innovation and Business Park offering a range of commercial uses up to 32,000 sqm (GIA). The proposal includes a mix of Use Classes E(g)(iii), B2 and B8; a single dedicated site access; on-site vehicle parking, service loading/unloading areas, motorcycle and cycle parking together with associated infrastructure all on land at Broadfields, Old Tilbury Road, Brentwood, Essex together with adjacent off-site highway improvements and new traffic signals at the A128 Tilbury Road/Station Road junction ('Development').
- 1.2 The Development is an Outline planning application with all matters reserved except for access. The Development is located approximately 5km east of the M25, junction 29 and south-west of the junction of the A127 Southend Arterial Road and A128 Tilbury Road. The site is accessed from the west side of the old alignment of Tilbury Road as shown on **Figure A1**.
- 1.3 Old Tilbury Road is the original alignment of Tilbury Road on the eastern boundary of the site and will be referred to as 'Old' Tilbury Road to differentiate it from the A128 Tilbury Road. Old Tilbury Road is a 7.3-metre-wide local access road providing access to Broadfields; a small number of private residences; other small businesses and a residential development of 23no dwellings beyond the north-east corner of the site.
- 1.4 Old Tilbury Road also serves an approved development site located opposite known as the East Horndon Industrial Park (Ref: 19/00315/OUT). This development will be referred to as 'EHIP' within this document. Drawing No REDW-3235-104-B (**Drawings**) shows the EHIP approved off-site highway works along Old Tilbury Road, including the new roundabout at the A128 Tilbury Road/Old Tilbury Road junction ('EHIP roundabout'). The first phase of the EHIP permission has now been implemented on site and prior to this phase opening the associated off-site highway works outlined above will be completed.



1.5 The Development includes the following:

- Outline planning application (with all matters reserved except for access) for the redevelopment of the site to deliver the Broadfields Innovation and Business Park, comprising demolition of existing buildings and the erection of new buildings providing up to 32,000 sqm of Class Eg(iii), B2 and B8 floorspace, together with associated landscaping, vehicle parking and loading, cycle parking and infrastructure;
- Maximum 466no car parking spaces including 23no disabled spaces;
- Within the total car park provision, car-charging infrastructure for 93no car parking spaces (20% allowance) consisting of 'active' car-charging (i.e. with operating charge points) with a further 93no car parking spaces (20% allowance) consisting of 'passive' car-charging provision (i.e. with underground ducts extended to these spaces for easy conversion to active charging at a later date);
- 140no secure and covered cycle parking spaces;
- 17no motorcycle parking spaces;
- Construction of a new off-site 3m wide shared footpath/cyclepath from the pedestrian crossing island on the A128 Tilbury Road to the north-east corner of the site opposite Hall Cottages;
- Construction of a new off-site 2m wide footpath south from the pedestrian crossing island on the A128 Tilbury Road to the Station Road junction;
- Construction of a new traffic signal installation at the junction of the A128 Tilbury Road / Station Road as shown on **Drg.No. REDW-3386-404**.

- 1.6 The site has been subject to a previous planning application now withdrawn (Ref: 21.01666.OUT) for outline planning for the demolition of existing buildings and construction of new buildings providing up to 20,000 sqm of Class E(g)(ii), E(g)(iii), B2 and B8 floorspace, together with associated landscaping, vehicle parking and loading, cycle parking and infrastructure ('Broadfields 1'). The Broadfields 1 planning application received a consultation response from Essex County Council (ECC) shown in italics below:

'The documents accompanying the application have been duly considered and a number of site visits have been carried out previously. From a highway and transportation perspective, the impact of the proposal is NOT



acceptable to the Highway Authority for the following reasons;

- 1. The application has not considered the wider impacts of the proposed development in combination with other major developments in the locality that are proposed within Brentwood Borough Council's emerging Local Plan.*
- 2. The submitted highways capacity assessment is not considered to be sufficiently robust on the potential impact of the proposed development on the local highway network.*

The proposals are therefore contrary to the principles of the National Planning Policy Framework and the aims and objectives of the Highway Authority's Development Management Policies, adopted as County Council Supplementary Guidance in February 2011'

- 1.7 Notes accompanying the ECC consultation response provided further detail, saying:

Notes

The proposed development site is located on the 'old' Tilbury Road which connects to the A128 approximately 300m south of the proposed access. Brentwood Borough Council's emerging Local Plan has designated the area on the other side of the A128 for a new Garden Village development to include 3,700 dwellings, care homes, primary and secondary schools and 5.5 hectares of employment land. Dunton Hills Garden Village forms the cornerstone of the residential allocation within the Local Plan. Given that

- a) the Local Plan has been through public examination and reached the main modifications stage, and*
- b) there is a live planning application for Dunton Hills Garden Village that is currently being considered, the developer of Broadfields Innovation and Business Park needs to demonstrate that both developments can co-exist without detriment to the safety and efficiency of the local highway network. (our underlining).*

- 1.8 ECC in their consultation response to the Broadfields 1 application stated that their approval would be linked to the outcome of their discussions and agreement of traffic data associated with the Dunton Hills Garden Village (DHGV) application located to the east side of the A128 Tilbury Road. **Figure 1.1** shows the relative location of both development sites.
- 1.9 The DHGV planning application has been submitted and is currently being considered by Brentwood District Council. The Development will provide significant employment opportunities for DHGV residents prior to the implementation of any DHGV permission:



Figure 1.1 – Site Location relative to the DHGV Site



- 1.10 The Transport Assessment measures and assesses the highway and transportation effects of the Development the surrounding highway network together with DHGV and other specific committed developments and reviews the sustainability of the Development against local and national guidelines.
- 1.11 The Transport Assessment considers the following issues:
- **Section 2.0** describes the existing highway conditions and patterns of movement within the study area together with public transport provision and accessibility of all modes of travel in the vicinity of the site;
 - **Section 3.0** describes the Development proposals;
 - **Section 4.0** assesses the volume, distribution and characteristics of trips likely to be attracted to the Development and the likely impact of both the Development and the adjacent Committed Development on the adjoining highway network;
 - **Section 4.0** includes a review of the effect on the wider highway network of both this Development and the adjacent EHIP Committed Development and the West Horndon residential re-development;
 - **Section 5.0** describes the local and national highway planning policy background;
 - **Section 6.0** provides a full summary and report conclusions.



- 1.12 The Transport Assessment should be read in conjunction with the indicative architectural proposals shown on NWA plc Chartered Architects **Drawing No. 0503-A20-007** and the Design and Access Statement both prepared by NWA plc Chartered Architects together with the Planning Statement prepared by Savills. The Transport Assessment should also be read together with the Framework Travel Plan document prepared for the Development by the Redwood Partnership (PMcL/3386d6/September 2022).
- 1.13 The Transport Assessment provides a conservative assessment of traffic flows based upon robust traffic growth figures and using development traffic data already agreed for the adjacent East Horndon Industrial Park development and DHGV data as currently submitted. The Transport Assessment will show that the Development can be accommodated within the smaller roundabout being constructed by the East Horndon Industrial Park permission on the A128 Tilbury Road and on the larger future replacement roundabout proposed by the DHGV application in the same location. The Transport Assessment will also show no material detrimental effects on the A127/A128 interchange to the north prior to the implementation of more comprehensive highway works proposed by the DHGV application and at the Station Road junction to the south, subject to proposed traffic signal improvements shown on **Drg.No. REDW-3386-404**.
- 1.14 The local planning authority is Brentwood Borough Council. Essex County Council is responsible for highways and transportation matters in the area.



2.0 TRANSPORT PLANNING POLICY

2.1 Transport planning policy and guidance that are relevant to the Development are set out in the following documents:

- i) National Planning Policy Framework (NPPF – July 2021);
- ii) Essex Local Transport Plan 3 (LTP3: 2011-2026);
- iii) Brentwood Replacement Local Plan (Aug 2005) Saved Policies (Aug 2008);
- iv) Brentwood Local Plan Document – February 2019.

2.2 National and local planning policy aim to secure sustainable development in terms of transport. Policy aims generally are to:

- Reduce growth in the length and number of motorised journeys;
- Reduce the impact of HGV traffic on residential areas;
- Encourage alternative means of travel which have less environmental impact;
- Encourage sustainable development close to the market that it serves in order to reduce the need and length of car trips promoting healthy alternatives to the car.

National Planning Policy Framework (NPPF – July 2021)

2.3 The National Planning Policy Framework (NPPF) updated in July 2021 sets out the Government's planning policies for England and how they are expected to be applied providing a framework within which Councils can produce their own planning guidance. A core planning principle of the NPPF is to actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, focusing significant development in locations which are or can be made sustainable.

2.4 NPPF paragraph 110 states:

110. In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*



- b) safe and suitable access to the site can be achieved for all users;.....*
- d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.*

2.5 The site is within a reasonable walking distance of West Horndon Station and an easy walking distance to the nearest local bus stops providing a link north to Brentwood. The site's location will reduce the length of vehicle journeys; reduce reliance on the private car and provide employees and visitors to the site with a realistic choice of alternative means of travel other than the private motor car. This application together with EHIP, DHGV and West Horndon residential developments will provide an opportunity to enhance existing bus services to and from the site to West Horndon Station. Safe and suitable access to the site is proposed with no material adverse impact from the Development on the transport network.

2.6 NPPF paragraph 111 states:

'111. 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.'

2.7 It is established that the development complies with NPPF as:

- i) The proposed site access has been shown to be safe with adequate visibility splays. Sufficient car parking has been provided on site and will be managed to ensure that all parking demand is controlled and contained within the site boundary. Additional parking space is available on site if required by current maximum parking standards;
- ii) The EHIP roundabout; the replacement DHGV roundabout and the A127/A128 Tilbury Road interchange have been shown to operate within acceptable capacity under all scenarios;
- iii) The A128 Tilbury Road/Station Road right turn lane junction is operating over-capacity at peak hours only, but will operate more efficiently with the Development as a result of the proposed traffic signal improvements shown on **Drg.No. REDW-3386-404**;



iv) The residual cumulative impacts have been shown to be acceptable and not 'severe' as specified in NPPF. The highway capacity of the local highway network will be further improved by highway works accompanying the Dunton Hills Garden Village development.

2.8 NPPF paragraph 112(e) states:

'Within this context, applications for development should:

e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.'

The Development will include 20% active electric vehicle charging points distributed within the site, together with 20% passive spaces for future upgrade. Electric vehicle charging points can be allocated to each individual dedicated sub-plot within the Development in proportion to subsequent detailed planning applications.

Essex Local Transport Plan (LTP3), 2011-2026 - June 2011

2.9 The Essex LTP, June 2011 provides advice and guidance on transport objectives for Essex. Policy 2 - Integrated Planning states:

Policy 2 – Integrated Planning
<p>Transport and land-use planning will be used together to secure new development at the most appropriate and sustainable locations by:</p> <ul style="list-style-type: none"> • working closely with district planning authorities to enable a better balance of new homes, jobs and services; • locating new developments in areas which are accessible to key services by sustainable forms of transport; • ensuring new developments provide for sustainable transport and effective travel planning; • requiring new developments to provide appropriate transport infrastructure in line with the Council's current development management policies; and • making the most effective use of all available funding sources by co-ordinating the delivery of ECC and development funded works.

2.10 A comprehensive and efficient transport system is an important enabler of sustained economic prosperity. The site location achieves this by:



- enabling businesses on the site to reduce their costs by moving their people and goods more quickly, easily and reliably;
- providing easy access to markets and suppliers and avoiding HGV movements through residential areas;
- getting people to work by creating more job opportunities for a wider and more flexible labour market, especially for new residents planned for the nearby area.

2.11 The site is accessible to staff and visitors walking, cycling, by bus and by rail transport. Adequate car parking is provided on site for those who need the use of a car. Cycle parking provision on site will encourage cycling as a travel mode. A new off-site shared footpath/cyclepath will connect the site with existing bus stops on the A128 Tilbury Road providing the site with a safe pedestrian and cycle route to existing footway infrastructure and public transport. The future planned DHGV development nearby will further enhance the connectivity of the site.

2.12 Policy 6 – Freight Movement states:

Policy 6 – Freight Movement

The Council will manage the efficient movement of freight within the county by:

- working with operators to ensure that heavy goods vehicles use identified routes and that other freight traffic uses the most appropriate routes;
- working with local businesses to promote and support the sustainable distribution of goods;
- working in partnership with the Highways Agency and neighbouring authorities to provide live travel information to freight operators;
- encouraging a shift of freight from road transport to rail transport.

2.13 The site is ideally located near to the Principle Routes of the A128 Tilbury Road with a short connection to the A127 Arterial Road which links directly west to the M25 and the trunk road network. HGV movements from the site will not need to pass through existing or future planned residential areas.



Brentwood Replacement Local Plan (Aug 2005) Saved Policies (Aug 2008)

- 2.14 Current Local Plan policy is included in the Brentwood Replacement Local Plan (Aug 2005) Saved Policies (Aug 2008). Relevant policies include:

Policy T1 – Travel Plans which requires businesses to adopt Travel Plans; A Framework Travel is provided with the planning application.

Policy T2 – New Development and Highway Considerations states that planning permission will not be granted for proposals where proposals indicate an *'Unacceptable detrimental impact on the transport system which cannot be resolved by agreed mitigation measures'*. The residual cumulative impacts have been shown to be acceptable and not severe.

Policy T5 – Parking General states *'Any provision for vehicle parking will be expected to comply with the parking standards set out in Appendix 2'*. The approved parking standards are Essex County Council's Parking Standards: Design and Good Practice SPD (Sep 2009) which are referred to within this assessment.

Brentwood Local Plan – Pre-Submission Document, February 2019

- 2.15 The Brentwood Local Plan was submitted to the Secretary of State for independent examination on 14 February 2020 and is yet to be formally adopted. Policy BE15: Electric and Low Emission Vehicles states:

'A. The Council will seek appropriate infrastructure for electric and low emission vehicles at new developments;

B. This could include, but is not limited to, electric vehicle charging / plug-in points or the infrastructure required to provide this in the future.'

