

11.0 TRAFFIC AND TRANSPORT

11.1 Introduction

11.1.1 Background

AECOM has been commissioned by Atlas GP Ltd. to assess the traffic and transport related effects of the Proposed Strategic Housing Development (SHD) application (the 'Proposed Development') to An Bord Pleanála (The Board) on a brownfield site located in the Sandyford Industrial Estate, Sandyford, Co. Dublin, (the 'Site').

A formal Traffic and Transport Assessment (TTA) has also been prepared and submitted by AECOM as part of the overall SHD Application, and underpins this chapter of the EIAR.

The Site on which the Proposed Development will be constructed was previously used as a two-storey warehouse/production building with associated car parking and ancillary works. This building has been demolished and the subject site is currently vacant.



Figure 11.1: Proposed General Arrangement

The following traffic and transport chapter was prepared by Zachary Cave (BEng (Hons), Civil Engineering). Zachary is a Member of the Institute of Engineers Ireland and a Member of the Transport Planning Society and has more than 2 years' experience.

11.1.2 Pre-Application Consultation – An Bord Pleanála Opinion ABP- 307978-20

The Pre-Application meeting with An Bord Pleanála was held, via MS Teams meeting, on the 23 November 2020. At this meeting Dún Laoghaire-Rathdown County Council (DLRCC) queried the location of the proposed vehicular entrance, relative to the existing pedestrian crossing on Carmanhall Road and the works proposed to the public realm along Blackthorn Road and the junction with Carmanhall Road. These details have been clarified in this document.

Following this meeting, AECOM engaged with members of DLRCC Transportation Department (Claire Casey and Thiago Bodini) to discuss the proposals for DLRCC proposed cycle lanes. At the most recent meeting on

the 14th of January 2021, DLRC indicated that their drawings were currently being prepared by the Transportation Department. In the absence of these specific proposals, AECOM have ensured that the scheme will be designed so that it can cater for the design of these proposed cycle lanes along Carmanhall Road and Blackthorn Avenue. Agreement shall be obtained with DLRC Transportation Department prior to the commencement of any work in the area.

DLRC also raised concerns regarding the car parking provision and the proposed cycle parking provision within the development. This issue was highlighted in Item 4 of The Board's Opinion 307978-20. The rationale for the proposed car parking provision has been explained further below.

11.1.3 Objectives

The main objective of this assessment is to examine the potential traffic impact of the Proposed Development and its access arrangements on the adjacent local road network. The net change in traffic on the network due to additional traffic has been calculated and its influence on the adjacent local road network has been investigated.

To complete the assessment that underpins this chapter, AECOM has made reference to the following documents:

- Dún Laoghaire Rathdown County Development Plan (2016 – 2022);
- Standards for Cycle Parking and associated Cycling Facilities for New Developments (January 2018);
- Greater Dublin Area Cycle Network Plan (National Transport Authority, 2013)
- Design Manual for Urban Roads and Streets, DMURS, May 2019 (Dept of Transport, Tourism and Sport/ Dept of Environment, Community & Local Govt);
- Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions), DN-GEO-03060, (TII, June 2017);
- PE-PDV-02045 Traffic and Transport Assessment Guidelines (May 2014), Transport Infrastructure Ireland; and
- Department of Housing, Planning and Local Government (DHPLG; March 2018). Sustainable Urban Housing: Design Standards for New Apartments.

11.1.4 Study Methodology

The methodology adopted for the assessment that underpins this chapter can be summarised as follows:

Baseline Conditions

- **Existing Traffic Flow Assessment** –Traffic flow data for the AM and PM peak conditions was obtained by classified junction turning count surveys in February 2020.
- **Existing Transport Infrastructure** – AECOM collated information on the public transport, walking and cycling in the area of the site.

Characteristics of the Proposed Development

- **Development Proposals** – Description of the Proposed Development, including proposed improvements to the road accessing the site and a review of parking and servicing provision and facilities for pedestrians and cyclists.

Potential Effects

- **Development Trip Generation** – based on the quantum of Proposed Development, AECOM reviewed trip rate data for similar uses and developed anticipated traffic flows, by using the industry standard Trip Rate Information Computer System (TRICS) database. These flows were then assigned to the existing network having regard for observed traffic patterns on the surrounding road network.
- **Percentage Impact** – The development traffic impact on the key junctions, with and without the Proposed Development was undertaken to determine future operation and any requirements for further analysis or required mitigation measures.
- **Impact analysis** – traffic modelling was completed where the need for this was identified using ‘Junctions 9’ software.

EIA Significance Terminology

As identified in Chapter 2 (Scope and Methodology) of this EIAR, a common framework of assessment criteria and terminology has been used based on the EPA’s draft Guidelines on the Information to be Contained in EIARs (EPA, 2017). This common framework follows a ‘matrix approach’ to environmental assessment which is based on the characteristics of the impact (magnitude and nature) and the value (sensitivity) of the receptor.

The assessment reported below is based on the common framework described in Chapter 2 of this EIAR. It has been assumed that the value (sensitivity) of the transport assets is no greater than **Medium**, which equates to ‘Medium or high importance and rarity, regional scale, limited potential for substitution’ (see Table 2.3 of Chapter 2).

A description of the significance categories used is provided in Table 11.1. Effects that are either Large or Profound are considered to be Significant, and effects that are Moderate, Slight or Imperceptible are considered to be Not Significant. How the level of effect is determined, based on the environmental value and magnitude of impact, is explained in Table 2.5 of Chapter 2.

Table 11.1: Significance categories and typical descriptions.

Significance Category	Typical Description
Profound	An effect which obliterates sensitive characteristics. Only adverse effects are usually assigned this level of significance. These factors are key issues in the decision-making and consent process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance which are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also be included in this significance category.
Large	An effect which, by its character, magnitude, duration or intensity alters a significant proportion of a sensitive aspect of the environment. These can be beneficial or adverse effects and are considered to be very important issues which are likely to be substantial in the decision-making process.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. These are beneficial or adverse effects which may be important but are not likely to be central to decision-making or consent. The cumulative effects of these factors may influence consent or decision-making if they should lead to an increase in the overall adverse effect on a particular resource or receptor.

Significance Category	Typical Description
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.
Imperceptible	An effect capable of measurement but without significant consequences. No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

11.1.5 Temporal Scope

Under the current programme, it is expected that the duration of construction will last for approximately 24 months. The duration of the construction phase is therefore classified as 'short-term' by the Environmental Protection Agency in their 2017 draft 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (one to seven years).

The operational phase of the Development will follow and will be a 'permanent' duration (those lasting greater than sixty years).

A decommissioning phase for the Development has not been considered due to the 'permanent' nature of the development. The EIA has been based on these assumptions.

11.1.6 Geographical Scope

The assessment covers the physical extent of the Application Site in the red line boundary, including works to the public realm on Carmanhall Road which will be altered as part of the scheme. The assessment of the road network and traffic impacts encompasses the nine junctions identified in Section 11.5.2, and Figure 11.17.

Cumulative impacts are calculated using central growth rates from the TII's Travel Demand Projections (Unit 5.3) to take into account the level of committed developments in the immediate vicinity of the development. Impacts are determined by assessing the opening year of the development (2023) and the two horizon year assessments (2028 and 2038), as per the TII Traffic Assessment Guidelines. The assessment uses appropriate geographical traffic growth rates for the surrounding area in these future year scenarios.

11.2 Baseline / Existing Conditions

11.2.1 Introduction

This section includes a review of the existing baseline conditions of the site including public transport, walking and cycling facilities and the current operation of the surrounding public network. AECOM undertook numerous site audits to identify the existing conditions in the vicinity of the site. The findings from AECOM's analysis are presented within this section and further discussed in the TTA.

11.2.2 Location

The subject site is situated on a brownfield site located in the Sandyford Industrial Estate, Sandyford, Co. Dublin. The subject site is a vacant brownfield site at present.

The site is bounded by commercial premises to its southern and western boundaries with the Carmanhall Road to the north and Blackthorn Road to the east.

Figure 11.2 below shows the development's location in relation to Dublin City and Figure 11.3 shows the surrounding environs of the Proposed Development.

The posted speed limit along the Carmanhall Road is 30km/hr with the posted speed limit along the Blackthorn Road being 50km/hr in the vicinity of the subject site.

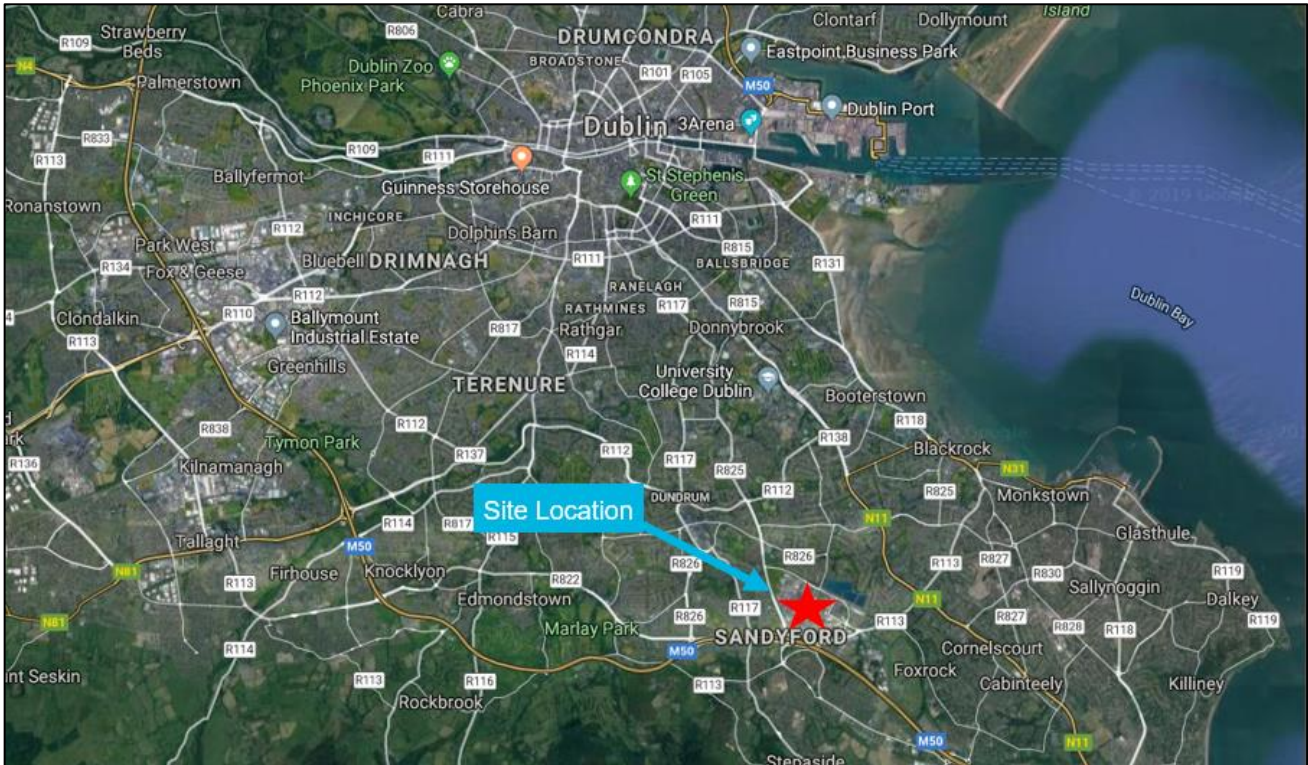


Figure 11.2: Development Location in Relation to Dublin City (Source: Google Maps)



Figure 11.3: Existing Site Layout (Source: Bing Maps)

11.2.2.1 Land Use Zoning

The subject lands are zoned ‘A2’ within the Dún Laoghaire Rathdown County Development Plan (2016-2022) as illustrated within Figure 11.4 below. The zoning objective of lands zoned ‘A2’ is as follows “To provide for the creation of sustainable residential neighbourhoods and preserve and protect residential amenity”. Along the Blackthorn Road there is a roads objective which illustrates that there is a “Proposed Quality Bus/ Bus Priority Route” in vicinity to the subject site.

