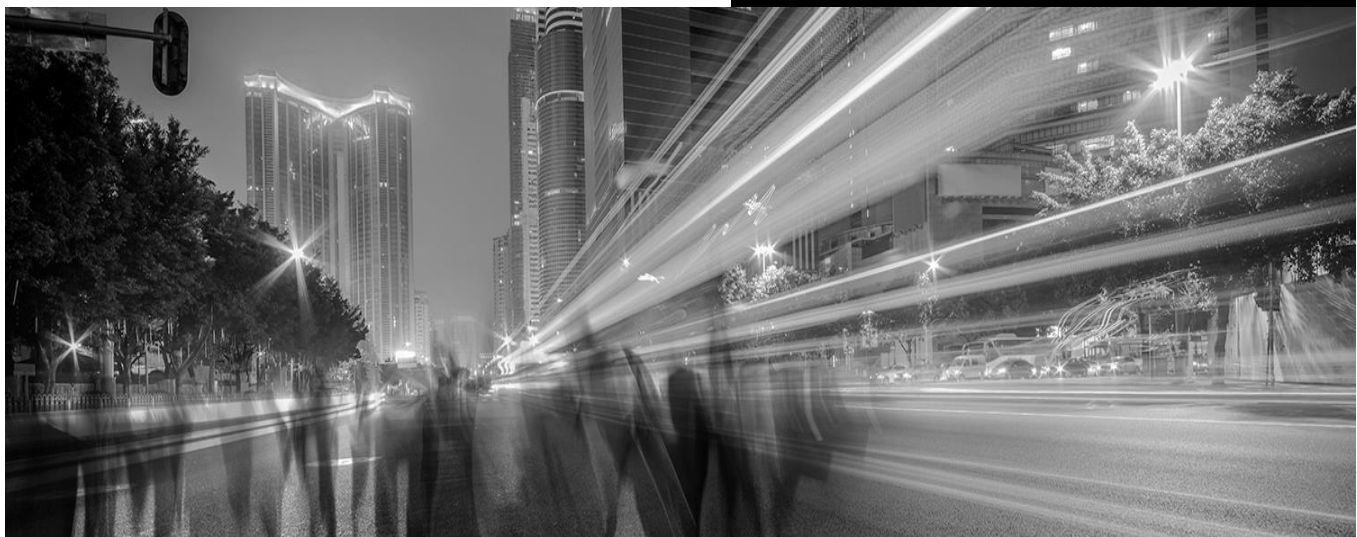


2022

Quality Audit Report



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Quality Audit Report

Hartfield Place, Swords Road, Whitehall, Dublin 9

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1 Introduction

This report outlines the findings of a Quality Audit carried out with respect to the proposed Hartfield Place development at Swords Road, Dublin 9.

The audit team carried out a site visit on Thursday the 24th of March 2022 in order to identify elements within the road environment which could impact the accessibility and mobility of road users as well as safety issues observed in the proposed scheme.

The audit team comprised of the following people:

Team Leader:

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Team Member:

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Team Member:

Johannes de Klerk BEng, MIEI

Team Observer:

Thaís Côrtes BEng (Hons)

During the site visit, the weather was dry and sunny. The road surface was dry, and the traffic levels were noted to be heavy and consistent across the audit period.

The audit team reviewed the following drawings and documents provided by AECOM:

- (1) LinSig Junction Basic Results Summary - Preview_2
- (2) HARTPL-CWO-BT-B1-DR-A-092035 – Basement Parking Plan
- (3) PR379360-ACM-XX-XX-DR-CE-10-0001 C – Proposed General Arrangement
- (4) PR379360-ACM-XX-XX-DR-CE-10-0101-0101 – Visibility Splay
- (5) PR379360-ACM-XX-XX-DR-CE-10-0102-0102 – Refuse Vehicle Autotrack Analysis
- (6) PR379360-ACM-XX-XX-DR-CE-10-0103-0103 – Emergency Vehicle Autotrack Analysis.

Documents/Information not supplied:

- (A) Speed Count Data
- (B) Traffic Count Data
- (C) Collisions Data.

The terms of reference/procedure for the Audit were as per the relevant sections of **DMURS (Design Manual for Urban Roads and Streets)** and **Transport Infrastructure Ireland Road Safety Audit Standard GE-STY-01024 (Dec 2017)**. The audit examined only those issues within the design relating to the road safety implications and accessibility of the scheme and has therefore not examined or verified the compliance of the design in any other criteria. The Quality Audit should not be treated as a design check.

The problems identified and described in this report are considered by the Audit Team to require action to improve the safety of the scheme and to improve mobility.

All comments, references and recommendations in this audit are in respect of the review of information supplied by AECOM and subsequent site visit by the audit team.

2 Description of the Proposed Development

The proposed Hartfield Place development will be located off Swords Road, in Whitehall, Dublin 9, within the Greater Dublin Area. The proposed development will have a sole vehicular entrance, which will be connected to the junction between Swords Road (N1) and Iveragh Road to the northwest, as shown in **Figure 2.2**.

The site is located in the North Dublin area, in a green field of 2.73 hectares. The site is bounded to the west by Swords Road, by Highfield Healthcare to the south, green lands to the north and residential development to the east.

The proposal is to construct a 472No. residential unit' development, comprising from studios apartments to 3-bedroom apartments, a creche, 274No. car parking spaces, 11No. motorbike spaces and 732No. secure bike spaces for residents.

As part of the proposed development, the junction between Swords Road and Iveragh Road will be upgraded to include traffic signals on all approaches to the junction and crossing points at Iveragh Road and at the proposed access to the development.

Figure 2.1 shows the proposed site location and **Figure 2.2** shows the proposed site layout.

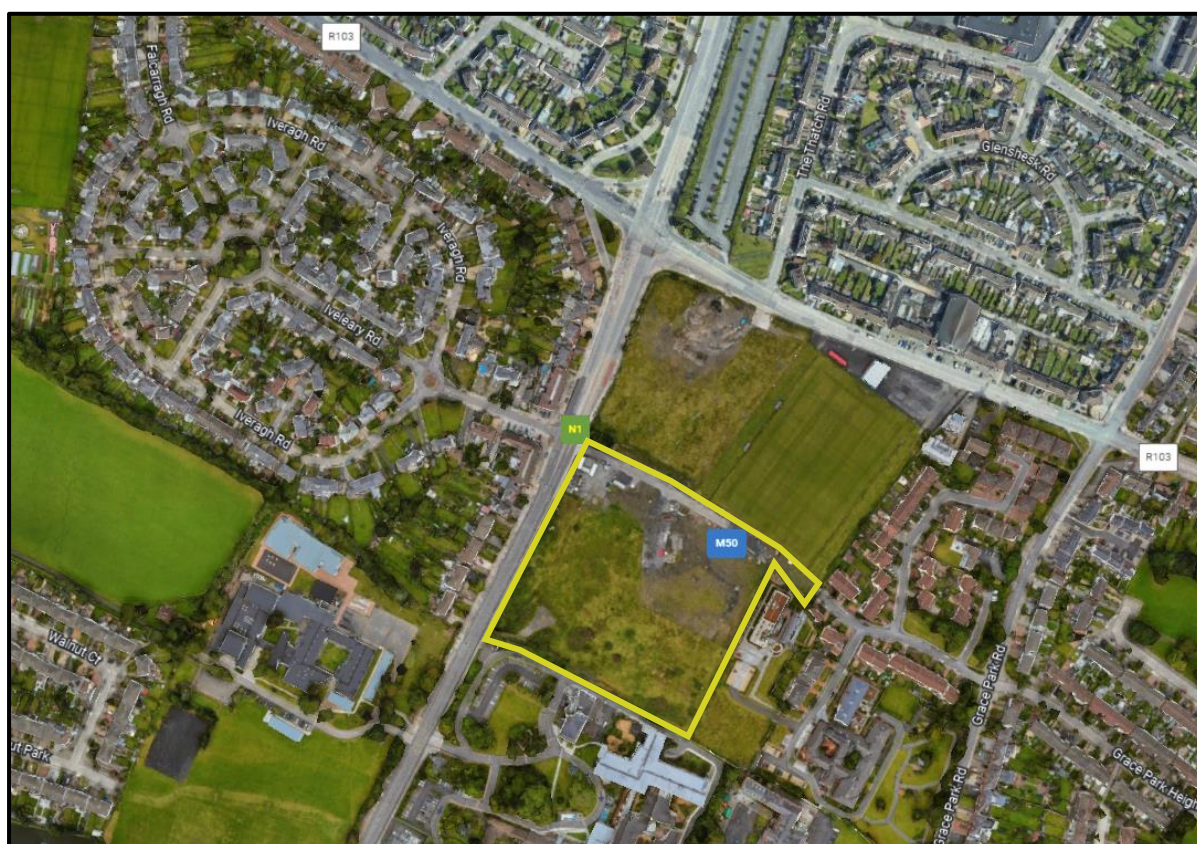


Figure 2.1 – Site Location (Source: Google Earth)

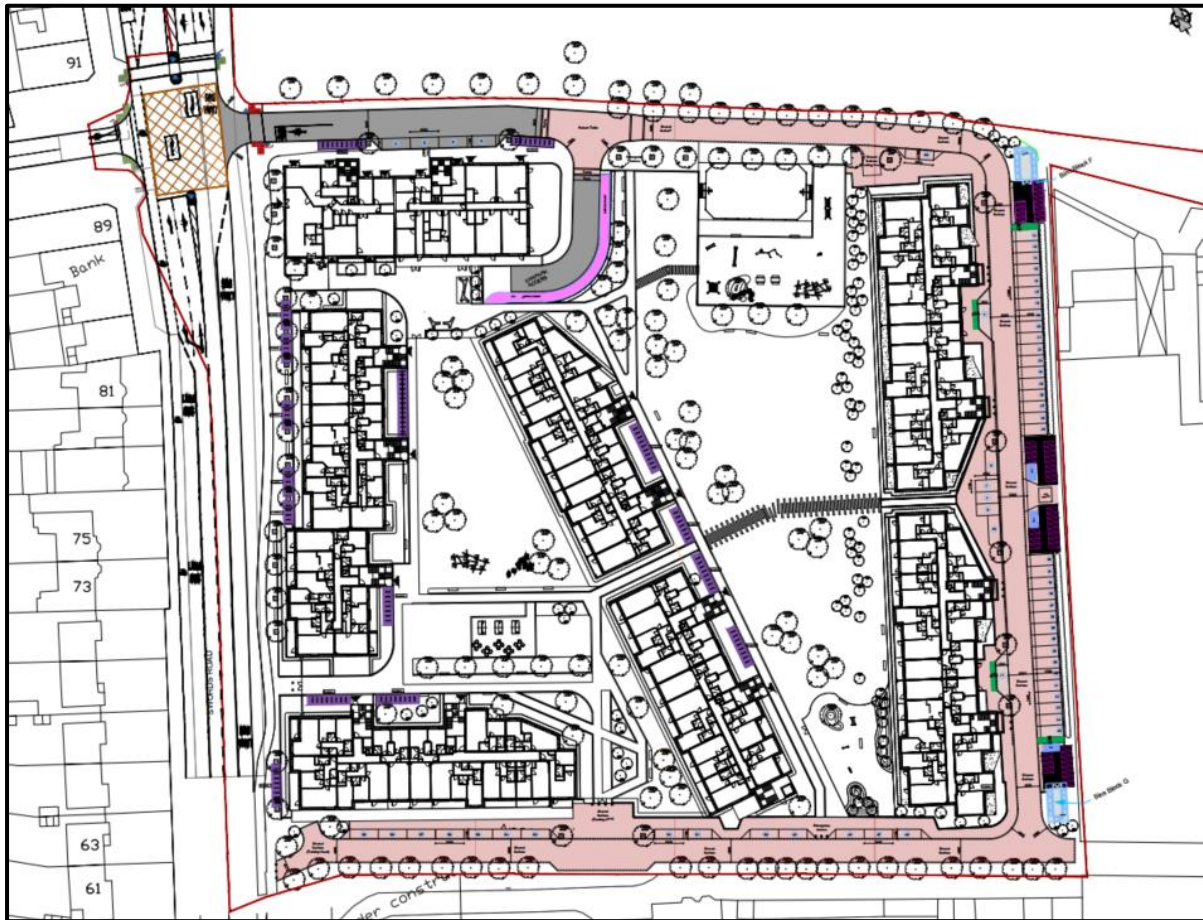


Figure 2.2 – Proposed Site Plan (Source: AECOM)

3 Quality Audit Scope

The scope of this Quality Audit is to review the proposed layouts supplied by the Design Team and make recommendations in line with guidelines as per the Design Manual for Urban Roads and Streets (DMURS) and the Transport Infrastructure Ireland Road Safety Audit Standard GE-STY-01024.

The introduction of DMURS have sought to improve the design of streets in urban areas and to facilitate the implementation of policy on sustainable living by achieving a better balance between all modes of transport and road users. The introduction of DMURS is intended to encourage more people to walk, cycle or use public transport by making the experience safer and more pleasant.

In general, the principles of DMURS are intended to lower traffic speeds, reduce unnecessary car use and create a built environment that promotes healthy lifestyles and responds more sympathetically to the distinctive nature of the individual communities and places.