Electric vehicle charging points are provided within the Development. An allocation of 20% active spaces (93no with operating charge points) and 20% passive spaces (93no with ducting for future conversion) are included within the total car parking provision of 466 spaces.



2.16 Policy BE16: Mitigating the Transport Impacts of Development states:

- 'A. Developments should seek to ensure that they will not have an unacceptable transport impact and/or any significant impacts from the development on the transport network (in terms of capacity and congestion) and on highway safety can be effectively mitigated to an acceptable degree;*
- B. New development will be required to:*
- a) submit Travel Plans, Transport Assessments and/or Statements in accordance with the thresholds and detailed requirements for each land use category as set out in the Essex County Council's Development Management Policies or its successors;*
 - b) provide reasonable and proportionate financial contributions/mitigation measures where necessary to mitigate the transport impact of the development to an acceptable degree....'*

2.17 Policy BE17: Parking Standards states:

- 'A. The Council will refer developers to the vehicle parking standards set out in the most up-to-date Essex Parking Standards. Schemes should comply with design standards and provision levels for uses and transport modes specified;*
- C. Proposals which do not conform to these standards should be supported by evidence detailing the local circumstances that justify deviation from the standard.'*

2.18 The scheme is compliant with current Essex Parking Standards with reasonable adjustments. The Outline application provides indicative parking provision appropriate to the proposed business uses showing that space for parking is available on the site.

2.19 Brentwood Borough Council's publication 'A Sustainable Transport Integration Vision' February 2020 provides a vision for improvements to highway and transportation facilities in the area. **Plan 2.1** shows that the site is ideally located within the South Brentwood Growth Corridor near to proposals for significant future residential development such as



the West Horndon re-development (560 dwellings) and the Dunton Hills Garden Village (3,500+ dwellings) offering future employment opportunities to new residents:

Plan 2.1

Site Location within South Brentwood Growth Corridor (SBGC, Figure 2 with site location added)



- 2.20 Both new residential sites, in particular the DHGV proposal, as it develops, will be within easy walking and cycling distance of the site providing accessible employment opportunities for new residents in the area. For those staff that need the use of the private car, the site location near to future residential areas will ensure shorter vehicle journeys.



3.0 EXISTING HIGHWAY & ACCESSIBILITY

- 3.1 The site is mainly open undeveloped ground. The north-eastern corner of the site consists of a single dwelling known as Broadfields accommodating a number of small businesses together with a general commercial yard and buildings for the storage of vehicles and materials. All these uses and their resultant vehicle trips will be removed from the highway network by the Development.

Pedestrian routes

- 3.2 The Institution of Highways and Transportation (IHT) publication "Guidelines for providing for journeys on foot" outlines reasonable walk distances for pedestrians without impaired mobility. The document refers to 2000 metres (2km) as being the preferred maximum distance people would consider when walking to work and suggests other acceptable walk distances for other purposes and location as shown in **Table 3.1**. As the general topography of the area surrounding the site is relatively flat, we would expect that the 'preferred maximum' walk distances will be acceptable by staff and visitors should they consider walking as a viable mode of travel:

Table 3.1: Suggested Acceptable Walking Distances (IHT)

	Town Centre (m)	Commuting/School Sightseeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred Maximum	800	2000	1200

- 3.3 Pedestrian routes in and around the site are flat and sufficiently wide for safe pedestrian access. **Figure A2 (Appendix A)** shows the walking routes from the site to the nearest bus stops on the A128 Tilbury Road and West Horndon railway station. The site is within a 400-metre (5-minute) walk distance of bus services on the A128 Tilbury Road.
- 3.4 Pedestrians do not have dedicated footway access to the site at the present time as Old Tilbury Road is bordered mainly by grass verge. However, from the north via the A127



Southend Arterial Road, a surfaced footway extends as far as the entrance of East Horndon Hall and its commercial entrance and beyond that to Hall Cottages (**Figure A2**). The Development will include tactile paved dropped kerb crossing points from the east side of Old Tilbury Road to the site entrance.

- 3.5 There are no surfaced pedestrian footways on Old Tilbury Road south of the site towards the A128 Tilbury Road. A narrow and uneven surfaced footpath 1.0-1.2m wide exists from bus stop BS4 (**Figure A2**) on the A128 Tilbury Road but terminates near to the Old Tilbury Road junction (**Photo 3.2**). The Development will include a 3m wide shared footway/cycleway on the west side of Old Tilbury Road from the A128 Tilbury Road to the north-east corner of the site.

Highways – Old Tilbury Road

- 3.6 Old Tilbury Road is a 7.3m wide local access road with double yellow line waiting restrictions and a 60-mph national speed limit (**Photo 3.1** and **Photo 3.2**). The road is sufficiently wide for two-way HGV movements and will not require further widening:

Photo 3.1
Old Tilbury Road at the northern end from the A127 Southend Arterial Road slip lane



Photo 3.2
Old Tilbury Road at the southern end from the A128 Tilbury Road junction



- 3.7 The site is located on the west side of Old Tilbury Road, East Horndon, Brentwood, Essex, CM13 3LS and has the benefit of vehicle access from both the northern and southern ends. From the north, access is via an entry-only access road direct from the on-slip to the westbound A127 Southend Arterial Road. From the south, access is via an all movements simple priority junction with the A128 Tilbury Road where Old Tilbury Road forms a minor side road at this junction (**Figure A1**).



- 3.8 Southbound entry only vehicle access is possible from the westbound A127 Southend Arterial Road on-slip, however the majority of vehicle access to the site is from the Old Tilbury Road/A128 Tilbury Road junction. **Photo 3.3** shows the visibility to the left for traffic leaving the southern end of Old Tilbury Road onto the A128 Tilbury Road, **Photo 3.4** shows the visibility to the right at this junction:

Photo 3.3
Old Tilbury Road visibility to left



Photo 3.4
Old Tilbury Road visibility to right



Highways – A128 Tilbury Road

- 3.9 The A128 Tilbury Road is a north-south Principle Route approximately 9m wide passing east of the Development. The road is subject to a 50mph speed limit. Although vehicle access is possible from the northern end of Old Tilbury Road the majority of Development traffic is expected to access the site from the south via A128 Tilbury Road.

Public Transport - Bus Accessibility

- 3.10 The Institution of Highways & Transportation's "*Guidelines for Planning for Public Transport in Developments*" (Para 5.18) states that: '*The Department of the Environment has recommended that the public should not have to walk more than 400 metres to the nearest bus stop.*'
- 3.11 The location of the nearest bus stops to the site is shown on **Figure A2 (Appendix A)** and on **Drawing No REDW-3386-406**. The nearest bus stops are located on the A128 Tilbury Road near to its junction with the A127 Southend Arterial Road (**BS1** and **BS2**– **Figure A2**) where passengers can alight walking adjacent to the A127 Southend Arterial Road westbound on-slip road then to the site from the northern end of Old Tilbury Road.



Passengers travelling on northbound bus services can alight at **BS1** directly onto the nearside footway which links to the northern end of the A128 Tilbury Road, however after alighting from southbound services at **BS2** just south of the interchange there is no safe route to cross the A128 Tilbury Road to access the site, therefore this bus stop will not be promoted as a safe alighting point for the Development. Bus stop **BS3** would be promoted as a safer bus stop for southbound bus services.

- 3.12 Alternatively, passengers can alight on the A128 Tilbury Road south of the site (**BS3** and **BS4** – **Figure A2**) walking north along Old Tilbury Road to the site. The walk distance from the southbound bus stop to the site entrance is 375 metres (5-minutes), marginally longer to the northbound bus stop of approximately 450 metres (6-minutes). The majority of bus passengers travelling to the site will alight at the southbound bus stop which is closer to the site. A new surfaced shared footpath/cyclepath adjacent to Old Tilbury Road leading to the site is included in the proposals and will provide a surfaced route from the nearest bus stops to the site entrance.
- 3.13 Bus service 565 is the single general passenger service passing near to the site providing 6no journeys Monday to Friday and 6no journeys on Saturday. The service links Brentwood, Ingrave, Herongate, East Horndon, West Horndon and Bulphan. **Drawing No REDW-3386-407** shows the service routing and timetable extract. The first service from Brentwood Station arrives at 07:30hrs; the last service departs to Brentwood Station at 18:00hrs, providing a realistic bus service for work trips. **Table 3.2** shows the frequency and route of this local bus service:

Table 3.2 - Local bus services and frequencies (Plan – REDW-3386-400)

Service Number	General Frequency (mins)			Route
	Mon-Fri	Saturday	Sunday	
565	6 services	6 services	-	Brentwood, Ingrave, Herongate, East Horndon, West Horndon and Bulphan

- 3.14 The walk distances from the site to the nearest bus stops on the A128 Tilbury Road are in practical terms within the suggested maximum walk distances included in the Institution of Highways & Transportation's guidelines. The site is accessible to local bus services.



Public Transport - Rail Accessibility

- 3.15 West Horndon railway station is located 1.8 kilometres south-west of the site providing over ground rail services (**Figure A2** and **Dwg.No. REDW-3386-406**). Train services are primarily provided by c2c. The typical off-peak service frequency is 2no trains per hour to London Fenchurch Street and 2no trains per hour to Shoeburyness via Basildon. Average train journey times from West Horndon are 10 minutes to Basildon; 20 minutes to Upminster (with connections to the London Underground); 30 minutes to Southend and 30 minutes to London Fenchurch Street.
- 3.16 The railway station is located within the preferred maximum commuting walk distance as defined in **Table 3.1** and for most healthy adults the walk distance from the station to the site is relatively easy and manageable. Business trips using the local taxi service as a link from the site to the station is a realistic possibility. The site is realistically accessible to local rail services.

Cycle Routes

- 3.17 The highway adjacent to the site does not have dedicated cycle routes and cyclists are required to cycle on the carriageway, however the local topography is reasonably level and the carriageway sufficiently wide to encourage cycling as a realistic mode of travel. Cycle journeys of up to 5 miles (8km) can replace carborne trips and adequate cycle storage will be provided for each business unit to encourage cycling as a sustainable mode of transport. New cycle routes adjacent to the site will be included as part of the Development.
- 3.18 **Figure A4** shows the 5-mile cycle isochrone to the site. Should staff and visitors wish to use cycling as a mode of transport the site is accessible to residential areas such as the majority of Brentwood including south-west parts of Billericay to the north; West Horndon, Langdon Hills and Laindon to the south, west and east and potentially further west towards Cranham. The cycle isochrone encompasses future residential areas such as West Horndon re-development and Dunton Hills Garden Village near to the site.



Personal Injury Accident Data

- 3.19 Personal injury accident data (PIA) on record for the period between 1st January 2012 and 31st December 2016 was obtained from Essex County Council. The area of interest included the A128 Tilbury Road junction northwards to the A127 Southend Arterial Road/A128 Tilbury Road interchange. The PIA data and accident location map are included in **Appendix F. Table 3.3** provides a summary of all the accidents.
- 3.20 An appraisal of the accident data over the 5-year period illustrates no history or pattern of traffic collisions to show that there are concerns with regard the local highway design. The data does not show abnormal grouping of accidents or a statistically high occurrence of incidents near to the site. No fatal accidents occurred within the area of interest in the period 2012-2016. A number of serious and slight accidents were recorded within this time period as scheduled in **Table 3.3**:

Table 3.3: Accident Data Summary (Source Essex County Council)

Accidents involving:

	Fatal	Serious	Slight	Total
Motor vehicles only (excluding 2-wheels)	0	13	59	72
2-wheeled motor vehicles	0	3	2	5
Pedal cycles	0	2	0	2
Horses & other	0	0	0	0
Total	0	18	61	79

Casualties:

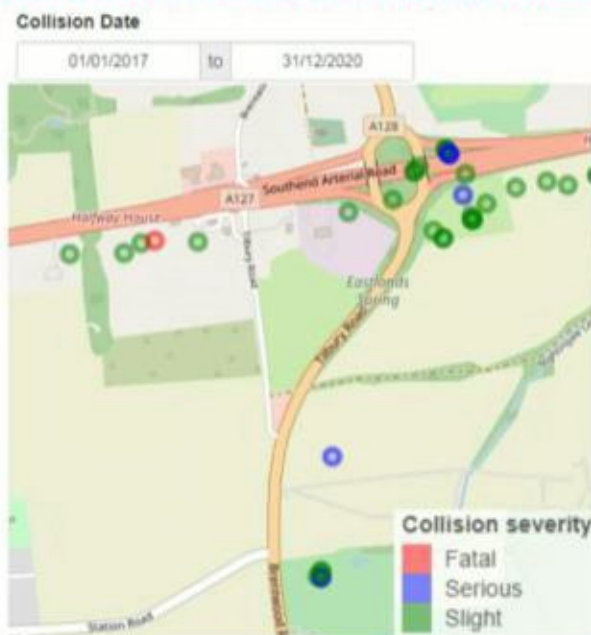
	Fatal	Serious	Slight	Total
Vehicle driver	0	12	62	74
Passenger	0	3	36	39
Motorcycle rider	0	2	1	3
Cyclist	0	2	0	2
Pedestrian	0	0	0	0
Other	0	0	0	0
Total	0	19	99	118

- 3.21 Where causation factors were noted, reasons for the accident flagged up a lack of driver attention and driver error rather than junction inadequacies. None of the records indicate that the police considered junction design to be a material reason for an accident.
- 3.22 A further online search (saferessexroads.org/collision-data) for the period between 1st January 2017 and 31st December 2020 was undertaken, showing a single collision at the Old Tilbury Road and a small number of collisions at the A128 Tilbury Road/Station



Road junction (**Figure 3.1**). The Station Road junction is being improved as part of this application. A number of collisions were recorded at the A127 Southern Arterial Road/A128 Tilbury Road interchange. The relative traffic impact of the Development on the A127 Southern Arterial Road/A128 Tilbury Road interchange is minimal and would have no material effect on highway safety at this junction.