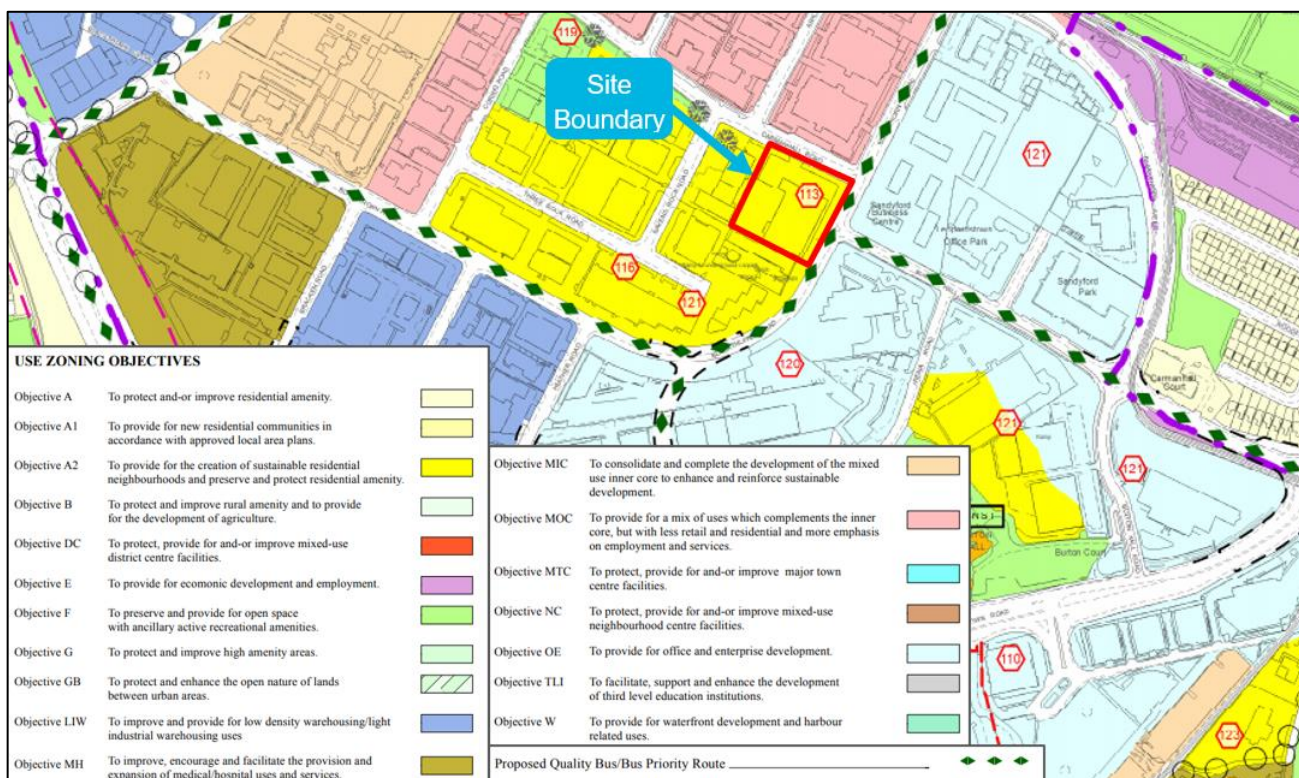


Figure 11.4: Site Zoning (Source: Dún Laoghaire Rathdown County Development Plan)

11.2.3 Existing Transportation Infrastructure

11.2.3.1 Background

An important stage in the development of an assessment of Traffic and Transport is the identification and appreciation of the local network’s existing transport conditions and vehicle movement characteristics.

An audit of the local road network has therefore been undertaken to establish the existing transport conditions and vehicle movement patterns across the existing network.

11.2.3.2 Existing Pedestrian / Cyclist Environment

Carmanhall Road

Carmanhall Road is a 7.5m wide single carriageway local road which is located along the northern boundary of the site. This road features 3 controlled and numerous uncontrolled crossings. It should be noted that not all crossings feature blister strip paving but are flush with the carriageway. Footpaths are provided along both sides of the carriageway with a grass verge and public lighting is also provided along both sides of the Carmanhall Road. The posted speed limit is 50 km/hr.

Blackthorn Road

Blackthorn Road is a 9m wide single carriageway local road which is located along the eastern boundary of the site. In the vicinity of the subject site this road features 2 number signal-controlled crossings with associated

blister strip paving and flush kerbing. Footpaths are provided along both sides of the carriageway with a grass verge and public lighting is also provided on both side of the Blackthorn Road. The posted speed limit is 50 km/hr.

Sustainable Transport – Bus

As graphically illustrated in Figure 11.5 below, the site is situated to benefit from bus transport connections allowing residents, staff and customers to travel by this sustainable mode.

The closest bus stops to the site are located along the Blackthorn Road both of which are within a 100m walking catchment of the site. These bus stops are operated by Bus Éireann and private companies. Figure 11.5 illustrates the location of the bus stops in relation to the development with Table 11.2 detailing the number of services per day and the routes.

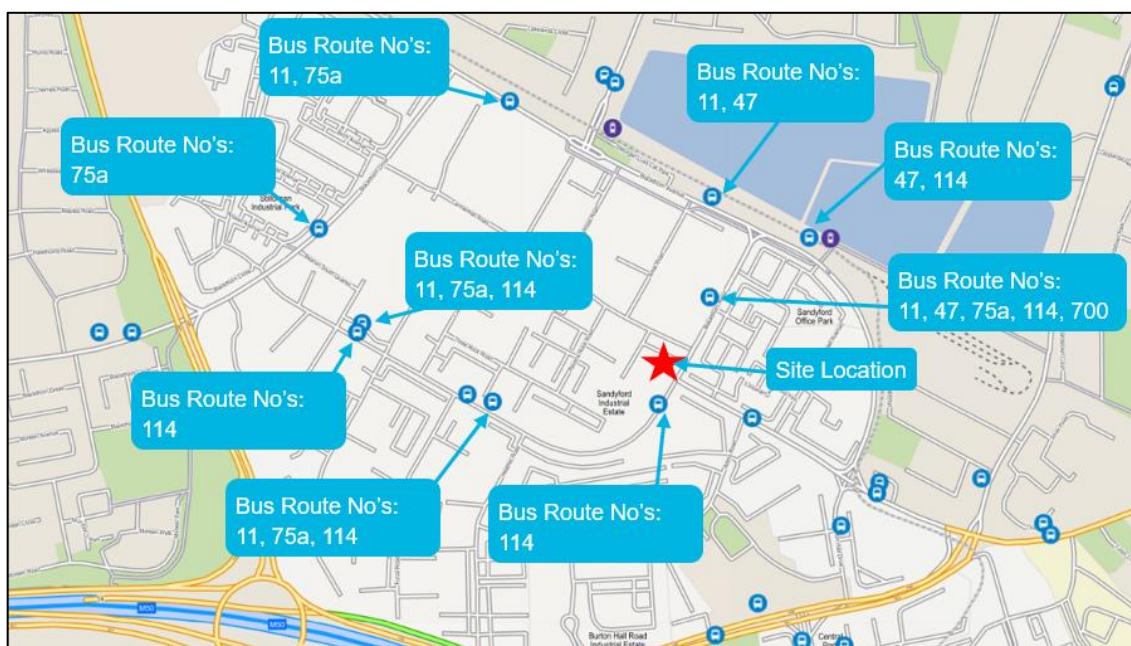


Figure 11.5: Bus Stops in the Vicinity of the site (Source: www.journeyplanner.transportforireland.ie)

Table 11.2: Bus Timetables (Source: www.journeyplanner.transportforireland.ie)

Route No.	Operator	Route	No. of Services		
			Monday Friday	to Saturday	Sunday
11	Dublin Bus	Wadelai – Drumcondra – Dublin City – Milltown – Stillorgan – Sandyford	1 service every 30 mins		
47	Dublin Bus	Dublin City – Sandymount – Stillorgan – Sandyford – Stepside	1 service every 30 mins	1 service every hour	None
75a	Go-Ahead	Dun Laoghaire – Stillorgan – Sandyford – Ballinteer – Tallaght	2 services per day	2 services per day	None
114	Go-Ahead	Ballinteer – Sandyford – Foxrock - Blackrock	1 service every hour (6am to 8pm)	1 service every hour (8am to 12am)	1 service every hour (1pm to 10pm)
700	Aircoach	Foxrock – Sandyford – Stillorgan – Dublin City – Dublin Airport	1 service every 15 mins		

11.2.3.3 Sustainable Transport – Light Rail

The closest LUAS stations to the site are the Sandyford and Stillorgan Stations, located 0.35 km (4-minute walk) and 0.55 km (6-minute walk) to the north east and north of the development, respectively. These stations are situated along the LUAS Green Line. It provides light rail services west to Dublin City and east towards Cherrywood.

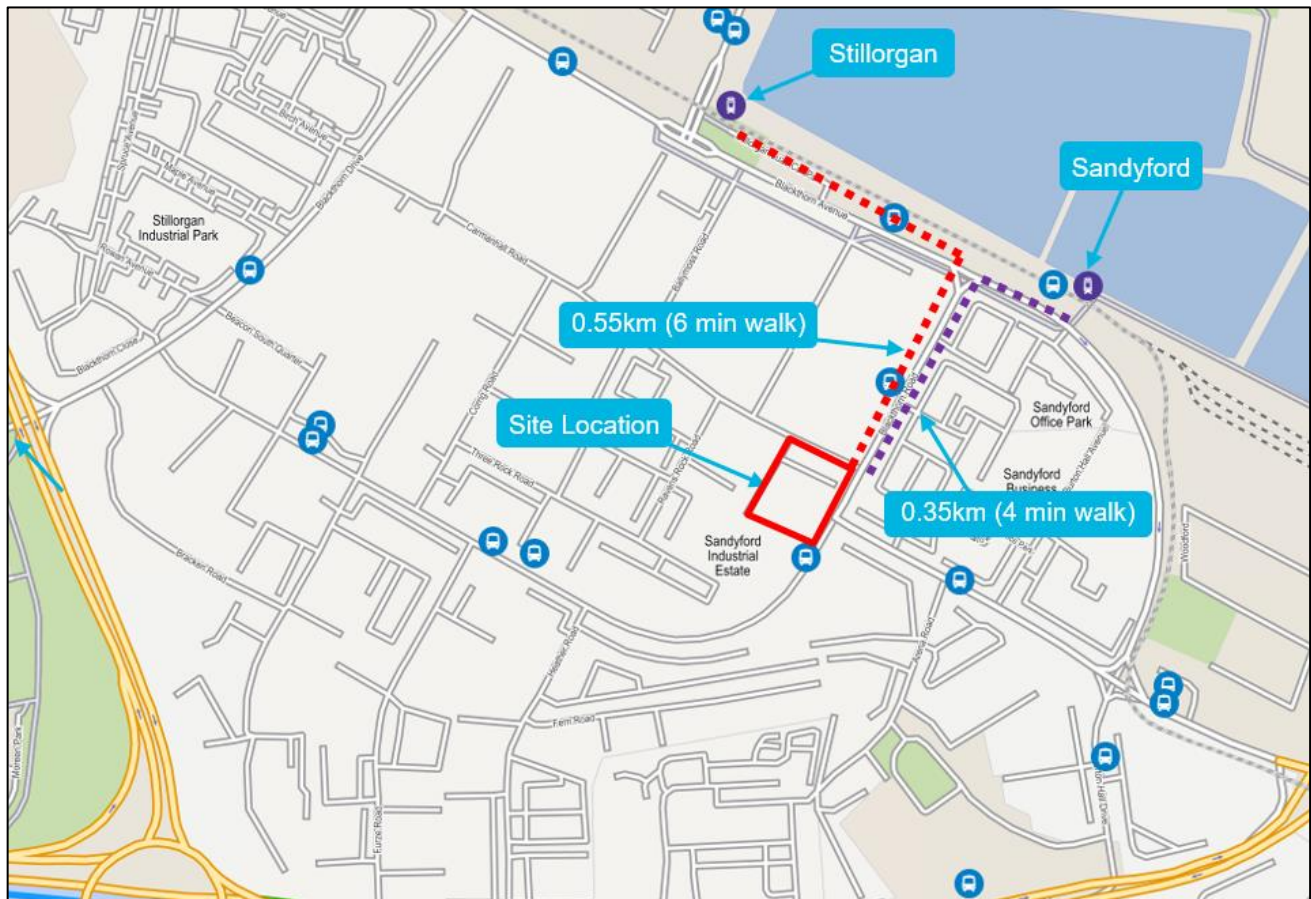


Figure 11.6: Site Proximity to LUAS Stations (Source: www.journeyplanner.transportforireland.ie)

11.2.3.4 Sustainable Transport – Car Sharing

There are 7 GoCar hire stations located within a 1km walking catchment, 6 of which are located in the Sandyford Industrial Estate, west of the subject site. GoCar members can book cars online or via the app for durations of as little as an hour. They then unlock the car with their phone or a GoCard; the keys are in the car, with fuel, insurance and city parking all included. The benefits of such car sharing services include:

- The reduction of cars on the road and therefore traffic congestion, noise and air pollution;
- Frees up land traditionally used for private parking spaces;
- Encourages and potentially increases use of public transport, walking and cycling as the need for car ownership is reduced;
- Car sharing allows those who cannot afford a car the opportunity to drive, encouraging social inclusivity; and
- Car share replaces approximately 20 private car parking spaces.