DMURS Quality Audits are undertaken to demonstrate that appropriate consideration has been given to the relevant aspects of the design from a DMURS point of view. The benefits of undertaking a DMURS Quality Audit are as follows:

- The needs of all user groups and the design objectives of the project are fully considered
- An audit enables the project's objectives to be delivered by putting in place a check procedure
- It can contribute to cost efficiency in design and implementation
- A DMURS Quality Audit encourages engagement with stakeholders.

A Quality Audit is a check that all the potential Social, Economical & Environmental opportunities within the project are realised & integrated into a coherent design of Place. This Quality Audit will be divided into the following assessments:

- An Accessibility Audit
- A Non-Motorized User (NMU) Audit (Walking and Cycling Audit)
- A Visual Audit
- A Road Safety Audit.

This Quality Audit was carried out to identify any potential difficulties road users, particularly mobility impaired users, older people and families with children may encounter when accessing the proposed Hartfield Place and also to address any safety issues associated with the proposal. The elements found in this Audit that require further consideration with the guidelines set out in DMURS are outlined below.

3.1 Accessibility Audit

An accessibility audit can be carried out on a development to identify specific aspects associated with access and accessibility of the scheme. The purpose of an access audit is to assess the access requirements of a scheme for potential users.

3.1.1 External Accessibility Audit

This external access audit has considered only the external environment surrounding the site, therefore has not focused on issues within the proposed Hartfield Place development.

The proposed site will be connected to Swords Road (N1) to the northwest of the site boundary at the existing junction with Iveragh Road, which will form a crossroads with the existing T-junction. As part of the proposed development, it is intended to signalise all approaches of the crossroads at this junction in order to increase safety and reduce delays for vehicles accessing and exiting the site.

The proposed development will also provide signalised pedestrian crossings at the site access and at the Iveragh Road, which will connect to the extensive existing pedestrian infrastructure in place. **Figure 3.1** below shows an overview of the proposed site entrance off Swords Road.

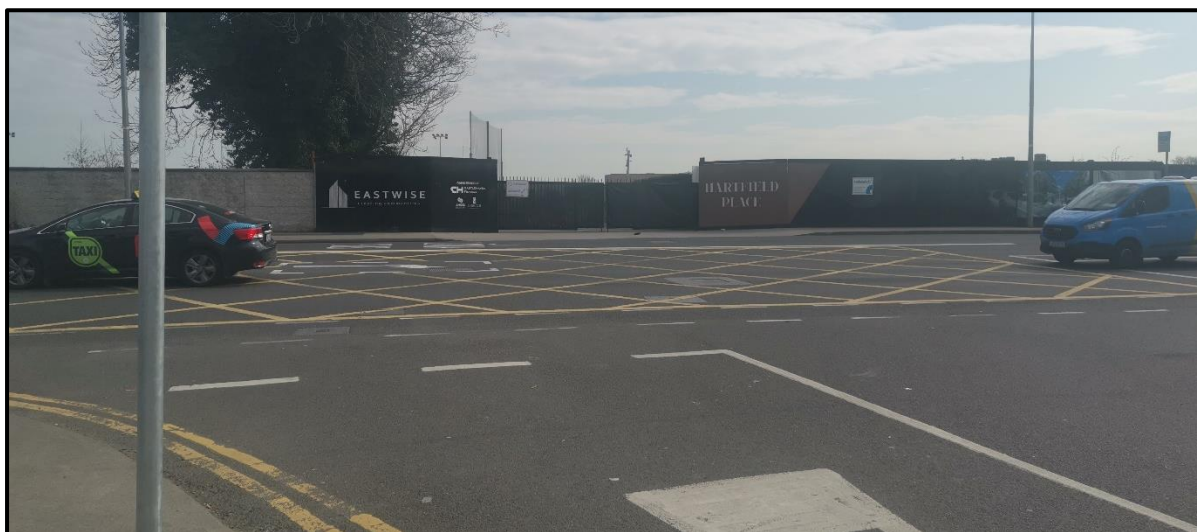


Figure 3.1: Location of the access junction

The proposed Hartfield Place is well connected to several locations by the road network adjacent to the site. Swords Road (N1) is a two-way carriageway with 2No. lanes in each direction in the vicinity of the site, with 2No. of those dedicated bus lanes. There is a yellow box at the junction between Swords Road and Iveragh Road to stop vehicles from blocking the junction. The speed limit along Swords Road is 50 km/h.

The site is located approximately 2km away from the M50 motorway, which provides connectivity to the entire motorway network surrounding Dublin City with the City Centre itself being 4 km to the south of the site, an approximate 30-minute bus ride.

There is an extensive footpath and cycle network provided along the roads in the vicinity of the site, which future residents will avail of. Swords Road provides footpaths on both sides of the road and a cycle lane to the western edge of the carriageway, shown in **Figure 3.2**.



Figure 3.2: Shared Footpath and Cycleway along the southern bound of Swords Road

Hartfield Place is located in relatively close proximity to several main locations within the Great Dublin Area. Future residents of the development will be able to reach the Dublin Airport and East point Business Park in less than 10 minutes drive, Dublin City University (DCU) in approximately 13 minutes walking and Connolly Station in *circa* 21 minutes bus ride.

Collision history was obtained from the Road Safety Authority (RSA) website. It was noted that 6No. minor and 1No. serious incidents were recorded at the junction between Swords Road (N1) and Iveragh Road. Further details on the collisions have been provided in the Road Safety Audit in section 3.4.1.

3.1.2 Public Transport Network

The audit team noted from the site visit that the proposal is well-served by several bus routes in the vicinity of the site and the site is adjacent to the Swords Road Quality Bus Corridor. Future residents, staff and visitors of the site will have the opportunity to avail of the existing bus routes network available in the vicinity of the site which will be further enhanced by the major Bus Connects proposal to improve the public transport, pedestrian, and cyclist networks around the site.

There are 4No. bus stops located adjacent to the site entrance, along Swords Road and several others within walking distance from the site. There are continuous footpaths leading from the site to the bus stops located adjacent to the site, with signalised pedestrian crossings and pedestrian refugee islands. The footpaths are deemed to be in reasonable condition and of appropriate width in the vicinity of the site entrance. The western footpath along Swords Road is designed as a segregated track for pedestrians and cyclists, with the provision of road markings and signage. **Table 3.1** and **Figure 3.4** outlines the available bus services in the area.

From the 4No. bus stops near the site, 3No. provide bus shelters with benches and all of them are designed for disabled users with Kassel kerbs. All bus stops appear to be in good condition.

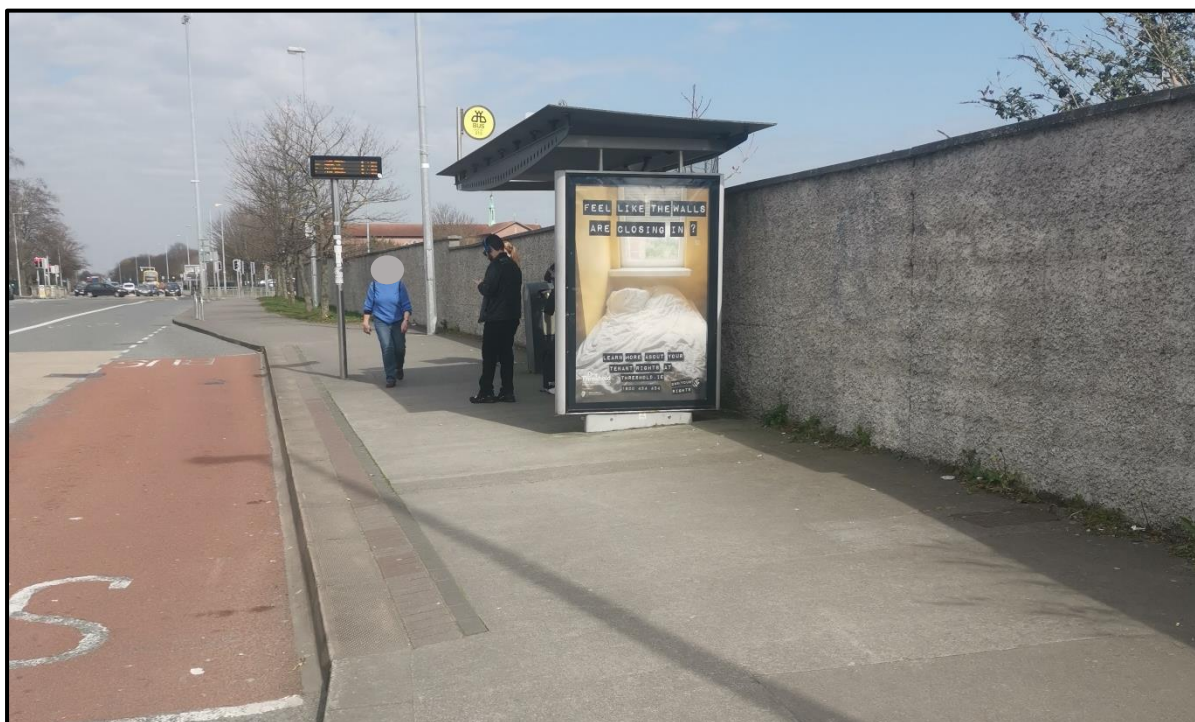


Figure 3.3: Bus Stop Located North of Site Entrance

In addition to the extensive bus routes network in the vicinity of the site, there are also rail services which future residents and visitors of the site can utilise. The Drumcondra station, located to the southwest of the site, is an approximate 26 minutes walk from Hartfield Place and serves routes such as Dublin Connolly – Sligo, Dublin – Maynooth, Longford and M3 Parkway and Grand Canal Dock and Dublin Heuston – Portlaoise routes which all run several times a day. The site is also located approximately 21 minutes by bus to Connolly Station, the focal point in the Irish Rail route, with trains for several locations across the county. **Figure 3.6** overleaf shows the Drumcondra and Connolly Stations.

Regarding light rail, the closest DART station from the site is the Killester station, approximately 40 minutes walking from the site, which is part of the DART and Dublin commuter line, connecting to Malahide, Howth and Greystones.

Another major project of which future residents will make use, named Metro Link, will connect Swords to Charlemont and tie in with the Luas green line, DART, BusConnects and Irish Rail. The closest station to the site will be Collins Avenue, *circa* 22 minutes' walk from the site. The project is under consultation, and it is anticipated that it will be concluded in 2027. **Figure 3.7** shows the proposed location of Collins Avenue station.

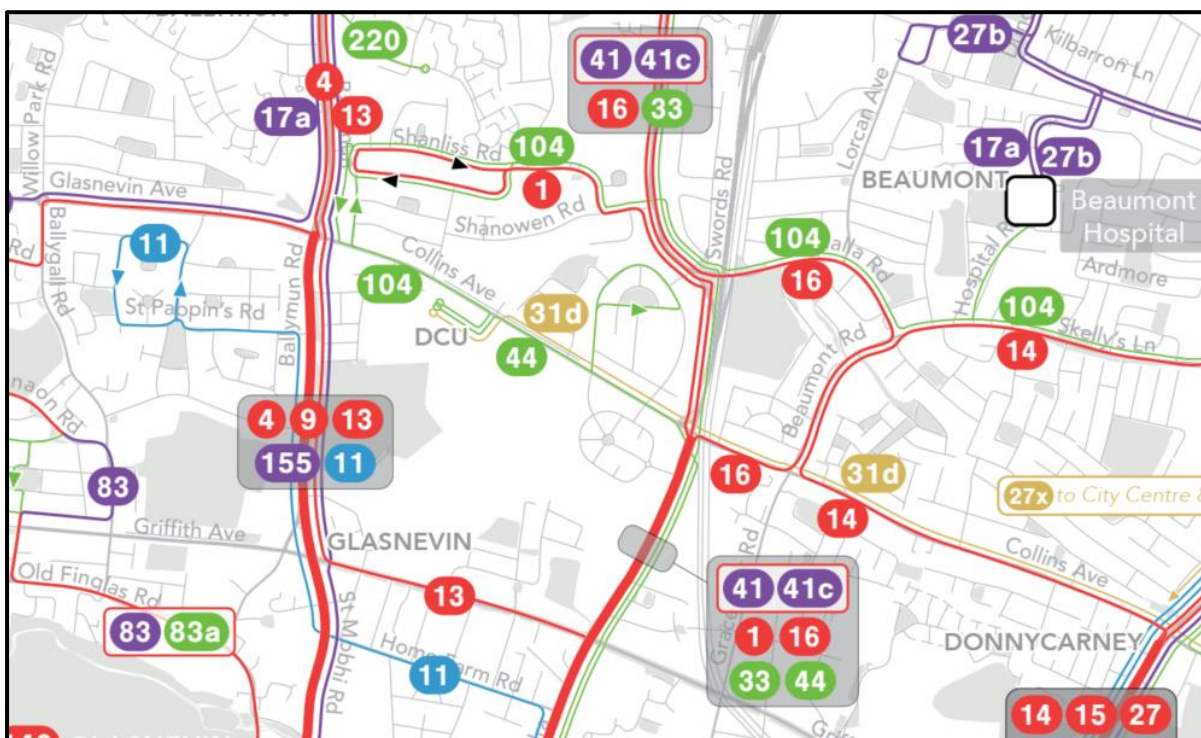


Figure 3.4: Existing bus network (Source: BusConnects.ie)