Figure 3.1
Online Search of Traffic Collisions (saferessexroads.org/collision-data)





4.0 DEVELOPMENT PROPOSALS

4.1 Outline illustrative site layout proposals are shown on NWA plc Chartered Architects **Drawing No. 0503-A20-007** included at the rear of the Transport Assessment. The proposals are for a maximum provision of up to 32,000 sqm gross internal floor area (GIA) of mixed-use innovation and business park use.

4.2 The Development may be constructed in phases with on-site infrastructure and cycle, vehicle and motorcycle parking provided in proportions agreed with each phase. The proposed site access from Old Tilbury Road together with the associated off-site footpath/cyclepath improvements along Old Tilbury Road and the A128 Tilbury Road and the A128 Tilbury Road/Station Road traffic signal improvement would be completed prior to the opening of any part of the Development.

4.3 The Development includes the following:

- Outline planning application (with all matters reserved except for access) for the redevelopment of the site to deliver the Broadfields Innovation and Business Park, comprising demolition of existing buildings and the erection of new buildings providing up to 32,000 sqm of Class Eg(iii), B2 and B8 floorspace, together with associated landscaping, vehicle parking and loading, cycle parking and infrastructure;
- Maximum 466no car parking spaces including 23no disabled spaces;
- Within the total car park provision, car-charging infrastructure for 93no car parking spaces (20% allowance) consisting of 'active' car-charging (i.e. with operating charge points) with a further 93no car parking spaces (20% allowance) consisting of 'passive' car-charging provision (i.e. with underground ducts extended to these spaces for easy conversion to active charging at a later date);
- 140no secure and covered cycle parking spaces;
- 17no motorcycle parking spaces;
- Construction of a new off-site 3m wide shared footpath/cyclepath from the pedestrian crossing island on the A128 Tilbury Road to the north-east corner of the site opposite Hall Cottages;
- Construction of a new off-site 2m wide footpath south from the pedestrian crossing island on the A128 Tilbury Road to the Station Road junction;



- Construction of a new traffic signal installation at the junction of the A128 Tilbury Road / Station Road as shown on **Drg.No. REDW-3386-404**.

4.4 **Table 4.1** includes an indicative range of commercial uses and floor areas together with associated car and motorcycle parking provision:

Table 4.1 – Outline Development Schedule of Areas & Parking Provision

Use Class	Internal Floor Area GIA (sqm)	External Floor Area GEA (sqm) ⁽³⁾	Car Parking (no)	Disabled Parking (no)	PTW ⁽⁴⁾ (no)
E(g) (iii) ⁽¹⁾	9,844	10,366	196	10	7
B2	4,800	5,040	96	5	3
B8	17,356	18,224	174	8	7
Totals	32,000	33,600	466	23	17

Notes:

1. Formally Use Class B1(c) – Industrial Processes;
2. GIA x 1.05 (Used for TRICS purposes)
3. PTW=Powered two-wheelers (motorcycles).

'Old' Tilbury Road

- 4.5 **Drawing No. REDW-3386-405** shows single access to the Development is gained directly from Old Tilbury Road via a new priority junction. Tilbury Road is 7.3m wide with double yellow line waiting restrictions and a 60-mph national speed limit. The speed limit on Old Tilbury Road will be reduced to 20mph as part of Brentwood Borough Council's vision document (**Figure 4.1**).
- 4.6 The new 7.3m wide site access with 9m entry radii is provided with 2.4x95m visibility splays which have previously been agreed by ECC as adequate for Old Tilbury Road vehicle speeds. The proposed access is sufficient to allow for the entry and exit of 16.5m articulated lorries and 12m rigid lorries.
- 4.7 There are no surfaced footways adjacent to Old Tilbury Road from the south via the A128 Tilbury Road apart from a narrow 1.0-1.2m wide surfaced footpath from bus stop BS4 (**Figure A2**) on the A128 Tilbury Road which terminates at Old Tilbury Road junction south of 'The Willows' dwelling (**Photo 3.2**).



Pedestrian & Cycle Routes

4.8 Brentwood Borough Council's vision document titled 'A Sustainable Transport Integration Vision' February 2020 (SBGC) includes proposals to improve accessibility along Old Tilbury Road. The improvements at the northern end of Old Tilbury Road are located in a sub-area referenced in the publication as 'Area B', whilst the southern end improvements are located in a sub-area referenced as 'Area C'.

4.9 **Figure 4.1** shows an extract from Brentwood Borough Council's vision document and the proposed Area B Works. The left panel shows the existing situation on Old Tilbury Road, the right panel shows the Council's anticipated improvements:

Figure 4.1 – Brentwood Borough Council Area B Works – Existing and Proposed



4.10 The Council's Area B proposals include a realignment of Old Tilbury Road to accompany a new 20mph speed limit. A dedicated cyclists-only 3m wide cyclepath on the west side of Old Tilbury Road, passing the site frontage and extending north to the A127 Arterial Road is proposed by the Council. The vision document also includes a 2m



wide footpath on the east side of Old Tilbury Road which is included in the EHIP permission which has now being implemented.

- 4.11 **Figure 4.2** shows an extract from Brentwood Borough Council's vision document and the proposed Area C Works at the southern end of Old Tilbury Road and at its junction with the A128 Tilbury Road. The left panel shows the existing situation on Old Tilbury Road, the right panel shows the Council's anticipated improvements including a larger roundabout as required by the Dunton Hills Garden Village development ('Dunton Hills Roundabout'):

Figure 4.2 – Brentwood Borough Council Area C Works – Existing and Proposed



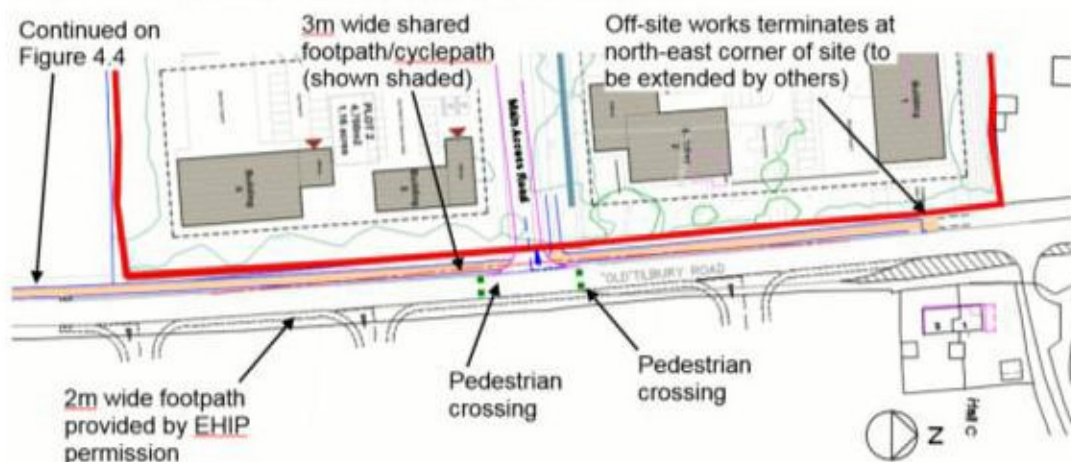
- 4.12 The Council's Area C proposals include a dedicated 3m wide dedicated cyclepath (cyclists only) on the west side of Old Tilbury Road, extending south from the Development to the A128 Tilbury Road. This cyclepath and a separate new 2m footpath surrounds three sides of the Dunton Hills Roundabout (**Figure 4.2**). The proposed 2m footpath crosses to the east side of Old Tilbury Road south of the property named 'Willows' linking to the footpath on the frontage of the EHIP site.



Proposed off-site footpath/cyclepath Improvements

- 4.13 Pedestrians do not have a dedicated footway or cycleway connecting to the site as Old Tilbury Road at the present time is bordered mainly by grass verge. From the north via the A127 Southend Arterial Road, a short section of Old Tilbury Road has the benefit of a single surfaced footway on its east side extending south beyond the entrance of East Horndon Hall and its commercial entrance as far as Hall Cottages (**Figure A2**). The EHIP permission are constructing a 2m footway on the east side of Old Tilbury Road which will allow pedestrian access to the site via 2no dropped kerb crossings on Old Tilbury Road.
- 4.14 The Development includes a new shared 3m wide footpath/cyclepath along Old Tilbury Road from the A128 Tilbury Road through to the north-east corner of the site. **Figure 4.3** highlights the route of the proposed shared footpath/cyclepath passing along the complete eastern site frontage. The footpath/cyclepath further north of the site can be readily extended at a later date by others in accordance with the Council's Area B proposals (**Figure 4.1**): The shared footpath/cyclepath can be converted to a dedicated (cyclists-only) cycle route when the Dunton Hills Roundabout is completed together with its associated footpath works on the east side of Old Tilbury Road:

Figure 4.3 – Proposed off-site 3m footpath/cyclepath adjacent to site

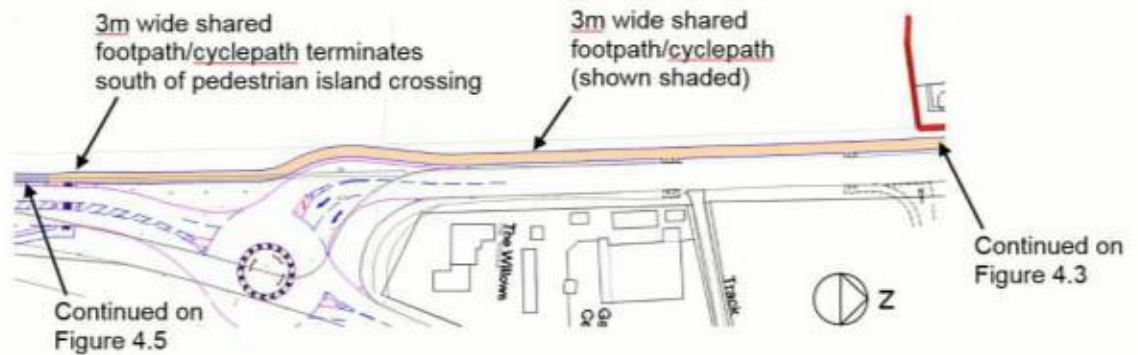


- 4.15 **Figure 4.4** shows the off-site proposals south of the Development along Old Tilbury Road to the A128 Tilbury Road. The proposed new 3m wide shared footpath/cyclepath will continue from the south-east corner of the Development passing west of the EHIP



Roundabout terminating south of the pedestrian island crossing on the A128 Tilbury Road:

Figure 4.4 – Proposed off-site 3m footpath/cyclepath adjacent to roundabout



- 4.16 **Figure 4.5** shows the continuation of the off-site proposals south from the pedestrian island crossing on the A128 Tilbury Road. From this point, the existing narrow footpath will be replaced with a new 2m wide footpath which will continue south from the pedestrian island crossing, passing the northbound bus stop on the A128 Tilbury Road and terminating at the Station Road traffic signal improvement works included in this application:

Figure 4.5 – Proposed Off-Site 2m Footpath Improvements to Station Road



- 4.17 Within the Development, a shared 3m wide footpath/cyclepath passes through the site on the north side of the main access road as indicated on **Drg.No REDW-3386-405** and on the indicative architect's **Drawing No. 0503-A20-007**. All on-site pedestrian and cycle routes will be subject to detailed planning application(s) and will be designed to provide easy access for wheelchair users in accordance with current building regulations.



Car Parking

- 4.18 Since 1st September 2020, Use Class A1, A2, A3 & B1 have been defined as a new Use Class E, however the relevant Use change applies to B1 Use only, where the proposed Use B1(c) is now classified as Use E(g)(iii). Car parking standards are included in the Essex Planning Officers Association (EPOA) publication 'Essex County Council – Parking Standards Design and Good Practice, September 2009'. The recent Use Classes changes have not yet been reflected in EPOA car parking standards, so equivalent parking standards relating to the former B1(c) Use have been used.
- 4.19 **Table 4.2** shows the suggested ECC maximum vehicle parking standards for each proposed planning Use:

Table 4.2
Essex County Council – Vehicle Parking Standards (Sept 2009)

Use	ECC Standard (space/sqm)	Development Size (sqm)	Maximum Parking Provision (spaces)
B1 (now E(g))	1/30sqm	9,844	328
B2	1/50sqm	4,800	96
B8	1/100sqm	17,356	174
	Total	32,000	598

- 4.20 Essex County Council's parking standard for B1 Use is a blanket standard covering all sub-groups, including B1(a) Offices, B1(b) Research and Development of Products & Processes and B1(c) Light Industry. The development proposal includes only B1(c) (now Use Class E(g)(iii)) which are B1 sub-groups generating lower levels of traffic and therefore a lower parking demand than B1(a) (now Use Class E(g)(i)).
- 4.21 Staff employment densities within the B1 Use group can vary according to the type of Use as shown in data on employment densities in Home & Communities Agency, 'Employment Densities Guide 2015'. **Chart 4.1** includes an extract of Section 4 of that document showing that employment density for B1(c) Use at approximately 47 sqm per employee can be four times less than that for B1(a) Use showing approximately 12 sqm per employee.