The locations of the GoCar bases are illustrated in Figure 11.7 with Table 2.2 providing additional details in relation to walking distance from the site and the type of GoCar vehicle available.

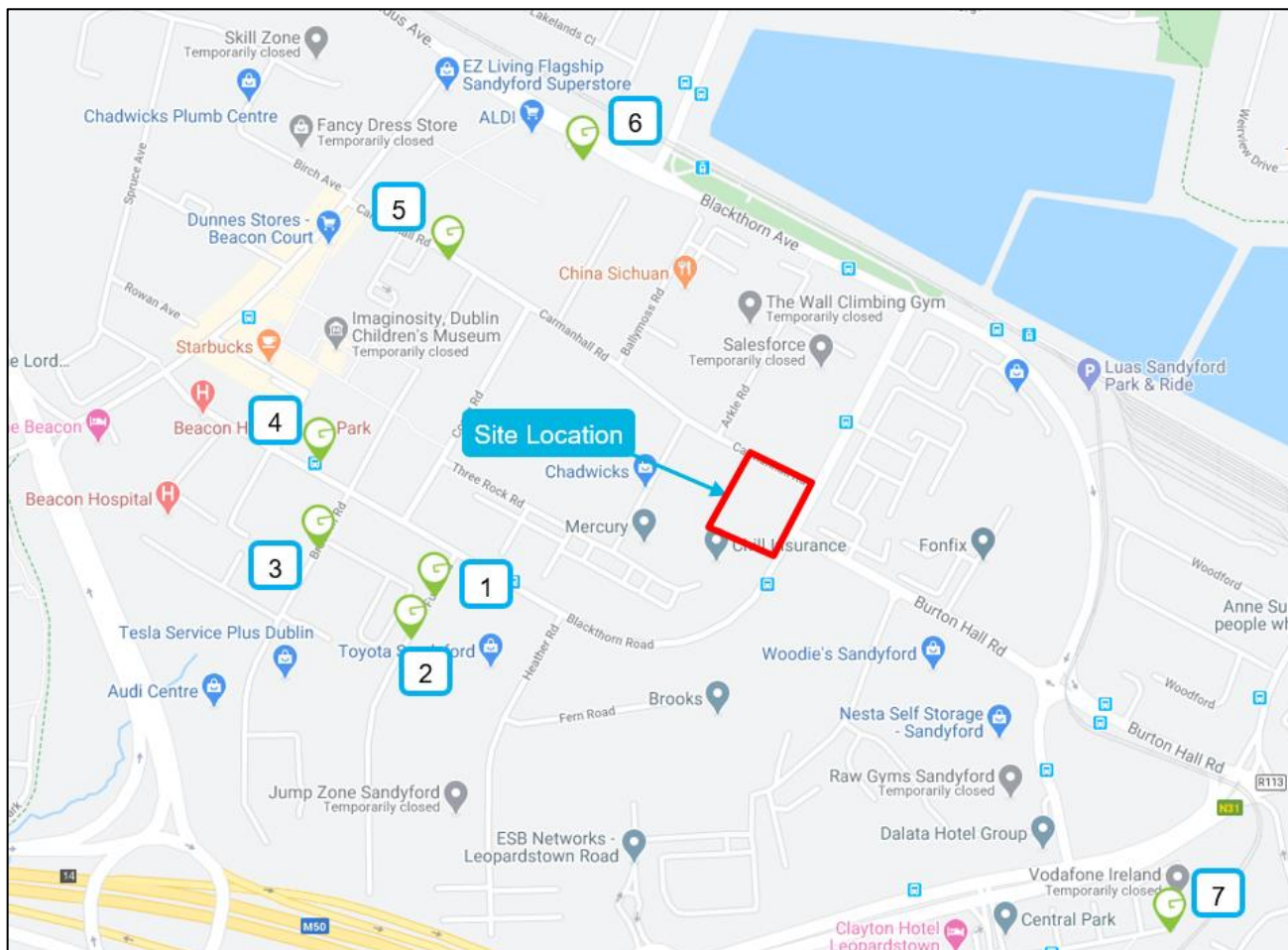


Figure 11.7: GoBase Locations (Source www.GoCar.ie)

Table 11.3: GoBase Details.

Ref No.	Go Base Location	Vehicle Class	Approximate Distance from the development
1	Sandyford Hub (Heather Road)	GoCity, GoTripper, GoExplore	0.55 km
2	Sandyford Hub (Furze Road)	GoTripper	0.60 km
3	Sandyford Hub (Bracken Road)	GoTripper	0.70 km
4	Blackthorn Road	GoCity, GoExplore	0.70 km
5	Carmanhall Road	GoCity, GoVan	0.60 km
6	Rockbrook Sandyford	GoCity, GoTripper	0.65 km
7	Central Park	GoCity	0.90 km

11.2.4 Emerging Transportation Infrastructure

11.2.4.1 Local Road Proposals

The Dún Laoghaire Rathdown County Development Plan (2016 – 2022), has outlined both short (6 years) and long-term road network proposals for the DLRCC environs. Within the Dún Laoghaire Rathdown County Development Plan (2016 – 2022), Policy ST25: Roads details the following:

“It is Council Policy, in conjunction and co-operation with other transport bodies and authorities such as the TII and the NTA, to secure improvements to the county road network – including improved pedestrian and cycle facilities.”

As part of this roads policy DLRCC have indicated that there are to be number of road improvements in the Sandyford Industrial Estate and environs which are as follows:

- ‘M50 Diverge Ramp Access to Sandyford (provided via a free-flow slip to ESB Link Road (preferred option) or Heather Road);
- Leopardstown Link Road;
- Bracken Road Extension to Drummartin Link Road;
- ESB Link Road & Link to Arena Road; and
- Leopardstown Roundabout Reconfiguration.’

As part of the Dún Laoghaire Rathdown County Development Plan these schemes are to be delivered within the 6 years that it covers (2016 – 2022). The extent of the works that will need to be undertaken for the implementation of the schemes is unknown at this stage or what stage of the design process they currently sit at. Figure 11.8 illustrates the proposed roads objectives.

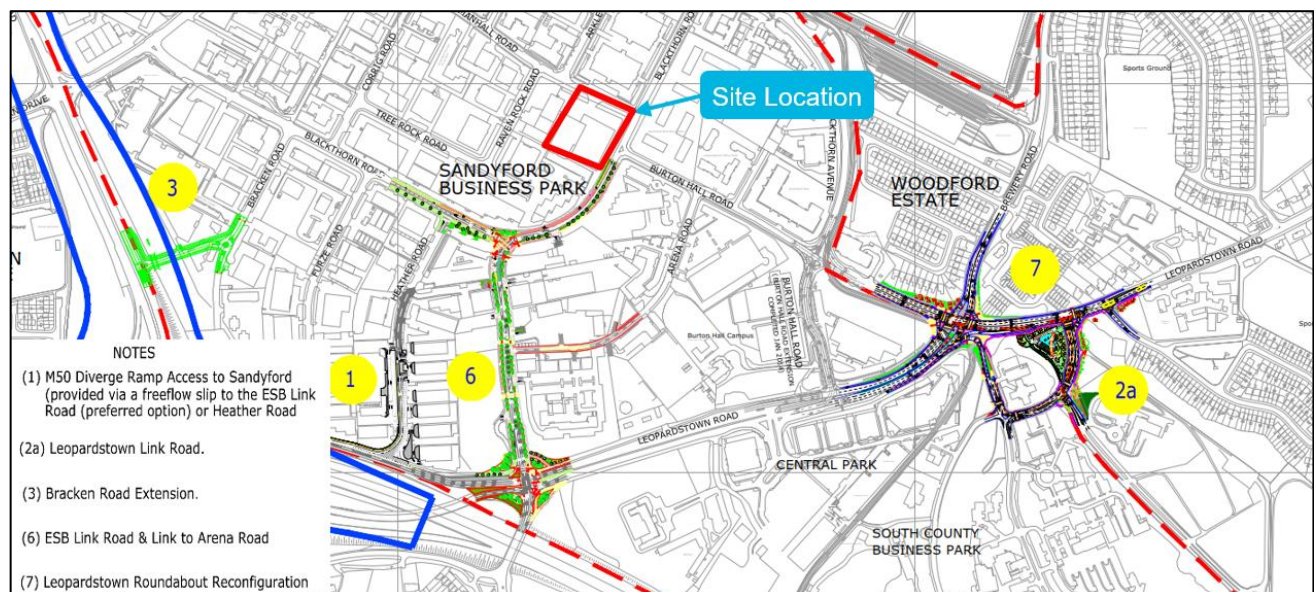


Figure 11.8: 6 Years Roads Objectives (Source: Dún Laoghaire Rathdown County Development Plan 2016 – 2022)

11.2.4.2 Cycle Network Proposals

In the vicinity of the subject site, it is planned to upgrade the Blackthorn Road, Burton Hall Road and include a connection from the Blackthorn Road to the Leopardstown Road which would appear to be provided as part of the ‘ESB link Road & Link to Arena Road’ roads proposal. Figure 11.9 illustrates the existing cycle facilities in the vicinity of the subject site with Figure 11.10 illustrating the proposed cycle network upgrades as part of the Cycle Network Plan for the Greater Dublin Area

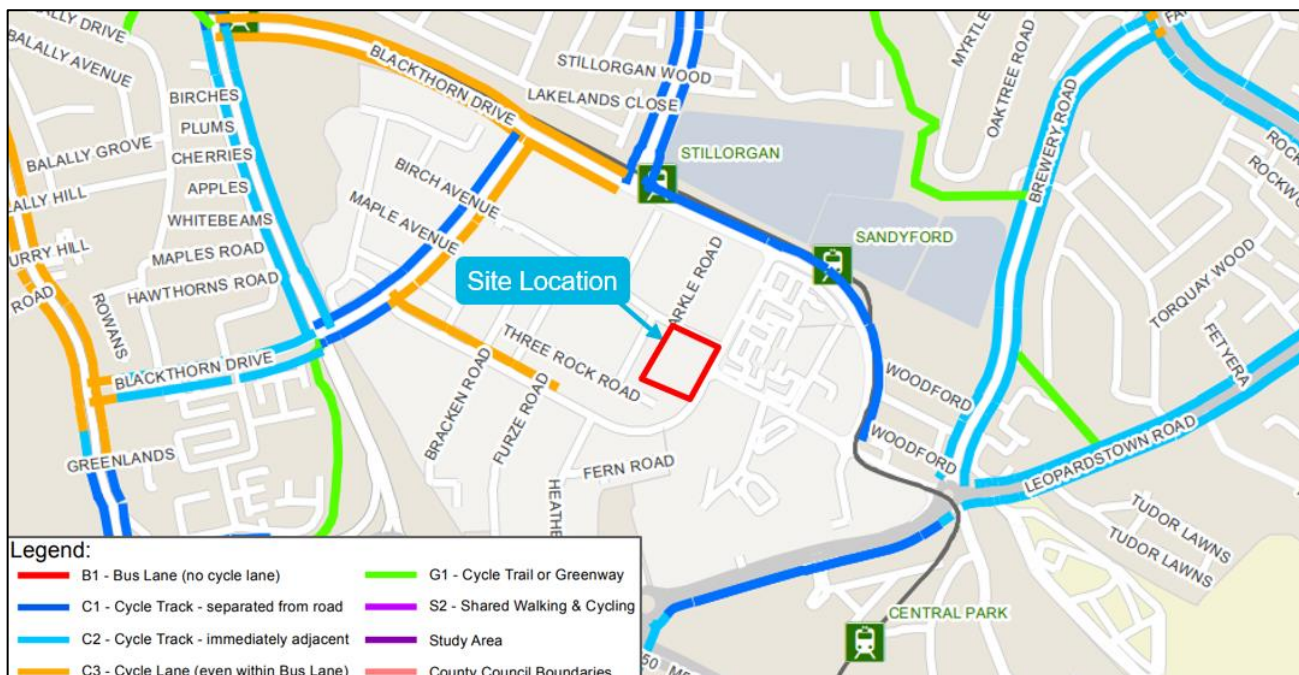


Figure 11.9: Existing Cycle Facilities (Source: GDA Cycle Network Plan, National Transport Authority)