Table 3.1 – Bus Services Available near Hartfield Place (Source: TFI)

Route No.	Bus Operator	Origin	Destination	Weekday Services
1	Dublin Bus	Santry	Pearse Street	Every 15 minutes
13		Grange Castle	Harristown	Every 15 minutes
14		Dundrum Luas Station	Beaumont	Every 10-15 minutes
16		Ballinteer	Dublin Airport	Every 10-15 minutes
33		Balbriggan	O'Connor Street	Every 60 minutes
41		Swords Manor	Lower Abbey Street	Every 20 minutes
41C		Swords Manor	Lower Abbey Street	5 services a day
44		Enniskerry	DCU	Every 60 minutes
101	Bus Eireann	Busaras	Drogheda	Every 20-30 minutes

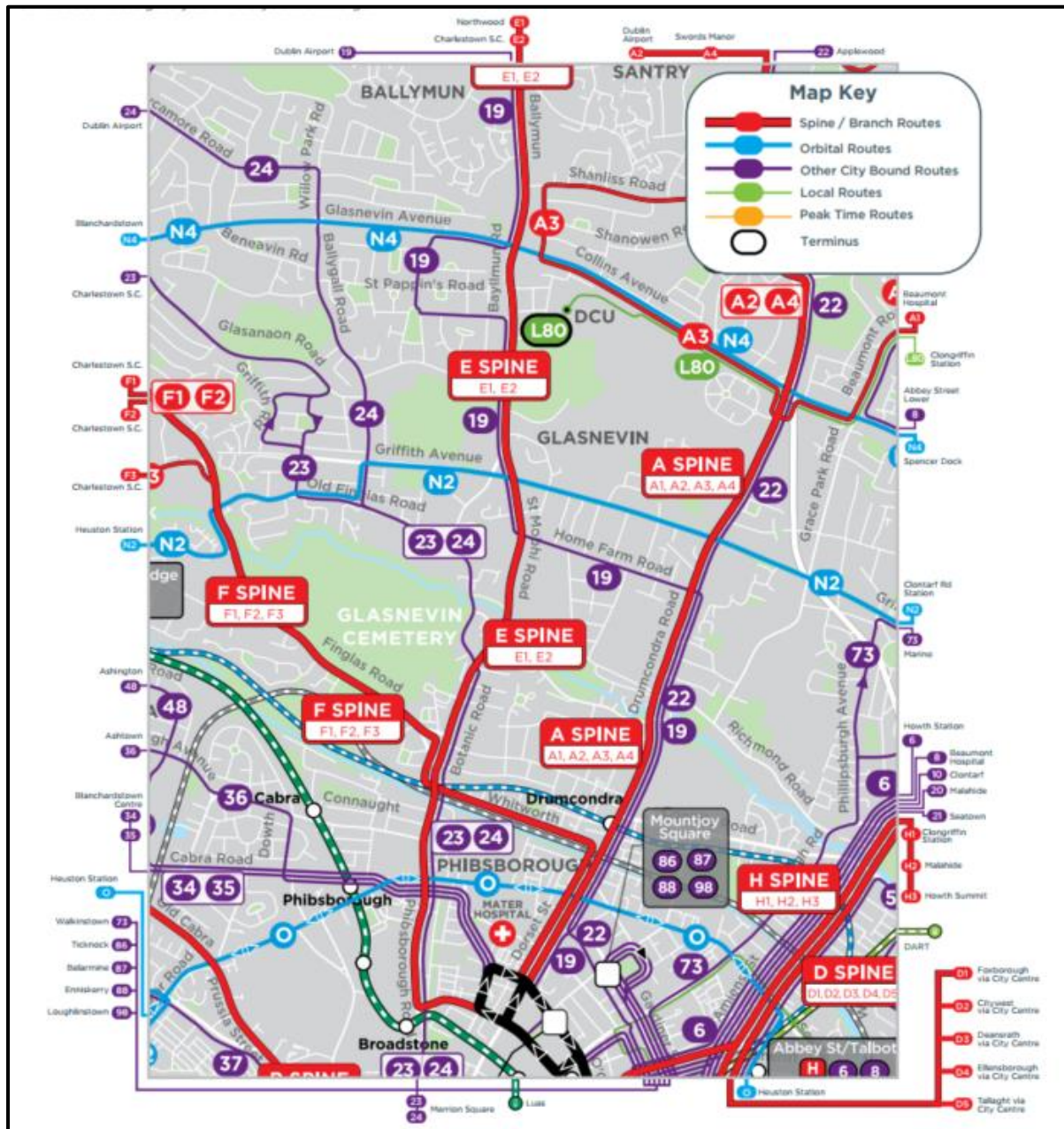


Figure 3.5: Proposed BusConnects network (Source: BusConnects.ie)

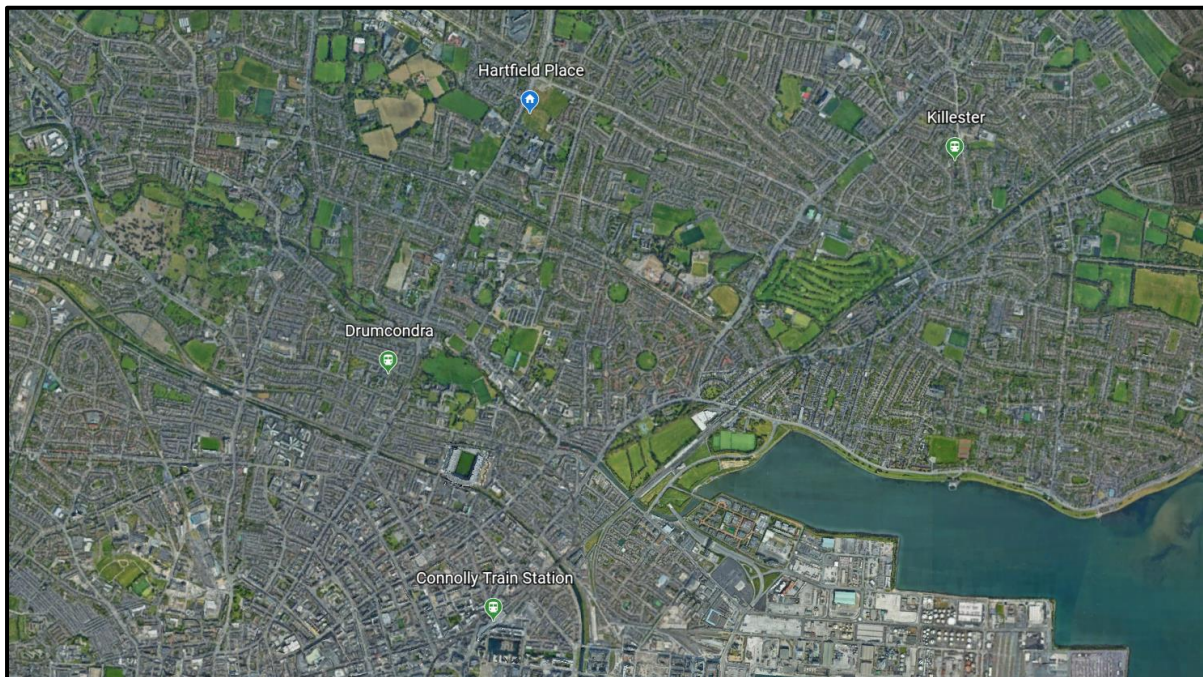


Figure 3.6: Location of Rail Stations (Source: Google Earth)

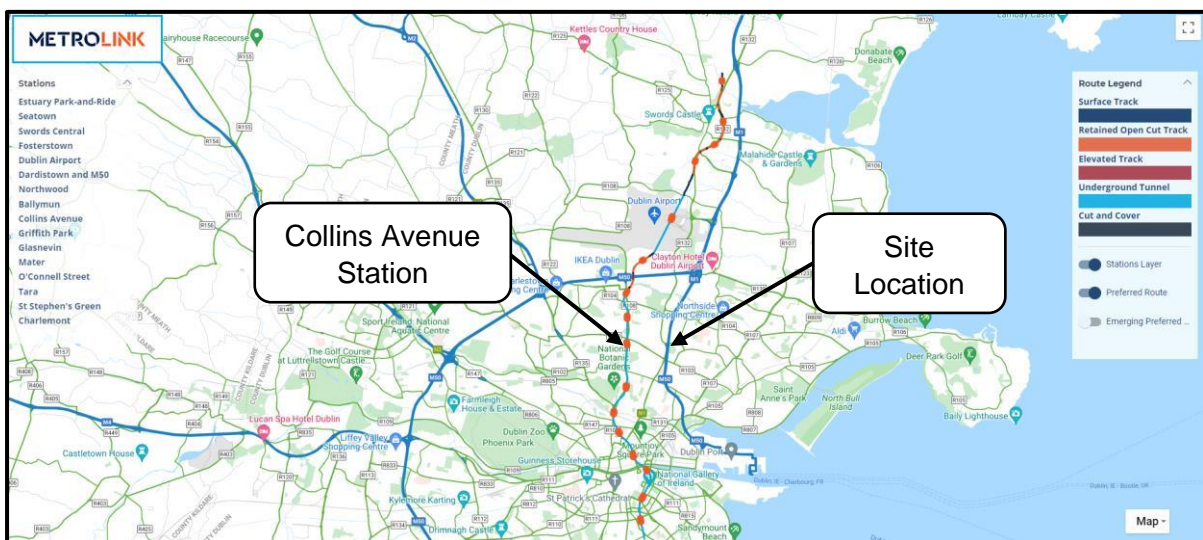


Figure 3.7: Proposed Metro Link Line (Source: MetroLink.ie)

3.1.3 Local Amenities

The site is located approximately 4 km north of Dublin town centre, in the North Dublin area, near several employment centres, leisure sites and local amenities, which will be easily accessed by the future residents of the proposed development.

The proposed residential development is located along Swords Road, which is classified as a bus quality corridor. As discussed previously, there are several commercial developments, education and employment areas located near the proposed site. Dublin City University (DCU)

a 13 minute walk from the site, Dublin Airport is approximately 22 minutes by bus and Omni Shopping Centre is only a 5-minute cycle from the site.

As noted, due to the variety of local amenities located near the proposed residential development, the proposal can be considered well served by both essential and recreational amenities.

3.1.4 Parking and Internal Access Audit

The internal site layout comprises of footpaths, communal areas, landscaped areas, shared surfaces and parking spaces. The site has a sole vehicular entrance, connecting the site to the junction between Swords Road (N1) and Iveragh Road, to the northwest of the site, which will be signalised with a pedestrian traffic light. The access road narrows down and becomes a shared surface, which links the outer areas of Hartfield Place. The location where the access road becomes a shared surface, the design team have provided a traffic calming measure to ensure vehicles do not drive at speed and are aware of the change in road use.

The access road is 6 metres wide, and the shared surface is 4.8 metres, which is in accordance with the DMURS guidelines. The site will also provide an underground car park, with the access road connecting to the raised table. The access to the underground car park will be 5.5 metres wide with a separate path for cyclists.

Hartfield Place will provide 4No. pedestrian and cyclist entrances along Swords Road, to the western boundary of the site. All entrances will be connected to the internal footpath network within the site layout, which will lead pedestrians to all locations across the site.

At the basement car park, the design team provided a pedestrian clear route to connect the parking spaces to the stair and lifts.

The proposed development aims to include a total of 334No. parking spaces, of which 60 will be located at ground level and 274No. at the basement car park. The basement car park will have 18No. disabled parking spaces, 241No. spaces for residents, 10No. spaces dedicated to car sharing and electric vehicles and 5No. spaces for creche staff. Regarding the 60No. parking spaces at ground level, it is understood that all spaces will be designated for residents and none of them are for disabled users. The disabled parking spaces at the basement car park do not provide buffer zones to both sides of the parking space and it also makes use of the pedestrian route to achieve the necessary length. No information could be found in the drawings provided regarding the dimensions of the parking spaces at the basement level. At the ground floor level, the parking spaces are displayed as parallel and perpendicular, and the dimensions are in accordance with DMURS guidelines.

The site will also provide motorcycle spaces, 11No. located at the underground car park and 3No. at ground floor level. No information could be found regarding the dimensions of the motorbike parking bays.

732No. bicycle parking spaces and 13No. cargo bike spaces will be provided at the basement level, which will be gate secured. The site will provide a dedicated bicycle access ramp connecting the ground floor to the basement and a bike repair station for future residents. At

ground level, 238No. bicycle parking spaces will be supplied and will be located adjacent to the apartment blocks.

3.1.5 Traffic Signage and Road Markings

As part of the proposed junction upgrade, it is intended to install new arrow road markings on all approaches to the junction to indicate the new junction arm, likewise, it is intended to upgrade the yellow box to cover all lanes along Swords Road.

The proposed development will also install signalised pedestrian crossings on approaches to the junctions and a new traffic island to the south of the junction along Swords Road.