- 4.22 Essex County Council's blanket B1 Use parking standard is therefore not appropriate for developments including only B1(c) Use as this will result in an over-provision of car parking if used without adjustment. Based upon actual staff densities for E(g)(iii) Use we consider a more realistic overall maximum parking standard for E(g)(iii) Use would be 1 space per 50sqm. **Table 4.3** shows the adjusted parking requirement for the development:

Table 4.3
Amended Vehicle Parking Requirements (maximum)

Use		Parking Standard (space/sqm)	Development Size (sqm)	Maximum Parking Provision (spaces)
B1 (now E(g))		1/50sqm ⁽¹⁾	9,844	196
B2		1/50sqm	4,800	96
B8		1/100sqm	17,356	174
		Total	32,000	466

Notes:

- Adjusted standard according to 'Employment Densities Guide 2015'

Chart 4.1 – Extract from Employment Densities Guide 2015

Homes & Communities Agency Employment Density Guide 2015

4. Employment density matrix

Use Class	Sub-Category	Sub-Sector	Density (sqm)	Notes
B1a Offices	General Office	Corporate	13	N/A
		Professional Services	12	N/A
		Public Sector	12	N/A
		TMT	11	N/A
		Finance & Insurance	10	N/A
	Call Centres		8	N/A
B1b	R&D Space		40-60	N/A lower densities will be achieved in units with higher provision of shared or communal spaces
B1c	Light Industrial		47	N/A
B2	Industrial & Manufacturing		36	G/A
B8	Storage & Distribution	National Distribution Centre	95	G/A
		Regional Distribution Centre	77	G/A
		'Final Mile' Distribution Centre	70	G/A

- 4.23 ECC parking standards suggest a maximum car parking provision of 598no spaces for the proposed Uses (**Table 4.2**). Based upon the operational requirements of the Applicant and the Employment Density Guide 2015 (**Chart 4.1**), the indicative sketch site layout proposals shown on **Drg.No. NWA-0503-A20-007** shows that the site is of sufficient size to contain up to a maximum 466no preferred sized ECC parking spaces



dimensioned 2.9x5.5 metres including 23no disabled parking spaces. The main access road width will be 7.3m. Aisle widths will be a minimum of 6 metres in front of parking bays, increased to 7 metres wide where through HGV access is required to service yards between parking spaces.

- 4.24 The Development is therefore shown to be compliant with the ECC car parking standards but with a reasonable adjustment for Use Eg(iii) in accordance with the Employment Densities Guide 2015 as shown in **Chart 4.1**.

Electric Car Charging

- 4.25 The Essex Design Guide provides no specific guidance with regards to the quantum of electric car-charging facilities for non-residential development. The guide states *'The level of provision of electric charging points should be appropriate to the development size and type, its level of parking provision and its context and location'*.

The Design Guide standards for residential development states:

'3.204 For housing developments with no off-street parking, 10% of the unallocated parking bays should have an active (i.e. wired and ready to use) charge point. A further 10% should have the necessary underlying infrastructure (i.e. cabling and ducting) to enable quick, simple installation at a later date when there is sufficient demand'

- 4.26 HM Government guidance *'Electric Vehicle Charging in Residential and Non-Residential Buildings, July 2019'* makes suggestions for new non-residential buildings stating:

'The government wants every new non-residential building, and every non-residential building undergoing a major renovation, with more than 10 car parking spaces within the site boundary of the building to have one charge point and cable routes for electric vehicle charge point cabling for one in five spaces'

- 4.27 The Development includes electric vehicle charging provision greater than national Government guidance. Based upon a maximum of 466no parking spaces, it is proposed to



provide 20% 'active' provision (i.e. with operating charge points) equating to a total of 93no car parking spaces with a further 20% 'passive' provision equating to a further 93no car parking spaces (i.e. with ducts extended to these spaces for easy upgrade to usable charge points at a later date). The active provision will consist of fast-charging units which have a typical charging time of 2-4 hours, appropriate for workplace charging.

Disabled Car Parking

- 4.28 Advice on the proportion of disabled spaces provided in car parks is provided in the 'Essex County Council – Parking Standards Design and Good Practice, September 2009'. The minimum standard which is the same for all 3 planning uses E(g) (formally B1(b) and B1(c)), B2 and B8 suggests individual bays for disabled to be: *'For car parks below 200 vehicle bays = 2 bays or 5% of total capacity. For car parks over 200 vehicle bays = 6 bays plus 2% of total capacity'*.
- 4.29 Car parking provision is below 200no spaces for each commercial building; therefore, we consider a disabled parking standard of 5% of total parking capacity to be suitable which suggests a minimum number of 23no disabled spaces (466×0.05). A disabled parking provision of 23no spaces will be distributed around the site generally in proportion to each use as scheduled on **Table 4.3**. The proposals are in excess of the ECC disabled parking standard.

Cycling

- 4.30 As previously discussed, employment density for E(g)(iii) Use can be four times less than that for the E(g)(i) Use proposed, therefore a blanket B1 cycle parking standard is not sufficiently applicable for developments including only E(g)(iii) Use. A reduction to the cycle parking standard has been made for E(g)(iii) Uses as shown in **Table 4.4** to reflect the reduced employment density and therefore cycle parking demand for E(g)(iii). This similar reduction was previously agreed by ECC for the EHIP planning permission.
- 4.31 Advice on the proportion of cycle parking spaces provided in car parks is provided in the 'Essex County Council – Parking Standards Design and Good Practice, September 2009'. **Table 4.4** indicates unadjusted minimum ECC cycle parking provision of 228no spaces:

**Table 4.4 - Essex County Council – Cycle Parking Standards (Sept 2009)**

Use	Development Size GIA (sqm)	ECC Cycle parking standard (space/sqm)	Minimum Cycle parking provision (spaces)	Redwood adjusted Standard (space/sqm)	Adjusted parking provision due to reduced B1 employment density
B1 staff	9,844	1/100sqm	98	1/250sqm	39
B1 visitors	9,844	1/200sqm	49	1/500sqm	20
B2 staff	4,800	1/250sqm	19	1/250sqm	19
B2 visitors	4,800	1/500sqm	10	1/500sqm	10
B8 staff	17,356	1/500sqm	35	1/500sqm	35
B8 visitors	17,356	1/1000sqm	17	1/1000sqm	17
		Total	228		140

- 4.32 The adjusted cycle parking standard equates to 140no cycle storage spaces. A single bespoke and covered cycle parking structure is capable of storing 10no cycles per unit. The planning application includes 14no individual cycle storage units distributed around the site in accordance with the Uses shown in **Table 4.4**. Cycle parking provision would be subject to monitoring and potential enhancement if subsequent Travel Plan surveys show a greater need for cycle storage space.

Powered Two-Wheelers

- 4.33 Advice on the proportion of powered two-wheelers (PTW) provided in car parks is included in the 'Essex County Council – Parking Standards Design and Good Practice, September 2009'. The minimum standard which applies to all B1 Uses (B1(b), B1(c), B2 and B8 suggests '*1 space + 1 per 20 car spaces (for 1st 100 car spaces), then 1 space per 30 car spaces (over 100 car spaces)*'. Based upon a maximum car parking provision of 466no spaces the PTW parking requirement for this development is a minimum of 1 space + 1 per 30 car spaces for the whole development distributed evenly around the site.
- 4.34 Motorcycle parking is more efficiently contained in larger combined areas rather than individually marked spaces as it results in a more efficient usage of space for smaller mopeds and motorcycles. The PTW parking requirement equates to 17no spaces (1+466/30). Motorcycle parking can be provided for each building with a provision to store



a total of 17no motorcycles. The PTW parking provision will therefore compliant with the ECC parking standard.

Servicing

- 4.35 Track swept paths show that adequate space is provided on the indicative site layout within access roads and service yards for 16.5m articulated lorries and a 10m FTA rigid lorries HGV manoeuvres without conflicting with kerbs or parked areas.

- 4.36 Vehicle turning requirements for smaller rigid lorries, vans and emergency fire tenders are less onerous than for a 16.5m articulated lorry or 10m FTA rigid lorry and will therefore require less turning area. The proposed site access and the indicative site layout show that adequate space is available on the site to accommodate all HGV turning movements accessing the service yards or loading/unloading areas.



5.0 CAPACITY ASSESSMENT

5.1 The Transport Assessment reviews the traffic impact of the development on the capacity of the highway network at two future periods. It has been assumed that the Development will be open by Year 2024. An additional future year assessment year of Year 2032 has been undertaken, ten years after the date of registration of the planning application for the Development. The future assessment years for the Development therefore are:

- i) Opening Year Assessment - Year 2024 (year of opening);
- ii) Future Year Assessment - Year 2032 (year of application+10 years).

5.2 The traffic impact of the Development has been assessed on three highway junctions nearest to the site:

- i) A127 Southend Arterial Road / A128 Tilbury Road grade separated junction;
- i) A128 Tilbury Road / 'Old' Tilbury Road roundabout junction;
- ii) A128 Tilbury Road / Station Road ghosted right turn lane junction.

5.3 To estimate the peak hour Development traffic to and from the site, the Transport Assessment uses the TRICS national traffic-generation database which includes traffic survey data of similar developments nationwide with similar planning uses. The same TRICS assessment data approved for the EHIP permission is included in this assessment.

5.4 **Table 5.1** shows the total external floor areas for the development used to estimate TRICS peak hour vehicle trips. External floor areas have been derived by using a 1.05 multiplier to the internal floor areas for each Use class:

Table 5.1 – Outline Development Schedule of Uses

Use Class	Internal Floor Area GIA (sqm)	External Floor Area GEA (sqm)
E(g) (iii)	9,844	10,366
B2	4,800	5,040
B8	17,356	18,224



Vehicular Traffic Attraction – EHIP & Development

5.5 Vehicular traffic attraction for the Development uses TRICS vehicle trip rates for each proposed planning Use from the earlier and nearby East Horndon Industrial Park planning permission (EHIP, Ref: 21.01666.OUT). **Table 5.2** shows the total AM and PM traffic flows when the Development proposals are added to the East Horndon Hall development traffic:

Table 5.2 – Estimated Development Peak Hour Traffic

Use	GIA (sqm)	GEA (sqm)	AM peak hour (0800-0900hrs)				PM peak hour (1700-1800hrs)			
			Arrivals		Departures		Arrivals		Departures	
			Trip rate	Vehs ⁽¹⁾ (No.)	Trip rate	Vehs ⁽¹⁾ (No.)	Trip rate	Vehs ⁽¹⁾ (No.)	Trip rate	Vehs ⁽¹⁾ (No.)
Committed Development - East Horndon Industrial Park (EHIP)										
B1(b)	2,500	2,625	1.451	38	0.256	7	0.192	5	1.209	32
B1(c)	5,000	5,250	0.736	39	0.084	4	0.075	4	0.637	33
B2	9,500	9,975	0.424	42	0.168	17	0.084	8	0.391	39
B8	18,000	18,900	0.162	31	0.049	9	0.032	6	0.151	29
Sub-Total	35,000		-	150	-	37	-	23	-	133
Broadfields Innovation & Business Park										
Eg (iii)	9,844	10,336	0.736	76	0.084	9	0.075	8	0.637	66
B2	4,800	5,040	0.424	21	0.168	8	0.084	4	0.391	20
B8	17,356	18,224	0.162	29	0.049	9	0.032	6	0.151	27
Sub-Total	32,000			126		26		18		113
Total				276	-	63	-	41	-	246

Notes:

1. Vehicle trip rate applied to Gross External Floor Areas (GEA/100) to derive vehicle numbers

5.6 The upper four rows of **Table 5.2** have been extracted directly from Table 4.2 of the Transport Assessment for the EHIP permission (Ref: PMcL/3235d9/Feb 2019). The EHIP Transport Assessment also tested the robustness of the capacity of the proposed EHIP roundabout by including a significant sensitivity test of an additional 50% added to the TRICS vehicle trip rates. The traffic attraction from these proposals replaces this sensitivity test, avoiding double counting of traffic. The 50% sensitivity test in EHIP



TRICS estimated traffic flows is not included in this assessment, to do so would result in an unreasonably high estimate of development traffic.

- 5.7 The lower four rows of **Table 5.2** show the TRICS vehicle trip rate factors per 100sqm of external floor area relating to the Development proposals with the EHIP vehicle trip rates applied. The total gross peak hour vehicle arrivals and departures for both the EHIP permission and the Development combined are summated on the bottom row of **Table 5.2**:

Vehicular Traffic Attraction – DHGV

- 5.8 **Table 5.3** shows an extract from the Dunton Hills Garden Village Transport Assessment (Table 15) indicating Year 2033 DHGV external vehicle trip generation. The DHGV vehicle distribution assumes 50% uses the northern access roundabout, to be located north of the Station Road junction and 50% uses the southern access roundabout, to be located south of the Station Road junction (DHGV Transport Assessment, Para 61). The relevant peak hour time periods within this assessment are 08:00-09:00hrs (AM peak) and 17:00-19:00hrs (PM peak):

Table 5.3 – DHGV Transport Assessment, Appendix H, Table 15

56. The external hourly trip generation is summarised in the tables below:

Table 15: Dunton Hills Garden Village - 2033 Trip Generation

Time Period	Residential		Employment		Local	
	In	Out	In	Out	In	Out
07:00 - 08:00	66	385	70	25	66	19
08:00 - 09:00	77	320	59	17	129	74
09:00 - 10:00	122	188	51	33	42	30
16:00 - 17:00	319	140	23	74	37	92
17:00 - 18:00	469	161	11	52	16	72
18:00 - 19:00	409	159	20	31	13	20
TOTAL:	1462	1383	234	232	303	308

- 5.9 **Table 5.4** shows appropriate 0800-0900 AM and 1700-1800 PM peak hours for DHGV external vehicle trips as extracted from **Table 5.3**:

**Table 5.4 – AM & PM DHGV External Traffic Flows**

Time Period			
0800-0900	Arrivals	Departures	Purpose
	77	320	Residential
	59	17	Employment
	129	74	Local
	265	411	Total
1700-1800	Arrivals	Departures	Purpose
	469	161	Residential
	11	52	Employment
	16	72	Local
	496	285	Total

- 5.10 The distribution of the total DHGV AM & PM peak hour traffic flows onto the A128 Tilbury Road shown in **Table 5.4** assumes 50% DHGV traffic uses their 'northern roundabout' and 50% DHGV traffic uses their 'southern roundabout' (identifiers for the two roundabouts proposed by DHGV). A small proportion of DHGV traffic will access Station Road via both roundabouts assumed in proportion to turning counts undertaken in Year 2017. The estimated DHGV percentage traffic distribution on the local highway network is shown on **Fig A329**. The resultant AM and PM DHGV traffic flows are shown on **Fig A330**.