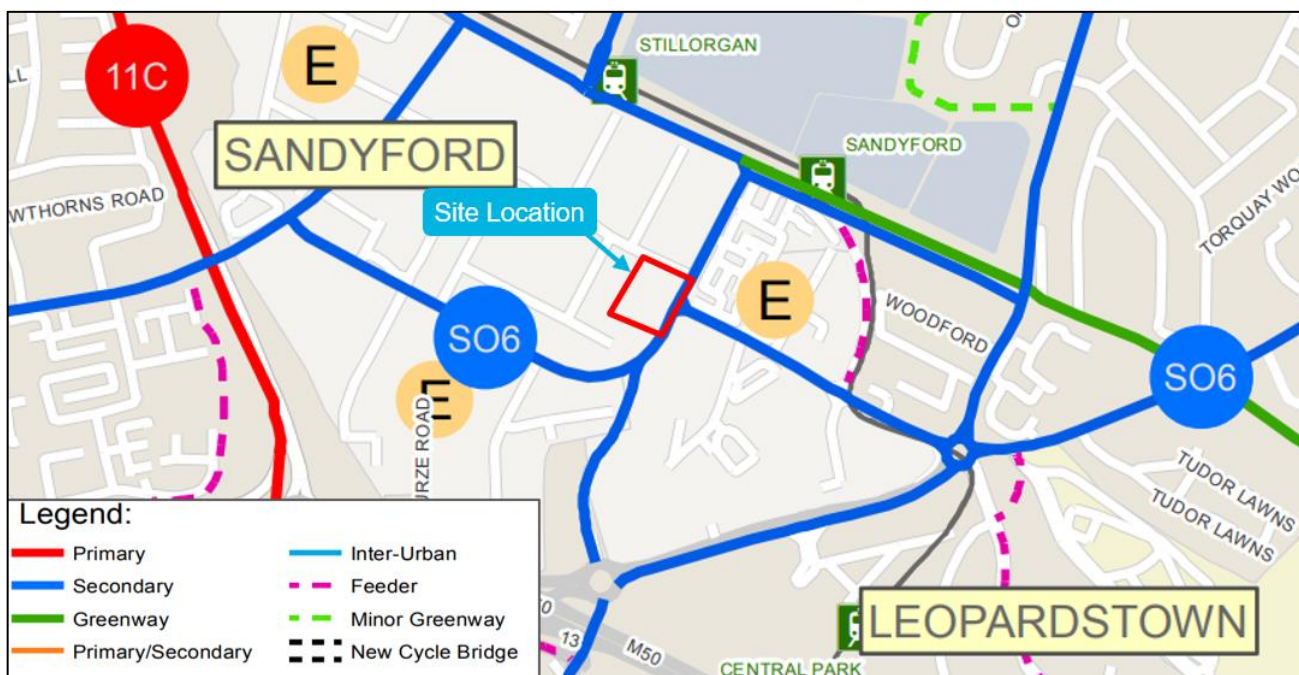


Figure 11.10: Proposed Cycling Facilities (Source: GDA Cycle Network Plan, National Transport Authority)

11.2.4.3 Bus Network Proposals

The National Transport Authority (NTA) has put forward proposals to upgrade a number of core bus corridors from the Dublin environs to the City Centre under the title 'BusConnects'. The aim of the project is to:

- 'Make bus journeys faster, predictable and reliable;
- New bus stops and better facilities;
- More efficient network, connecting more places and carrying more passengers;

- Updated ticketing systems and implementing a cashless payment system with a simpler fare structure; and
- Improving the cycling network and making it safer.’

As part of the BusConnects scheme the current bus network is to be revised and more frequent and efficient services are to be provided across the Dublin environs. Table 11.4 details the proposed routes in the vicinity of the subject site with Figure 11.11 illustrating the proposed routing.

Table 11.4: Revised Bus Networks Routes

Route	Route Type	Route	Frequency
S8	Orbital Route	Dun Laoghaire – Sandyford – Ballinteer – Tallaght – City West	Every 20 mins
10	Other City Bound Route	Ticknock – Sandyford – Goatstown – Ranelagh – Mountjoy Square	Every 30 mins
213	Local Route	Kiltiernan – Sandyford – Stillorgan – Sydney Parade – Sandymount – Ringsend Bus Garage	Every 60 mins
313	Peak Time Route	Kiltiernan – Stepside – Sandyford – Stillorgan – UCD	Peak – Only
316	Peak Time Route	Whitechurch – Ballinteer – Sandyford – Stillorgan – UCD	Peak – Only

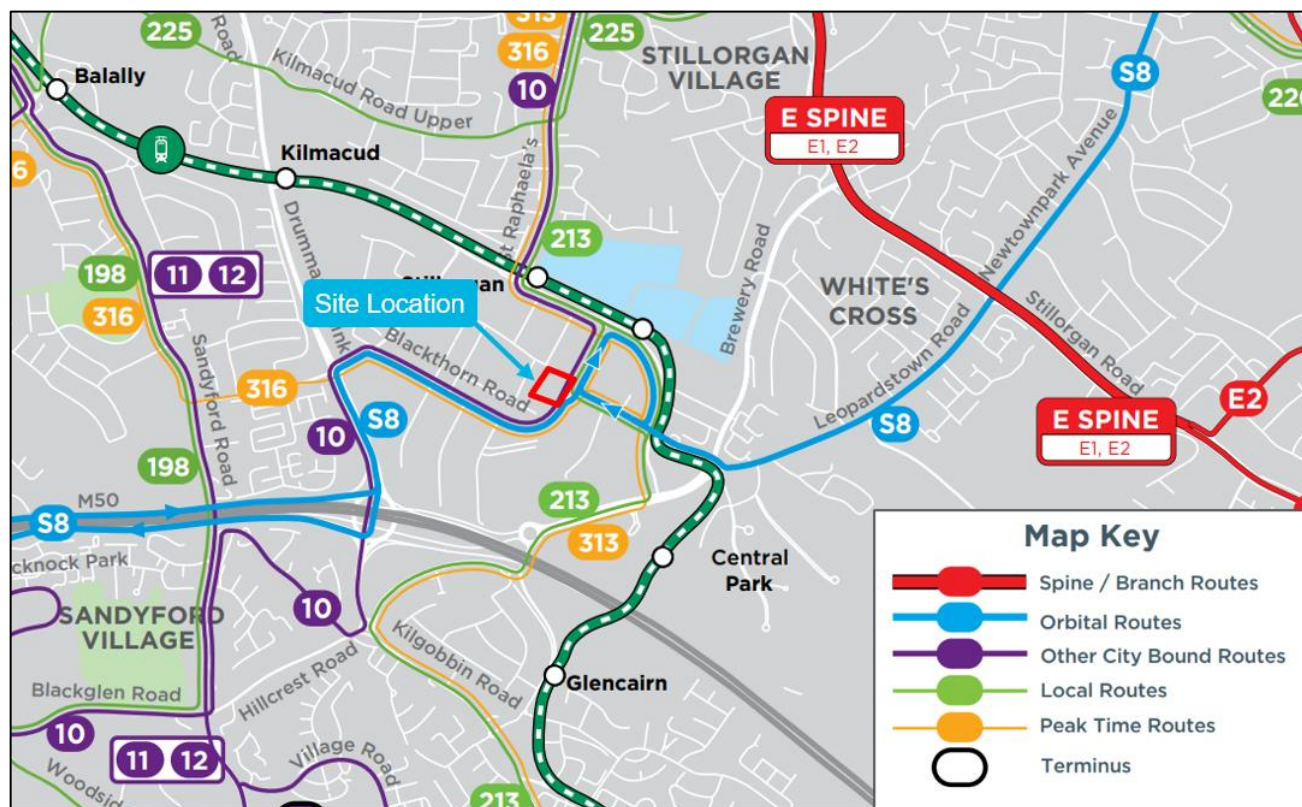


Figure 11.11: Proposed Public Transport Services (Source: www.busconnects.ie)

11.2.5 Existing Site Access

At present there is currently one access point into the site which serves both vehicles and pedestrian / cyclist access. Figure 11.12 show the location of the existing access point into the site.



Figure 11.12: Previous Vehicular Access Point (Source: Google Streetview, July 2018)

11.2.6 Road Collision Statistics

A review of the Road Safety Authority (RSA) traffic collision database has been undertaken for the road network in the vicinity of the proposed site to identify any collision trends. This review will assist to identify any potential safety concerns in relation to the existing road network.

Traffic collision data was obtained for the period 2005 – 2016, which is the most recent data available from the RSA website. It should be noted that information relating to reported incidents for the years 2017, 2018, 2019 and 2020 is not yet available on the Road Safety Authority (RSA) website. The RSA records detail only those occasions where the incident was officially recorded such as the Garda being present to formally record details of the incident.

The incidents are categorised into class of severity, which includes minor, serious and fatal collisions. The collision locations are shown in Figure 11.13 below.

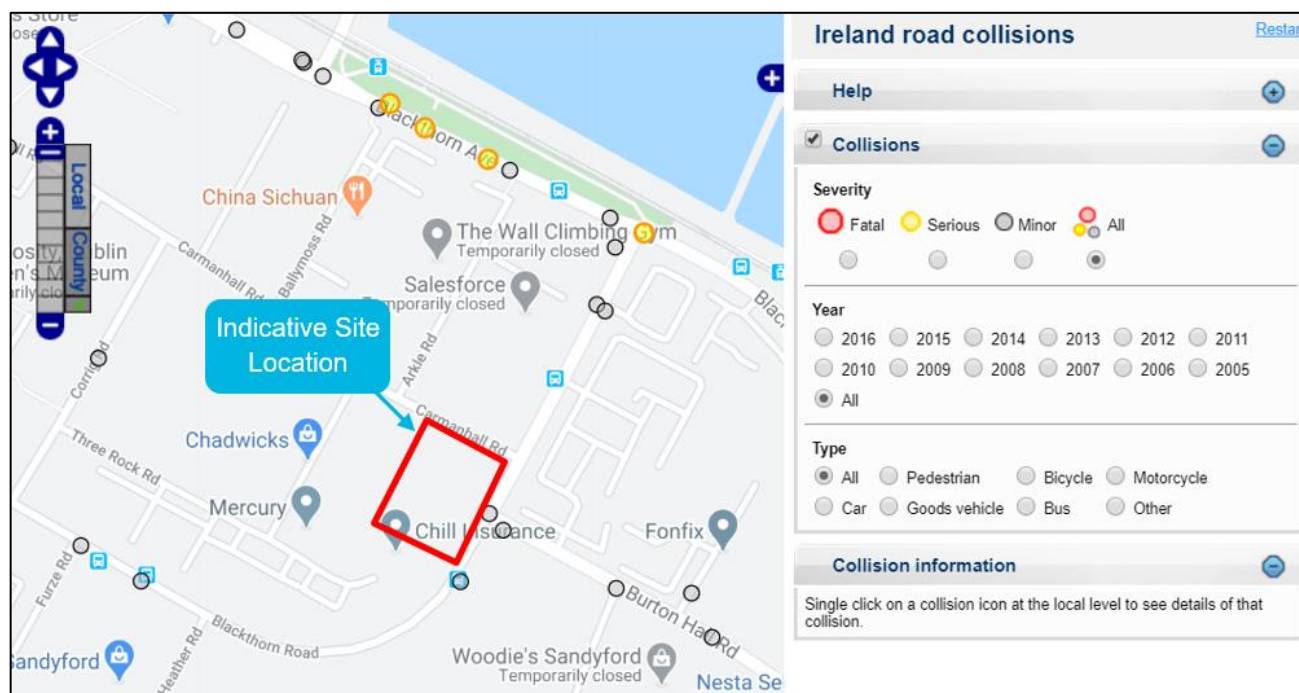


Figure 11.13: Collision Record within the vicinity of the subject site (source: www.rsa.ie)

Upon inspection there have been 3 number collisions recorded along the Blackthorn Road in the vicinity of the subject site. The collisions are recorded as minor collisions and do not indicate any reoccurring collision hotspots or traffic concerns with the existing road network.

11.2.7 Existing Conditions Summary

The subject site is ideally positioned within the urban environment to maximise access to/from the site utilising sustainable forms of travel including walking, cycling and public transport.

The site's proximity to the nearby bus stops, approximately within a 100m walking catchment of the site, with a bus service every 15 minutes, enhances the sustainability characteristics of the site. These services travel towards Dublin City and will allow residents / staff / customers to avail of the wider bus network or train services.

The site's proximity to the nearby LUAS stops, both within a 6-minute walk from the site, which have a LUAS service every 10 minutes, also enhances the sustainability characteristics of the site. These services travel towards Dublin City and will allow residents / staff / customers to avail of the wider bus network or train services.

11.3 Characteristics of the Proposed Development

11.3.1 Introduction

This section details the Proposed Development with regard to the transportation elements which include the internal roads layout, proposed pedestrian/cycling infrastructure and parking provisions within the development area.

11.3.2 Proposed Development

The subject scheme principally proposes a multi storey apartment complex with associated childcare facility, resident's amenities, community infrastructure and car parking at ground floor level. The Proposed Development also includes signage and elevational treatment; boundary treatments; hard and soft landscaping; and all necessary site works above and below ground level.

The Proposed Development will comprise of:

(i) construction of a Build-To-Rent residential development within a new part six, part eight, part nine, part eleven storey rising to a landmark seventeen storey over basement level apartment building (40,814sq.m) comprising 428 no. apartments (41 no. studio, 285 no. one-bedroom, 94 no. two-bedroom & 8 no. three-bedroom units) of which 413 no. apartments have access to private amenity space, in the form of a balcony or lawn/terrace, and 15 no. apartments have access to a shared private roof terrace (142sq.m) at ninth floor level;

(ii) all apartments have access to 2,600sq.m of communal amenity space, spread over a courtyard at first floor level and roof terraces at sixth, eighth and ninth floor levels, a 142sq.m resident's childcare facility at ground floor level, 392sq.m of resident's amenities, including concierge/meeting rooms, office/co-working space at ground floor level and a meeting/games room at first floor level, and 696sq.m of resident's amenities/community infrastructure inclusive of cinema, gym, yoga studio, laundry and café/lounge at ground floor level. The café/lounge will primarily serve the residents of the development and will be open for community use on a weekly/sessional basis;

(iii) provision of 145 no. vehicular parking spaces (including 8 no. mobility parking spaces, 2 no. club-car spaces and 44 no. electric charging spaces), 5 no. motorcycle parking spaces, bin stores, plant rooms, switch room and 2 no. ESB sub-stations all at ground floor level; provision of bicycle parking (752 no. spaces), plant and storage at basement level; permission is also sought for the removal of the existing vehicular entrance and construction of a replacement vehicular entrance in the north-western corner of the site off Carmanhall Road;

(iv) provision of improvements to street frontages to adjoining public realm of Carmanhall Road & Blackthorn Road comprising an upgraded pedestrian footpath, new cycling infrastructure, an increased quantum of landscaping and street-planting, new street furniture inclusive of bins, benches and cycle parking facilities and the upgrading of the existing Carmanhall Road & Blackthorn Road junction through provision of a new uncontrolled pedestrian crossing; and,

(v) All ancillary works including provision of play equipment, boundary treatments, drainage works - including SuDS drainage, landscaping, lighting, rooftop telecommunications structure and all other associated site services, site infrastructure and site development works. The former Avid Technology International buildings were demolished on foot of Reg. Ref. D16A/0158 which also permitted a part-five rising to eight storey apartment building. The development approved under Reg. Ref. D16A/0158, and a subsequent part-seven rising to nine storey student accommodation development permitted under Reg. Ref. PL06D.303467, will be superseded by the proposed development.

11.3.3 Site Access

There will be 1 no. vehicular access serving the subject site, the vehicular access point will be located at the northern boundary of the site. Prospective residents, staff and customers can avail of a number of access points along the Carmanhall Road and Blackthorn Road for pedestrians and cyclists only. Figure 11.14 illustrates the proposed vehicular access.

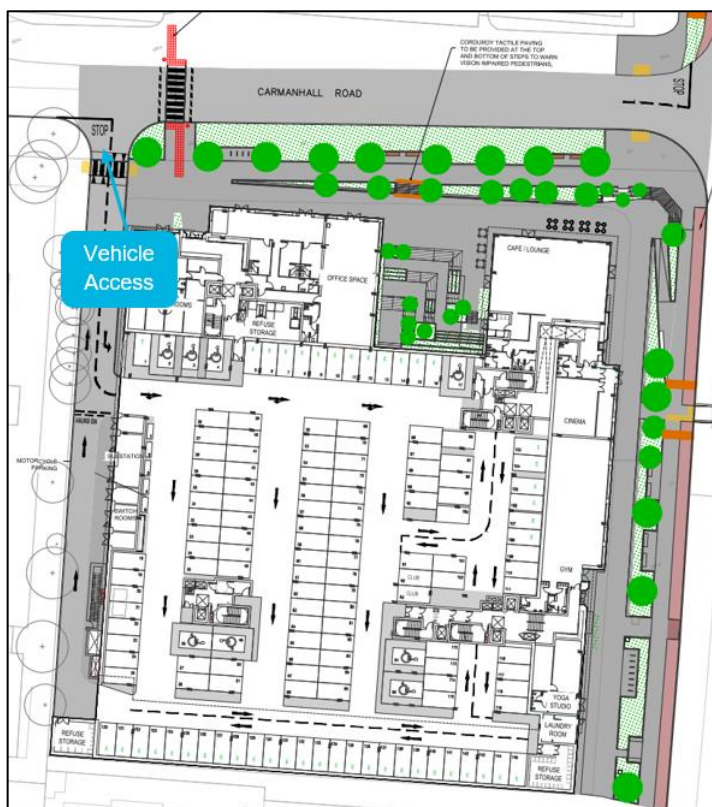


Figure 11.14: Site Access Points

11.3.4 External Roads Upgrades

It is proposed that the existing pedestrian crossing along the Carmanhall road will be moved approximately 10m east of its current location to facilitate the construction of the new vehicular access point. Further to this it is proposed to upgrade the existing Carmanhall Road / Blackthorn Road junction by means of providing a new uncontrolled pedestrian crossing. An off road cycle lane is also to be provided along the Blackthorn Road which will tie in with the existing cycle facilities to the north-east of the site.

AECOM had a meeting with members of DLRC Transportation Department (Claire Casey and Thiago Bodini) to discuss the proposals for these cycle lanes on the 14th of January 2021, and DLRC indicated that these drawings were currently being prepared by the Transportation Department. In lieu of the design proposals, the scheme will be designed so that it can cater for the design of these proposed cycle lanes along Carmanhall Road and Blackthorn Avenue. The external roads upgrades can be seen in the AECOM TTA drawing: PR-461030-ACM-XX-00-DR-CE-10-0001, which has been submitted as part of this SHD Application.

11.3.5 Internal Roads Layout

Due to the undercroft car parking being 90 degree it is required that in line with 'The Design Recommendations for multi-storey and underground car parks, March 2011' the internal roads through the undercroft car parking are to be 6.0m wide to ensure that there is enough aisle width to facilitate 90-degree parking and two way traffic movements through the site. The proposed roads layout can be seen in AECOM TTA drawing PR-461030-ACM-XX-00-DR-CE-10-0001 which has been submitted as part of this SHD Application.

11.3.6 Pedestrian and Cyclists Permeability

The subject site will be highly accessible to pedestrians from the Carmanhall Road and Blackthorn Road. Pedestrians will be given priority within the internal site layout to ensure desire lines within the site are accommodated providing a good level of service and ensures the risk of vehicle/pedestrian conflict with vehicles is minimised.

11.3.7 Servicing

An AutoTrack analysis has been undertaken to demonstrate the capability of the development to cater for a 10.2m bin lorry. The results of the analysis show that the site access junction can accommodate a bin lorry accessing, exiting and travelling through the site. This is illustrated Figure 11.15.

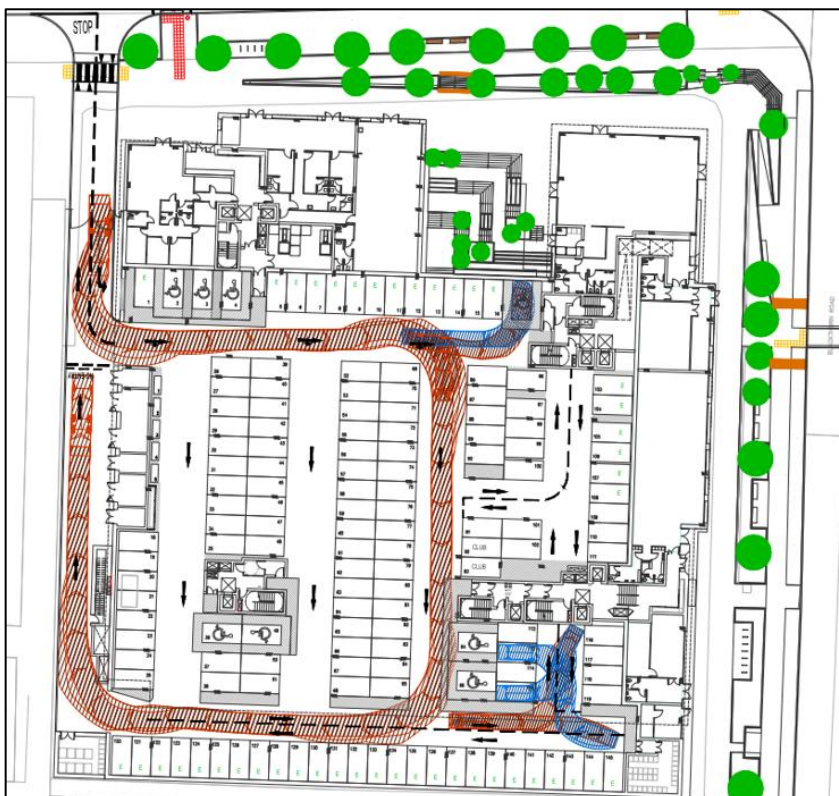


Figure 11.15: Proposed Servicing Strategy

11.3.8 Visibility Splays

In accordance with DMURS, sightlines of 45m are required having regard to the speed limit along the Carmanhall Roads (50km/hr). This visibility splay requirement can be achieved at the subject site access from a 2.4m setback, as shown in Figure 11.16.

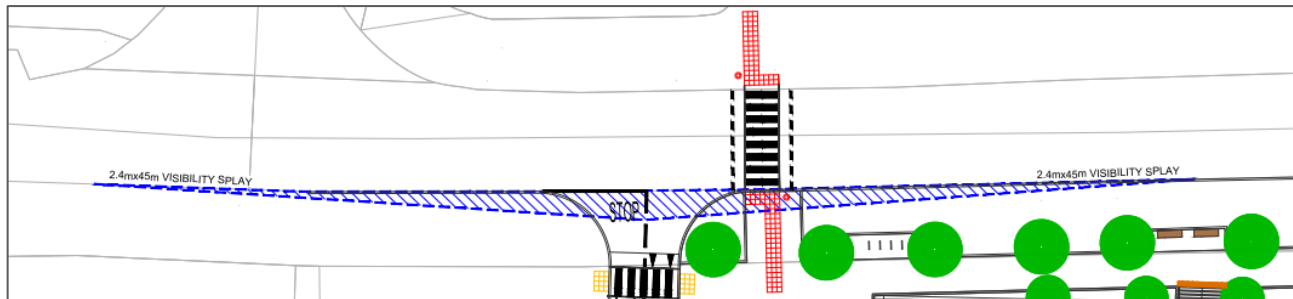


Figure 11.16: Visibility Splays Along the Carmanhall Road.

11.3.9 Parking Strategy

11.3.9.1 Standard Vehicle Parking

In order to determine the appropriate quantum of vehicle parking for the Proposed Development, reference has been made to the following guidance:

- Chapter 4 of Sustainable Urban Housing: Design Standards For New Apartments Guidelines For Planning Authorities, as published by the Department of Housing, Planning and Local Government (DHPLG), March 2018; and
- Section 8.2.4.5 of the current Dún Laoghaire Rathdown County Development Plan (2016-2022);

11.3.9.2 Design Standards for New Apartments Guidelines

'Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities Department of Housing, Planning and Local Government (DHPLG) The Department of Housing, Planning and Local Government has recently published (March 2018) new guidance 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' (SUHDS). In relation to car parking, within 'Central and/or Accessible Urban Locations' the document states 'In larger scale and higher density developments, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances. The policies above would be particularly applicable in highly accessible areas such as in or adjoining city cores or at a confluence of public transport systems such as rail and bus stations located in close proximity.'