No information could be found in the drawings provided regarding traffic signs in any location across the proposed development. Likewise, no information could be found regarding the removal of existing road markings.

3.1.6 Drainage

No information was provided from the design team regarding the drainage system for the proposed Hartfield Place.

3.1.7 Potential Issues Identified in the Access Audit

The following items summarise some of the key issues found relating to the access to the site.

Issue 3.1: Bus Stops Near Proposed Development

The bus stops located to the south of the site entrance does not have the provision of shelters or benches and bus users have to wait along the footpath and a bus stop upgrade is not incorporated as part of the proposed works. It was also noted from the site visit that the bus cage markings show signs of wear and tear.



Figure 3.8: Bus Stop to the South of Site Entrance

Issue 3.2: Missing Dimensions

The audit team noted from the drawings provided that there are no dimensions of the parking spaces provided for the basement parking nor the width of the roadway in the basement. The audit team also noted that the motorbike parking spaces located at ground floor level do not have measurements provided.

Issue 3.3: Incorrect Traffic Sign

The proposed Hartfield Place will upgrade the junction between Swords Road (N1) and Iveragh Road and it is proposed to install arrow road markings on all approaches to the junction. However, at both Iveragh Road and the site access road, the design team is proposing to install an incorrect road marking, with arrows indicating all 3No. directions, which is not in accordance with the Chapter 7 Road Markings.

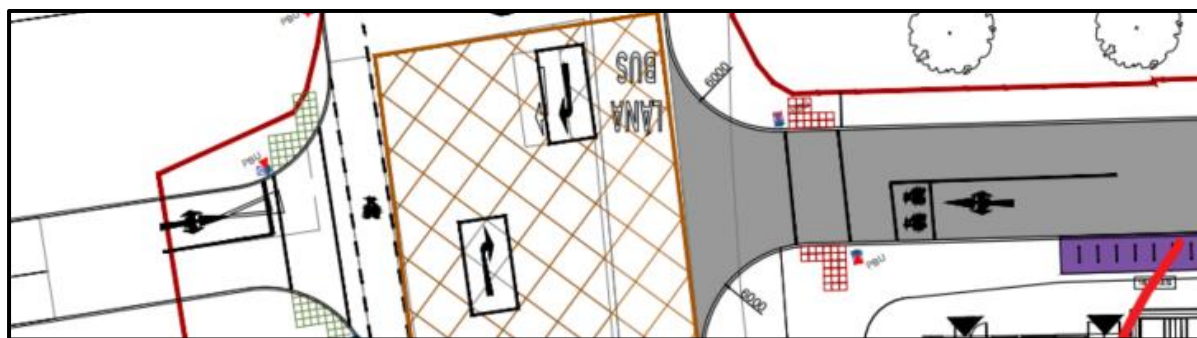


Figure 3.9: Proposed Access Junction (Source: AECOM)

Issue 3.4: Lack of Traffic Signs Details

As part of the proposed development, it is intended to provide a pedestrian traffic island at the southern approach to the junction, along Swords Road. Traffic islands should be accompanied with 'Keep Left' traffic signs on both ends of the island and the signs aid to inform motorists of hazards ahead. The lack of traffic signs can cause driver confusion and lead to vehicle/pedestrian collision. Likewise, no information could be found regarding mounting height and distance from the carriageway on the drawings for the traffic lights. Road signs should be located at least 450mm away from the road edge in order to provide sufficient rod clearance.

Issue 3.5: Disabled Parking Spaces (RRM 015)

It is intended to install 18No. disabled parking spaces at basement level, however, some of the proposed disabled parking bays are not compliant with DMURS and/or the Traffic Signs Manual. Disabled parking spaces should measure 6m in length and 2.4m in width, along with buffer zones with 1.2m to either side of the parking bay.

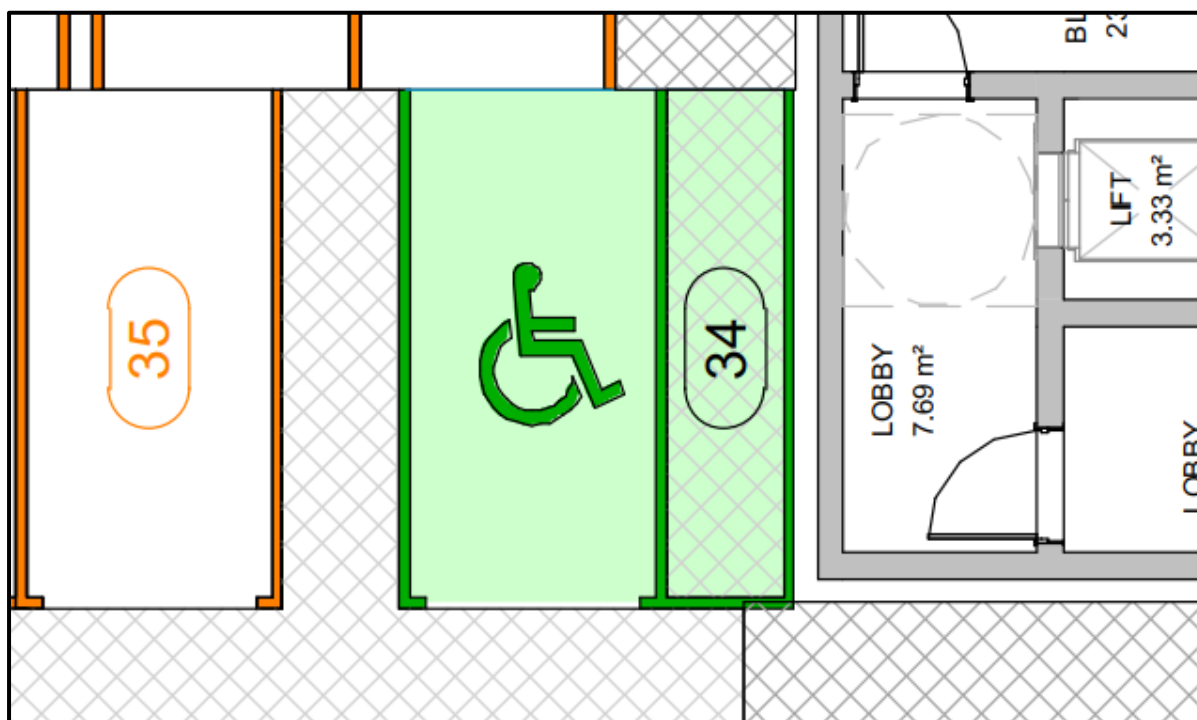


Figure 3.10: Incorrect Disabled parking bay (Source: AECOM)

Issue 3.6: Insufficient Pedestrian Connectivity at the Basement Car Park

The proposals aim to include pedestrian paths connecting the basement car parks with the lifts and stairs; however, it could be noted that the proposals do not provide a clear pedestrian route with sufficient connectivity, which could pose a risk to pedestrians, especially vulnerable users.

Please refer to section 3.4.2 for other issues related to access to the site as per the Road Safety Audit.

3.1.8 Access Audit Recommendations

The layout, as well as the capacity of the bus stop located to the south of the access entrance, should be reviewed to cater for the increase in passenger numbers.

All traffic signs should be clearly marked in the drawings to ensure that they do not impose a risk to non-motorised and motorised users of the access road.

All drawings should clearly mark the dimensions of all elements of the proposed development, such as parking bays dimensions, road widths and footways and they should follow guidelines specified in DMURS.

The proposed Hartfield Place should make available to future residents' information regarding the public transport network in the area.

3.2 Non-Motorised Users Audit

A non-motorised user audit was carried out to identify how user-friendly the scheme is to non-motorised users and identify improvements to enhance the functionality of the footpaths, cycle lanes and streets for pedestrians and cyclists.

In the case of this development, the designers have made provisions for footpaths, shared surfaces, 4No. pedestrian and cyclists' entrances off Swords Road (N1) and a cyclist ramp to connect with the basement car park.

During the site visit, it was noted that there is an intense pedestrian usage of the existing footpath infrastructure adjacent the site, therefore, it is considered that future residents of the Hartfield Place development will also make use of the existing and proposed infrastructure.

3.2.1 Footpaths

The proposed Hartfield Place will include 4No. pedestrian and cyclist entrances off Swords Road (N1), one at the vehicular entrance, 2No. between the apartment blocks and 1No. at the southwestern end of the scheme, as indicated in **Figure 3.11**. Apart from the footpaths along the vehicular access, the pedestrian entrances will be gated, and bollard secured, in order to refrain vehicles from entering the site at those locations.



Figure 3.11: Pedestrian and Cyclist connectivity to the site (Source: AECOM)

The footpaths will be connected to the existing footpath network in place along Swords Road (N1) and will lead pedestrians to all areas of the site. No information could be found, however, regarding the width of the footpaths within the site and its proposed levels.

3.2.2 Pedestrian Crossing Points

As part of the proposed upgrade to the junctions between Swords Road (N1) and Iveragh Road, it is intended to install signalised pedestrian crossing points. However, there is an inconsistency in the documents provided where the proposed drawings only refer to 3No. signalised pedestrian crossings at the junction but the junction analysis report from LinSig software refers to an additional crossing point along the southern approach of Swords Road (N1).

The proposed junction upgrade as part of the Hartfield Place proposal includes yellow tactile paving blister at the Iveragh Road and the northern approach of Swords Road to the junction,

which is not in accordance with DMURS and the TII document DN-GEO-03084, which states that for signalised crossing points, the tactile paving should be red.

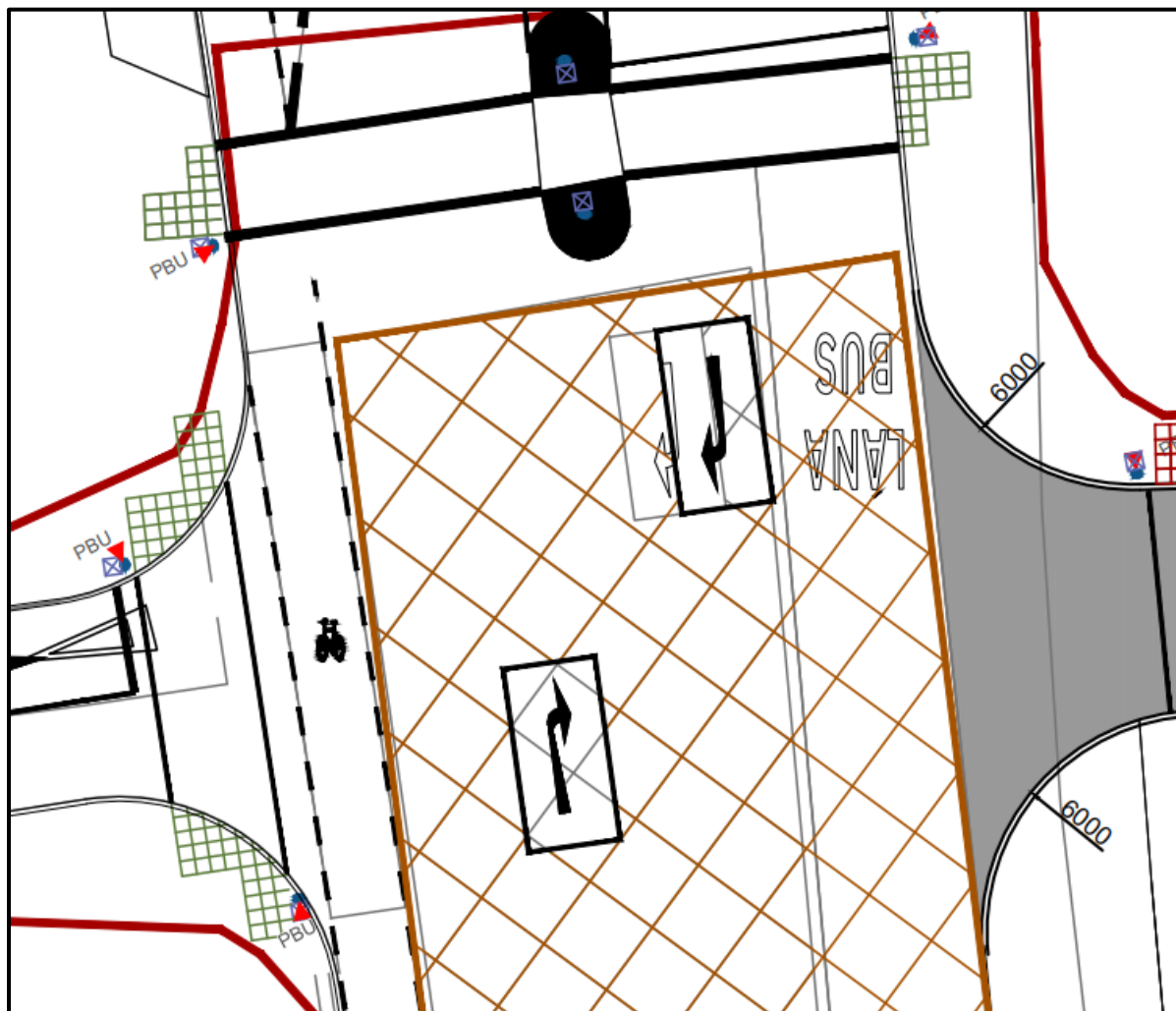


Figure 3.12: Proposed Crossing Points not in Accordance with Guidelines. (Source: AECOM)

As the proposed development was designed in a manner that the proposed road is a shared surface for both motorised and non-motorised users, there are no proposals for crossing points along the internal road layout.