Base Traffic Flows (Existing Traffic Surveys)

- 5.11 Due to the recent Covid restrictions and their effect on base traffic flows, new traffic surveys have not been undertaken. For purposes of the Transport Assessment we have used base traffic survey data originally obtained by survey in 2016 or directly from Essex County Council (ECC) for surveys in 2017 and included in the EHIP application.
- 5.12 A traffic survey of existing vehicle turning movements was carried out in November 2016 at the A128 Tilbury Road/Old Tilbury Road junction. Existing vehicle turning movements for the identified peak hours were counted including heavy goods vehicle proportions. Heavy goods vehicles have been converted to equivalent passenger car units (pcus) using a conversion factor of 2no pcus to each HGV vehicle as shown in **Figure A300**.



- 5.13 Existing traffic movements at the A128 Tilbury Road/Station Road junction were surveyed in July 2017. Existing vehicle turning movements for the identified peak hours were counted including heavy goods vehicle proportions as shown on **Figure A307**. Peak hour turning movements with conversions to equivalent passenger car units are also shown on **Figure A307**.
- 5.14 ECC supplied Year 2017 traffic turning count data for the A127 Southend Arterial Road/A128 Tilbury Road grade separated junction. Existing Year 2017 traffic flows have been extracted for the busiest AM Peak Hour and the PM Peak Hour and are shown on **Figure A309**. Vehicle turning movements have been converted to equivalent passenger car units as shown on **Figure A310**.

Traffic Growth

- 5.15 To establish base traffic turning movements on the highway network at Opening Year 2024 and Future Year 2032 without development, we have applied traffic growth factors to the original traffic survey data. Traffic growth factors have been applied to the traffic survey data counted at the A128 Tilbury Road/Old Tilbury Road junction in 2016; to the traffic survey data counted at the A128 Tilbury Road/Station Road junction in 2017 and to the ECC supplied data for the A127 Southend Arterial Road/A128 Tilbury Road interchange counted in 2017.
- 5.16 Department for Transport Road Traffic Forecasts 2018 (RTF18, Scenario 1) provides forecasts for traffic demand, congestion and emissions in England and Wales up to Year 2050. This data shows a smaller increase in traffic growth from Year 2016 and Year 2017 when compared to the RTF15 growth figures applied for the EHIP permission. The RTF18 growth forecasts for East England have been weighted to the site's locality, i.e. Brentwood using TEMPro software version 7.2c datasets. TEMPro provides four differing growth figures for both origin and destination for the AM and PM periods which have been averaged.
- 5.17 A summary of the average of the AM and PM growth factors applied to derive base traffic flows at Opening Year 2024 and Future Year 2032 are shown in **Table 5.5**:



Table 5.5
Tempo adjusted traffic growth figures

Time Period	Average Growth Factors with Tempo Adjustment			
	Growth Factor 2016-2024	Growth Factor 2016-2032	Growth Factor 2017-2024	Growth Factor 2017-2032
AM & PM periods	1.0582	1.0887	1.0454	1.0810

- 5.18 Base 2016 peak hour traffic turning movements at the A128 Tilbury Road/Old Tilbury Road junction have been factored by traffic growth multipliers shown in **Table 5.5** to Opening Year 2024 and Future Year 2032 as shown on **Figure A301**.
- 5.19 Base 2017 peak hour traffic turning movements at the A128 Tilbury Road/Station Road junction have been growthed to Opening Year 2024 and Future Year 2032 are shown on **Figure A308**.
- 5.20 Base 2017 peak hour traffic turning movements at the A127 Southend Arterial Road/A128 Tilbury Road interchange have been growthed to Opening Year 2024 and Future Year 2032 as shown on **Figure A311** and **Figure A312** respectively.

Existing Diverted Movements

- 5.21 Development traffic flows for employment use are not considered completely new to the local highway network as a proportion of local work trips already counted on the highway and passing the site will divert from their original work destination into the Development. A robust assumption for a development of this size in this location is at least 25% of development traffic flows at the site access are already passing the site on the A128 Tilbury Road and are included in the existing traffic surveys carried out in Year 2016 or Year 2017. The percentage of existing diversions was agreed by ECC for the EHIP permission.
- 5.22 For a robust assessment of existing diverted movements, 25% of new development traffic has been deducted from the A128 Tilbury Road through traffic flows as shown in **Figure A303**. The resulting nett traffic flows at the new site access roundabout are shown in **Figure A304**.



- 5.23 Development traffic flows taken from **Figure A303** has been distributed at the A128 Tilbury Road/Station Road junction in proportion to the Year 2017 base traffic survey data as shown on **Figure A314**. The distributed traffic is also shown on **Figure A314**.
- 5.24 The development traffic flows taken from **Figure A304** have been distributed at the A127 Southend Arterial Road / A128 Tilbury Road interchange in proportion to the Year 2017 base traffic survey data supplied by ECC as shown on **Figure A313**. The resulting distributed traffic is shown in **Figure A320**.

Committed West Horndon Industrial Park Residential Development Site

- 5.25 For the EHIP permission, Essex County Council requested the assessment include the potential traffic impact of the committed residential development at the West Horndon Industrial Park (Site R02 - Brentwood Local Plan Re-submission Document, February 2019). The committed residential site is located west of West Horndon Station. Approximately 43,000 sqm of industrial buildings at the West Horndon Industrial Park are to be replaced by 580no new dwellings. **Figure 5.1** shows the location of the Committed Development:

Figure 5.1
West Horndon Industrial Park Residential Development Site (Site R02)



- 5.26 For the EHIP permission, Essex County Council agreed vehicle trip rates and vehicle trip distribution for the existing West Horndon Industrial Park and for its redeveloped



residential use. **Figure A315** shows the estimated vehicle trip distribution from West Horndon Industrial Park for both the existing industrial uses and the replacement residential use. **Table 5.6** shows the industrial use vehicle trips removed from the highway network as a result of the removal of 43,000 sqm of industrial use, together with the additional vehicle trips added to the highway network as a result of the replacement 580no new residential dwellings:

Table 5.6
West Horndon Industrial Park – Existing & Proposed Uses
Peak hour vehicle trip rates (from ECC)

	GFA	AM peak hour (0800-0900hrs)				PM peak hour (1700-1800hrs)			
		Arrivals		Departures		Arrivals		Departures	
		Trip ⁽¹⁾ rate	Vehs (No.)	Trip ⁽¹⁾ rate	Vehs (No.)	Trip ⁽¹⁾ rate	Vehs (No.)	Trip ⁽¹⁾ rate	Vehs (No.)
Industry	43,000 sqm	1.096	471	0.236	101	0.184	79	0.952	409
Residential	580 no	0.157	91	0.404	234	0.381	220	0.231	134

Note:

1. Trip rates advised by ECC

- 5.27 **Figure A316** shows the vehicle movements removed from the local highway network as a result of 43,000 sqm of existing industrial space being replaced at the West Horndon Industrial Park using total vehicle movements calculated in **Table 5.6**.
- 5.28 **Figure A317** shows the new vehicle movements on the local highway network from 580no new dwellings using the vehicle trips shown in **Table 5.6**. It is clear, the change from employment use to residential use will reverse traffic movements as employees currently arriving at the West Horndon Industrial Park site in the AM peak hour will be replaced by new residents leaving the site in the AM peak hour. The traffic movements in the PM peak hour are similarly reversed.
- 5.29 The replacement of the industrial uses at the West Horndon Industrial Park site will remove existing work trips from the highway network as employees will not in the future be travelling to this site but will seek work elsewhere either at the proposed development or the new EHIP development or at new employment land on the future Dunton Hills development site. Nett development traffic flows from the redeveloped West Horndon Industrial Estate are shown on **Figure A319**. **Figure A319** also shows the distribution of this traffic north to the A127 Southend Arterial Road/A128 Tilbury Road interchange.



5.30 Total traffic flows at the proposed A128 Tilbury Road/Old Tilbury Road' roundabout are:

- Development Total Traffic Flows Year 2023 - **Fig A305**
- Development Total Traffic Flows Year 2031 - **Fig A306**
- Development + West Horndon Total Traffic Flows Year 2023 - **Fig A323**
- Development + West Horndon Total Traffic Flows Year 2031 - **Fig A324**

5.31 Total traffic flows at the A127 Southend Arterial Road/A128 Tilbury Road interchange are:

- Development Total Traffic Flows 2023 - **Fig A325**
- Development Total Traffic Flows 2031 - **Fig A326**
- Development + West Horndon Total Traffic Flows 2023 - **Fig A327**
- Development + West Horndon Total Traffic Flows 2031 - **Fig A328**

5.32 Total traffic flows at the A128 Tilbury Road/Station Road junction are:

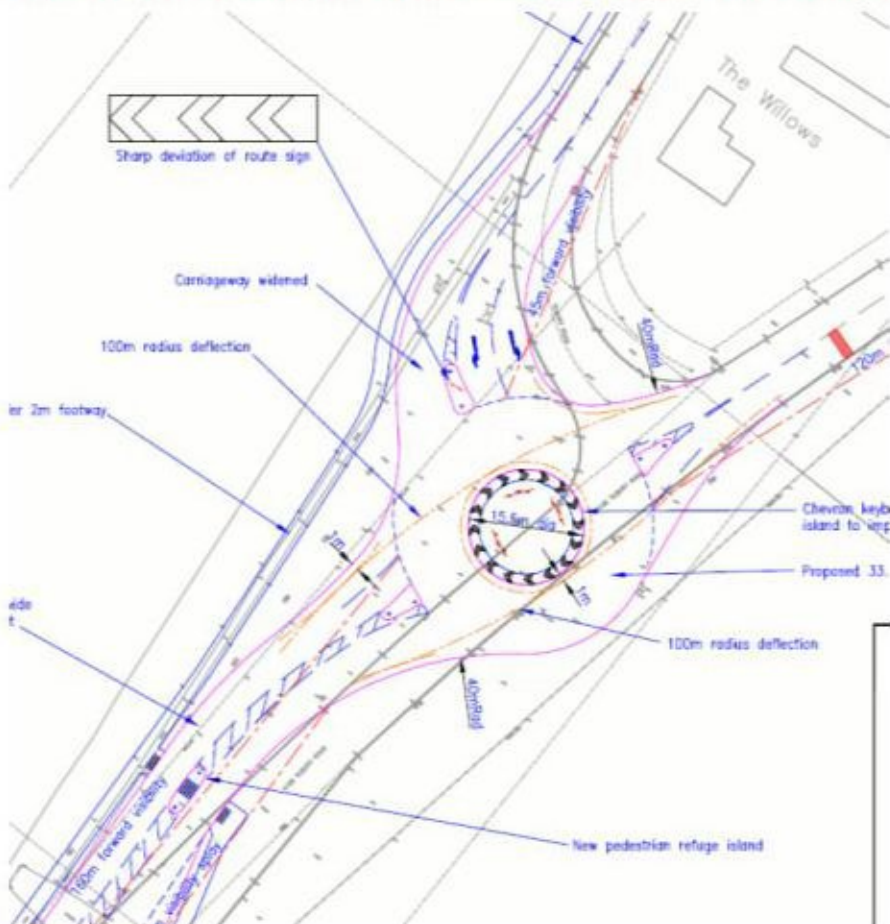
- Development Total Traffic Flows 2023 - **Fig A321**
- Development Total Traffic Flows 2031 - **Fig A321**
- Development + West Horndon Total Traffic Flows 2023 - **Fig A322**
- Development + West Horndon Total Traffic Flows 2031 - **Fig A322**



Proposed A128 Tilbury Road/Old Tilbury Road Roundabout East Horndon Industrial Park Proposal

- 5.33 The East Horndon Industrial Park planning permission (EHIP) agreed a new roundabout improvement at the A128 Tilbury Road/Old Tilbury Road junction, together with other highway improvements on old Tilbury Road as shown on approved Drawings **REDW-3235-104-RevB** and **REDW-3235-112** respectively submitted with the EHIP application. **Figure 5.2** shows an extract from REDW-3235-104-B and the approved roundabout improvement:

Figure 5.2 – Extract from Approved East Horndon Industrial Park Plan REDW-3235-104-B



- 5.34 To determine the traffic impact of the Development on the East Horndon Hall approved roundabout (EHIP roundabout), we have added conservative estimates for Development traffic as scheduled in **Table 5.2** to the total EHIP base and development



traffic agreed by ECC for the EHIP application.

- 5.35 The smaller EHIP roundabout will be constructed prior to the construction of the larger roundabout associated with the DHGV development. The capacity tests completed on the smaller EHIP roundabout after EHIP traffic and the Development traffic is added indicates that the roundabout will operate within capacity with a maximum RFC of 0.84 at Future Year 2032. **Table 5.7** shows the schedule of results of the assessment on the EHIP roundabout prior to the DHGV development being implemented:

Table 5.7 – EHIP Roundabout Capacity + Development

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
A128 Tilbury Road / Old Tilbury Road - Proposed roundabout - Year 2024 Broadfields+EHIP+West Horndon Fig A323										
Arm A	3.9	10.49	0.78	B	20 % [Arm A]	2.8	7.73	0.72	A	15 % [Arm C]
Arm B	0.1	3.92	0.09	A		0.4	5.34	0.30	A	
Arm C	2.1	6.66	0.66	A		4.5	12.51	0.81	B	
A128 Tilbury Road / Old Tilbury Road - Proposed roundabout - Year 2032 Broadfields+EHIP+West Horndon Fig A324										
Arm A	4.3	11.19	0.80	B	17 % [Arm A]	3.1	8.40	0.75	A	12 % [Arm C]
Arm B	0.1	4.02	0.09	A		0.4	5.56	0.30	A	
Arm C	2.3	7.01	0.68	A		5.3	14.18	0.84	B	

- 5.36 The permitted EHIP roundabout is therefore sufficiently large to cater for the Development in Design Year 2024 and Future Year 2032 prior to the construction of the larger DHGV roundabout using robust background base traffic flows previously agreed by ECC for the EHIP permission. Arcady outputs are included in **Appendix B**.



A128 Tilbury Road / 'Old' Tilbury Road roundabout Dunton Hall Garden Village Proposal

- 5.37 The DHGV planning application proposes to replace the EHIP roundabout with a larger roundabout at the A128 Tilbury Road/Old Tilbury Road junction extending eastwards beyond the adopted highway boundary into the DHGV application site. Using the DHGV Transport Assessment data (Appendix H, para 56, Table 15), we have modelled the effect of the EHIP and DHGV traffic, the West Horndon re-development traffic and the Development traffic on the larger DHGV roundabout proposed on the A128 Tilbury Road. **Figure 5.3** shows an extract of the DHGV roundabout proposals:

Figure 5.3 – DHGV Roundabout Proposals



- 5.38 **Table 5.8** shows the Arcady roundabout capacity outputs of the larger DHGV roundabout with DHGV, EHIP and West Horndon development traffic and the Development traffic added, indicating a maximum RFC of 0.89 on the A128 Tilbury Road northbound in Year 2032 (**Fig A324+Fig A330**). The larger DHGV roundabout is shown to be within capacity even with the conservative estimate of traffic flows modelled:



5.39 It should be noted that the total vehicle turning movements for Year 2032 used to model the larger DHGV roundabout producing the output shown in **Table 5.8** exceed by 25% in the AM peak hour 0800-0900hrs and by 30% in the PM peak hour 1700-1800hrs those currently submitted for Year 2033 within the DHGV Arcady models. The assessment therefore provides a significant sensitivity test for the proposed DHGV roundabout to the Future Year 2032 (Application date+10 years) with applied traffic growth and the addition of DHGV, EHIP and West Horndon development traffic and the Development traffic.

Table 5.8 – DHGV Roundabout Capacity+Development

	AM					PM				
	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
A128 Tilbury Road / Old Tilbury Road junction - Proposed Dunton Hills roundabout - Year 2032 (A324)+DHGV (A330)										
Arm 1	7.3	19.24	0.89	C	6 % [Arm 1]	4.5	12.05	0.82	B	14 % [Arm 1]
Arm 2	0.1	4.82	0.11	A		0.6	7.16	0.37	A	
Arm 3	2.3	6.41	0.70	A		4.0	9.66	0.80	A	
Arm 4	0.3	4.95	0.24	A		0.5	6.49	0.33	A	

Notes:

Arm 1 – A128 Tilbury Road northbound

Arm 2 – ‘Old’ Tilbury Road

Arm 3 - A128 Tilbury Road southbound

Arm 4 – Dunton Hill North Access

5.40 The assessments on the proposed roundabouts at the Old Tilbury Road/A128 Tilbury Road junction show that the Development can be implemented without severe effect on both the smaller EHIP roundabout (**Table 5.7**) prior to the implementation of the DHGV proposals and on the proposed larger DHGV roundabout once the DHGV development has been implemented (**Table 5.8**).

Existing A127 Southend Arterial Road/A128 Tilbury Road interchange

5.41 The existing A127/A128 roundabout interchange has been modelled with Development traffic. **Table 5.9** shows a maximum RFC of 0.76 in Future Year 2032 which indicates the roundabout working within capacity after the Development has been added:

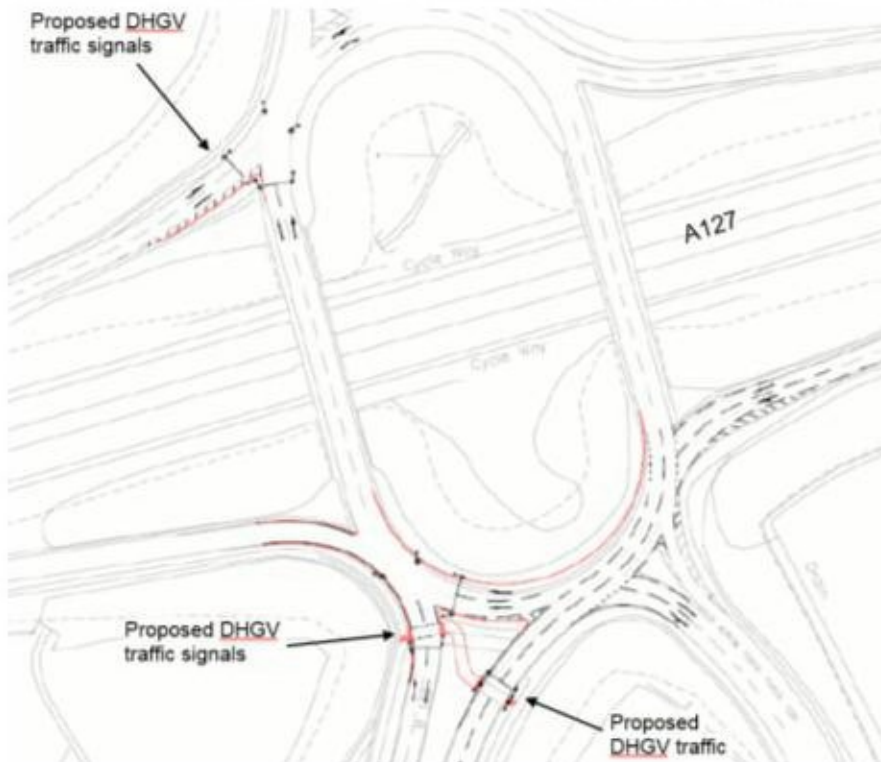


Table 5.9 – Existing A127/A128 Interchange+Broadfields

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
A127 Southend Arterial/A128 Tilbury Road Grade Separated Junction - Year 2024 Broadfields+EHIP+west horndon A327										
Arm A	1.0	3.51	0.49	A	17 % [Arm B]	1.1	4.24	0.51	A	21 % [Arm D]
Arm B	2.6	9.40	0.72	A		2.0	7.89	0.67	A	
Arm C	1.7	4.91	0.60	A		1.5	4.50	0.60	A	
Arm D	0.6	4.85	0.35	A		1.3	7.78	0.55	A	
A127 Southend Arterial/A128 Tilbury Road Grade Separated Junction - Year 2032 Broadfields+EHIP+west horndon A328										
Arm A	1.1	3.71	0.51	A	13 % [Arm B]	1.2	4.59	0.54	A	17 % [Arm B]
Arm B	3.2	11.15	0.76	B		2.4	9.05	0.71	A	
Arm C	1.8	5.32	0.63	A		1.7	4.86	0.62	A	
Arm D	0.7	5.16	0.37	A		1.5	8.89	0.60	A	

5.42 The DHGV development proposes the installation of partial traffic signal control as shown in **Fig 5.4**. The Development does not propose any alteration to this interchange which will operate within capacity without DHGV as shown in **Table 5.9**. The future DHGV traffic signal improvement (**Figure 5.4**) will provide further improvement to the capacity and safety of this interchange:

Figure 5.4 – DHGV Traffic Signal Proposals at the A127/A128 Interchange





Station Road Assessment - A128 Tilbury Road/Station Road junction

- 5.43 The visibility of Station Road on its approach to the A128 Tilbury Road is restricted by annual undergrowth well behind the carriageway edge in areas not generally expected to be cleared as part of the normal Council maintenance of verges. The visibility splays are shown on **Photo 5.1** and **Photo 5.2**. Visibility is measured as 115 metres left and 70m right:

Photo 5.1
Station Road
Visibility to the left along Tilbury Rd



Photo 5.2
Station Road
Visibility to the right along Tilbury Rd



- 5.44 Modelling of the junction uses existing measured parameters of the junction. The junction has been assessed using JUNCTION9-PICADY. JUNCTION9 outputs are included in **Appendix C**. The assessment of the existing junction without development is included in **Table 5.10** and shows that even without development in the 'do nothing' scenario the A128 Tilbury Road/Station Road is operating over capacity with a maximum RFC of 1.64 in Year 2024 and 1.85 in Year 2032:



Table 5.10
Summary of PICADY Results
A128 Tilbury Road/Station Road Junction – Do nothing

Link	Weekday AM Peak			Weekday PM Peak		
	Q (vehs)	Delay (secs)	RFC	Q (vehs)	Delay (secs)	RFC
Year 2024 – Do nothing – A208						
Station Road left	15.3	258.90	1.12	58.1	614.27	1.48
Station Road right	7.7	330.37	1.07	20.6	664.88	1.45
A128 Tilbury Road right to Station Rd	2.1	25.38	0.68	1.2	16.58	0.52
Year 2032 – Do nothing – A208						
Station Road left	28.4	456.24	1.35	78.1	840.45	1.75
Station Road right	12.9	517.50	1.31	27.6	885.18	1.71
A128 Tilbury Road right to Station Rd	2.5	29.36	0.72	1.3	17.90	0.55

- 5.45 The approved EHIP **Drawing No. REDW-3235-122** shows the approved highway works to the Station Road approach arm of the junction which will provide motorists with more manoeuvring space to safely and efficiently join the A128 Tilbury Road. The improvement widens Station Road for a distance of 40m from the give way line so that 2no lanes of traffic can wait at the approach to the junction. The improvements together with clearance of the full verge area covering the visibility splays to achieve 250 metre visibility in both directions has been modelled and JUNCTION9 outputs are included in **Appendix E**. The results of the assessment of the improved junction are summarised in **Table 5.11**.
- 5.46 **Table 5.8** shows that the proposed EHIP improvements will provide greater capacity at the junction in both Opening Year 2023 and Future Year 2031 when compared to the 'do nothing' scenario shown in **Table 5.10**. Although the junction still operates over capacity the improvements will provide a better level of service than the 'do nothing' scenario with the addition of the EHIP Committed Development and the Development:



Table 5.11
Summary of PICADY Results
A128 Tilbury Road/Station Road Junction with Station Road widened

Link	Weekday AM Peak			Weekday PM Peak		
	Q (vehs)	Delay (secs)	RFC	Q (vehs)	Delay (secs)	RFC
	Year 2023 – Improved Layout Development – A221					
Station Road left	10.9	166.24	1.07	32.5	305.76	1.21
Station Road right	5.8	253.95	0.98	12.3	357.32	1.17
A128 Tilbury Road right to Station Rd	2.5	29.95	0.72	1.3	17.84	0.56
Year 2031 – Improved Layout Development – A221						
Station Road left	29.7	403.34	1.36	59.8	563.56	1.51
Station Road right	12.5	467.93	1.31	21.5	605.29	1.47
A128 Tilbury Road right to Station Rd	3.0	35.48	0.76	1.5	19.39	0.59
Year 2023 – Improved Layout Development + West Horndon – A222						
Station Road left	1.1	15.90	0.52	1.1	15.79	0.52
Station Road right	0.9	44.42	0.45	1.5	135.26	0.64
A128 Tilbury Road right to Station Rd	0.6	12.30	0.37	2.4	25.62	0.70
Year 2031 – Improved Layout Development + West Horndon – A222						
Station Road left	1.3	18.00	0.56	13.1	143.86	1.12
Station Road right	1.1	57.32	0.52	3.9	291.83	0.96
A128 Tilbury Road right to Station Rd	0.7	13.19	0.40	2.7	28.80	0.73

- 5.47 A review of daily ATC traffic profiles on the A128 Tilbury Road surveyed in October 2017 show well defined AM and PM peaks in traffic volume indicating that traffic queues are short-lived as traffic flows on the A128 Tilbury Road subside either side of the AM and PM peak hours. **Chart 5.1** shows the hourly variation in northbound daily traffic flows on the A128 Tilbury Road. **Chart 5.2** shows the hourly variation in southbound daily traffic flows on the A128 Tilbury Road, again showing similar traffic flows variations. For most of the week the Station Road junction operates within capacity apart from the peak hours:



Chart 5.1 - Surveyed Northbound Traffic Volumes on A128 Tilbury Road

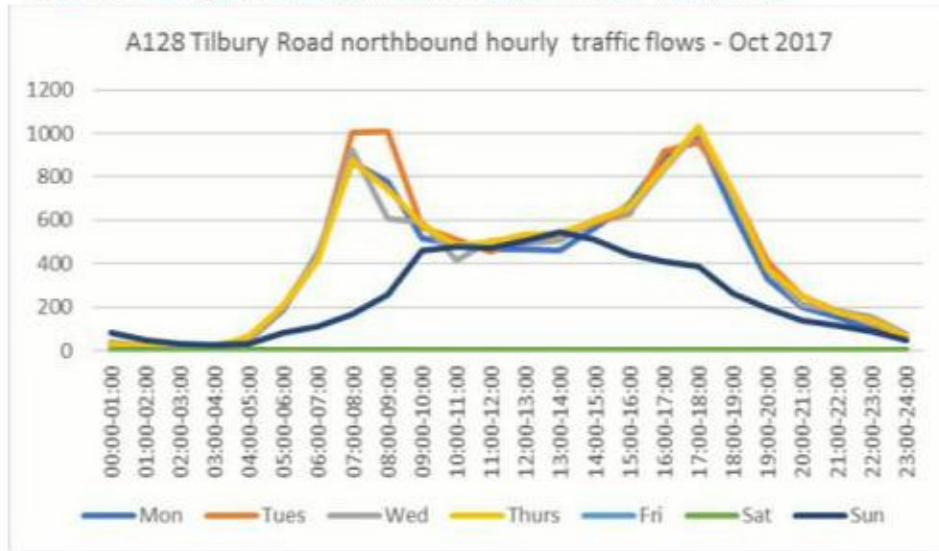
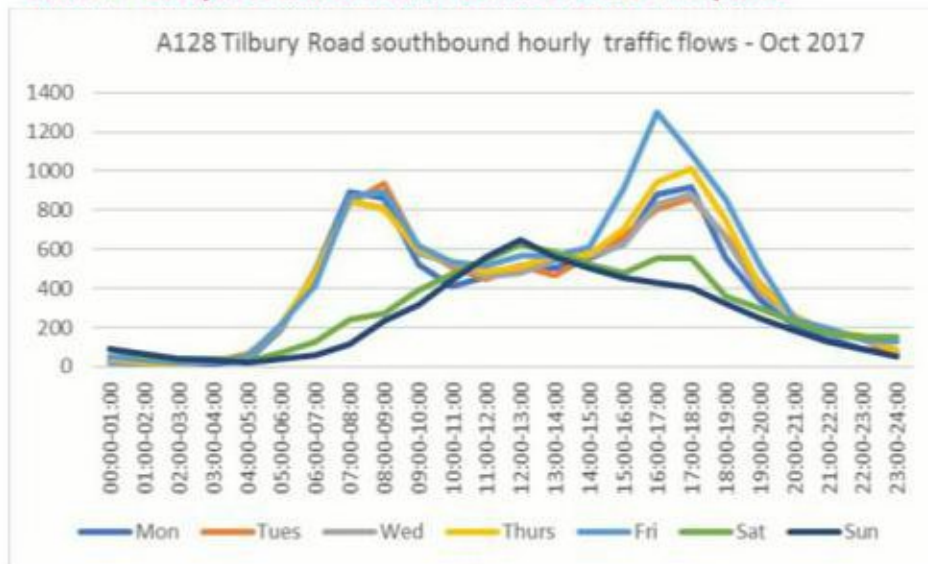


Chart 5.2 - Surveyed Southbound Traffic Volumes on A128 Tilbury Road



5.48 The EHIP widening improvements of the A128 Tilbury Road/Station Road junction provide greater capacity at that junction in both Opening Year 2024 and Future Year 2032 when compared to the 'do nothing' scenario of no development. The existing congestion at the A128 Tilbury Road/Station Road junction has been shown to be short-lived within well-defined peak periods. **Figure 5.5** shows the junction is planned for significant improvement to traffic signal control when additional land becomes available as part of the Dunton Hill Garden Village development. **Figure 5.5** show the improvements proposed within Brentwood Borough Council's publication 'A Sustainable Transport Integration Vision'



February 2020. The A128 Tilbury Road/Station Road junction is included in Area D of the proposals. The left panel shows the existing junction arrangement; the right panel shows the traffic signal improvement to be carried out in conjunction with a new access into the Dunton Hills Garden Village (DHGV) proposal:

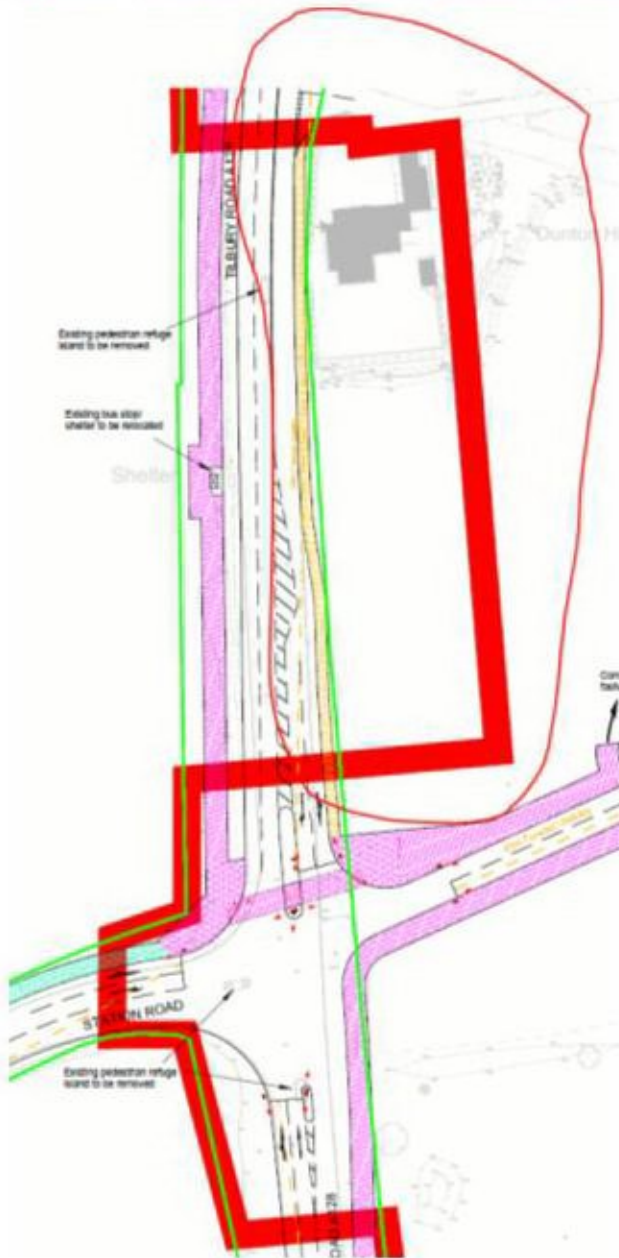
Figure 5.5 – Brentwood Borough Council Area D Works – Existing and Proposed



- 5.49 The DHGV application includes the construction of new traffic signals at the A128 Tilbury Road/Station Road junction. An extract of the DHGV proposals are shown on **Figure 5.6**. The green line indicates the adopted highway boundary; the thick red line shows the red line application boundary:



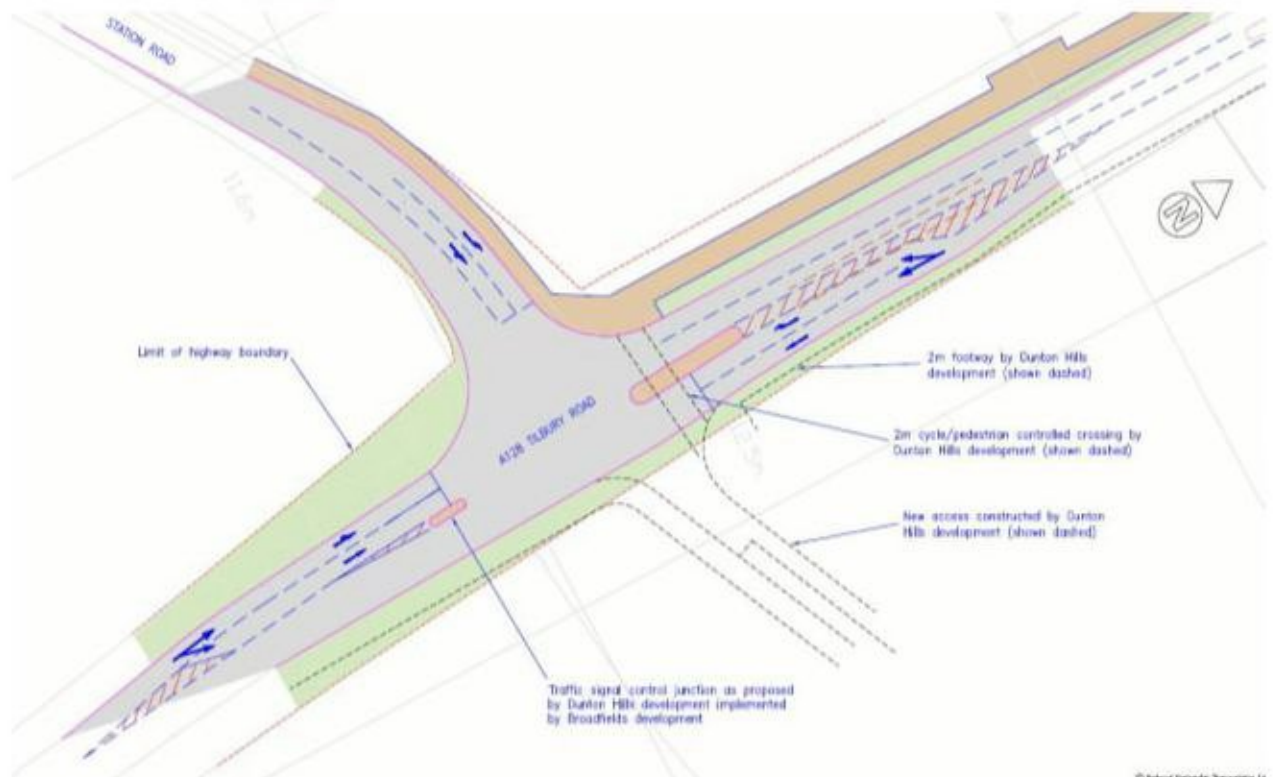
Figure 5.6– Proposed DHGV Traffic Signals at A128 Tilbury Road/Station Road Junction



5.50 **Fig 5.7** replicates the traffic signal improvement proposal for the A128 Tilbury Road/Station Road as currently submitted with the DHGV application. To avoid any reliance on 3rd party land this arrangement excludes any works outside the adopted highway. The black dashed lines to the east of the junction indicates work to be carried out by the DHGV development within their site:



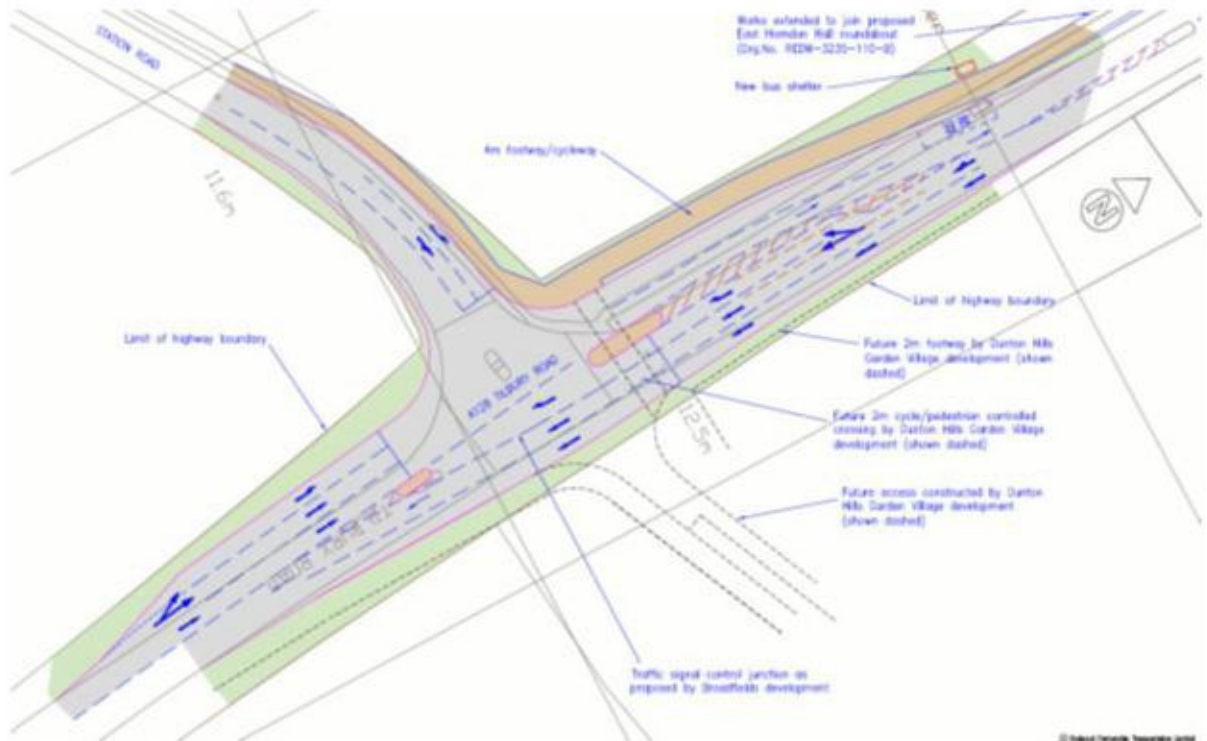
Figure 5.7 – DHGV Traffic Signal Improvement within adopted highway at A128/Station Road Junction



- 5.51 The capacity of the proposed DHGV traffic signals on the A128 Tilbury Road will be constrained due to a single southbound lane proposed by the DHGV Applicant (**Fig 5.2**). An alternative traffic signal junction layout is proposed with all works located on adopted public highway as shown on our **Drawing No. REDW-3386-404**. An additional A128 southbound lane will improve southbound capacity over and above that proposed for the traffic signals included within the DHGV application. An additional left turn lane into Station Road will further improve traffic signal capacity, all constructed within adopted highway enabling the Development to proceed in advance with or without the DHGV development. An extract of the traffic signal proposals included in this application and proposed on our **Drawing No. REDW-3386-404** is shown in **Figure 5.3**.



Figure 5.3 – Improved Traffic Signal Improvement within adopted highway at A128/Station Road Junction



- 5.52 The improved traffic signal installation as shown on our **Drawing No. REDW-3386-404** would be sufficient to cater for all development flows and would be constructed within adopted public highway without the need for 3rd party land. The subsequent DHGV access on the east of the A128 Tilbury Road can be constructed at the appropriate time to serve the DHGV development should it be implemented.
- 5.53 Linsig capacity modelling has been undertaken on the proposal shown on **Drawing No. REDW-3386-404** based upon the Linsig model submitted for the DHGV application with additional lanes added on the A128 Tilbury Road as previously described. Traffic flows have been derived by the addition of Year 2032 base traffic + Broadfields + EHIP + West Horndon redevelopment (**Figure A322**) for the interim traffic signal solution. The Linsig results (pre-DHGV) show a maximum degree of Saturation of 54.9% in the AM peak hour rising to 80.2% in the PM Peak Hour (**Appendix D**). The traffic signals pre-DHGV will operate within capacity during both AM and PM peak hours.



- 5.54 Linsig modelling post-DHGV shows that for Future Year 2032, the proposed traffic signals shown on our **Drawing No. REDW-3386-404** will operate within capacity with a degree of saturation of 74.2% in the AM peak hour but will be marginally above capacity with Degree of Saturation of 91.9% in the PM peak hour. However, the modelling includes significant stage time periods within each cycle for both bus services leaving the DHGV site and for a pedestrian/cycle green stage crossing the A128 Tilbury Road. This theoretical modelling will exacerbate delays on the A128 Tilbury Road over and above that which will be experienced on the ground as it is most unlikely that bus and pedestrian stages will be called every cycle, allowing more green time for the A128 Tilbury Road and Station Road. The traffic signals post-DHGV will operate within acceptable capacity in the AM peak hour and marginally above capacity in the PM peak hour. The level of congestion in the PM peak hour is acceptable considering the robust levels of base and development traffic assumed during a distant Future Year of 2032.
- 5.55 The provision of the traffic signal arrangement shown on **Drawing No. REDW-3386-404** is included in the Development proposals.

Modal Split

- 5.56 When fully occupied the site is expected to generate approximately 800 full and part-time employment opportunities in the local area. Clearly, local recruitment will influence employee travel behaviour and this will undoubtedly make a significant contribution towards limiting unnecessary car journeys and reducing the length of any necessary car journeys. Future DHGV plans for significant residential development within a 2-mile radius will maximise the opportunity to recruit locally and will encourage walking and cycling trips to the site. Over time, as the new Dunton Hills Garden Village is developed and occupied, more local residents will become available to work on the site, reducing longer vehicle trips to more distant work opportunities.
- 5.57 An assessment has been undertaken of the modal split of all person trips to the site. Multi-modal trip estimates for the development are included in the TRICS outputs in **Appendix G**, however for a more localised assessment we have used the Travel to Work included in the Neighbourhood Statistics, 2011 dataset QS701EW for Brentwood (**Figure A6**). **Table 5.11** shows the modal split for the Brentwood area for both rural and urban areas. The proportions exclude those working from home; 'tram' and 'other method of travel' and the unemployed and we would suggest the rural modal split to be



more appropriate to this site location:

Table 5.11 Brentwood Travel to Work Modal Split

Mode of Travel to work	Brentwood Modal Split (%)			
	Rural Total (no.)	Rural Total (%)	Urban Total (no.)	Urban Total (%)
Train	1,680	19.0	6705	27.7
Bus	118	1.3	537	2.2
Taxi	50	0.5	177	0.7
Motorcycle	79	0.9	159	0.7
Car driver	6,036	68.1	13,198	54.4
Car passenger	340	3.8	879	3.6
Cycle	64	0.7	273	1.1
Walk	495	5.7	2,333	9.6
Total	8,862	100.0	24,261	100

- 5.58 Based upon the TRICS assessment applied to the 466no space car park an average of 792no. daily vehicle trip arrivals are estimated at the site entrance (**Figure A5**) we can estimate the total modal split of person trips travelling to the site as a proportion of the 'car driver' mode of transport included in the Neighbourhood travel statistics. **Table 5.12** shows the estimated weekday modal split to the site:

Table 5.12 Average Weekday Daily Modal Split to the Development

Mode of Travel to work	Brentwood Modal Split (%)		Site Modal Split (persons)
	Rural Total (no.)	Rural Total (%)	
Train	1,680	19.0	220
Bus	118	1.3	15
Taxi	50	0.5	6
Motorcycle	79	0.9	10
Car driver	6,036	68.1	792
Car passenger	340	3.8	44
Cycle	64	0.7	10
Walk	495	5.7	66
Total		100.0	1,163

- 5.59 Travel Plan measures will be aimed at increasing car sharing and promoting train and bus transport, cycling and walking. The development will benefit from enhanced bus stops near to the site and from future proposals for nearby residential developments such as those proposed at West Horndon and Dunton Hills Garden Village which will be within easy walking and cycling distance of the site.



6.0 SUMMARY & CONCLUSIONS

- 6.1 The Redwood Partnership has been appointed by MM Properties (London) Limited to prepare a Transport Assessment for a new Development named the Broadfields Innovation & Business Park. The site is located approximately 5km east of the M25, junction 29 and south-west of the junction of the A127 Southend Arterial Road and A128 Tilbury Road.
- 6.2 The Development is an Outline planning application with all matters reserved except for access. The proposal comprises the demolition of existing buildings and yard and the erection of a new Innovation and Business Park offering a range of commercial uses up to 32,000 sqm (GIA). The proposal includes a mix of Use Classes E(g)(iii), B2 and B8; a single dedicated site access; on-site vehicle parking, service loading/unloading areas, motorcycle and cycle parking together with associated infrastructure all on land at Broadfields, Old Tilbury Road, Brentwood, Essex together with adjacent off-site highway improvements and new traffic signals at the A128 Tilbury Road/Station Road junction.
- 6.3 The Development includes the following:
- Outline planning application (with all matters reserved except for access) for the redevelopment of the site to deliver the Broadfields Innovation and Business Park, comprising demolition of existing buildings and the erection of new buildings providing up to 32,000 sqm of Class Eg(iii), B2 and B8 floorspace, together with associated landscaping, vehicle parking and loading, cycle parking and infrastructure;
 - Maximum 466no car parking spaces including 23no disabled spaces;
 - Within the total car park provision, car-charging infrastructure for 93no car parking spaces (20% allowance) consisting of 'active' car-charging (i.e. with operating charge points) with a further 93no car parking spaces (20% allowance) consisting of 'passive' car-charging provision (i.e. with underground ducts extended to these spaces for easy conversion to active charging at a later date);
 - 140no secure and covered cycle parking spaces;
 - 17no motorcycle parking spaces;
 - Construction of a new off-site 3m wide shared footpath/cyclepath from the pedestrian crossing island on the A128 Tilbury Road to the north-east corner of the site opposite Hall Cottages;



- Construction of a new off-site 2m wide footpath south from the pedestrian crossing island on the A128 Tilbury Road to the Station Road junction;
 - Construction of a new traffic signal installation at the junction of the A128 Tilbury Road / Station Road as shown on **Drg.No. REDW-3386-404**.
- 6.4 Pedestrian routes in and around the site are flat and will be sufficiently wide for safe pedestrian access from nearby bus stops to the site once off-site improvements have been carried out. The walk distances from the site to the nearest bus stops on the A128 Tilbury Road are, in practical terms, within the recommended maximum walk distances suggested in the Institution of Highways & Transportation's guidelines. The site is within 2km of West Horndon railway station and is therefore accessible to bus and rail public transport.
- 6.5 The site is located near to a range of transport options other than the private car which will provide realistic choices of sustainable modes of transport for staff or visitors to the site. Being located close to the A127 Southend Arterial Road the site is ideally located to offer a short route for HGVs direct to a principle transport route without the need to pass through residential areas.
- 6.6 Personal injury accident data (PIA) on record for the period between 1st January 2012 and 31st December 2016 was obtained from Essex County Council. An appraisal of the accident data over the 5-year period illustrates no history or pattern of traffic collisions to show that there are concerns with regard the local highway design. The data does not show abnormal grouping of accidents or a statistically high occurrence of incidents near to the site.
- 6.7 A further online search (saferessexroads.org/collision-data) for the period between 1st January 2017 and 31st December 2020 was undertaken, showing a single collision at the Old Tilbury Road and a small number of collisions at the A128 Tilbury Road/Station Road junction. Both junctions are being improved as part of the adjacent East Horndon Industrial Park permission. A number of collisions were recorded at the A127 Southern Arterial Road/A128 Tilbury Road interchange. The relative traffic impact of the Development on this junction is minimal and would have no material effect on highway safety at this junction.



- 6.8 To encourage cycling as a sustainable mode of transport the proposals include a 3m wide shared off-site footpath/cyclepath from the A128 Tilbury Road to the site entrance and beyond to the north-east corner of the site. The status of the shared footpath/cyclepath will be temporary in nature until such time as the transport improvements are implemented along Old Tilbury Road as proposed by Brentwood Borough Council's publication 'A Sustainable Transport Integration Vision' February 2020. Once implemented, the shared footway/cycleway would be amended to a dedicated 3m wide cycleway.
- 6.9 A total parking provision of a maximum of 466no preferred sized 2.9x5.5 metre spaces is shown on the indicative site layout. There is no opportunity to park outside marked spaces on site or to park off-site on Old Tilbury Road which has double yellow line waiting restrictions. Further afield, the A128 Tilbury Road is a Primary Route where carriageway parking is also not permitted. Therefore, there are no nearby opportunities for staff or visitors to park on street in the local area, therefore car parking demand will be contained within the site. The proposed car parking provision is sufficient to provide for the parking demand of the proposed uses.
- 6.10 Within the total provision of 466no car parking spaces it is proposed to provide 20% 'active' electric vehicle charging provision (i.e. with operating charge points) equating to 93no car parking spaces with a further 20% 'passive' provision equating to a further 93no car parking spaces (i.e. spaces with ducts extended for easy upgrade to usable charge points at a later date). The active provision will consist of fast-charging units which have a typical charging time of 2-4 hours, appropriate for workplace charging.
- 6.11 Disabled parking has been provided as 5% of total parking capacity. Disabled parking spaces have been distributed around the site and have a dimension of 2.5x5.0m with an additional 1.2m clear area provided around the disabled spaces. The proposals include 23no disabled spaces which is in excess of the disabled parking standard.
- 6.12 A reduction to the cycle parking standard has been made to reflect the reduced employment density for E(g)(iii) Uses, therefore the reduced cycle parking demand. Secure and covered cycle parking is available for up to 140no cycles distributed around the site in 10no separate locations each as a single bespoke and covered cycle parking structure dedicated to each building. Cycle parking provision would be subject to monitoring and potential enhancement if subsequent Travel Plan surveys show a greater need for cycle storage space.



- 6.13 The PTW motorcycle parking requirement equates to 17no spaces which can be distributed around the site in locations attached to each building. The PTW parking provision is compliant with the ECC parking standard.
- 6.14 Track swept paths of the main turning movements for 16.5m articulated lorries and 10m FTA rigid lorries accessing and turning at the site entrances and within the site show that adequate space is provided within the indicative site layout for these manoeuvres without conflict with kerbs or parking areas.
- 6.15 The smaller approved EHIP roundabout will be constructed prior to the construction of the larger roundabout associated with the DHGV development if permitted. The capacity tests completed on the smaller EHIP roundabout after EHIP traffic, West Horndon Industrial Park Committed Developments and Development traffic is added indicates that the roundabout will operate within capacity with a maximum RFC of 0.84. The permitted EHIP roundabout is therefore sufficiently large to cater for the Development in Design Year 2024 and Future Year 2032 prior to the construction of the larger DHGV roundabout using robust background base traffic flows previously agreed by ECC for the EHIP permission.
- 6.16 Arcady roundabout capacity outputs of the larger DHGV roundabout post-DHGV with EHIP, DHGV, West Horndon traffic and the Development traffic added, indicates a maximum RFC of 0.89 on the A128 Tilbury Road northbound in Future Year 2032. The larger DHGV roundabout is shown to be within capacity even with a conservative estimate of traffic flows modelled.
- 6.17 The proposals include for a traffic signal installation at the junction of the A128 Tilbury Road/Station Road as shown on our **Drawing No. REDW-3386-404**. Linsig capacity show that traffic signals would be sufficient to cater for all development flows all constructed within adopted public highway and without the need for 3rd party land. The subsequent DHGV access on the east of the A128 Tilbury Road can be constructed at the appropriate time to serve the DHGV development should this development be implemented.
- 6.18 Based upon the Linsig model submitted for the DHGV application but with additional lanes added on the A128 Tilbury Road, the Linsig results (pre-DHGV) show a maximum degree of Saturation of 54.9% in the AM peak hour rising to 80.2% in the PM Peak



Hour. The traffic signals pre-DHGV will operate within capacity during both AM and PM peak hours.

- 6.19 Linsig modelling post-DHGV with an additional arm into the DHGV site and additional pedestrian/cycle crossings shows that for Future Year 2032, the proposed traffic signals will operate within capacity with a degree of saturation of 74.2% in the AM peak hour but marginally above capacity with Degree of Saturation of 91.9% in the PM peak hour. The post-DHGV modelling includes significant stage times within each cycle for both bus services leaving the DHGV site and for a pedestrian/cycle green stage crossing the A128 Tilbury Road. This modelling will exacerbate delays on the A128 Tilbury Road over and above that which will be experienced on the ground as it is most unlikely that bus and pedestrian stages will be called every cycle allowing more green time for the A128 Tilbury Road and Station Road. The traffic signals post-DHGV will operate within acceptable capacity in the AM peak hour but marginally above capacity in the PM peak hour. The level of congestion in the PM peak hour is acceptable considering the robust levels of base and development traffic assumed for the Future Year 2032.
- 6.20 The existing A127/A128 roundabout interchange has been modelled with Development traffic. The Arcady assessment shows a maximum RFC of 0.76 in Future Year 2032 which indicates the roundabout working within capacity after the Development has been added. Post-DHGV, the DHGV development proposes the installation of partial traffic signal control at the A127/A128 roundabout interchange. The Broadfields Development does not propose any alteration to this interchange which has been shown to operate within capacity without DHGV. The future DHGV traffic signal improvement will provide further improvement to the capacity and safety of this grade separated junction sufficient to cater for DHGV traffic flows.
- 6.21 In conclusion, the traffic impact of the Development on the adjacent highway network has been shown to be within acceptable limits under all scenarios and not 'severe' as specified in NPPF. The Development will provide a significant package of off-site highway improvements to encourage walking and cycling to the site and will include a substantial traffic signal improvement of the A128 Tilbury Road/Station Road junction. Our assessment shows that the proposals will not have an unacceptable or adverse traffic impact on the surrounding highway network.