The DHPLG 2018 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' defines Central and/or Accessible Urban Locations as:

'Such locations are generally suitable for small- to large-scale (will vary subject to location) and higher density development (will also vary), that may wholly comprise apartments, including:

- Sites within walking distance (i.e. up to 15 minutes or 1,000- 1,500m), of principal city centres, or significant employment locations, that may include hospitals and third-level institutions;
- Sites within reasonable walking distance (i.e. up to 10 minutes or 800- 1,000m) to/from high capacity urban public transport stops (such as DART or Luas); and
- Sites within easy walking distance (i.e. up to 5 minutes or 400-500m) to/ from high frequency (i.e. min 10 minute peak hour frequency) urban bus services.'

Accordingly the Site, can be classified as an ‘Central and/or Accessible Urban Location’ as it is located within a significant employment location (Sandyford Industrial Estate), less than 600m walking distance from both the Stillorgan and Sandyford LUAS stops. Furthermore the Site is also ideally located to benefit from the emerging BusConnects network redesign.

AECOM believe parking provision for the Proposed Development should be provided in accordance with the DHPLG 2018 ‘Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities’, and as such the quantum of vehicle parking provided on site should be ‘**minimised, substantially reduced or wholly eliminated**’.

11.3.9.3 Dun Laoghaire Rathdown County Development Plan 2016-2022

The Dun Laoghaire Rathdown County Development Plan 2016-2022 states the following in relation to car parking:

“Reduced car parking standards for any development (residential and non-residential) may be acceptable dependent on:

- *The location of the proposed development and specifically its proximity to Town Centres and District Centres and high density commercial / business areas;*
- *The proximity to the proposed development to public transport;*
- *The precise nature and characteristics of the proposed development;*
- *Appropriate mix of land uses within and surrounding the proposed development;*
- *The availability of on-street parking controls in the immediate area;*
- *The implementation of a Travel Plan for the proposed development where a significant modal shift towards sustainable travel modes can be achieved;*
- *Other circumstances where it can be justified on sustainability grounds. “*

In very limited circumstances, the Council may also consider the development of car free housing on suitable small scale sites which have high levels of public transport accessibility, have convenient and safe access to local shops and community facilities and / or are located very close to Town Centres.” The proposed site has been reviewed in relation to the accessibility of the above factors and shown in Table 11.5 below.

Car parking within the Proposed Development is also considered in Section 5.9.3 of the Hughes Planning and Development Consultants (2021) Statement of Consistency and Planning Report.

Table 11.5: Dún Laoghaire Rathdown County Council Reduced Car Parking Criteria.

Criteria	Response	Criteria Met
Proximity to Town Centre	The subject site is located in the Sandyford Industrial Estate which features a number of commercial and retail developments. The site is located near Goatstown, Stillorgan and Dundrum which are all within a 15 minute cycle distance of the site.	Yes
Proximity to Public Transport	5 minute walk to high frequency Stillorgan and Sandyford LUAS stops, where services connect the site to Dublin City Centre. 1 min walk to bus service within Sandyford where services connect the site to Dublin City Centre and surrounding environs. There are 7 no. GoCar GoBase stations located within a 1km walking catchment of the site.	Yes

Criteria	Response	Criteria Met
Nature of the Development	Development comprises of a residential land uses where opportunity for promoting sustainable travel and modal shift for future occupants will be high.	Yes
Approximate Mix of Land Uses surrounding the development	The site is situated within Sandymore Industrial Estate where a mix of land uses are situated including retail, financial institutions, restaurants and major employers. The proposed site will therefore benefit from being situated within walking and cycling distance to an array of different land uses which will reduce the requirement for private car use. The site is located approximately 1.3km from St. Raphaelas Primary and Secondary schools.	Yes
Availability of On Street Parking Controls	As the development is adopting an undercroft car parking and no provisions have been made for on-street car parking, on-street parking controls do not apply to the development. As part of the Proposed Development, landscaping is to be provided along the Carmanhall Road. This will prevent and deter existing residents from attempting to park along the site frontage along the Carmanhall Road.	Yes
Implementation of a Travel Plan	A Residential Travel Plan will be prepared to accompany the planning application and will be adopted prior to operation of the residential development. The Travel Plan will set out a framework of measures to promote sustainable travel amongst future residents, whilst reducing the reliance on private car modes.	Yes
Other Circumstances	Due to the sites central proximity to Goatstown, Stillorgan and Dundrum, there is an array of existing walking and cycling facilities within the vicinity of the site that will allow for safe travel of pedestrians / cyclists. Of note, pedestrian footpaths connect the site to the aforementioned towns and also to nearby Dublin Bus and LUAS stops. In addition, the site is located within the vicinity of the GoCar car share scheme, with GoBase stations located in the Sandymore Industrial Estate. The existing facilities will further assist to promote sustainable modes and reduce the need for private vehicle ownership.	Yes

With regard to the Proposed Development schedule, the associated DLRCC standard car parking requirements are outlined in Table 3.3.

Table 11.6: Dún Laoghaire Rathdown County Council Development Plan Vehicle Parking Maximum Requirements and Development Parking Provision.

Description	Quantum		DLRCC Standard Parking Rate		Proposed Parking Provision	
			Parking Required	Parking to be Provided	Residential Parking	Visitor Parking
1 bed apartment	326	Units	1 space per 1 bed unit	326	145	0
2 Bed apartment	94	Units	1.5 space per 2 bed unit	141		
3 bed apartment	8	Units	2 spaces per 3 bed unit	16		
Total				483	145	

In regard to the development proposals for the 428 residential apartment units, it is noted that the car parking proposals for these apartment units are below (by approximately 66.12%) the car parking requirement when compared with the Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requirements.

AECOM believe this level of car parking is acceptable given the site's public transport accessibility, the provision of car club spaces, electric vehicle spaces and motorbike spaces. A Mobility Management Plan will also be

prepared by AECOM outlining the existing travel patterns for residents in this area along with the target goals for using various modes of transport with detailed measures. The Mobility Management Plan will be utilised by the Mobility Management Plan Coordinator to achieve these target goals.

Considering the DHPLG 2018 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' specific planning policy requirements for of reducing the quantum of on-site car parking for developments such as the subject proposals, AECOM believe that the proposed provision of only 33.88% of the Dún Laoghaire Rathdown County Development Plan (2016 – 2022) maximum standards complies fully with the specific planning policy requirements of the DHPLG 2018 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities'.

Mobility Impaired Parking

The appropriate level of mobility impaired parking for the Proposed Development will be provided in accordance with the Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requirements.

The Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requires that '4% of car parking spaces shall be suitable for use by disabled persons', which equates to 6 number spaces being required.

The Proposed Development provides 8 spaces which is in accordance with the Dún Laoghaire Rathdown County Development Plan (2016 – 2022).

Electric Vehicle Parking

The appropriate level of electric vehicle parking for the Proposed Development will be provided in accordance with the Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requirements.

The Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requires that for residential developments 'A minimum of one car parking space per ten residential units should be equipped with one fully functional Electric Vehicle Charging Point', which equates to 44 number spaces being required.

The Proposed Development will provide 44 number spaces which is in line with the Dún Laoghaire Rathdown County Development Plan (2016 – 2022).

Motorcycle Parking

The appropriate level of motorbike parking for the Proposed Development will be provided in accordance with the Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requirements.

The Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requires 'A minimum of four or more spaces per 100 car spaces', which equates to 4 number spaces being required.

The Proposed Development will provide 5 number spaces which is accordance with the Dún Laoghaire Rathdown County Development Plan (2016 – 2022).

Car Club

There is no specific requirement within the Dún Laoghaire Rathdown County Development Plan (2016 – 2022) with respect to the quantum of car club spaces to be provided as part of a scheme.

In the absence of specific guidance within the Dún Laoghaire Rathdown County Development Plan (2016 – 2022), as part of the scheme proposals it is proposed to provide 2 number spaces within the car park. Engagement will be required with an operator for these spaces.

11.3.9.4 Cycle Parking

The proposals include the provision of 774 bicycle parking spaces (752 within the basement and 22 at surface level) on-site within the development. The proposed on-site bicycle parking provision of 774 spaces (including

Short and Long-term parking spaces) is approximately 51% more than the 512 cycle parking spaces required by the DLRCC development management standards and approximately 3% more than the DHPLG requirements.

11.3.10 Internal Proposed Development Layout

The internal layout design has been informed by the DMURS guidelines. The following measures are examples of where compliance with the DMURS guidelines has been demonstrated.

Pedestrian Capability: As per Figure 4.34 of DMURS, the internal footpaths have been proposed at a minimum width of 1.8m, which is the space required to allow two wheelchairs to pass each other or travel side by side.

Carriageway widths: The internal carriageway width is typically 6m as per the DMURS guidelines (Section 4.4.1) for a standard carriageway. The increased 6m width is to facilitate refuse lorries accessing the proposed site off Carmanhall Road, and also in the undercroft where there is perpendicular parking, where 6m is required for a vehicle to reverse.

Pedestrian Crossings: There is to be a raised uncontrolled pedestrian crossing provided at the proposed vehicular access to facilitate the safe movement of pedestrians travelling along Carmanhall Road, which will comprise of tactile paving and flushed kerbs to facilitate pedestrian movements crossing the carriageway at the junction. This raised table is to let vehicular and pedestrian / cycling traffic know that they are entering an area of conflict and must proceed with caution. The existing pelican crossing along Carmanhall Road is proposed to be relocated south of its current position to facilitate the proposed site access while also allowing pedestrians to cross safely at this location.

Corner Radii: The proposed corner radii at the junctions comply with DMURS (Section 4.3.3) to 4.0 – 6.0m in order to reduce vehicular speeds and reduce pedestrian crossing distances.

Car Parking: Car parking provision is proposed within the undercroft car park for residents. All car parking spaces are proposed at the required dimensions i.e., 2.5m x 5.0m for a standard parking space. The standard length of the parallel parking spaces is 6m.

Landscaping: Section 4.2.7 of DMURS recommends providing softer landscaping areas in order to provide a sense of “place function” within the development. The site therefore provides a significant amount of landscaping, including trees located along the Carmanhall Road and Blackthorn Road. This landscaping is situated so that it does not impact on sightlines along Carmanhall Road and Blackthorn Road.

Material and Finishes: DMURS also gives guidance on the types of materials and finishes to be used in order to provide a sense of calm for traffic and improve legibility for vulnerable road users. The road markings will be flush so as to permit refuse vehicles and fire tenders manoeuvring within the development infrequently.

Signing and lining: As per section 4.2.4 of DMURS, signing and lining has been provided appropriately at the required locations throughout the development. However, the Proposed Development has been designed to have a self-regulating approach to increase the road safety as opposed to relying on mandatory warning signs.

11.4 Potential Effects – Construction Phase

Construction traffic associated with the construction of the Proposed Development will vary during the course of the construction phase. The proposed sequencing of the construction phase of the Proposed Development is as follows:

- Initial set-up of Site, including security and construction compound;
- Identifying and locating above and below ground utilities and services at the Site and its surroundings, including in the public realm on Carmanhall Road and on other adjacent roadways;

- Removing limited on site vegetation, which will include off-site trips;
- Site preparation, including the stripping of soils, tarmac/asphalt surfaces, segregation, stockpiling and export of all these materials from site via HGV journeys;
- Development of the Proposed Development's foundations and substructure. This will include deliveries of machinery, steel rebar, formwork and concrete deliveries on HGVs;
- Development of the Proposed Development's superstructure. This will include deliveries of materials including steel rebar, brick and concrete deliveries on HGVs;
- Internal finishing, including the mechanical and electrical fit out; and
- External landscaping in the public realm and on site.

The above sequences will include deliveries and the removal of wastes throughout. In addition, traffic will be generated from workers' trips to and from the site via private vehicles and public transport. The duration of the various phases will be determined by the Main Contractor and their final Construction Management Plan and construction schedule.

As with any construction project, the Main Contractor will be required to prepare a comprehensive traffic management plan for the construction phase. The purpose of this plan is to outline measures to manage the expected construction traffic activity during the construction period. The plan will be prepared for the approval of DLRCC in advance of any works. Section 11.7.1 outlines the relevant measures which should be implemented in the Main Contractor's Construction Traffic Management Plan. Once these measures are implemented and managed in accordance with the plan it is considered that the effects will be **imperceptible** and short-term in duration.