3.2.3 Cycleways

Currently, Swords Road (N1) provides for off-road cycle lanes only on the north bound direction, by means of a segregated pedestrian and cycle path. The cycle lane becomes on-road near the approach to the junction. The existing cycle lane is in reasonable condition, with some localised damage to the path and the road marking segregating the lane with the footway was observed to be fading away at some locations.



Figure 3.13: Cycle Lane along Swords Road (Source: Google Maps)



Figure 3.14: Broken Tactile Paving at Shared Surface

As part of the major project named BusConnects, it is intended to upgrade Swords Road as part of the Swords to City Centre preferred route. The proposals include a cycle lane on the southern bound of the road, as shown in **Figure 3.15** below.

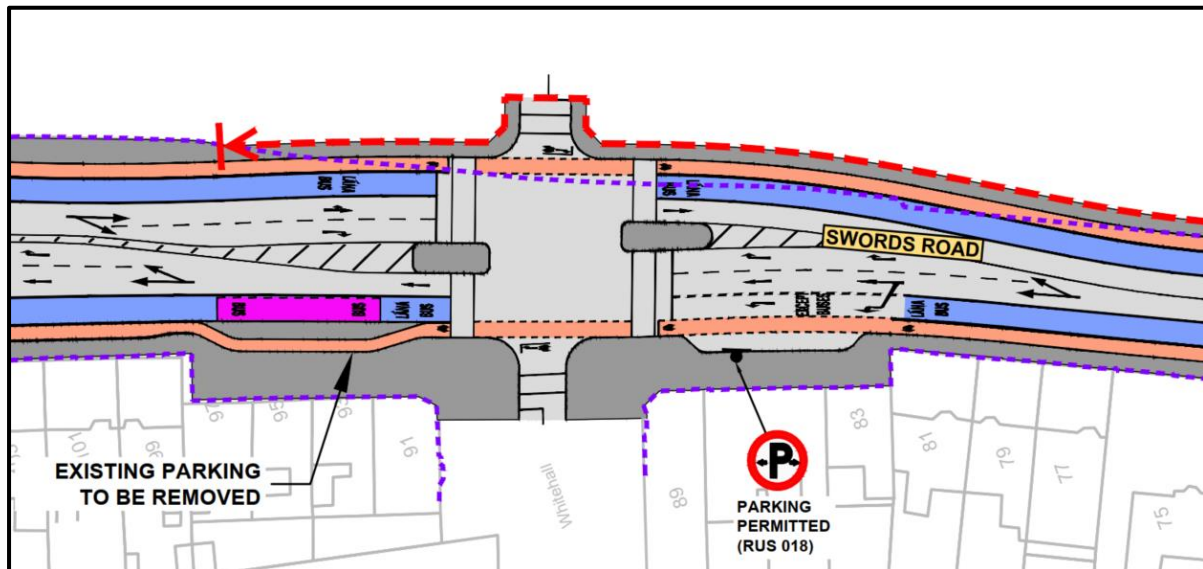


Figure 3.15: BusConnects Proposal (Source: BusConnects.ie)

Within the site layout, there are no proposals for dedicated cycle lanes apart from the bicycle ramp to the basement car park, instead, the roads will function on a shared basis for vehicular, cyclist and pedestrian traffic.

3.2.4 Cycle Storage Provision

The number of bicycle parking spaces is higher than the number of car parking bays, in order to promote cycling from an early stage in the development. The total number of bicycle parking spaces on the site is 970No. and 13No. spaces dedicated to cargo bikes. The cargo bike spaces and 732No. will be located at basement level, divided into 10No. stores. The spaces will be accessed using a key or fob, which will add a layer of security to residents. The remaining 238No. spaces will be located at ground floor level, spread across the site, near the apartment blocks.

3.2.5 Potential Issues Identified in the Non-Motorized Users Audit

The following items summarise some of the key issues found related to the walkability and cyclability of the site.

Issue 3.7: Signalised Pedestrian Crossings

As part of the proposals, it is intended to install and upgrade pedestrian traffic lights at the junction between Swords Road (N1) and Iveragh Road. The drawings provided show yellow tactile paving blisters at the crossing on the northern approach of Swords Road and at the Iveragh Road approach, however, for signalised pedestrian crossings, tactile blister paving should be red according to the TII document DN-GEO-03084 and DMURS. There is also a lack of information regarding the width of the crossing at all proposed crossing points.

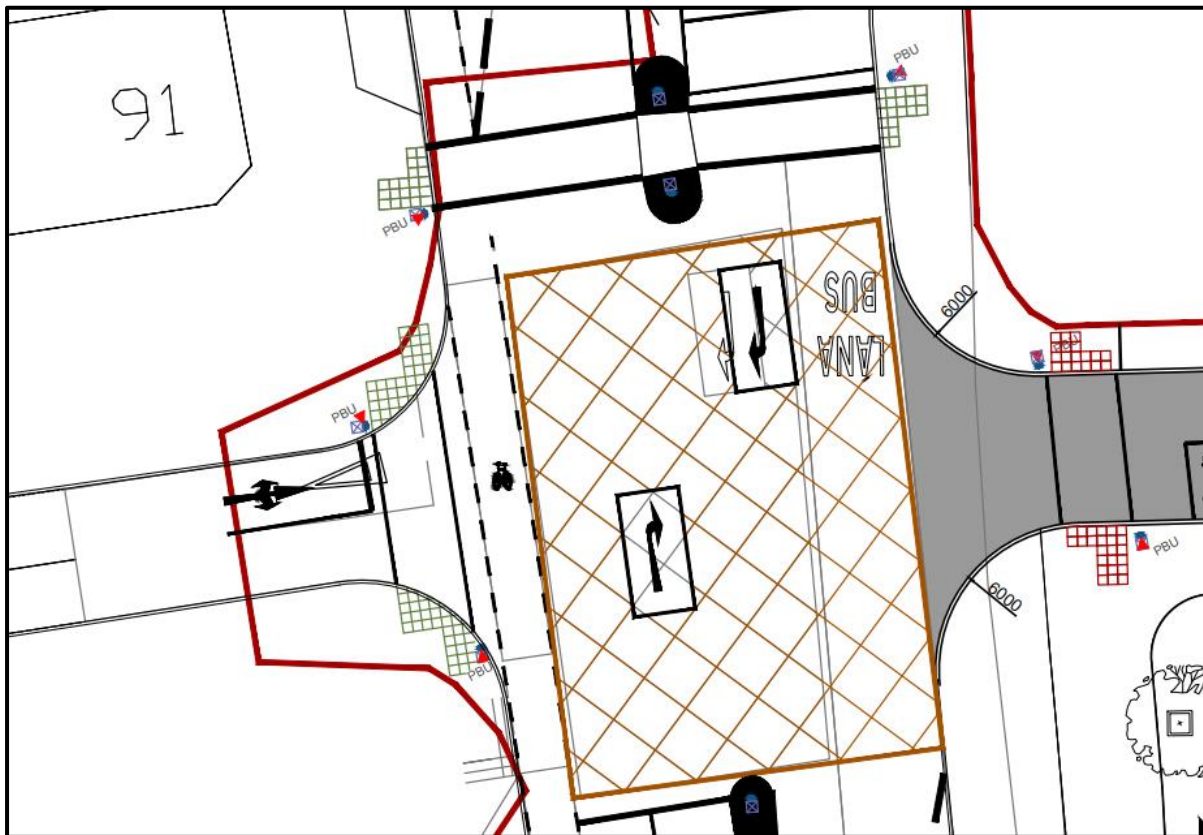


Figure 3.16: Signalised Pedestrian Crossing Points (Source: AECOM)

Issue 3.8: Inconsistency of Documents Provided

The proposed junction upgrade shows signalised pedestrian crossings at 3No. of the 4No. approaches to the junctions, however, the junction modelling report provided using LinSig software relates to crossing points at all approaches to the junction. The design team should include in all drawings the proposed crossing point to the southern approach of Swords Road if intended to be constructed.

Issue 3.9: Width of Footways

It is noted from the drawings that the proposed footways within the site layout do not have width displayed. The minimum width for footpaths, according to DMURS, should be a minimum of 1.8 metres.

Issue 3.10: Shared Surface

The proposed Hartfield Place will implement shared surfaces along the site; however, the path was designed as a long stretch with no speed calming measures, which could lead to motorists driving at excessive speed which could increase the risk to non-motorized users travelling along the shared surface.

Issue 3.11: Overgrown Vegetation and Dry Leaves at end of Crossing Point

It was noted from the site visit that at the crossing point near the site entrance there is an accumulation of dry leaves, garbage and overgrown vegetation and the location is within the site boundary of the proposed development, however, there are no proposals to remove same

as part of the proposed works. This can cause risks of slips and falls for pedestrians and cyclists, especially vulnerable road users.

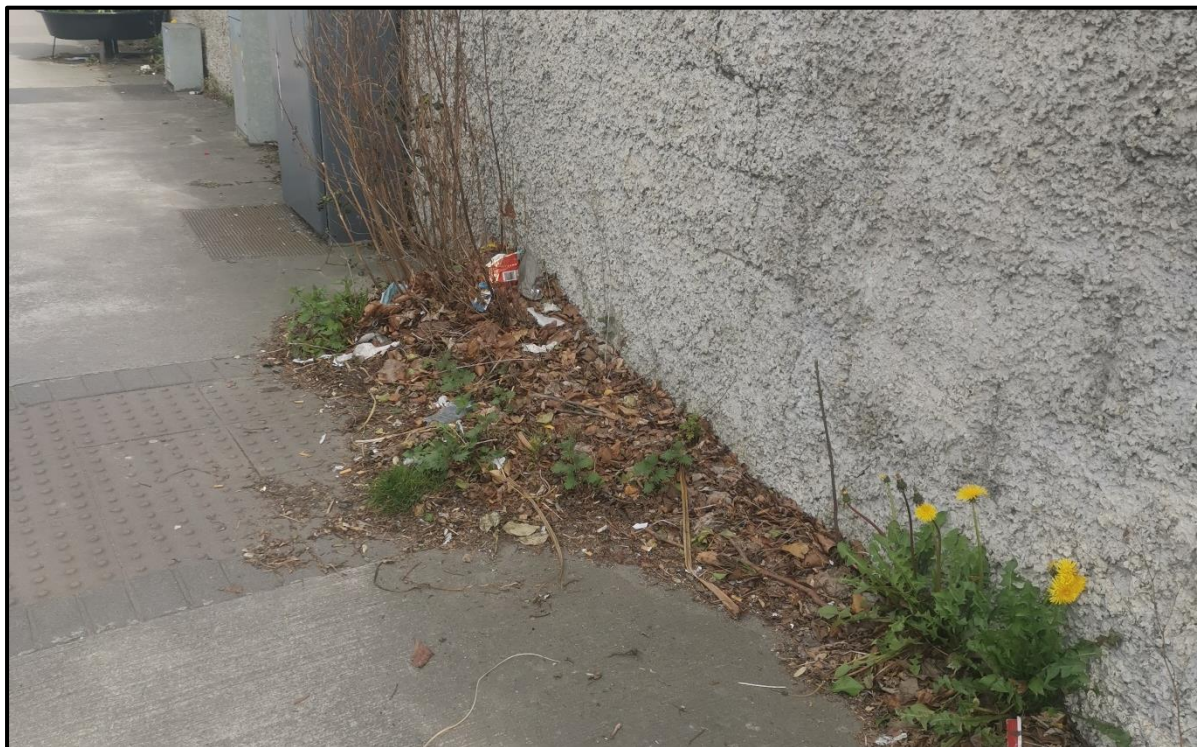


Figure 3.17: Overgrown Vegetation and Dirt at pedestrian crossing.

Please refer to section 3.4.2 for other issues related to non-motorised users as per the Road Safety Audit.

3.2.6 Non-Motorized Users Audit Recommendations

The design team should ensure pedestrian and cyclist paths are maintained during construction and that all surfaces tie into existing surfaces.

The design team should review the site layouts and the LinSig analysis to match the proposals regarding pedestrian crossings. The design team should consider the inclusion of a pedestrian crossing point at the southern approach of Swords Road (N1) at the junction. The inclusion of a pedestrian crossing facility will increase pedestrian connectivity in the area and will reduce travel distance for pedestrians that wish to reach the other side of the road.

All dimensions of footways and crossing points within the proposal should be clearly marked in the drawings in accordance with relevant guidelines. All crossing points should be designed in a way to provide clearance for both pedestrians and cyclists to cross the road at the same time.

The proposed signalised pedestrian crossing points should be reviewed in accordance with specifications in DMURS and the TII document DN-GEO-03084.

Drawings shall be kept consistent during the design stage, with all information provided and clearly marked.

The design team should include in the proposals the removal of overgrown vegetation along the site boundary along Swords Road (N1) and at the pedestrian crossing to the north of the site entrance.

The design team should consider revision to the road markings and surface at the shared surface on the southbound of Swords Road (N41) in order of the safety of pedestrians and cyclists.

3.3 Visual Quality Audit

An audit on the visual quality of the development may be undertaken to ensure that the development ties in with the best practice recommendations for streetscapes as set out in DMURS.

Hartfield Place aims to provide an extensive open area for future residents, with landscaped areas provided between apartment blocks and along the roadways.

3.3.1 Landscape

The proposal aims to include landscaped areas throughout the development, which will offer open space for future residents and visitors. However, ORS was not provided with landscape drawings, therefore cannot conclude if the proposals will impose any risk to users of the site.

3.3.2 Finish Materials

No information was provided regarding the finish materials of any surface within the proposed site layout; therefore, the audit cannot conclude if same will cause any risk to site users, especially vulnerable road users.

3.3.3 Lighting

No information regarding public lighting provision could be found in the drawings provided, it is, therefore, unclear if the proposed development will be sufficiently lit.

3.3.4 Potential Problems Identified in the Visual Quality Audit

Issue 3.12: Road Finish Surface

The surface of the proposed roads, the raised table and footways within the site have not been specified in the drawings, which can cause confusion among users when travelling throughout the site.

Issue 3.13: Public Lighting

There are no proposed lighting plans for the underground car park and the site layout. This may create conflicts where motorists may be unable to see other vehicles and vulnerable users which could lead to potential pedestrian-vehicle and vehicle-vehicle collisions which pose a risk of injury to all users.

Please refer to section 3.4.2 for other issues related to the visual quality of the site as per the Road Safety Audit.

3.3.5 Visual Quality Audit Recommendations

The plans should provide information on the surface finishes for all surfaces along the proposed site.

The design team should ensure sufficient lighting is provided within the proposed development boundary and that the location of lamp poles does not affect the navigability of non-motorised users of the site.

3.4 Road Safety Audit

3.4.1 Collision History Near the Proposed Development

The Road Safety Authority (RSA) website was consulted to obtain data regarding collisions in the vicinity of the proposed development site entrance. As can be seen from **Figure 3.18** below, 7No. incidents were recorded at the junction between Swords Road and Iveragh Road, between 2005 and 2016.

1No. incident was classified as serious and involved a bicycle on a Tuesday evening in 2016. The 6No. minor incidents were recorded between 2007 and 2013 and involved cars and buses. No incident was recorded with pedestrians at the junction. Several other incidents were recorded along Swords Road.

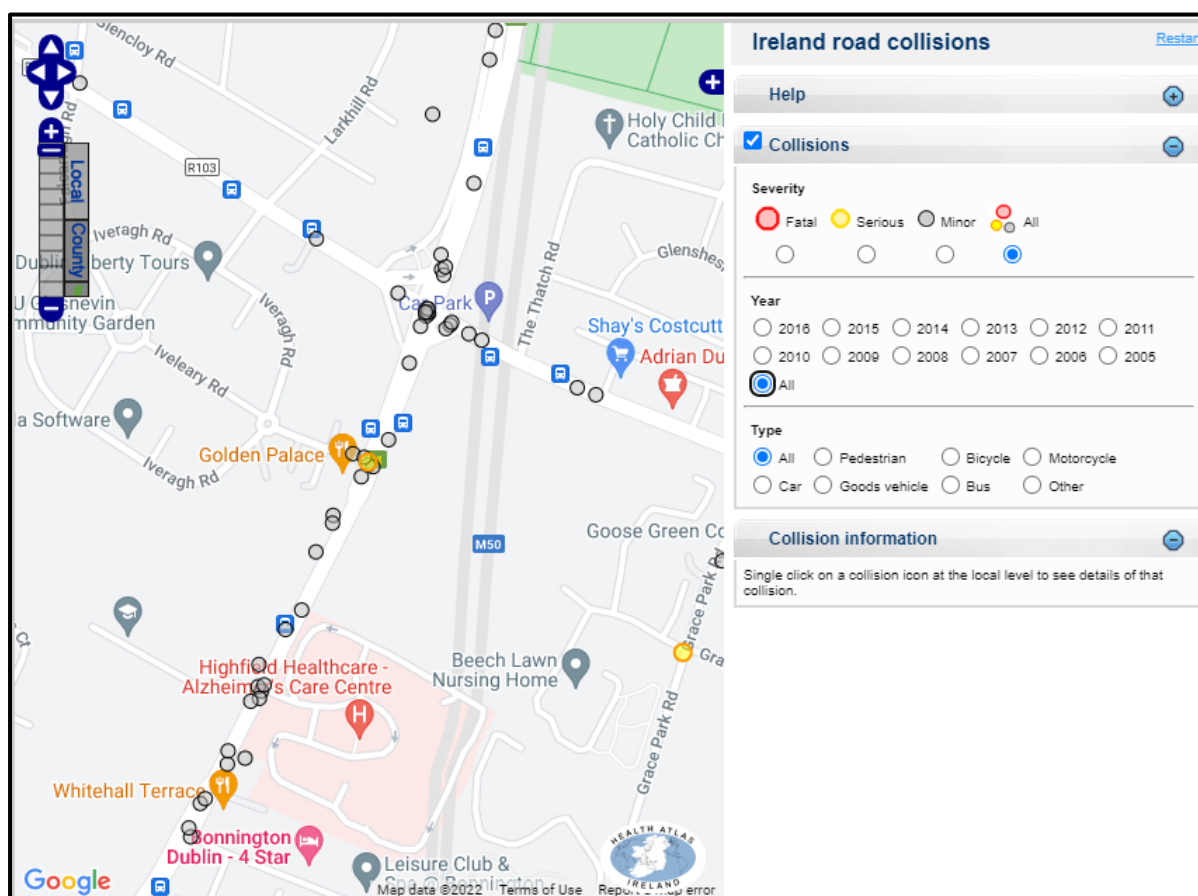


Figure 3.18: Collisions near the proposed development (Source: RSA.ie)

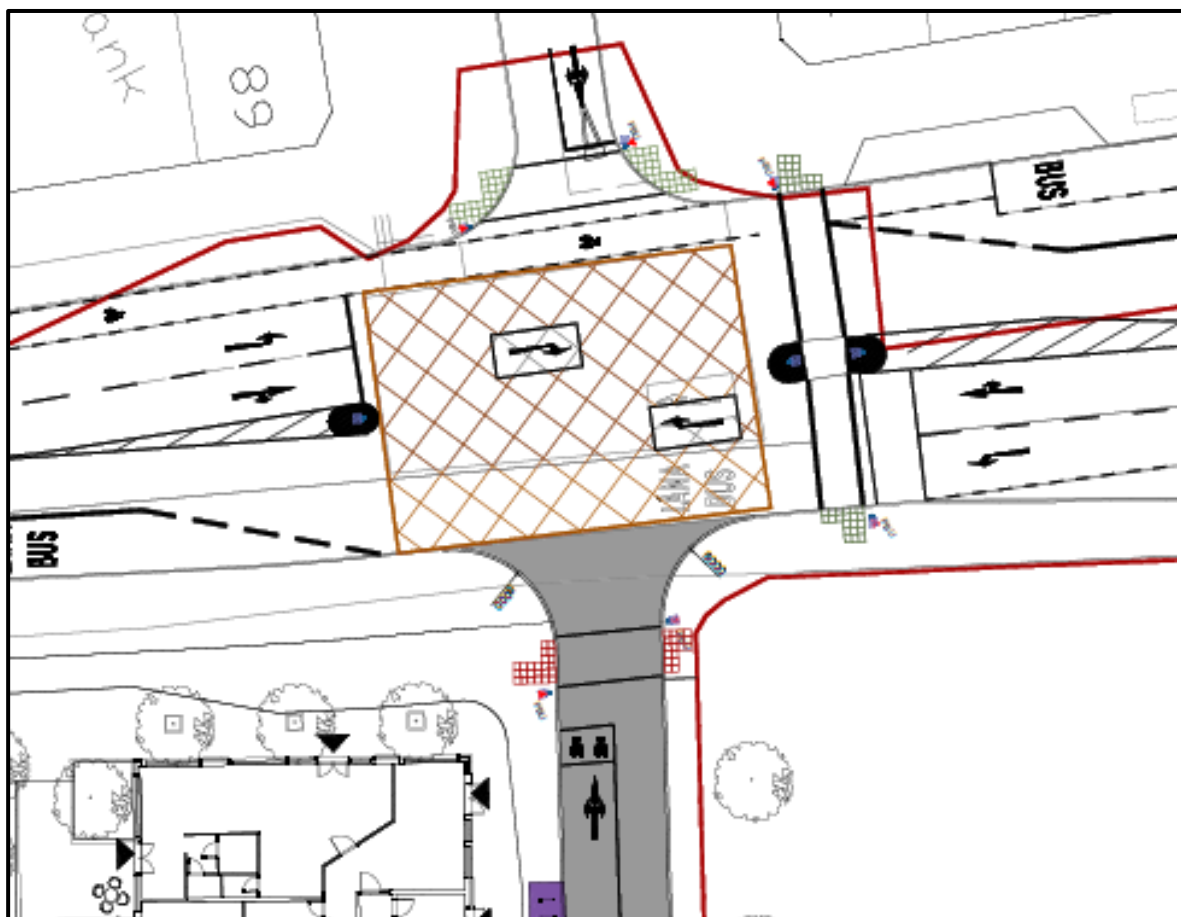
3.4.2 Potential Problems Identified in the Road Safety Audit

The following are problems and recommendations to address the safety issues associated with the proposal. The recommendations are proposed to the designer of the scheme to reduce any safety risks associated with it.

Problem No.01: Cycle Permeability

Location: R132/N1 Swords Road

The audit team note from the drawings provided that it is not clear how the proposed development will tie in with the existing cycle path network. Insufficient cycle permeability in the vicinity of the intersection may put cyclist at risk when channelled into the site access road without clear user right of way. Inadequate cycle paths may lead to cycle-vehicle conflicts resulting in resulting in injury.



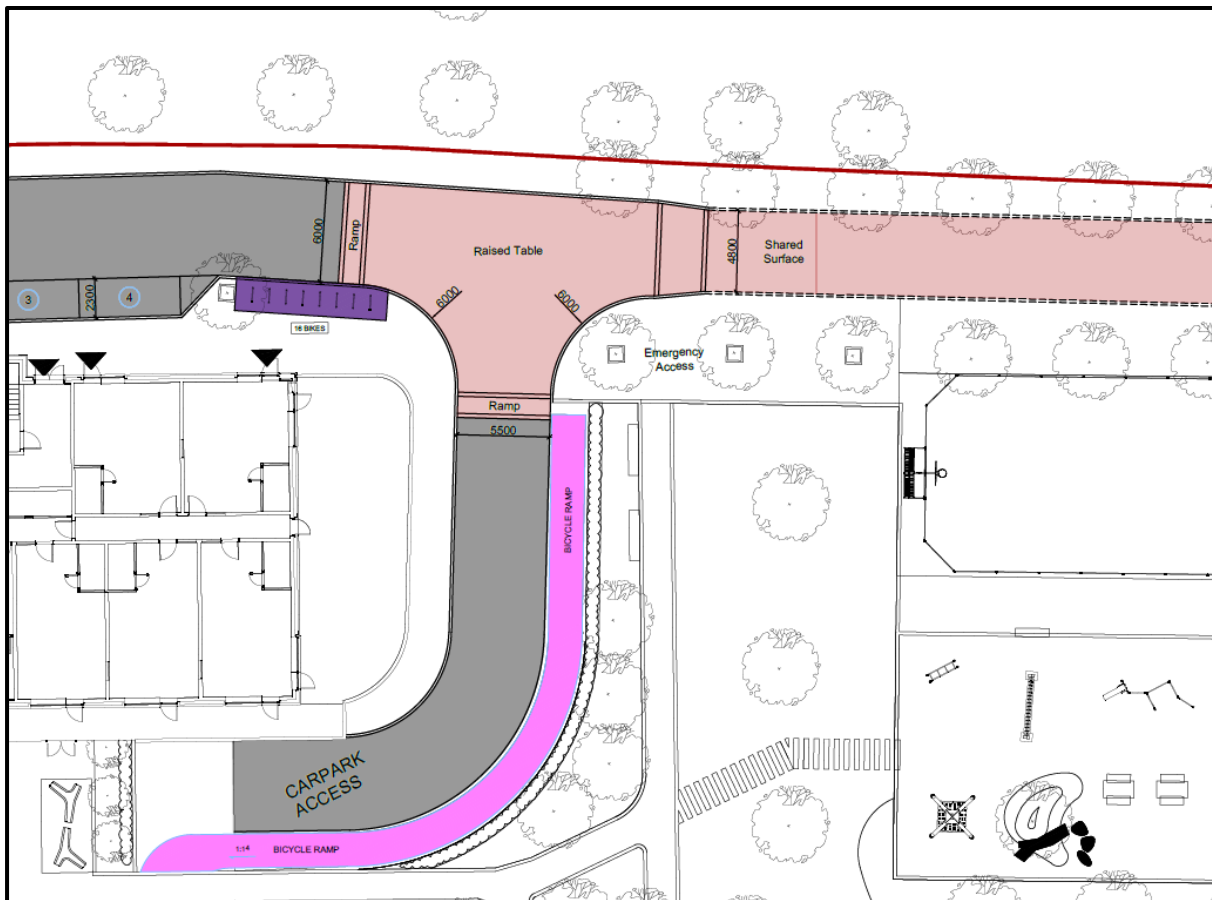
Recommendation:

The design team should review the site access road and intersection tie-in to ensure interconnectivity with all surrounding cycle paths by in line with DMURS guidelines and the National Cycle manual.