11.5 Potential Effects – Operational Phase Trip Generation and Distribution

11.5.1 Introduction

The following paragraphs present the process by which the potential level of vehicle trips, associated with the future development have been generated and subsequently assigned across the local road network.

11.5.2 Traffic Surveys

In order to establish the existing local road network's traffic characteristics and subsequently enable the identification of the potential impact of the Proposed Development, traffic surveys (weekday classified junction turning counts) were conducted by Irish Traffic Surveys, ITS, over a 12-hr survey period from 07:00 – 19:00 on Tuesday the 25th of February 2020 at the following locations and as illustrated in Figure 11.17:

- J1: Drummartin Link Road / Blackthorn Drive;
- J2: Blackthorn Drive / Blackthorn Road;
- J3: Blackthorn Drive / Carmanhall Road;
- J4: Blackthorn Drive / Blackthorn Avenue / Stillorgan Wood;
- J5: Blackthorn Avenue / Blackthorn Road;
- J6: Carmanhall Road / Blackthorn Road;
- J7: Blackthorn Road / Burton Hall Road;
- J8: N31 / Burton Hall Road; and

- J9: N31 / R113 / Burton Hall Road.

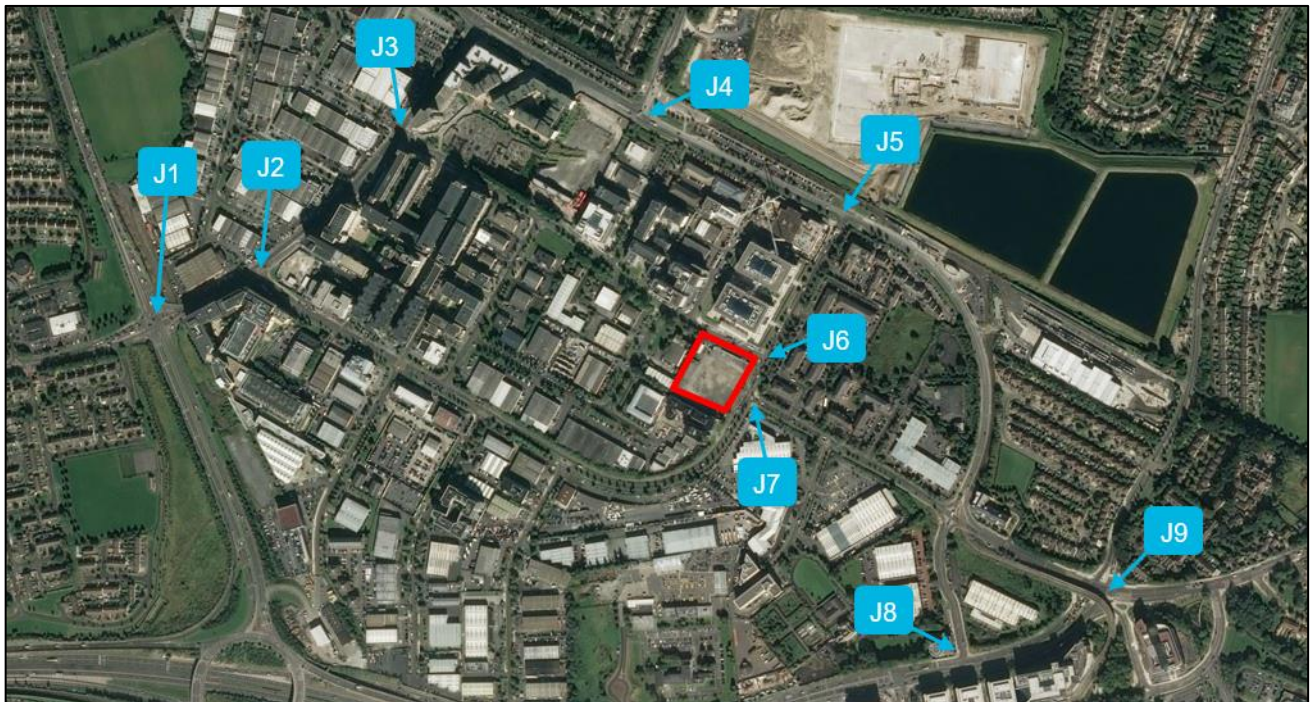


Figure 11.17: Traffic Survey Locations (Source: Google Maps)

The traffic survey established that the local AM and PM peak hours occur between 08:00 – 09:00 and 16:30 – 17:30, respectively. The recorded peak hour traffic flows are included in the TTA submitted as part of this SHD Application.

11.5.3 Trip Generation

In order to determine the potential vehicle trip generation for the subject site, the trip rates were taken from the industry standard TRICS for ‘Privately owned Flats’. Table 11.7 below indicates the proposed trip rate for the associated land use with Table 11.8 showing the predicted vehicle trip generation of the likely vehicle traffic flows travelling to/from the proposed subject development during the morning (08:00 – 09:00) and evening (16:30 – 17:30) peak hour periods. The TRICS output is included in the TTA submitted as part of this SHD Application.

Table 11.7: Proposed Development Trip Generation

Land Use	Quantum		AM Peak Hour (08:00 – 09:00)		PM Peak Hour (16:30 – 17:30)	
			Arrival Rate	Departure Rate	Arrival Rate	Departure Rate
Apartments	428	Units	0.055	0.194	0.149	0.081

Table 11.8: Proposed Development Traffic Generations

Land Use	TRICS Land Use		Quantum		AM Peak Hour		PM Peak Hour	
	Flats Owned	Privately Owned			Arrivals	Departures	Arrivals	Departures
Apartments	Flats Owned	Privately Owned	428	Units	24	83	64	35
Total Two Way Trips					107		98	

Table 11.9 presents a review of the Proposed Development during the peak periods.

Table 11.9: Proposed Trip Generations

Scenario	AM Peak Hour		PM Peak Hour	
	Arrivals	Departures	Arrivals	Departures
Proposed Scheme	24	83	64	35
Additional Trip Generation above Permitted	9	59	30	11

The review identifies that the Proposed Development will generate an additional 68 vehicular trips during the morning peak hour and an additional 41 trips during the evening peak hour, respectively.

11.5.4 Trip Distribution & Assignment

To understand the potential distribution of the trips arriving and departing the site, the base traffic survey results have been interrogated. The base traffic surveys indicate the direction that motorists currently travel to/from when arriving onto the immediate road network immediately adjacent the site during the typical peak periods. Figure 11.18 illustrates the proposed trip distribution patterns during the AM and PM Peak Hours at the site access location. Please refer to Appendix A of the AECOM TTA which illustrates the trip distribution splits across the road network.

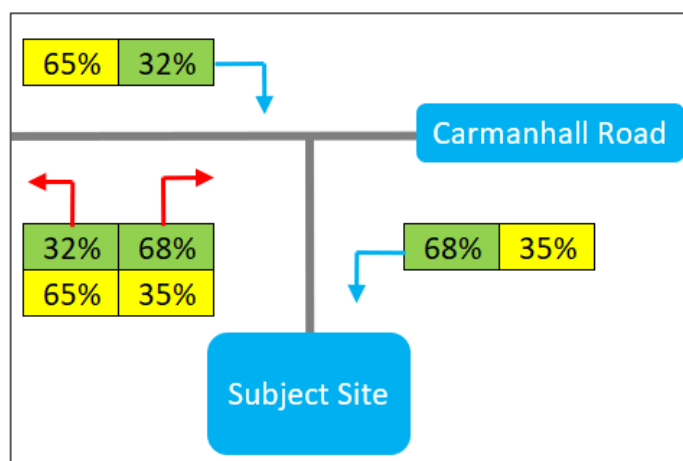


Figure 11.18: Trip Distribution during the AM & PM Peak Hour along the Carmanhall Road

11.5.5 Traffic Growth

The TTA adopts an Opening Design Year of 2023. In accordance with TII Guidance, Future Design years (+5 and +15 years) of 2028 and 2038 have therefore been adopted.

The Transport Infrastructure Ireland (TII) ‘Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (May 2019)’ sets out growth rates for forecasting future year traffic for use in scheme modelling and appraisal. It is noted that in respect of Sandyford, which is in the ‘Dublin Metropolitan’ area, the growth during the period 2016 – 2030 is set at 1.62% per annum for medium growth which reduces 0.51% per annum from 2030 – 2040 (LV rates used).

The development has assessed the opening year of the development (2023) and the two horizon year assessments (2028 and 2038), as per the TII Traffic Assessment Guidelines. The assessment years used for this assessment are as follows for the traffic surveys carried out by ITS:

- 2020 to 2023 – 1.0494 (or 4.94%);

- 2020 to 2028 – 1.0458 (or 13.72%); and
- 2020 to 2038 – 1.0557 (or 21.06%).

11.5.6 Threshold Analysis

The TII Guidelines for Transport Assessments state that the thresholds for junction analysis in Transport Assessments are as follows:

- *'Traffic to and from the development exceeds 10% of the existing two-way traffic flow on the adjoining highway.'*
- *'Traffic to and from the development exceeds 5% of the existing two-way flow on the adjoining highway, where traffic congestion exists or will exist within the assessment period or in other sensitive locations.'*

11.5.7 Impact of the Proposed Development

11.5.7.1 Local Road Network

A comparison was made between the pre-development and post-development scenarios, to identify the percentage impact of the development within the Sandyford Industrial Estate.

The projected percentage impact of operational traffic on the surrounding road junctions in the year of opening (2023) is set out below and shown figuratively in Figure 11.19.



Figure 11.19: Proposed Development Impact at Junction Locations

It should be noted that the opening year of the development has been assessed only. Any future year base flows would be greater than the flows presented below, hence a smaller percentage impact in comparison to the development flows would be recorded.

On the basis of the TII Traffic and Transport Assessment Guidelines (May 2014), given the impact upon each junction does not exceed 10% (or even 5%) modelling will not be required at any of the junctions. Each of the junctions is discussed in more detail in the paragraphs below.

Junction 1: 0.6% and 1.3% upon the Drummartin Link Road / Blackthorn Road 4-arm signalised junction in the respective AM and PM peak therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

Junction 2: 0.9% and 2.1% upon the Blackthorn Drive / Blackthorn Road 3-arm signalised junction in the respective AM and PM peak, therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

Junction 3: 1.9% and 3.8% upon the Blackthorn Drive / Carmanhall Road 4-arm signalised junction in the respective AM and PM peak therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

Junction 4: 1.4% and 0.6% upon the Blackthorn Avenue / St. Raphaela's Road 3-arm signalised junction in the respective AM and PM peak therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

Junction 5: 3.3% and 0.8% upon the Blackthorn Avenue / Blackthorn Drive 3-arm signalised junction in the respective AM and PM peak therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

Junction 6: 4.7% and 3.8% upon the Blackthorn Road / Carmanhall Road 3-arm priority junction in the respective AM and PM peak therefore modelling is required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**. For robustness in approach, AECOM have undertaken a modelling analysis of this junction in their TTA submitted as part of this SHD Application.

Junction 7: 0.9% and 1.3% upon the Blackthorn Road / Burton Hall Road 3-arm signalised junction in the respective AM and PM peak therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

Junction 8: 0.4% and 0.2% upon the Leopardstown Road / N31 3-arm signalised junction in the respective AM and PM peak therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

Junction 9: 0.5% and 0.3% upon the N31 / R113 / Burton Hall Road 5-arm signalised junction in the respective AM and PM peak therefore modelling is not required for this junction. The traffic impacts upon this junction will be nominal, resulting in effects that are **imperceptible**.

To summarise the percentage impact assessment, it has been found that none of the junctions warrant further traffic analysis but to be robust in AECOM's approach, the junctions immediately adjacent to the Proposed Development, Junction 6 (Blackthorn Road / Carmanhall Road) and the site access junction, has been subject to traffic modelling using the industry standard 'Junctions 9' software.

11.6 Potential Effects - Network Analysis

11.6.1 Introduction

This section presents the impact analysis to identify the potential effects of the Proposed Development upon the surrounding road network at the junctions as identified in Section 11.5.7.1 of this report. Figure 11.20 shows the junctions that have been analysed as part of this assessment. As the junctions are both unsignalized priority controlled, they have been assessed using the industry standard 'Junctions 9' (PICADY) software developed

by Transport Research Laboratory (TRL). The analysis does not take into account the proposed 6 years roads objectives as detailed in Section 11.2.4.1 of this chapter and AECOM believes that this presents the worst-case scenario.



Figure 11.20: Junctions Analysed (Source: Google Maps)

11.6.2 Junction Analysis

The operational assessment of the local road network was undertaken using TRL 'Junctions 9' for non-signalised junctions. When considering priority-controlled junctions, a Ratio to Flow Capacity (RFC) of greater than 85% (0.85) would indicate a junction to be approaching capacity, as operation above this RFC value is poor and deteriorates quickly resulting in traffic congestion in the form of longer queues.

'Junctions 9' is an industry standard software to model the capacity and queuing of non-signalised junctions (Priority controlled, intersections, roundabouts). The meaning of the acronyms used within the capacity assessment results are discussed below.

- RFC Ratio to Flow Capacity (for non-signalised junctions)
- Q Queue length (PCU's) i.e., 1 PCU equates to a 5.75m long car

It is generally accepted that RFC values of 0.85 (85%) and less are indicators that a junction is operating within capacity. Junctions are only identified as operating over capacity if these values are exceeded.

11.6.2.1 Modelling

Site Access / Carmanhall Road

A model was completed for observed traffic volume scenario for AM and PM and future assessment years. Full 'Junctions 9' results are contained within Appendix C of the AECOM TTA.

Based on the analysis of the Site Access Junction, it is clear that with the inclusion of the junction along the Carmanhall Road it will continue to operate within capacity throughout the 2023 (opening year) to the 2038 (opening year + 15) assessment with the development in place.

As demonstrated in the 2023 assessment year, the proposed site access will result in an RFC value of 0.24 (24%) with a corresponding queue of 0.3 PCU during the AM Peak period whilst during the PM Peak it is anticipated that the RFC will be 0.08 (8%) with a corresponding queue of 0.1 PCU.

When comparing the 2038 assessment years with and without development, the Proposed Development results in an increase of 0.01 (1%) to the RFC of the Carmanhall Road (Eastern Arm) during both the AM and PM Peak Periods with no increase to the queuing at the junction.

It is therefore considered that potential impacts from the Proposed Development on the surrounding road network are likely to be **negligible** resulting in effects that are permanent and **imperceptible**.

Junction 6

For robustness, a model was also completed at Junction 6 for observed traffic volume scenario for AM and PM and future assessment years. AECOM have undertaken this modelling analysis in their TTA submitted as part of this SHD Application. The potential impacts from the Proposed Development on Junction 6 were deemed to be **negligible** resulting in effects that are permanent and **imperceptible**.

11.7 Mitigation and Management

11.7.1 Outline Construction Traffic Management

This section deals directly with the impacts of construction of the Proposed Development. As with any construction project, the Main Contractor will be required to prepare a comprehensive traffic management plan for the construction phase. The purpose of such a plan is to outline measures to manage the expected construction traffic activity during the construction period.

This section will provide an overview of the likely routing of construction vehicles, based on a most likely scenario of construction. It should be noted that the impacts of the construction will be temporary (approximately 24 months), and it will be the contractor's responsibility to prepare a Traffic Management Plan for the approval of DLRCC in advance of any works.

Policy Guidance

Guidance for the temporary control of traffic at road works to facilitate the safety of the public during the works is provided below:

- Traffic Signs Manual Chapter 8 Temporary Traffic Measures and Signs for Roadworks (2019);
- Traffic Management Guidelines, Department of Transport (2003);
- Requirements of Dun Laoghaire Rathdown County Council.

Likely Construction Programme & Phasing

The construction programme is expected to require approximately 24 months to complete from occupation of the site.

Construction Route

To minimise construction impacts upon the surrounding road network, it is recommended that all construction traffic accesses and exits from the M50 Junction 14 travelling along the Drummartin Link Road turning right onto Blackthorn Drive then right again onto Carmanhall Road and then turning into the subject site. Figure 11.21 illustrates the recommended construction routing.

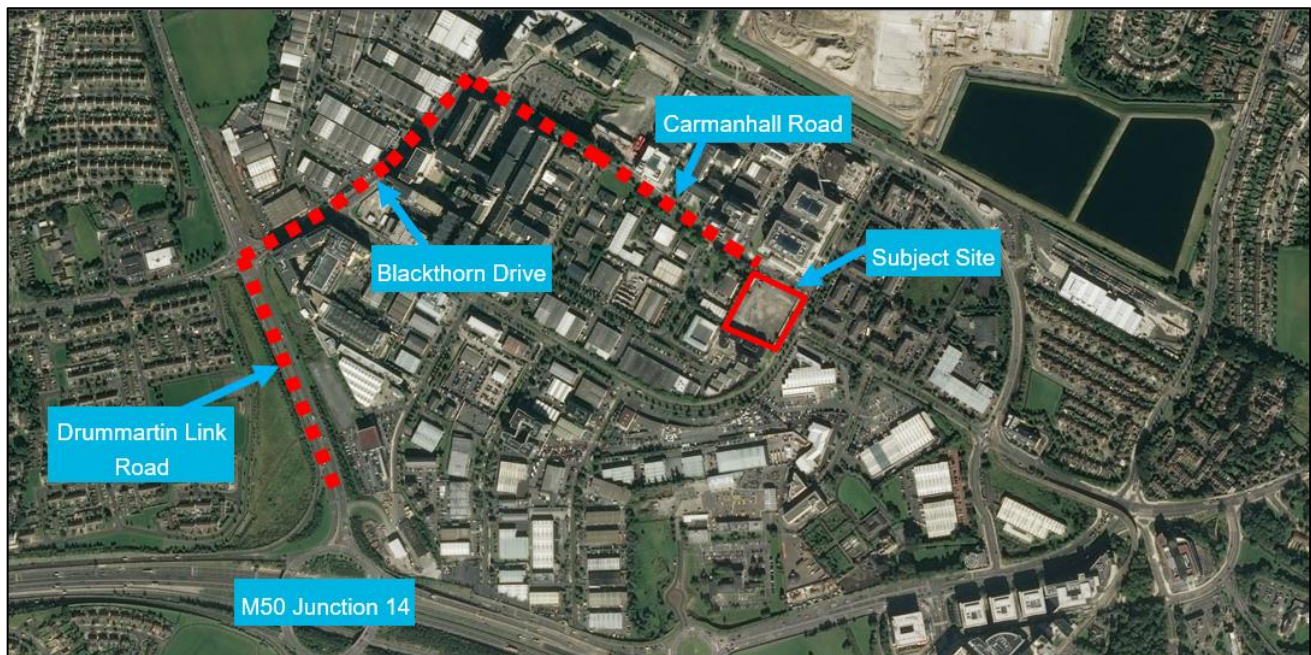


Figure 11.21: Proposed Construction Routing (Source: Bing Maps)

Parking

All contractors' vehicles will park within the development site area, it is recommended that as part of the construction management plan the contractor designates an area within the confines of the site dedicated to operative car parking. There will be no parking permitted on the surrounding road network or estate roads by the contractor or site operatives.

Mitigation Measures

A Construction Management Plan (CMP) will be developed by the Main Contractor prior to the commencement of work on site and will be prepared in consultation with DLRCC. A preliminary CMP has been submitted in this SHD Application.

Construction debris, particularly site clearance, spoil removal and dirty water run off can have a significant impact on footpaths and roads adjoining a construction site, if not adequately dealt with. These will be managed by the Main Contractor through the cleaning of out bound vehicles, regular inspections of the routes and the use of a road sweeper as required.

Hours of Operation

Site development and building works will be carried out between the hours of operation recommended by DLRCC to safeguard the residential amenities of properties in the vicinity. The typical hours of operation are as follows:

- 08:00hrs to 19:00 hours Monday – Friday; and
- 08:00hrs to 14:00 hours Saturday.

Traffic Management Measures

Below is a list of the proposed traffic management measures to be adopted during the construction works. Please note that this is not an exhaustive list, and that it will be the appointed contractor's responsibility to prepare a detailed construction management plan.

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations;

- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes;
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on trucks carrying dust producing material;
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds within the site;
- Parking of site vehicles will be managed and will not be permitted on public roads, unless proposed within a designated area that is subject to traffic management measures and agreed with DLRCC;
- A road sweeper will be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public roads leading away from the construction works;
- On site wheel washing will be undertaken for construction trucks and vehicles to remove any debris prior to leaving the site, to remove any potential debris on the local roads;
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. Spill kits will be available on site. All scheduled maintenance carried out off-site will not be carried out on the public highway; and
- Safe and secure pedestrian facilities will be provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users including mobility impaired persons.

The mitigation measures will therefore ensure that the presence of construction traffic will not lead to any significant environmental degradation or safety concerns in the vicinity of the proposed works. Furthermore, it is in the interests of the construction programme that deliveries, particularly concrete deliveries, are not unduly hampered by traffic congestion, and as a result continuous review of haulage routes, delivery timings and access arrangements will be undertaken as construction progresses to ensure smooth operation.

11.7.2 Operational Phase - Mobility Management Plan

The TTA has proposed a Mobility Management Plan (MMP) to increase the priority of more sustainable modes of transport.

The TTA presents an overview of the mobility management measures for the Proposed Development.

Upon completion of the development's construction phase, when the scheme is occupied, it is recommended that an update to the MMP is undertaken in unison with travel surveys for residents and visitors which will inform travel targets for site users.

An MMP broadly seeks to reduce the number of car journeys associated with the development, which reduces the environmental impact associated with the Proposed Development on the receiving environment. The specific aims of this MMP are;

- To discourage private car as a means of travel to and from the development;
- To increase and facilitate the number of people choosing to walk, cycle or travel by public transport to and from the development;
- To work with DLRCC, the National Transport Authority and public transport providers to support and encourage resident and staff uptake;

- To develop an integrated and unified plan for public transport, private vehicle, business fleet management and suppliers of commercial services to the development; and
- To liaise and co-operate with adjacent developments in relation to a coordinated approach to Mobility Management between, to and from the various employment areas.

11.7.3 Monitoring

Since there are no significant effects anticipated, no monitoring has been proposed with respect to effects from construction or operational traffic associated with the Proposed Development.

11.8 Indirect Effects

There are no significant indirect effects expected during the construction and operational phases of the development, and therefore there are no significant indirect effects identified.

11.9 Residual Effects

Once the identified mitigation and management measures, appropriate design standards and operational management plans are adhered to it is considered that any impacts on the traffic and transport surrounding the Proposed Development will be **negligible** and any effects **imperceptible**.

11.10 Difficulties Encountered

There were no particular difficulties encountered during the production of the traffic and transport chapter of the EIAR.

11.11 Summary and Conclusions

This Chapter of the EIAR has assessed the potential impacts and effects of the Proposed Development on the surrounding environment. The assessment was carried out by AECOM who have been commissioned by Atlas GP Limited in support of an SHD planning application submission to An Bord Pleanála and Dun Laoghaire Rathdown County Council for a proposed Strategic Housing Development within the Sandymount Industrial Estate Park, Sandymount, Co. Dublin.

The receiving environment has been assessed in terms of walking, cycling, public transport and road infrastructure.

The site is proposed to be accessed by way of a vehicular priority junction off the Carmanhall Road.

Visibility requirements are provided for in line with DMURS for 50km/hr. Site servicing is provided for in terms of a 10.2 m bin lorry for access and circulation.

Car parking has been provided in line with Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requirements with 145 car parking spaces proposed including 8 mobility impaired spaces, 44 electric vehicle spaces, 2 car club spaces and 5 motorcycle spaces.

Cycle parking has been provided in line with both the Dún Laoghaire Rathdown County Development Plan (2016 – 2022) requirements with a total of 774 cycle parking spaces being provided (752 within the basement and 22 at surface).

A trip generation assessment has been completed.

Trip distribution onto the network was established cognisant of current and future traffic patterns. The assumed Opening Year (2023) and Future Year scenarios (2028 and 2038) were calculated using central growth rates from the TII's Travel Demand Projections (Unit 5.3) to take into account the level of committed developments in

the immediate vicinity of the development. The traffic impacts upon the junctions were identified to be nominal, resulting in effects that are **imperceptible** and therefore not significant.

A Mobility Management Plan has been prepared (and included in the TTA) indicating the measures that will be implemented by the management company to promote more sustainable forms of transport to staff / visitors.

An outline for the Construction Traffic Management Plan will be prepared by the appointed Main Contractor indicating the potential construction traffic route and measures that could be implemented to minimise the impact on the surrounding road network, which will be subject to agreement with Dun Laoghaire Rathdown County Council Roads Department. Once these measures are implemented and managed in accordance with the plan it is considered that the effects will be **imperceptible**.

It is considered that there will be no significant effects on surrounding traffic or transportation from the construction and operation of the Proposed Development.