Problem No. 02: Signage & Road Markings

Location: Proposed Intersection and Internal Roads

The audit team note that there is a lack of signage and markings for the site access road and internal circulatory roads on the drawings provided. Signage and markings aid in informing road users of the presence of ramps, presence of vulnerable road users and stop/yield locations. Inadequate signage and road markings may lead road users not being alerted to the shared space which may result in vehicle-vehicle or vehicle-cycle conflicts causing injury.



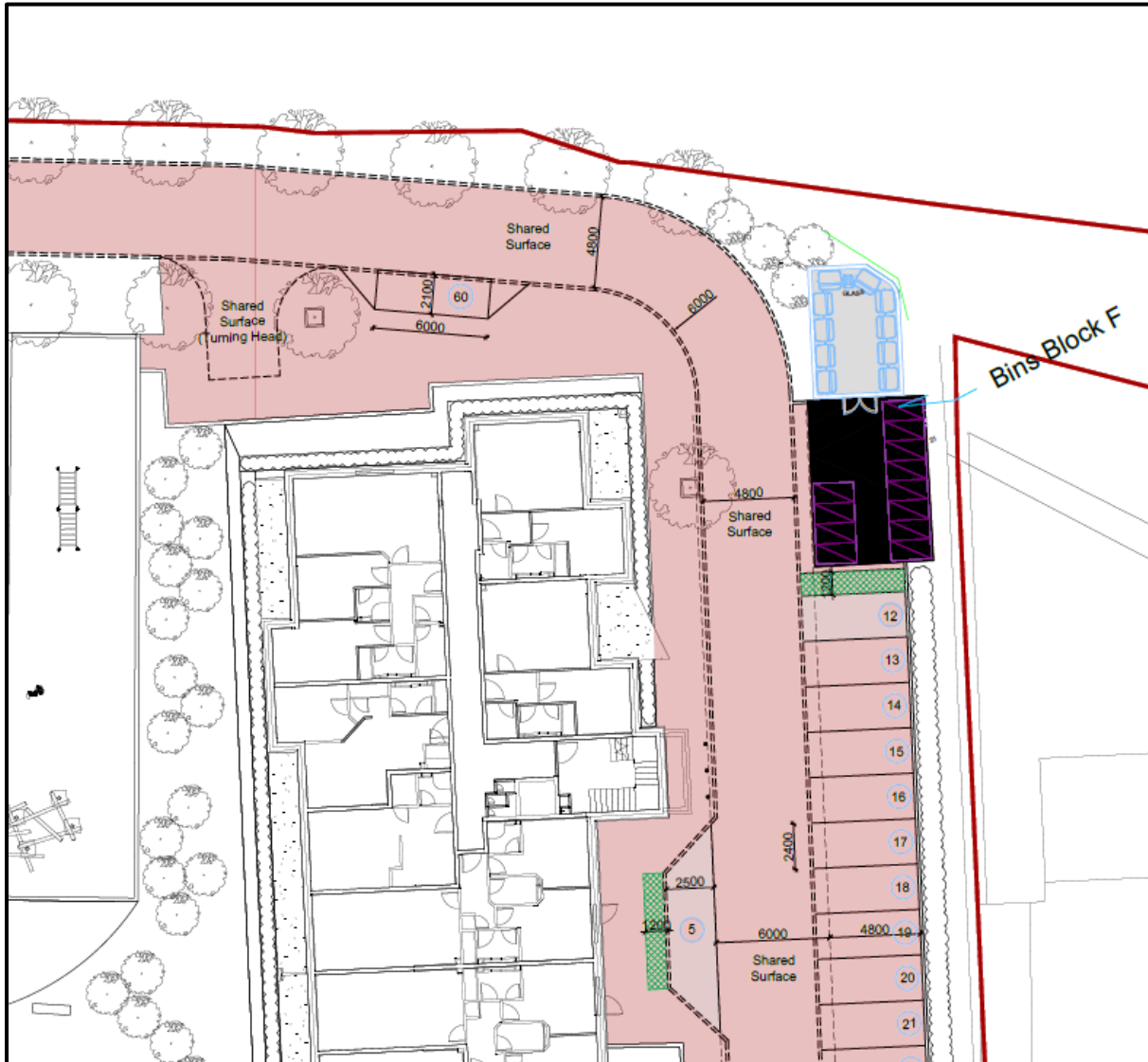
Recommendation:

The design team should include more details relating to signage and markings at the intersection and on the internal shared roadways in line with DMURS guidelines, the National Cycle Manual and the applicable Road Traffic Sign Manual.

Problem No.03: Shared Surface Demarcation

Location: Internal Road network

The audit team note from the drawings provided that there is a lack of information relating to the surface treatment for shared surfaces. Road users need to be made aware of the presence of vulnerable road users in the vicinity of shared surfaces by means of pavement colour treatment, textures and/or signage.



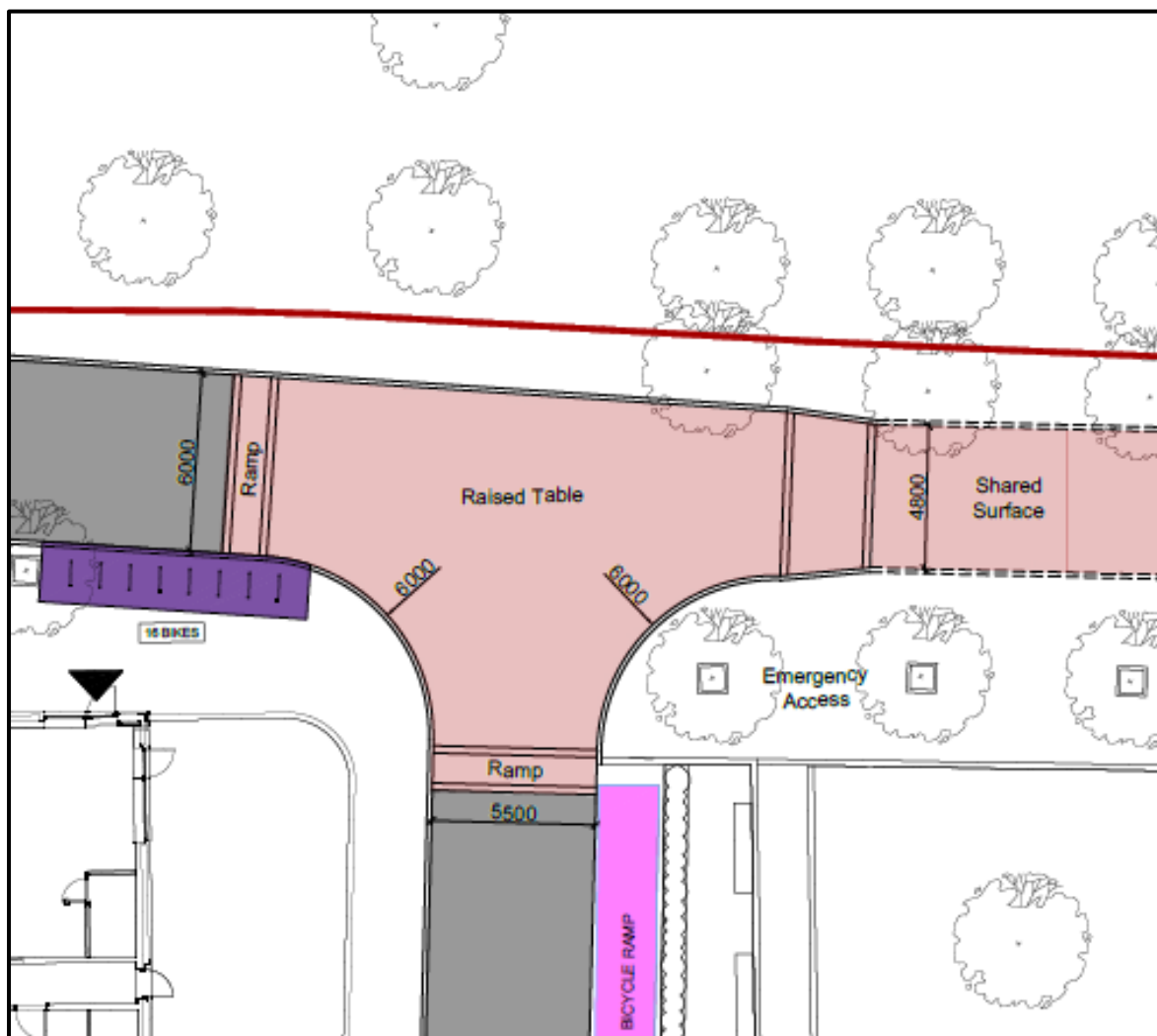
Recommendation:

The design team should ensure that appropriate shared surface demarcation and signage provided for throughout the site to clearly distinguish the proposed use in accordance with DMURS guidelines.

Problem No.04: Pedestrian Disabled Access

Location: Raised Platform

The audit team note that drop kerbs and tactile paving is not identified at the internal junction. These facilities aid users with specific visual needs in particular and the omission of same at crossing locations may will require vulnerable road users to travel in the roadway putting them at risk with vehicle conflicts and injury.



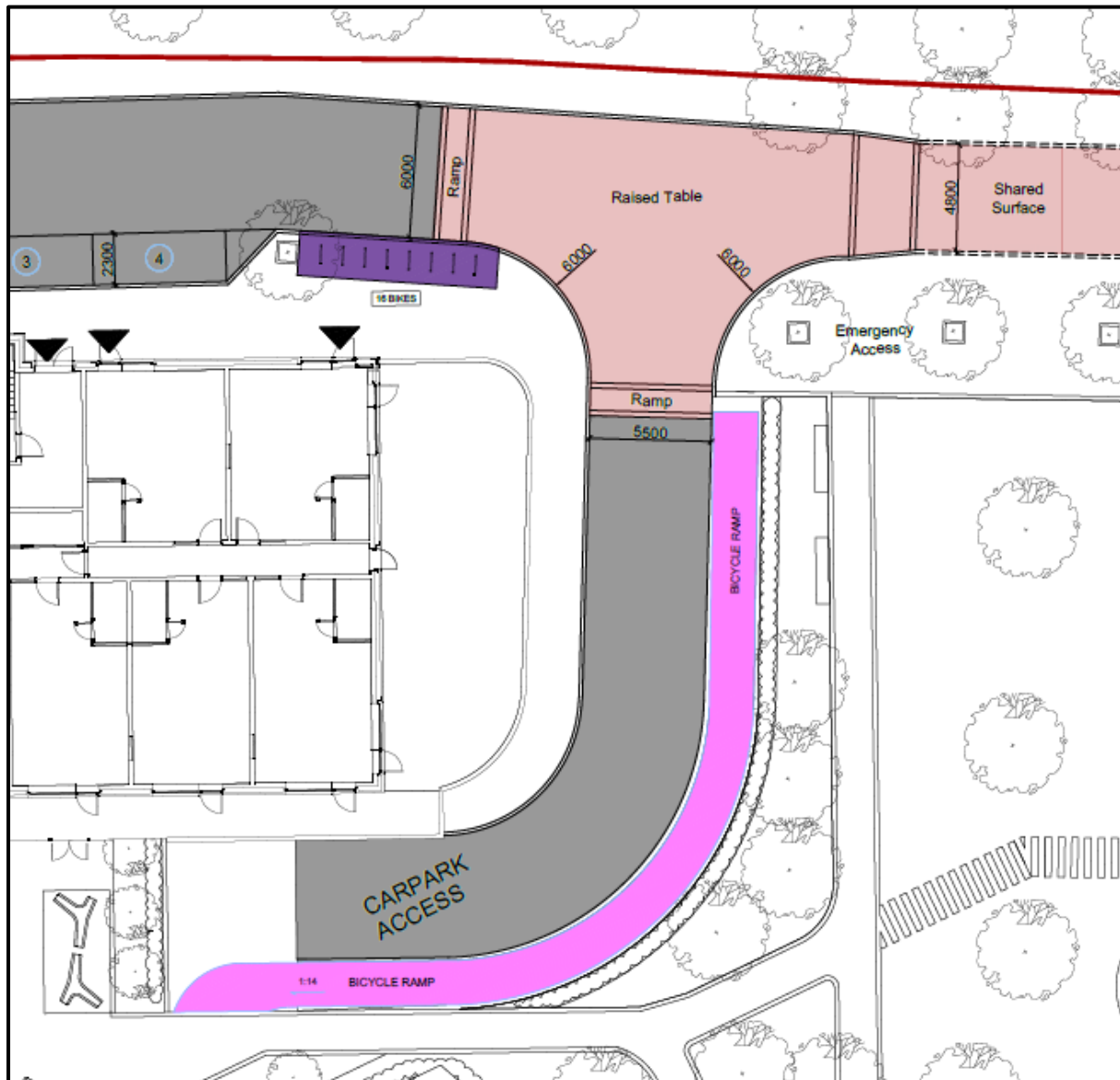
Recommendation:

The design team should ensure that details and locations of 'drop kerbs' and tactile paving is provided throughout the scheme at proposed crossing points.

Problem No.05: Bicycle Ramp Width

Location: Underground Carpark Access Ramp

The audit team note from the drawings provided that there is a bidirectional cycle path specified next to the vehicle access ramp. It is not clear from the drawing if the width is sufficient to allow two bicycles to pass and if cyclists are required to dismount in order to safely merge with vehicle traffic on the shared surface.



Recommendation:

The design team should assess the ramp cycle path width and clarify the merge and diverge manoeuvres from the shared path to the ramp in the vicinity of the internal junction.

Problem No. 06: Signage & Road Markings

Location: Underground Car Park

The audit team note that there is a lack of signage and markings for the underground car park circulatory roads on the drawings provided. Signage and markings aid in informing road users of the direction of travel, exit routes and stop/yield locations. Inadequate signage and markings may lead to confusion for road users which may result in vehicle-vehicle conflicts causing injury.



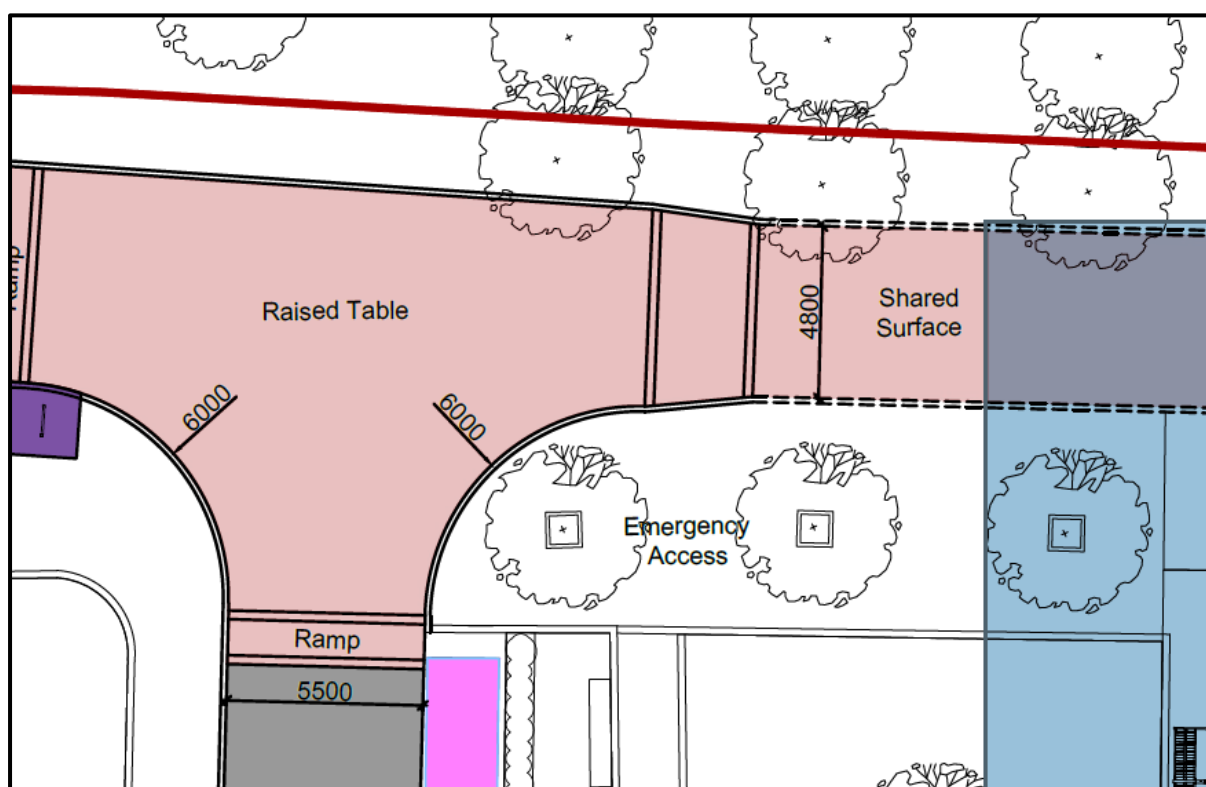
Recommendation:

The design team should include signage and road markings for the underground car park in line with Design Recommendations for multi-storey and underground car parks.

Problem No.07: Landscaping

Location: Internal site layout

The audit team noted from design layouts received that the proposed landscaping may impact on visibility at junctions and also obstruct disabled users and pedestrian movements. Trees, high bushes and shrubbery should be avoided in areas where visibility is to be maintained to ensure that drivers are clearly able to see approaching vehicles and pedestrians at junctions and designated pedestrian crossing locations. This could potentially lead to instances of vehicle-vehicle or pedestrian-vehicle collisions resulting in injury.



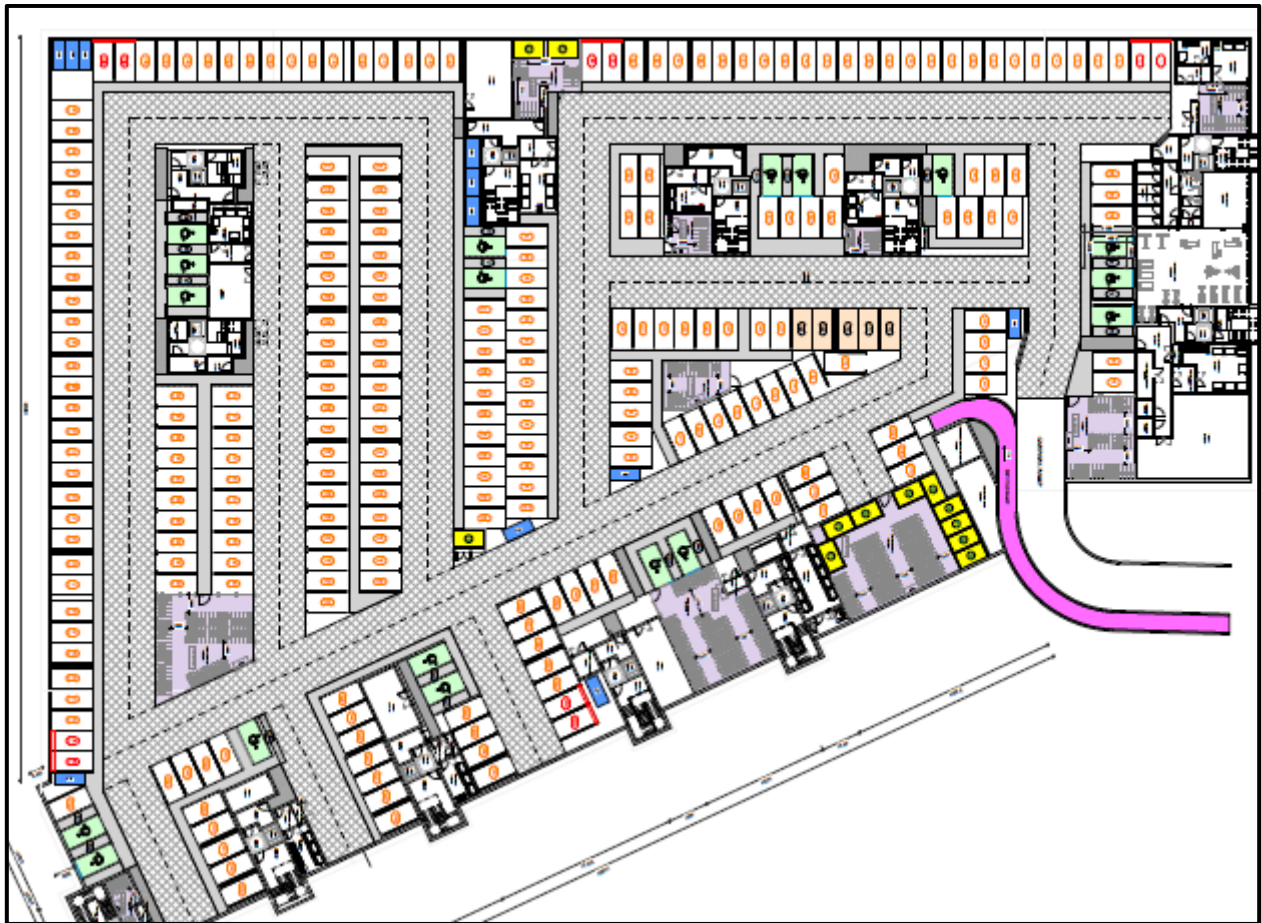
Recommendation:

The design team should ensure that any proposed landscaping does not impact on visibility of the internal roads and junctions or forward visibility at the proposed pedestrian crossings.

Problem No.08: Vehicle Swept Path Analysis

Location: Underground Carpark

The audit team note from the drawings provided that no vehicle swept path analysis has been completed for the underground carpark area. Swept path analysis should be conducted with the appropriate design vehicles to confirm the circulatory road layout is suitable for design vehicle turning movements. The swept path analysis should confirm that vehicles are able to navigate the carpark with continuous forward movements. The analysis should also analyse all applicable vehicle maneuvers and turning movements to ensure sufficient dimensions for carriageways and passenger vehicle parking bays.



Recommendation:

The design team should analyse vehicle swept paths with industry standard software to assess vehicle wheel paths during turning movements to confirm the suitability of the road layout for intended vehicle purposes.

Problem No.09: Lighting**Location: Internal Site Layout and Site Access Junction**

The audit team have not received drawings detailing lighting for the development and the access junction and it is not clear if lighting will be specified for the development. Areas in low light conditions may result in slips trips and falls on pedestrian paths. Drivers may be unable to see pedestrians in the internal road network and at pedestrian crossings which has the potential to lead to pedestrian-vehicle collisions resulting in injury to pedestrians.

Recommendation:

The design team should ensure that details and locations of all public lighting columns are provided for at detailed design and to ensure that positioning of columns does not cause any obstruction or hazard to vulnerable users.

Problem No.010: Drainage**Location: Internal Site Layout**

The audit team note from the drawings provided that there is no provision for drainage channels/ gullies positions for the proposed stormwater network throughout the proposed development. Inadequate gully positioning may lead to issues of ponding in areas of the development which poses a risk of slips, trips or falls to vulnerable road users.


Recommendation:

The design team should ensure that details and locations of all drainage gullies etc are provided for across the site and positioned strategically to avoid the risk of ponding across the site.

4 Quality Audit Team Statement

We certify that we have examined the drawings listed in **Appendix A** and examined the site by means of a site visit. This examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified to improve the safety of the scheme. The issues that we have identified have been noted in the report, together with suggestions for improvement, which we recommend should be studied for implementation.

Audit Team Leader: Adam Price: BEng (Hons), CEng, MIEI
ORS

Signed: 

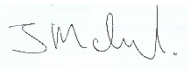
Date: 25th March 2022

Audit Team Member: David McCormack: BEng (Hons), Dip Eng, CEng, MIEI
ORS

Signed: 

Date: 25th March 2022

Audit Team Member: Johannes de Klerk: BEng, MIEI
ORS

Signed: 

Date: 25th March 2022

Audit Team Observer: Thaís Côrtes: BEng (Hons)
ORS

Date: 25th March 2022

Appendix A – Inspected Documentation

The audit team reviewed the following drawings and documents provided by AECOM:

- (1) LinSig Junction Basic Results Summary - Preview_2
- (2) HARTPL-CWO-BT-B1-DR-A-092035 – Basement Parking Plan
- (3) PR379360-ACM-XX-XX-DR-CE-10-0001 C – Proposed General Arrangement
- (4) PR379360-ACM-XX-XX-DR-CE-10-0101-0101 – Visibility Splay
- (5) PR379360-ACM-XX-XX-DR-CE-10-0102-0102 – Refuse Vehicle Autotrack Analysis
- (6) PR379360-ACM-XX-XX-DR-CE-10-0103-0103 – Emergency Vehicle Autotrack Analysis.



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Appendix B – Designer Response Form

Road Safety Audit Feedback Form

Job: 220092 – Hartfield Place, Swords Road, Whitehall, Dublin 9

Stage of Audit: Stage 1

Date Audit Completed: 25/03/2022

Problem Reference in Safety Audit Report	To Be Completed by the Designer			To Be Completed Audit Team Leader
	Problem Accepted (Yes/No)	Recommendation Accepted (Yes/No)	Alternative Option (Describe) (Only complete if recommendation not accepted)	Alternative Option Accepted by Auditors (Yes/No)
P1				
P2				
P3				
P4				
P5				
P6				
P7				
P8				
P9				
P10				

Signed: Designer

Date:

Please complete and return to safety auditor.

Safety Audit

Signed Off Audit Team Leader

Date:

Safety Audit

Signed Off Employer

Date: