CS CONSULTING

GROUP

DUBLIN | LONDON | LIMERICK

Road Infrastructure Design Report

Alterations to Shoreline GA01 Lands at Baldoyle

Stapolin Growth Area 1, Baldoyle, Co. Dublin

Client: The Shoreline Partnership

Job No. R089

May 2021

CS CONSULTING

GROUP

CS CONSULTING
GROUP

ROAD INFRASTRUCTURE DESIGN REPORT

ALTERATIONS TO SHORELINE GA01 LANDS AT BALDOYLE
STAPOLIN GROWTH AREA 1, BALDOYLE, CO. DUBLIN

CONTENTS

Appendix A: DMURS Statement

Appendix B: Independent Quality Audit

File Location: Job-R089\B_Documents\C_Civil\A_CS Reports\RIDR

BS 1192 FIELD | **BD-CSC-ZZ-XX-RP-C-0107-P3**

Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Rev. No.
R089	FB	GF	OS	18.05.2021	P3
R089	FB	GF	OS	07.05.2021	P2
R089	FB	NB	OS	16.10.2020	P1

CS CONSULTING

GROUP

1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by The Shoreline Partnership to prepare a Traffic Impact Assessment for a proposed mixed residential development at Baldoyle, Dublin 13.

In preparing this report, CS Consulting has made reference to the following:

- Fingal Development Plan 2017–2023
- Baldoyle-Stapolin Local Area Plan 2013–2019
- Design Manual for Urban Roads and Streets (DMURS)
- Design Recommendations for Multi-Storey and Underground Car Parks

The Road Infrastructure Design Report is to be read in conjunction with the engineering drawings and documents submitted by CS Consulting and with the various additional information submitted by the other members of the design team, which forms part of the planning submission.

2.0 SITE LOCATION AND PROPOSED DEVELOPMENT

2.1 Site Location

The proposed development site is located at Stapolin Growth Area 1, Baldoyle, Co. Dublin, in the administrative jurisdiction of Fingal County Council. The site has a total site area of c. 9.1ha and a site development area of c. 8.89ha.

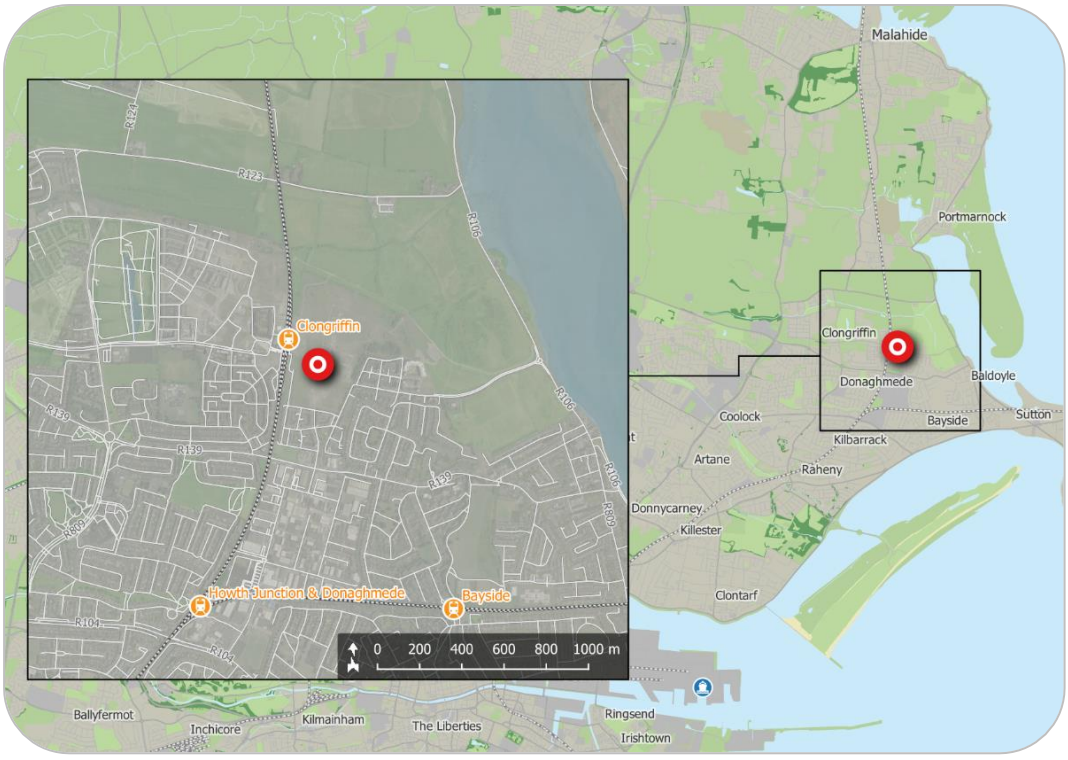


Figure 1 – Location of proposed development site
(*map data & imagery: EPA, OSi, OSM Contributors, Google*)

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in Figure 2.

The site is bounded to the west by The Dublin-Belfast rail line and by Clongriffin railway station, to the north by further zoned development lands, to the east by the established Red Arches residential development, to the

south by the established Myrtle residential development, and to the south-east by a permitted residential development currently under construction (under planning reg. ref. F16A/0412).

Figure 2 – Site extents and environs
(*map data & imagery: NTA, OSi, OSM Contributors, Microsoft*)

2.2 Existing Land Use

The subject site is currently undeveloped.

2.3 Description of Proposed Development

The development will consist of alterations to the permitted development, as permitted under FCC Reg. Ref. 16A/0412, ABP Reg. Ref. ABP-248970 (as amended by F20A/0258 and F21A/0046) of 544 no. residential units (385 no. apartments and 159 no. houses), retail and a crèche, to the development of 882 no. new residential dwellings (747 no. apartments, 135 no. houses), residential tenant amenity, retail, crèche, parking, and public realm, over a

total site area of c. 9.1 ha, and site development area of c. 8.89 ha. Landscaping will include extensive communal amenity areas, and significant public open space provision.

3.0 ROAD INFRASTRUCTURE DESIGN

The objectives of the evolving site layout design are:

- to ensure ease of access for emergency services and for refuse collection and servicing operations;
- to encourage walking and cycling;
- to create short walking routes to shops, public transport, etc.;
- to create a safe, secure, and pleasant environment for people, particularly vulnerable road users (VRUs) such as children.

Design measures have been implemented to support the above objectives in accordance with the core principles of the *Design Manual for Urban Roads and Streets* (DMURS).

The design of the road infrastructure within the subject development is primarily informed by principles contained within the DMURS manual. However, reference has also been made to the following documents:

- Fingal Development Plan 2017–2023
- Baldoyle-Stapolin Local Area Plan 2013–2019
- Traffic Signs Manual 2019
- DN-GEO-03060: Geometric Design of Junctions
- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities)
- National Cycle Manual 2011
- Greater Dublin Area Cycle Network Plan
- Design Manual for Urban Roads and Streets

3.1 Road Classification

The existing Longfield Road and Red Arches Road are local access roads with a speed limit of 50km/h.

DMURS uses a hierarchy system to classify the movement function of a street. This system classifies streets into the following categories:

- Arterial Streets
- Link Streets
- Local Streets

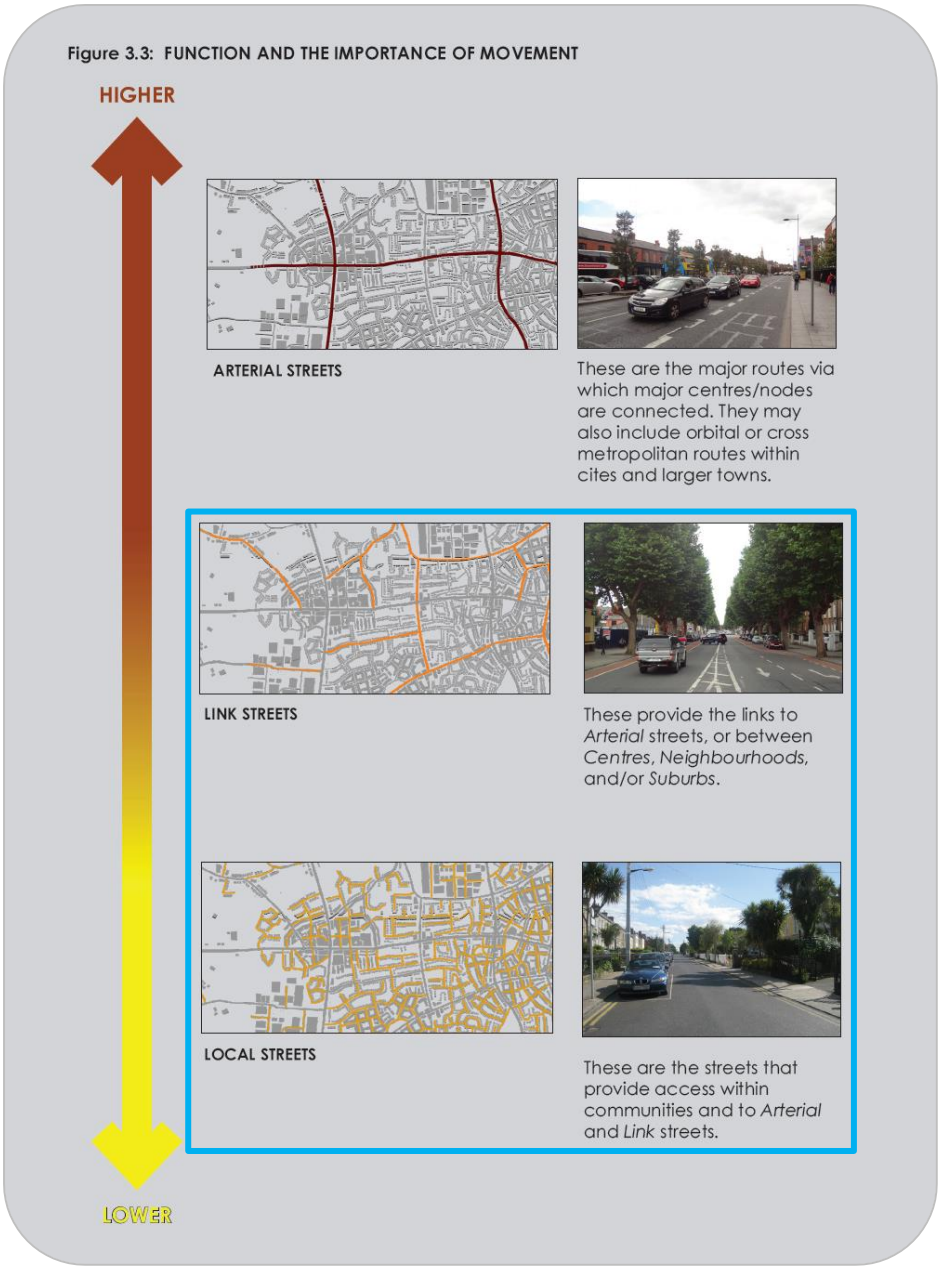


Figure 3 – DMURS Street Classification
(*source: Design Manual for Urban Roads and Streets*)

Based on the above, there are 3no. link streets within the proposed development:

- the continuation of Longfield Road
- the westward continuation of Red Arches Road
- the road which extends westward from Longfield Road, along the northern side of Stapolin Square

All other internal roads within the development are classed as local streets (green) and primarily serve a local access function.

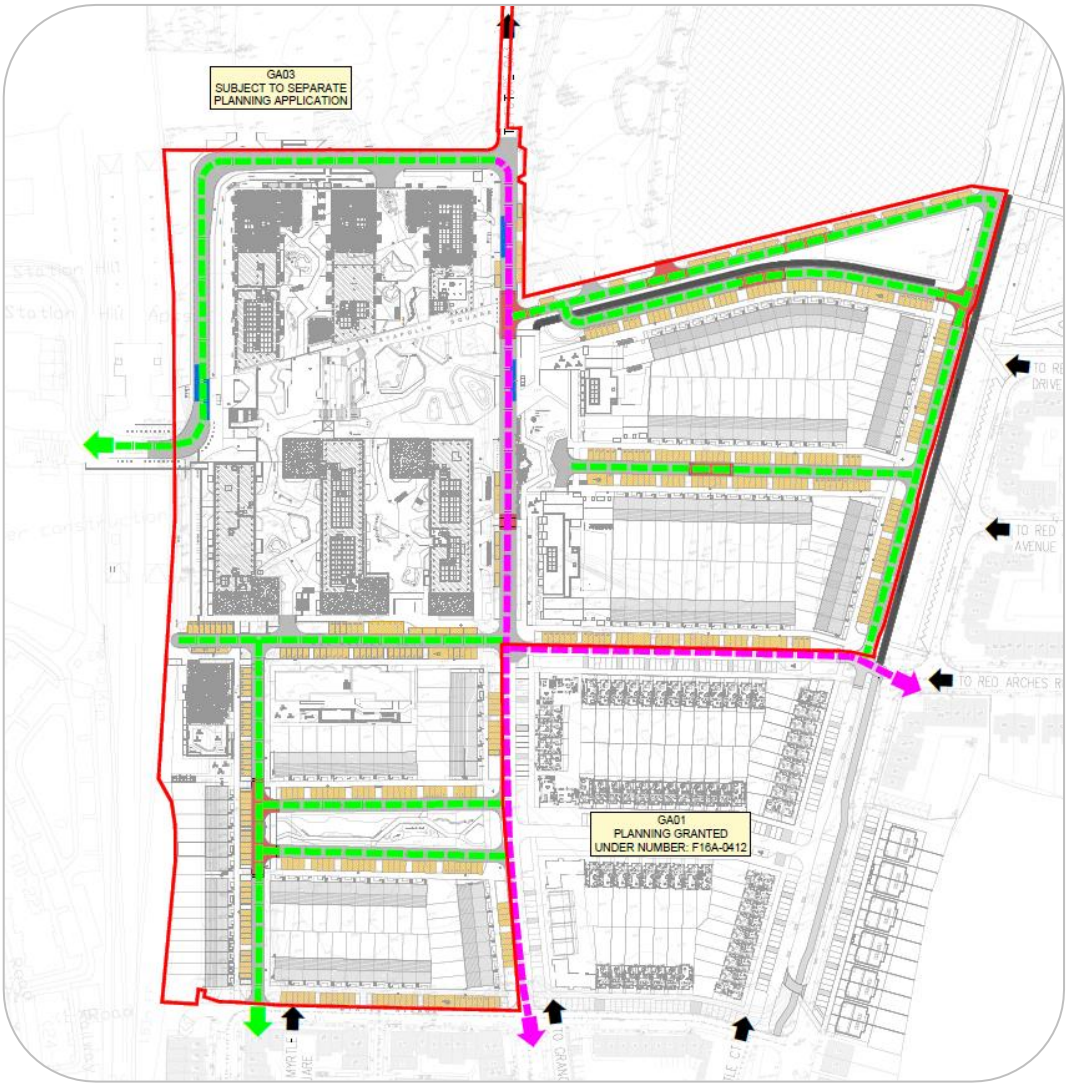


Figure 4 – Road hierarchy

Table 3.1 of DMURS outlines how road hierarchy terminology used in DMURS relates to other relevant publications.

DMURS Description	Roads Act/ DN-GEO-03031	Traffic Management Guidelines	National Cycle Manual
Arterial	National	Primary Distributor Roads	Distributor
Link	Regional (see note 1)	District Distributor Local Collector (see Notes 1 and 2)	Local Collector
Local	Local	Access	Access

Notes

Note 1: Larger Regional/District Distributors may fall into the category of *Arterial* where they are the main links between major centres (i.e. towns) or have an orbital function.

Note 2: Local Distributors may fall into the category of *Local* street where they are relatively short in length and simply link a neighbourhood to the broader street network.

Figure 5 - Terminology used within DMURS compared with other key publications
(*source: Design Manual for Urban Roads and Streets*)

3.2 Road Design Speeds

Longfield Road and Red Arches Road are existing local roads with a posted speed of 50km/h. No alteration to the current posted speed on these sections of road is proposed within the subject development.

All internal roads within the development have been designed for a vehicular traffic speed of 30km/h in order to prioritise movement of vulnerable road users. In accordance with DMURS, kerb radii at internal junctions have been restricted to a maximum of 4.5m, in order to discourage high vehicle speeds, except where larger radii are required to facilitate bus movements (kerb radii of 6.0m, at the junction of Longfield Road with Red Arches Road only).

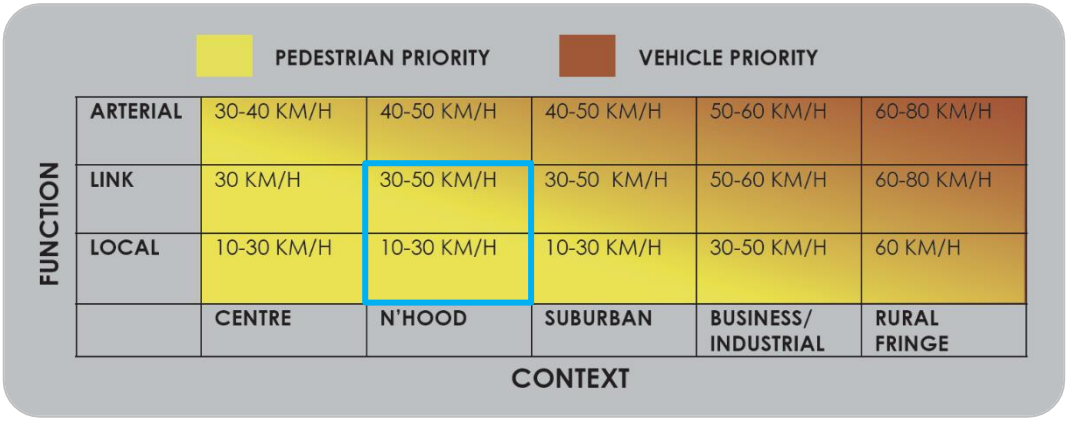


Figure 6 – Design Speed Selection Matrix
(*source: Design Manual for Urban Roads and Streets*)

3.3 Road Cross-Section

The road carriageway widths have been determined in accordance with DMURS. Link roads within the subject development shall have a carriageway width of 7.0m, comprising one traffic lane in either direction, and shall be flanked to either side by a 2.6m-wide pedestrian footpath. A lane width of 3.5m was chosen in accordance with Figure 4.55 of DMURS as the link streets within the development will frequently carry buses.

All other internal roads within the development are classed as local streets and primarily serve a local access function. These shall generally have a carriageway width of 5.5m, comprising one traffic lane in either direction, and shall also be flanked by 2.6m-wide footpaths. Along those sections of local streets on which dwellings are located, perpendicular on-street car parking spaces shall be arranged to either side of the road.

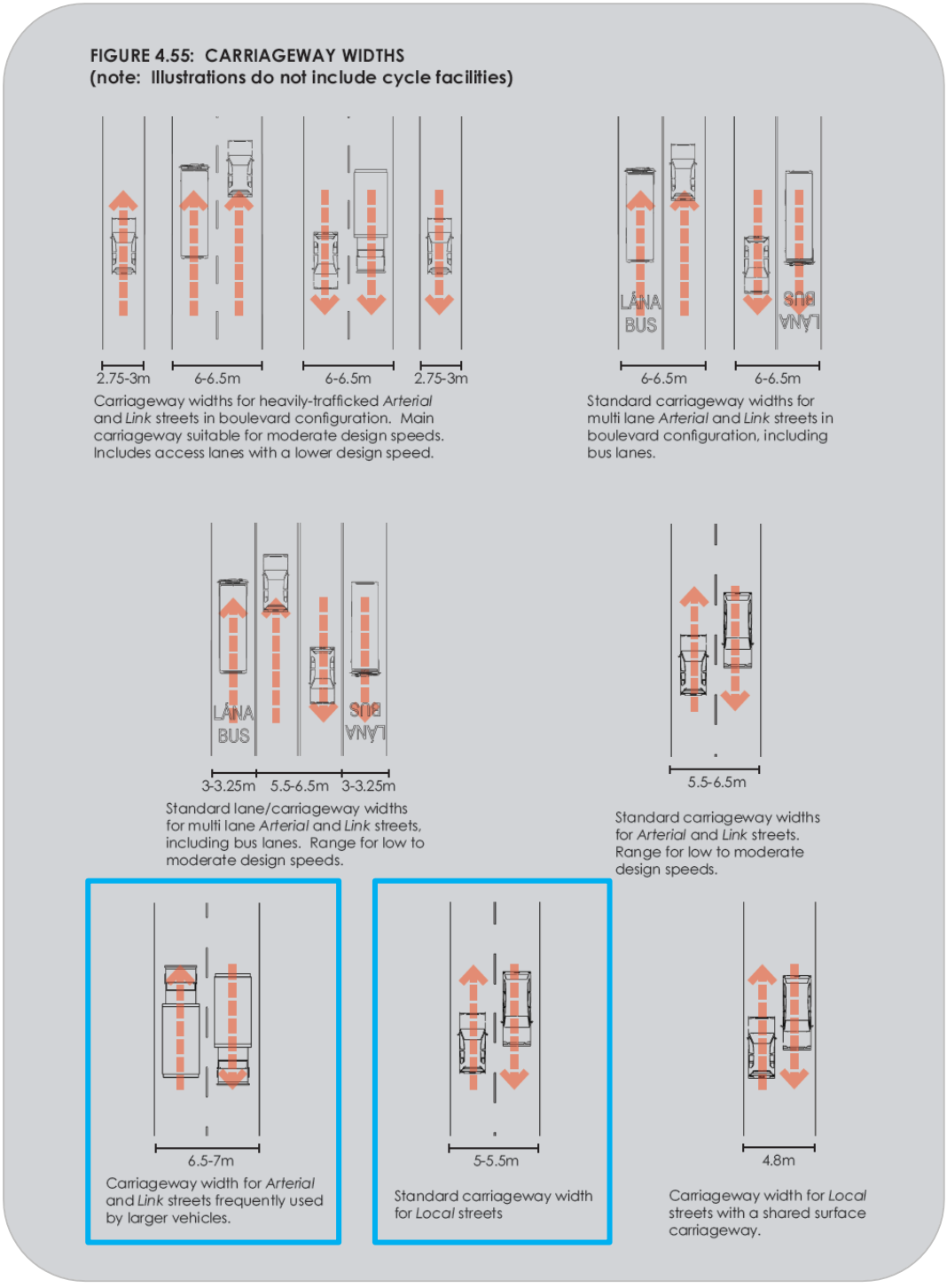


Figure 7 – Carriageway Widths
(*source: Design Manual for Urban Roads and Streets*)

3.4 Footpaths

Footpath widths within the proposed development have been designed in accordance with DMURS. It is proposed to provide a footpath width of 2.6m along all internal roads within the proposed development to allow desirable space for two people to pass comfortably.

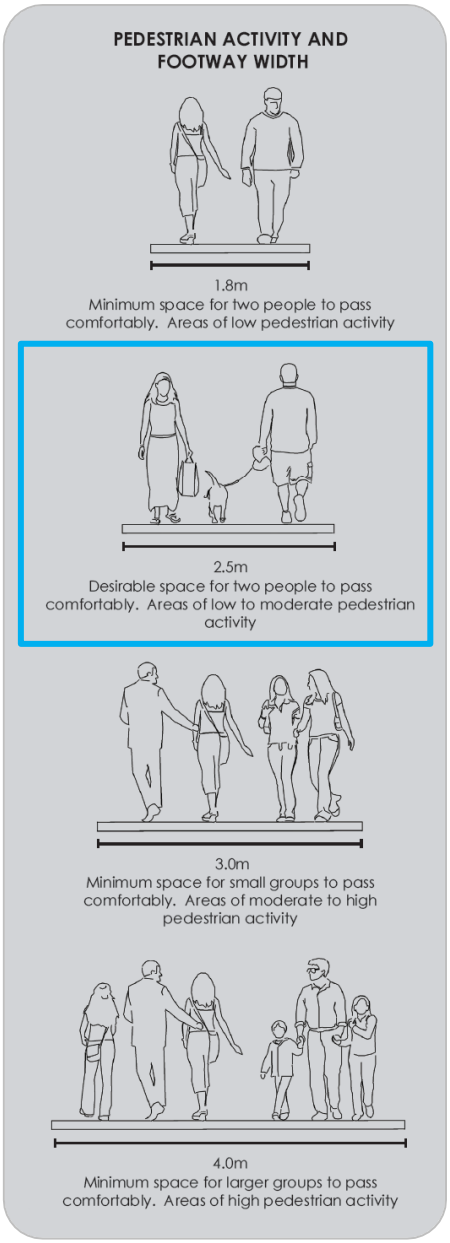


Figure 8 – Pedestrian Activity and Footpath Widths
(*source: Design Manual for Urban Roads and Streets*)

3.5 Undercroft Car Parking

The layout of the undercroft car parking areas within the proposed development have been designed in accordance with the IStructE *Design Recommendations for Multi-Storey and Underground Car Parks.* All car parking bays shall have a width of 2.4m and a length of 4.8m in accordance with *Table 4.2* of the Design Recommendations.

Table 4.2 Car bay dimensions

Type of parking	Length[b] (m)	Width (m)	Comment
Mixed use	4.80	2.40	Mixed occupancy
Short-stay	4.80	2.50	Typically less than two hours
Long-stay	4.80	2.30	One movement per day, e.g. business car park
Disabled user	4.80	3.60[c]	–
Parent/child	4.80	3.20[d]	–

Notes

a All the dimensions are to be clear of any projections, but see Section 4.3.4.

b The preferred dimension is 4.80m for all bay lengths. However, with restricted space and appropriate signage, this can sometimes be reduced for small/city vehicles (see Section 4.4.1).

c The bay width for use by disabled persons allows for the door to be fully opened to improve movement in and out of the car and to provide greater room for assistance to be given to those less mobile. Additional details are given in Traffic Advisory Leaflet 5/95 *Parking for Disabled*[4.3] and the Building Regulations[4.4,4.5].

d The bay width for use by parent and child allows for the door to be opened more fully for access to child seats.

Figure 9 – Car bay dimensions
(*source: Design Recommendations for Multi-storey and Underground Car Parks*)

Minimum aisle widths of 6.95m for two-way vehicle movement and 6.0m for one-way movement have been provided in accordance with Table 4.3 of the *Design Recommendations for Multi-Storey and Underground Car Parks*.

Table 4.3 Recommended aisle and bin widths

Parking angle	Preferred aisle width (m)	Bay width (m)	Preferred bin width for 4.80m bay length (m)
90°	Two-way aisle: 6.95	All	16.55
90°	One-way aisle: 6.00	All	15.60
60°	4.20	2.30 2.40 2.50	14.85 14.95 15.05
45°	3.60	2.30 2.40 2.50	13.65 13.80 13.95

Figure 10 – Aisle width dimensions
(*source: Design Recommendations for Multi-storey and Underground Car Parks*)

Refer to CS Consulting drawing BD-CSC-ZZ-XX-DR-C-0033 for development parking layout.

3.6 Road Junctions

The primary principle of the development's road junction design is to provide safe and consistent junction layouts for drivers and other road users. Road junction geometry has been designed in accordance with DMURS. Junctions within the development have been designed with sufficient capacity to accommodate design year peak traffic flows.

The primary objectives of the development junction design are as follows:

- To ensure capacity for the design year;
- To provide safe crossing facilities for pedestrians and cyclists;
- To ensure adequate visibility and consistency for road safety;
- To function as traffic calming measures.

Traffic modelling software has been used to assess the operation of key road junctions on the road network surrounding the subject development.

Refer to the Traffic Impact Assessment report submitted under separate cover within this planning application for further details of road junction operations.

4.0 DEVELOPMENT LAYOUT, PEDESTRIANS AND CYCLISTS

4.1 Development Access

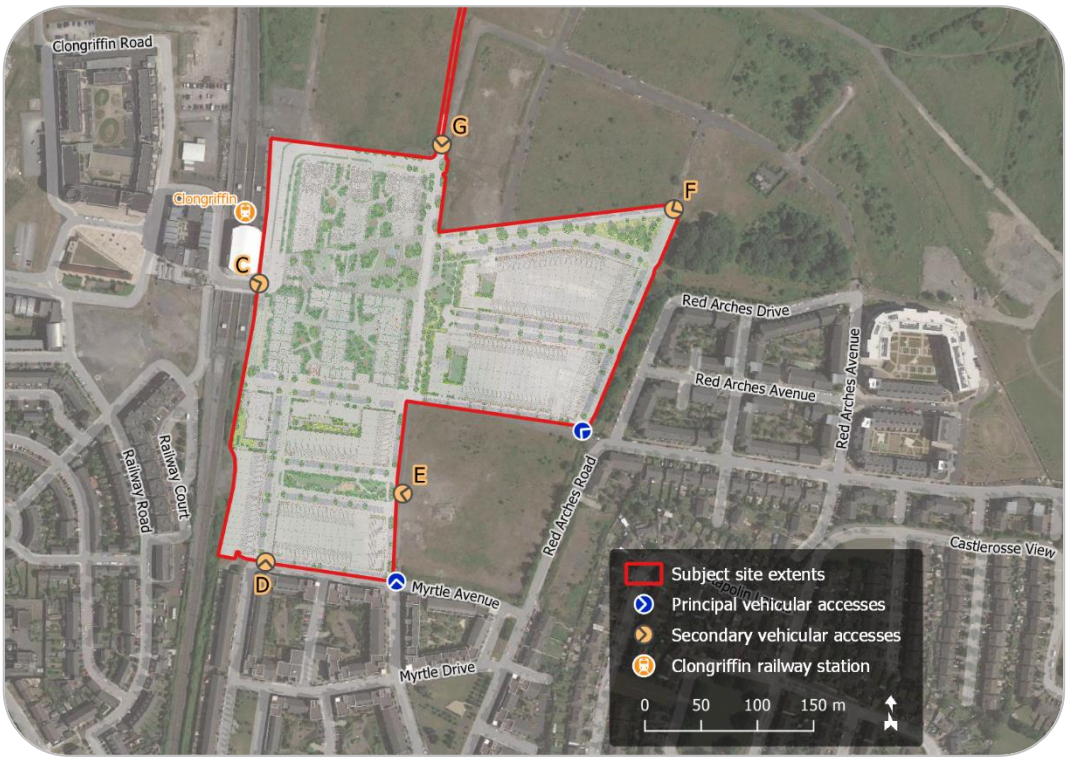


Figure 11 – Vehicular access points to subject development
(*map data & imagery: OSi, OSM Contributors, BSLA, Google*)

The subject development's internal road network shall tie into the existing surrounding road network at a total of 5no. locations to give vehicular access to the development (see Figure 11).

The 2no. primary vehicular access points are:

(A) the northward continuation of Longfield Road, which originates at Grange Road approx. 280m to the south; and

(B) the westward continuation of Red Arches Road, which originates at Coast Road approx. 930m to the east.

A further 3no. vehicular access points shall be located on the western and southern boundaries of the development:

(A) a ramp rising to meet the existing podium-level roadway at Clongriffin railway station, providing a link to Station Hill and to Clongriffin Main Street (this shall be restricted to use by public service vehicles, cyclists, and pedestrians);

(B) a new connection (in the form of a simple priority junction) to the existing Myrtle Avenue at the site's southern boundary; and

(C) a simple priority junction connecting the extended Longfield Road within the subject development to the east-west street of the committed development under construction to the south-east (which in turn connects to Myrtle Avenue).

Provision is also made for connectivity between the subject development and future development of the lands to the north:

(A) proposed roads within the eastern and northern boundaries of the subject site that may be extended into Growth Area 2; and

(B) the continuation of Longfield Road on a north-south axis through the entire subject development, allowing it to be further extended into Growth Area 3.

All connections between the development's internal road network and the existing external road network, including the new priority-controlled junctions at access locations (D) and (E), have been designed in accordance with the requirements of the *Design Manual for Urban Roads and Streets* (DMURS).

For further detail of the development's proposed internal road network and provisions for vehicular access to/from the surrounding road network, refer to CS Consulting drawings BD-CSC-ZZ-XX-DR-C-0001, BD-CSC-ZZ-XX-DR-C-

0016, BD-CSC-ZZ-XX-DR-C-0018, BD-CSC-ZZ-XX-DR-C-0025, BD-CSC-ZZ-XX-DR-C-0032, and BD-CSC-ZZ-XX-DR-C-0034.

4.2 Internal Site Layout and Road Hierarchy

The internal road network of the proposed development comprises link roads along the north-south and east-west axes, allowing circulation into and through the development site, as well as a network of connecting local streets that serve the individual blocks within the development.

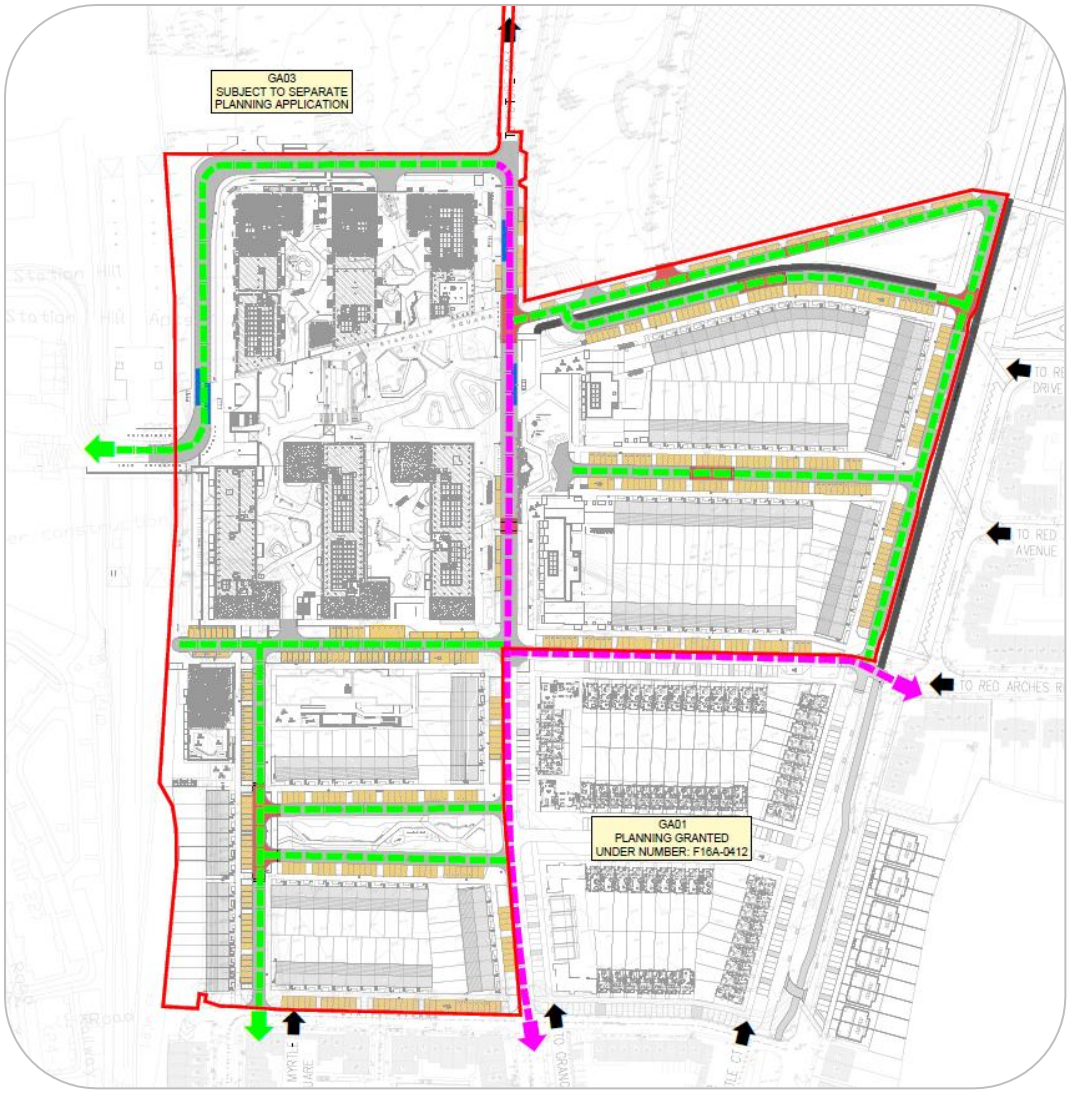


Figure 12 – Road hierarchy

The primary link road through the development is the continuation of Longfield Road, which shall extend northward through the site from its current termination at the site's southern boundary. This shall have a carriageway width of 7.0m, comprising one traffic lane in either direction, and shall be flanked to either side by a 2.6m-wide pedestrian footpath. Along the southern part of this Longfield Road extension, perpendicular on-street car parking spaces shall be arranged to either side of the road, between the carriageway and the footpath (see Figure 13). Limited on-street car parking shall also be provided along the northern section but shall take the form of recessed parallel parking bays.

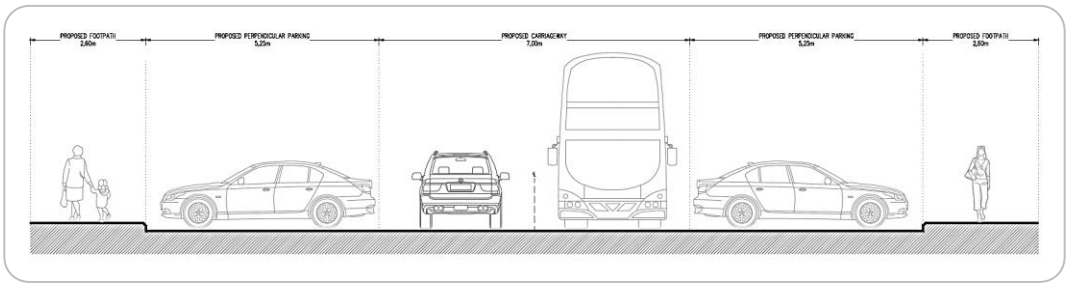


Figure 13 – Typical link road cross section (Longfield Road)

The second link road is the westward continuation of Red Arches Road, which shall be extended to meet Longfield Road. The third link road is that which extends westward from Longfield Road, along the northern side of Stapolin Square (immediately within the northern boundary of the development site) and continues along the western side of Stapolin Square. This provides the connection between Longfield Road and the proposed bus ramp up to the podium level of Clongriffin railway station.

All three link roads have been designed to permit the regular passage of buses, as illustrated in Figure 13. On-line bus stops are provided on both roads, in proximity to Stapolin Square and to the proposed bus ramp by Clongriffin railway station.

All other internal roads within the development are classed as local streets and primarily serve a local access function. These shall generally have a carriageway width of 5.5m, comprising one traffic lane in either direction, and shall also be flanked by 2.6m-wide footpaths. Along those sections of local streets on which dwellings are located, perpendicular on-street car parking spaces shall be arranged to either side of the road, between the carriageway and the footpath (see Figure 14).

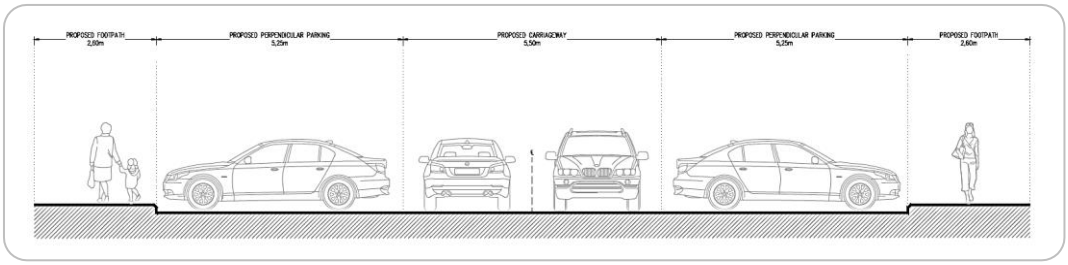


Figure 14 – Typical two-way local street cross section (Racecourse Grove)

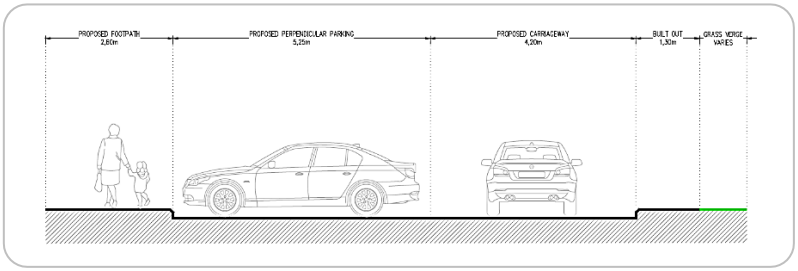


Figure 15 – Typical one-way local street cross section (Stapolin Avenue)

Two sections of local street along the eastern boundary of the development site shall be restricted to one-way vehicular traffic. As shown in Figure 15, these street sections shall have a reduced carriageway width of 4.2m at points, increasing to a minimum of 6.0m where required to facilitate manoeuvres into and out of perpendicular parking spaces.

For further details of the development's internal road network and road hierarchy, refer to CS Consulting drawings BD-CSC-ZZ-XX-DR-C-0001, BD-CSC-ZZ-XX-DR-C-0016 to BD-CSC-ZZ-XX-DR-C-0025, BD-CSC-ZZ-XX-DR-C-0032, and BD-CSC-ZZ-XX-DR-C-0034.

All road infrastructure within the development shall be designed and constructed to Fingal County Council taking-in-charge standards.

4.3 Road Alignments and Traffic Calming Measures

All internal roads within the development have been designed for a vehicular traffic speed of 30km/h. Kerb radii at internal junctions have been restricted to a maximum of 4.5m, in order to discourage high vehicle speeds, except where larger radii are required to facilitate bus movements At all internal road junctions, it has been ensured that forward visibility splays of at least 24m are achieved, in compliance with the *Design Manual for Urban Roads and Streets* (DMURS) requirements.

The presence of perpendicular and parallel on-street parking bays along significant portions of the internal road network shall have a natural traffic calming effect, as through traffic shall have to be alert to (and accommodate) parking manoeuvres into and out of these spaces. Kerb buildouts, which shall be provided at key points to prevent informal on-street parking, shall likewise perform a traffic calming function by forming a horizontal constraint to the carriageway.

4.4 Pedestrians & Cyclists

The development layout ensures a high degree of pedestrian and cyclist permeability into and through the site in accordance with the Design Manual for Urban Roads and Streets. Pedestrian and cyclist access to the development shall be possible along the full length of the site's eastern and southern boundaries, as well as via the proposed bus ramp (and associated lift) to/from Clongriffin railway station at the site's western boundary. The development layout also allows for convenient future pedestrian and cyclist access to the lands north of the subject site.

Access to Clongriffin railway station for pedestrians and cyclists from the eastern side of the railway line is currently possible via lifts and stairs located within the subject site. As part of the proposed development, new lifts and stairs shall be provided at Stapolin Square, providing access to the railway station. The existing lifts and stairs shall be maintained in operation until such time as the proposed new lifts and stairs have been completed.

Raised pedestrian footpaths are provided along all internal roads within the development, and a pedestrian plaza shall be created at Stapolin Square (providing an east-west link across the square). A total of 1,542no. bicycle parking spaces shall be provided within the development; these shall include 1,316no. secure and sheltered bicycle parking spaces in internal cycle storage rooms, as well as 194no. publicly accessible short-stay visitor bicycle parking spaces and 32no. external bicycle parking spaces for the development's non-residential elements.

4.5 Bus Ramp

As noted in the Traffic Impact Assessment associated with this planning application, the *Fingal Development Plan 2017–2023* and the *Baldoyle/Stapolin Local Area Plan* provide for a road link across the railway line at Clongriffin railway station, between Clongriffin and Stapolin, to allow for the east-west passage of public transport. The existing road on the western side is ramped up to the level of the railway station podium (approx. 16m AOD), where it terminates. As part of the subject development, it is proposed to provide a similar ramped road connection on the eastern side to complete the road link.

The proposed ramp shall begin immediately to the north of Stapolin Square turning to the left to run along the western side of Stapolin Square before turning right and connecting to the existing railway station podium. The ramp shall have a maximum gradient of 1:20 and shall be restricted to the

use of pedestrians, cyclists, and public service vehicles. In compliance with TII design standard DN-REQ-03034, a high containment vehicle restraint barrier shall be provided along either side of the bus ramp, extending a minimum distance of 45m from the existing station podium.

Refer to CS Consulting drawings BD-CSC-ZZ-XX-DR-C-0017 and BD-CSC-ZZ-XX-DR-C-0020 for further details of the proposed bus ramp connection. CS Consulting has liaised with Irish Rail as part of the design process for the bus ramp, to ensure that Irish Rail requirements are integrated into the design.

5.0 INDEPENDENT QUALITY AUDIT

An independent Quality Audit of the proposed development layout and access arrangements has been conducted by Roadplan Consulting on behalf of CS Consulting. This incorporates the following four components:

- access audit
- cycling audit
- walking audit
- road safety audit

The Quality Audit was completed in October 2020. Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team. Refer to CS Consulting drawing BD-CSC-ZZ-XX-DR-C-0034 for details of these design changes.

The Quality Audit report document issued by Roadplan Consulting, together with the audit response form, are provided as Appendix B to this report.

6.0 COMMENTS RECEIVED FROM PLANNING AUTHORITIES

Both An Bord Pleanála and Fingal County Council have reviewed the planning documentation submitted in respect of the proposed development during the pre-application consultation phase of the SHD process. A tripartite pre-application consultation meeting has also been held with An Bord Pleanála and Fingal County Council.

The relevant opinions of An Bord Pleanála that pertain to traffic and transport matters, as communicated to the applicant, are reproduced below; also examined in this section are the recommendations of Fingal County Council's Transportation Planning Department, which were issued to An Bord Pleanála. In each case, we describe measures taken by the design team in response to these opinions and recommendations.

6.1 Opinions Issued by An Bord Pleanála

An Bord Pleanála has on the 29th of October 2020 issued an opinion enumerating the items of specific information that should be submitted with any application for permission. The following items among these are of relevance to the proposed development's road design and the assessment of its traffic impact.

6.1.1 ABP Item 3 – cycle and pedestrian connections

"Details of cycle and pedestrian connections including legibility and permeability through the development site to the train station and other surrounding areas. The matter of 24 hour accessibility to the train station, given the level differences involved, should also be addressed. Landscaping proposals including an overall landscaping masterplan for the development site. Details pertaining to the quantity, type and location of all proposed hard and soft landscaping

including details of play equipment, street furniture including public lighting and boundary treatments should be submitted."

Response to ABP Item 3

Details of cycle and pedestrian connections through the development site to the train station and other surrounding areas are given on the following CS Consulting drawings within this submission:

- BD-CSC-ZZ-XX-DR-C-0001
- BD-CSC-ZZ-XX-DR-C-0016
- BD-CSC-ZZ-XX-DR-C-0017
- BD-CSC-ZZ-XX-DR-C-0018
- BD-CSC-ZZ-XX-DR-C-0025
- BD-CSC-ZZ-XX-DR-C-0032
- BD-CSC-ZZ-XX-DR-C-0034

Access to Clongriffin railway station from the subject development shall be ensured by the proposed new stairs and lifts (located at the new public plaza) and by the proposed new bus ramp, both of which shall be accessible to the public 24 hours a day.

For full details of the development's landscaping proposals, including street furniture, public lighting, and boundary treatments, please refer to the landscape architect's drawings and documentation.

6.1.2 ABP Item 6 – additional transportation details

"Additional transportation details having regard to the requirements of the Transportation Planning Division as contained within section 8.3.7 Access and Transportation of PA Opinion."

Response to ABP Item 6

Responses to points raised by Fingal County Council's Transportation Planning Division and contained within section 8.3.7 (Access and

Transportation) of the Planning Authority Opinion are provided in sub-section 6.2.

6.2 Recommendations of Fingal County Council

Fingal County Council on the 1st of July 2020 issued an opinion, informed by the internal report of its Transportation Planning Department, making the following recommendations relating to transportation.

6.2.1 FCC Point 1 – junction details

"Details of the access road tie-in junctions illustrating which road has priority should be provided to ensure there is no ambiguity in the final design for road users."

Response to FCC Point 1

As shown on CS Consulting drawings BD-CSC-ZZ-XX-DR-C-0016 and BD-CSC-ZZ-XX-DR-C-0018, stop controlled junctions are indicated at those locations where the development's internal road network ties in to the existing/permitted external road network.

6.2.2 FCC Point 2 – residential parking provision

"The parking provision to serve the residential element of the proposed development needs to be reconsidered. It is considered to be 357 spaces below what the Transportation Planning Section would consider to be the absolute minimum practical parking requirement."

Response to FCC Point 2

The final proposals for residential car parking provision within the development, and the rationale behind the selected car parking ratios, are presented in the accompanying Traffic Impact Assessment report.

6.2.3 FCC Point 3 – Clongriffin Station ramp

"The applicant has provided insufficient information within the current submission with regard to the construction details of the ramp which is to connect to Clongriffin Station. Information is required relating to the build-up and construction methods need to be provided. This should be requested to form part of any formal application."

Response to FCC Point 3

Refer to CS Consulting drawing BD-CSC-ZZ-XX-DR-C-0017 for structural and road build-up details of the proposed bus ramp to Clongriffin Station. The construction methodology and scheduling for this ramp will be discussed in detail with both Iarnród Éireann and Dublin Bus prior to the commencement of works, as described in the accompanying Construction Management Plan.

6.2.4 FCC Point 4 – Donaghmede roundabout assessment

"A revised Traffic & Transport Assessment with an assessment of the capacity of the roundabout junction at Donaghmede (the junction of the R139/R809 and the Hole-in-the-wall Road) should be carried out."

Response to FCC Point 4

The accompanying Traffic Impact Assessment report now includes the operational assessment of the existing roundabout junction at Donaghmede (the junction of the R139/R809 and the Hole-in-the-Wall Road).

It is noted also that the internal report of the Transportation Planning Department states:

"It is likely that most AM traffic will head west and south for links to the M1, M50, Dublin Airport and the City Centre direct particularly as travel to these destinations via junction 2 (the existing

roundabout junction of Red Arches Road and Coast Road) would add significantly to journey time and distance. Consequently, the scenario where the majority of all new, committed and existing development heads to Junction 1 (Longfield Road with Grange Road (R809) and Grange Rise) should also be assessed as a stress test."

A supplementary stress test of Junction 1, which corresponds to the above scenario, has been conducted and the results of this are provided as an appendix to the accompanying Traffic Impact Assessment report.

6.2.5 FCC Point 5 – commercial parking provision

"Clarity is required over the parking provision to serve the proposed commercial element of the proposed development – the proposed parking and set down arrangement serving the creche and medical facility requires further consideration."

Response to FCC Point 5

A summary schedule of areas for the development's non-residential/commercial elements is given in Section 6 of the accompanying Traffic Impact Assessment report. This also details the proposed car parking provision for these elements.

6.2.6 FCC Point 6 – undercroft parking layout

"The basements car parking requires further consideration as it is considered that a large amount of the parking spaces provided are not adequate in terms of their size and accessibility. A revised swept path analysis should also be required."

Response to FCC Point 6

The layout of the undercroft car park beneath Stapolin Square (Blocks A & D) has been revised to improve accessibility and usability. In particular, it is ensured that a minimum aisle width of 6.0m is provided wherever perpendicular parking spaces are located. Previous conflicts with structural elements have been resolved. Swept path analyses of the revised undercroft layout are given on CS Consulting drawings BD-CSC-ZZ-XX-DR-C-0026 to BD-CSC-ZZ-XX-DR-C-0028.

6.2.7 FCC Point 7 – undercroft accesses

"The applicant should be requested to submit sufficient details relating to the access ramp particularly with regard to the clearance heights of the ramp, the gradient of the ramp and the provision of any transition gradients."

Response to FCC Point 7

Undercroft accesses comply with the IStructE *Design Recommendations for Multi-Storey and Underground Car Parks*, particularly with regard to ramp gradient and perpendicular clearances. The southern access to the Stapolin Square undercroft parking shall be level, while the northern access ramp shall have a gradient of approx. 1:50. Access ramp transition slopes are therefore not required.

6.2.8 FCC Point 8 – undercroft parking segregation

"Clarity is required to indicate how it is proposed to segregate residential parking and commercial parking in such a manner as to ensure the availability of residential parking to residents 24/7."

Response to FCC Point 8

Residential and non-residential car parking within the undercroft car park shall be segregated by means of barrier control systems (with RFID key fob access or similar). All residential parking shall be accessible to residents at all times. Non-residential parking shall be accessible only via the southern ramp into the undercroft.

6.2.9 FCC Point 9 – EV charging point provision

"Details of the location and number of Electric Vehicle charging points should be provided with the main application."

Response to FCC Point 9

38no. car parking spaces within the Stapolin Square undercroft car park shall be equipped with electric vehicle charging points. This equates to 10% of spaces within the undercroft, or 5% of the development's total car parking provision, significantly exceeding the 1% requirement of the Fingal Development Plan.

All remaining car parking spaces within the development shall be 'future-proofed' by the inclusion of ducting to permit the rapid future installation of EV charging points, as defined in the ESB ecars specification document no. 18017 (Public Charge Points, last reviewed February 2012).

6.2.10 FCC Point 10 – traffic calming measures at linear park

"Details of the traffic calming measures being implemented to achieve a self-policing speed limit of 30km/hr in the immediate vicinity of the Linear park should be provided."

Response to FCC Point 10

Traffic calming measures have been implemented along Longfield Road, which bounds the western side of the linear park, to achieve a

self-policing speed limit of 30km/h along this street. These take the form of vertical deflections (raised table junctions and a raised pedestrian crossing). There is no longer any road proposed to run along the eastern side of the linear park.

The final landscaping proposal for the development shall ensure that the vegetation selected around the verge between the park fencing and the Longfield Road carriageway is suitable for this location and shall not encroach on this space or obstruct sightlines.

6.2.11 FCC Point 11 – Road Safety Audit

"Road Safety Audits should be carried out as part of the proposed development at the relevant stages as outlined in current edition of Transportation Infrastructure Ireland guidelines GE-STY-1027."

Response to FCC Point 11

As described in Section 5 of this report, an independent Quality Audit of the proposed development layout and access arrangements (incorporating a Road Safety Audit) has been conducted by Roadplan Consulting on behalf of CS Consulting.

Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team. Refer to CS Consulting drawing BD-CSC-ZZ-XX-DR-C-0034 for details of these design changes.

The Quality Audit report document issued by Roadplan Consulting, together with the audit response form, are provided as Appendix B to this report.

Appendix A

DMURS Statement

CS CONSULTING
GROUP

CS CONSULTING GROUP

HEAD OFFICE: 19-22 Dame Street, Dublin 2, D02 E267, Ireland

T | +353 1 5480863 | E | info@csconsulting.ie | www.csconsulting.ie

Strategic Housing Unit

An Bord Pleanála

64 Marlborough St

Rotunda

Dublin 1

Sent By: Email

Job Ref: R089

A-NB

Date: 7-May-21

RE: **Alterations to Shoreline GA01 Lands at Stapolin Growth Area 1, Baldoyle, Co. Dublin DMURS Statement of Consistency to An Bord Pleanála.**

Cronin & Sutton Consulting Engineers (CS Consulting), as part of a multi-disciplinary design team, have been commissioned by The Shoreline Partnership to develop a DMURS Statement of Consistency to accompany a planning application for a proposed mixed residential development and all associated ancillary accommodation at Baldoyle, Dublin 13.

Traffic & Transportation

The proposed scheme is designed in compliance with the following:

- Design Manual for Urban Roads and Streets (2019)
- Fingal Development Plan 2017–2023
- Baldoyle-Stapolin Local Area Plan 2013–2019
- National Cycle Manual (2011)
- Greater Dublin Area Cycle Network Plan

Internal Street Layout

The internal road network of the proposed development comprises link roads along the north-south and east-west axes, allowing circulation into and through the development site, as well as a network of connecting local streets that serve the individual blocks within the development. The primary link road through the development is the continuation of Longfield Road, which shall extend northward

through the site from its current termination at the site's southern boundary. This shall have a carriageway width of 7.0m, comprising one traffic lane in either direction, and shall be flanked to either side by a 2.6m-wide pedestrian footpath. Along the southern part of this Longfield Road extension, perpendicular on-street car parking spaces shall be arranged to either side of the road, between the carriageway and the footpath (see Figure 1). Limited on-street car parking shall also be provided along the northern section but shall take the form of recessed parallel parking bays.

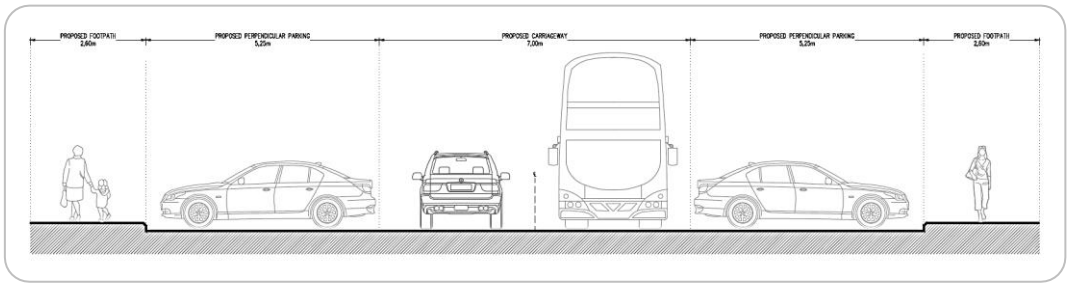


Figure 1 – Typical link road cross section (Longfield Road)

The second link road is the westward continuation of Red Arches Road, which shall be extended to meet Longfield Road. The third link road is that which extends westward from Longfield Road, along the northern side of Stapolin Square (immediately within the northern boundary of the development site) and continues along the western side of Stapolin Square. This provides the connection between Longfield Road and the proposed bus ramp up to the podium level of Clongriffin railway station.

All three link roads have been designed to permit the regular passage of buses, as illustrated in Figure 1. On-line bus stops are provided on both roads, in proximity to Stapolin Square and to the proposed bus ramp by Clongriffin railway station.

All other internal roads within the development are classed as local streets and primarily serve a local access function. These shall generally have a carriageway width of 5.5m, comprising one traffic lane in either direction, and shall also be flanked by 2.6m-wide footpaths. Along those sections of local streets on which dwellings are located, perpendicular on-street car parking spaces shall be arranged to either side of the road, between the carriageway and the footpath (see Figure 2).

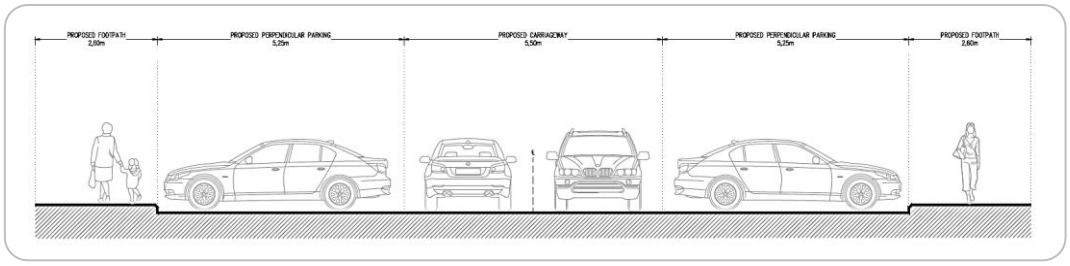


Figure 2 – Typical two-way local street cross section (Racecourse Grove)

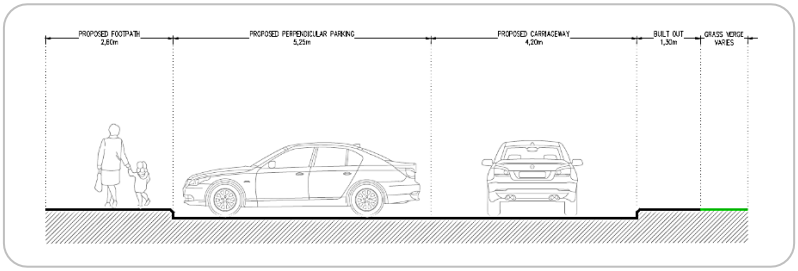


Figure 3 – Typical one-way local street cross section (Stapolin Avenue)

Two sections of local street along the eastern boundary of the development site shall be restricted to one-way vehicular traffic. As shown in Figure 3, these street sections shall have a reduced carriageway width of 4.2m at points, increasing to a minimum of 6.0m where required to facilitate manoeuvres into and out of perpendicular parking spaces.

The provision of good permeability for pedestrians and cyclists, as well as efficient access to public transport, are all key objectives of the proposed site layout. The development layout ensures a high degree of pedestrian and cyclist permeability into and through the site. Pedestrian and cyclist access to the development shall be possible along the full length of the site's eastern and southern boundaries, as well as via the proposed bus ramp (and associated lift) to/from Clongriffin railway station at the site's western boundary. The development layout also allows for convenient future pedestrian and cyclist access to the lands north of the subject site, once these are developed.

Access to Clongriffin railway station for pedestrians and cyclists from the eastern side of the railway line is currently possible via lifts and stairs located within the subject site. As part of the proposed development, new lifts and stairs shall be provided at Stapolin Square, providing access to the railway station. The existing lifts and stairs shall be maintained in operation until such time as the proposed new lifts and stairs have been completed.

Raised pedestrian footpaths are provided along all internal roads within the development, and a pedestrian plaza shall be created at Stapolin Square.

The objectives of the evolving site layout design are:

- to ensure ease of access for emergency services and for refuse collection and servicing operations;
- to encourage walking and cycling;
- to create short walking routes to shops, public transport, etc.;
- to create a safe, secure, and pleasant environment for people, particularly vulnerable road users (VRUs) such as children.

Road Alignments and Traffic Calming Measures

All internal roads within the development have been designed for a vehicular traffic speed of 30km/h. Kerb radii at internal junctions have been restricted to a maximum of 4.5m, in order to discourage high vehicle speeds, except where larger radii are required to facilitate bus movements (kerb radii of 6.0m, at the junction of Longfield Road with Red Arches Road only). At all internal road junctions, it has been ensured that forward visibility splays of at least 24m are achieved, in compliance with the Design Manual for Urban Roads and Streets (DMURS) requirements.

The presence of perpendicular and parallel on-street parking bays along significant portions of the internal road network shall have a natural traffic calming effect, as through traffic shall have to be alert to (and accommodate) parking manoeuvres into and out of these spaces. Kerb buildouts, which shall be provided at key points to prevent informal on-street parking, shall likewise perform a traffic calming function by forming a horizontal constraint to the carriageway.

Niall Barrett
Director
Chartered Civil & Traffic Engineer
B.Eng (Hons), CEng, M.I.E.I, Cert Health & Safety, Cert RSA
for Cronin & Sutton Consulting

Appendix B

Independent Quality Audit

CS CONSULTING
GROUP

20117-01-001

Proposed Residential Development at Baldoyle QA1

STAGE 1 QUALITY AUDIT
(incorporating an access, cycling, walking and road safety audit)

for

CS Consulting

May 2021

ROADPLAN CONSULTING

7, Ormonde Road
Kilkenny.
R95 N4FE

Tel: 056 7795800
info@roadplan.ie

1. INTRODUCTION

1.1 Roadplan Consulting has been commissioned by CS Consulting to carry out a Quality Audit of proposed residential development at Baldoyle (GA01)

1.2 The Baldoyle GA01 scheme consists of 882no. new residential dwellings (747no. apartments, 135no. houses), residential tenant amenity, retail, crèche, parking, and public realm, over a total site area of c. 9.1ha.

1.3 Vehicular and pedestrian access to the development shall be via the existing access roads serving the neighbouring established residential developments.

1.4 818 number car parking spaces are proposed to serve the residential development consisting of 671no. spaces for residents, 107no. spaces for commercial/crèche use and 40no. visitor spaces.

1.5 1,316no. long-term bicycle parking spaces for apartment residents, 194no. short-stay bicycle parking spaces for visitors and 32no. bicycle parking spaces to serve the proposed retail units, medical centre, crèche, café, and gym are also proposed within the development.

2. QUALITY AUDIT

2.1 Quality Audit is a defined process, independent of, but involving, the design team that, through planning, design, construction and management stages of a project provides a check that high quality places are delivered and maintained by all relevant parties, for the benefit of all end users. Quality Audit is a process, applied to urban roads, traffic management or development schemes, which systematically reviews projects using a series of discrete but linked evaluations and ensures that the broad objectives of place, functionality, maintenance and safety are achieved.

2.2 Quality Audit was introduced in the publication *Design Manual for Urban Roads and Streets* following concerns that in the design of new streets provisions made for motor vehicles frequently led to a poorly-designed public realm. In an urban area there is a high level of competing demand from different classes of road users. A well-balanced street will have minimal visual clutter and obstacles; it will use durable materials and most importantly, will encourage a degree of negotiation between road users as they make their way through it.

2.3 Quality Audit involves various assessments of the impacts of a street scheme in terms of road safety, visual quality and the use of streets by the community. Access for disabled people, pedestrians, cyclists and drivers of motor vehicles is considered.

2.4 In the context of a Quality Audit, road safety assessment is considered to be an appropriate method of examining road safety issues as it incorporates both the hazard identification techniques used in road safety audit and formal risk assessment techniques. This allows the opportunity at an early stage for road safety issues to be considered in a more dynamic way within the design process, and to ensure that safety issues are considered as part of the design rather than after design work is completed.

2.5 The Quality Audit Team reports findings with suggestions for future action. It should be noted that, in a Quality Audit, it is not the intention that suggestions would be binding on the design team; they are offered for detailed consideration in the design process.

3. METHODOLOGY

3.1 The Audit Team was as follows:

- George Frisby — Chartered Engineer MIEI
  Auditor Number GF51255
- Richard Frisby — BSc AEng MIEI.
  Auditor Number RF13337391

3.2 Road safety, non-motorised users, visual quality, access for disabled and functionality were considered in the Quality Audit. This exercise focused on issues such as:

- the design rationale as it related to vehicle, cycle and pedestrian movements;
- pedestrian desire lines both to and through the site;
- access requirements for all modes of transport;
- access requirements for disabled people and other vulnerable users;
- any road safety concerns associated with the scheme;
- the visual appearance of the scheme as it is experienced by those entering it and moving around within the street, including how this affects road user behaviour; and
- any other issues considered relevant to each constituent element of the Quality Audit process.

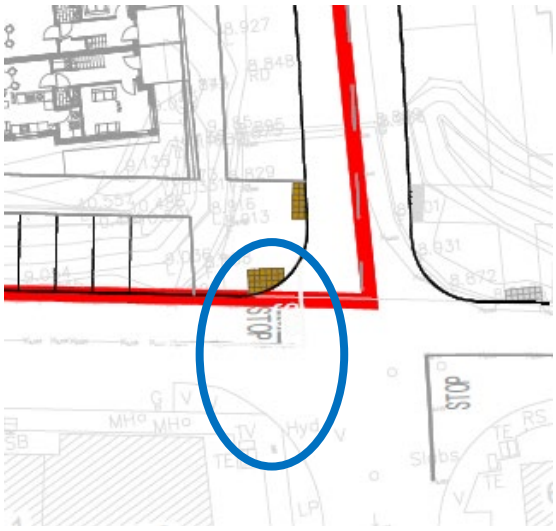
3.3 The documents provided for the audit were:

Drawing number	Rev	Drawing Title
BD-CSC-ZZ-XX-DR-C-0001	-	Overall Site Layout
BD-CSC-ZZ-XX-DR-C-0016	-	Road Layout
BD-CSC-ZZ-XX-DR-C-0017	-	Bus Route
BD-CSC-ZZ-XX-DR-C-0018	-	Road Marking Layout
BD-CSC-ZZ-XX-DR-C-0019	-	Road Profiles Sheet 1 of 2
BD-CSC-ZZ-XX-DR-C-0020	-	Road Profiles Sheet 2 of 2
BD-CSC-ZZ-XX-DR-C-0021		Road Details Sheet 1 of 2
BD-CSC-ZZ-XX-DR-C-0022		Road Details Sheet 2 of 2
BD-CSC-ZZ-XX-DR-C-0023		Proposed Road Cross-Sections
BD-CSC-ZZ-XX-DR-C-0024		Linear Park Sightlines
BD-CSC-ZZ-XX-DR-C-0025		Access Road Tie in Locations
BD-CSC-ZZ-XX-DR-C-0026		Swept Path Analysis – Fire Tender
BD-CSC-ZZ-XX-DR-C-0027		Swept Path Analysis – Refuse
BD-CSC-ZZ-XX-DR-C-0028		Swept Path Analysis – Basement
BD-CSC-ZZ-XX-DR-C-0032		Road Hierarchy

Copies of these audited drawings are contained in Appendix A.

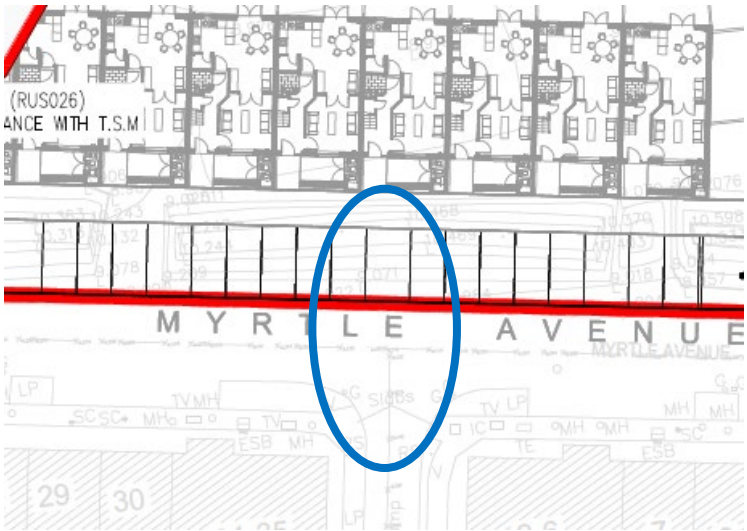
4. KEY FINDINGS, SUGGESTED ACTIONS AND COMMENTS

4.1 Issue:
Dropped kerbs and tactile paving are proposed on the northwest quadrant of the Myrtle Avenue / Longfield Road crossroads. However, no dropped kerbs or tactile paving is provided at the crossing point on the southern footpath. A lack of adequate dropped kerbs and tactile paving may lead to difficulties for visually impaired pedestrians crossing at this location.



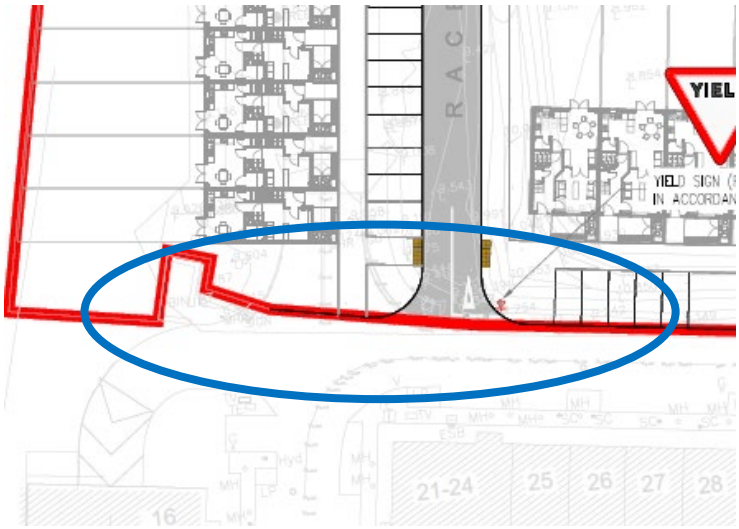
Suggestion:
Provide dropped kerbs and tactile paving on the southern footpath.

4.2 Issue:
There are no pedestrian crossing facilities provided along Myrtle Avenue to cater for pedestrians crossing between the access road to the south of Myrtle Avenue and the proposed development to the north. A lack of an adequate pedestrian crossing may contribute to a pedestrian collision at this location.



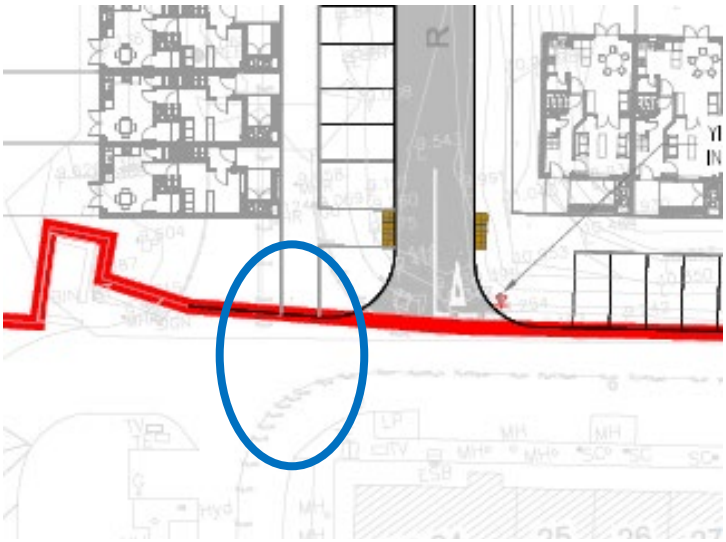
Suggestion:
Provide a pedestrian crossing facility across Myrtle Avenue at this location.

4.3 Issue:
Visibility splays from Racecourse Road onto Myrtle Avenue may be restricted by the proposed parking to the east of the junction. In addition, forward visibility for a driver turning right from Myrtle Avenue onto Racecourse Close may be obstructed by the buildings on the inside of the bend on the southern side of Myrtle Avenue. A lack of adequate visibility may contribute to a turning collision at this location.



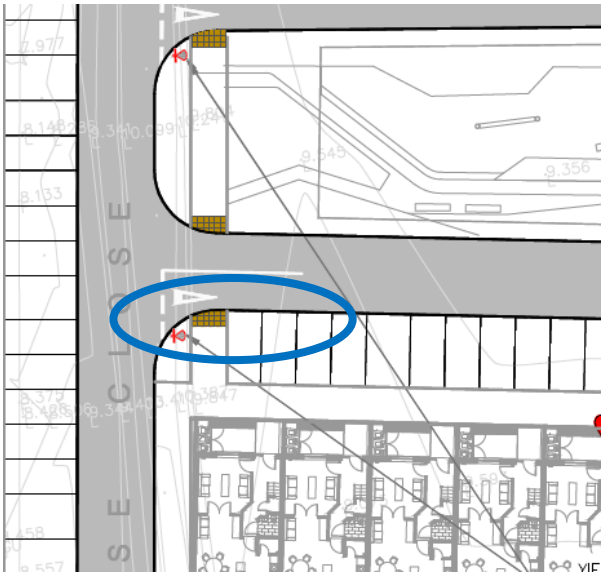
Suggestion:
Ensure adequate visibility splays in accordance with section 4.4.5 of the DMURS are provided.

4.4 Issue:
There are no pedestrian crossing facilities provided at the proposed junction of Racecourse Road with Myrtle Avenue to cater for pedestrians accessing the existing footpath located on the south side of Myrtle Avenue. A lack of an adequate pedestrian crossing may contribute to a pedestrian collision at this location.



Suggestion:
Provide dropped kerbs and tactile paving on the southern footpath.

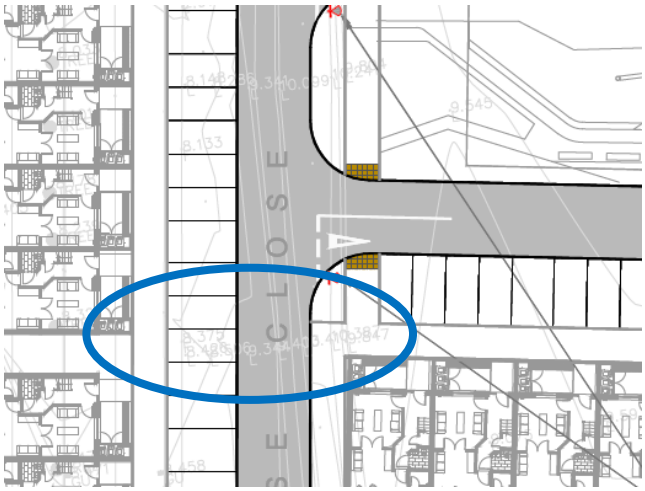
4.5 Issue:
Parking is provided adjacent to the pedestrian crossing located on Racecourse Lane. However, it is unclear whether adequate inter-visibility is provided between drivers of vehicles approaching the pedestrian crossing from Racecourse Lane and a pedestrian stopped waiting to cross at the pedestrian crossings.



Suggestion:
Ensure adequate inter-visibility is provided between drivers of vehicles approaching the pedestrian crossing and pedestrians stopped waiting to cross.

4.6 Issue:

There are no pedestrian crossing facilities provided to cater for pedestrians accessing the proposed footpath on the western side of Racecourse Close from the proposed footpath on Racecourse Lane Avenue. A lack of an adequate pedestrian crossing may contribute to a pedestrian collision at this location.

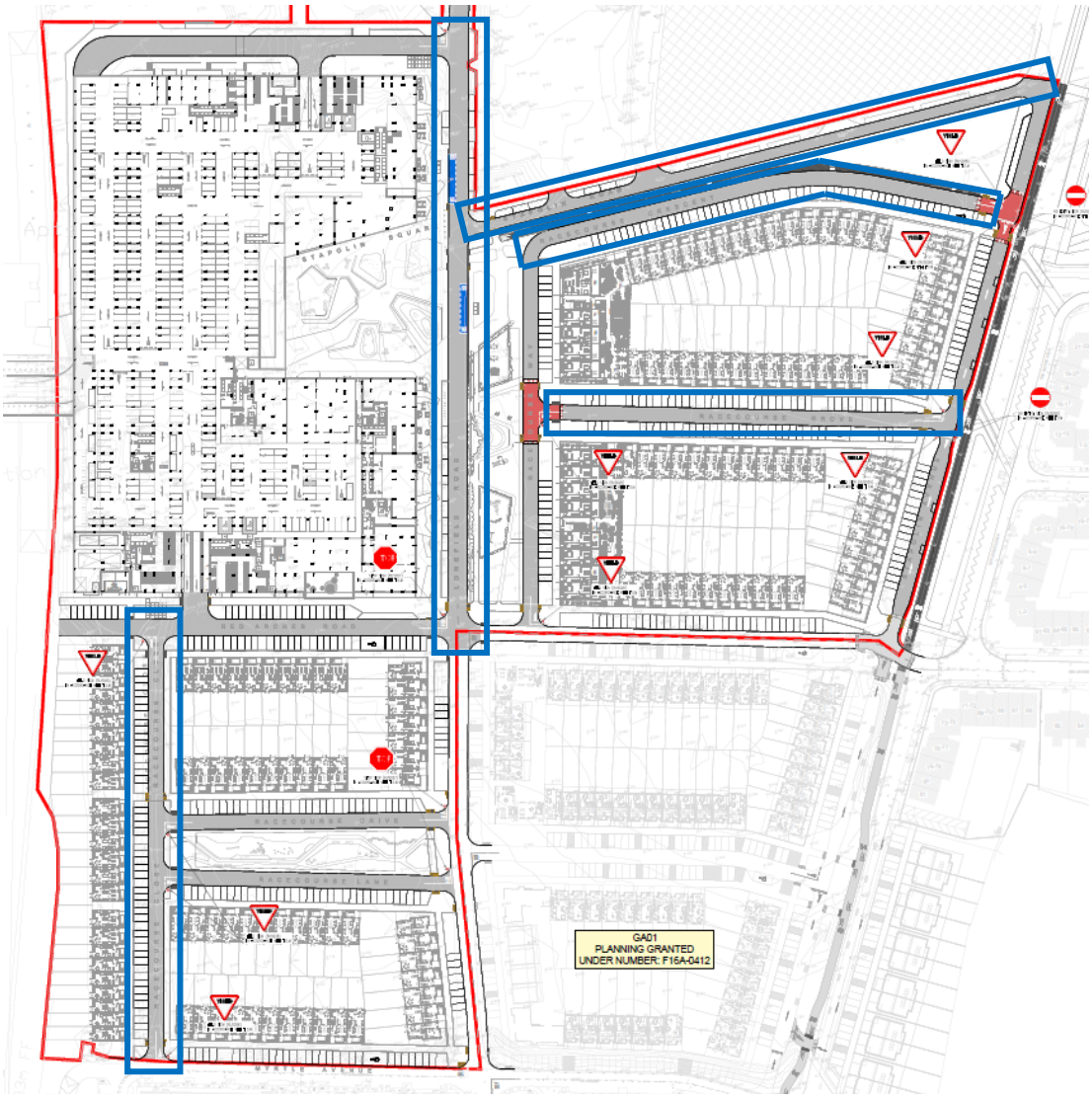


Suggestion:

Provide pedestrian crossing facilities to cater for the desired route for pedestrians.

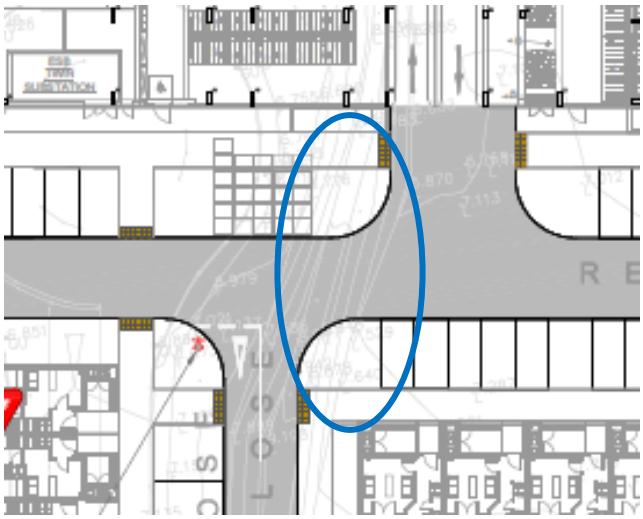
4.7 Issue:

A number of the internal access roads within the proposed development are relatively long and straight. This may encourage high speeds on these sections of road which may increase collision risk.



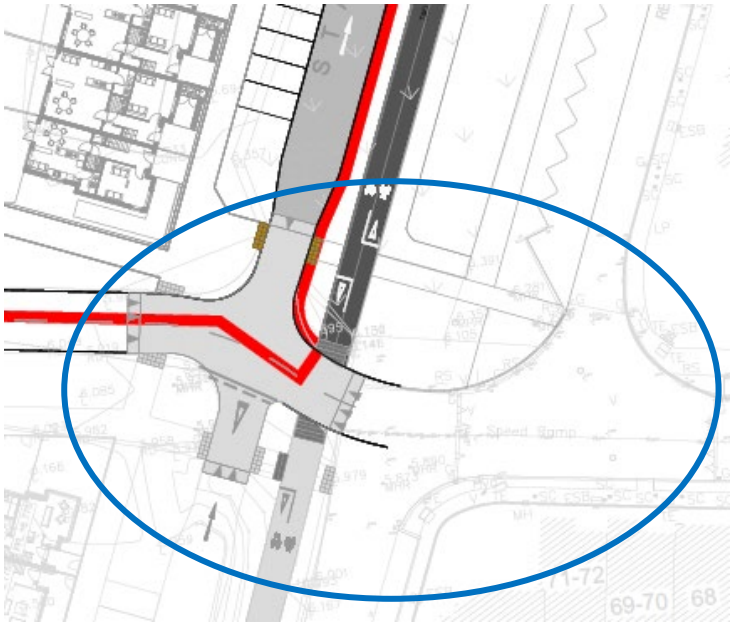
Suggestion:
Provide speed reduction measures along these sections of road.

4.8 Issue:
There are no pedestrian crossing facilities provided to cater for pedestrians accessing the proposed footpath on the northern side of Red Archers Road from the proposed footpath on the east side of Racecourse Close. A lack of an adequate pedestrian crossing may contribute to a pedestrian collision at this location.



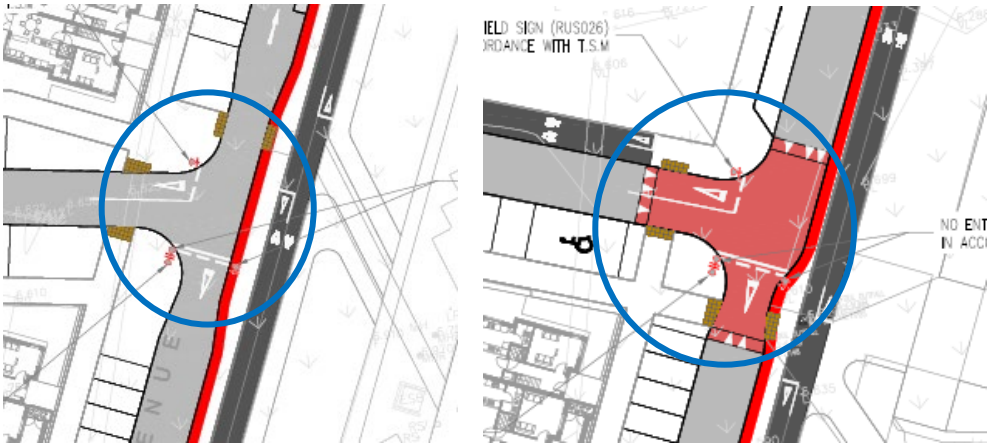
Suggestion:
Provide pedestrian crossing facilities to cater for the desired route for pedestrians.

4.9 Issue:
Priority at the Red Archers Road / Stapolin Avenue / Red Archers Drive is unclear and may cause confusion for drivers. The alignment of Red Archers Road through the junction in conjunction with the narrow carriageway width may result in drivers of vehicles tracking into the opposing lane. In addition, the short length of distance between the one-way road to the south and Red Archers Drive which runs parallel to it may result in difficulty for drivers of vehicles to turning at this location.



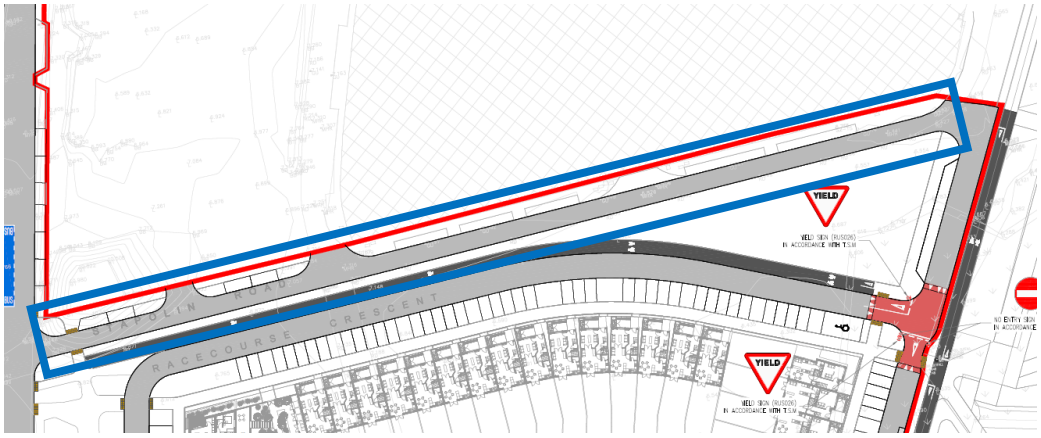
Suggestion:
Priority at the junction should be clearly defined while the overall alignment of the junction and the width of Red Archers Road through the junction should be revised to reduce the risk of a side wipe collision with opposing vehicles.

4.10 Issue:
Yield markings are proposed on two arms of the Stapolin Avenue / Racecourse Grove junction and Stapolin Avenue / Racecourse Crescent junctions. Priority at these junctions is unclear and may cause confusion for drivers which may lead to a collision at these locations.



Suggestion:
Remove the yield markings on Stapolin Avenue.

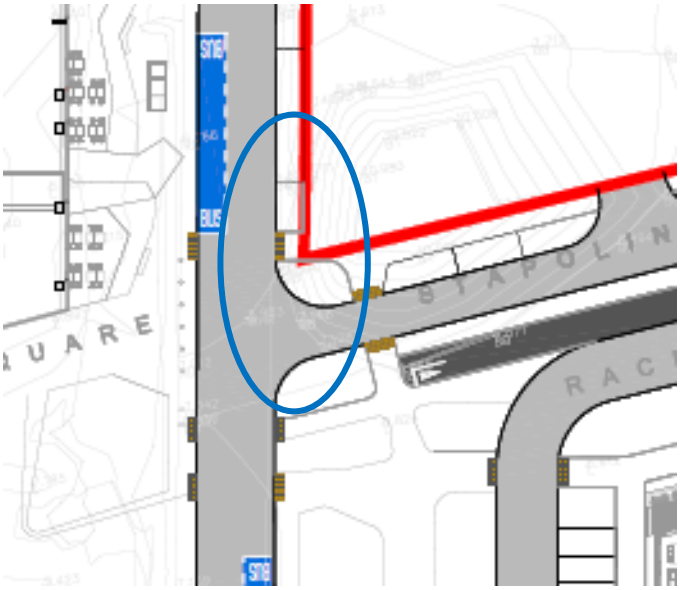
4.11 Issue:
It is assumed that the section of Stapolin Avenue to the north of its junction with Racecourse Crescent is one-way northbound while Stapolin Road is one-way westbound. However, signage or road markings are not shown to be provided to reflect this.



Suggestion:
Provide adequate signage and road markings to enforce the one-way system. If a two-way system is proposed ensure that adequate carriageway width is provided to cater for two-way traffic.

4.12 Issue:

Visibility splays at the proposed access from Stapolin Road onto Longfield Road may be restricted by the proposed parking to the north of the access. In addition, no junction control is provided on Stapolin Road and priority at the junction may be unclear.

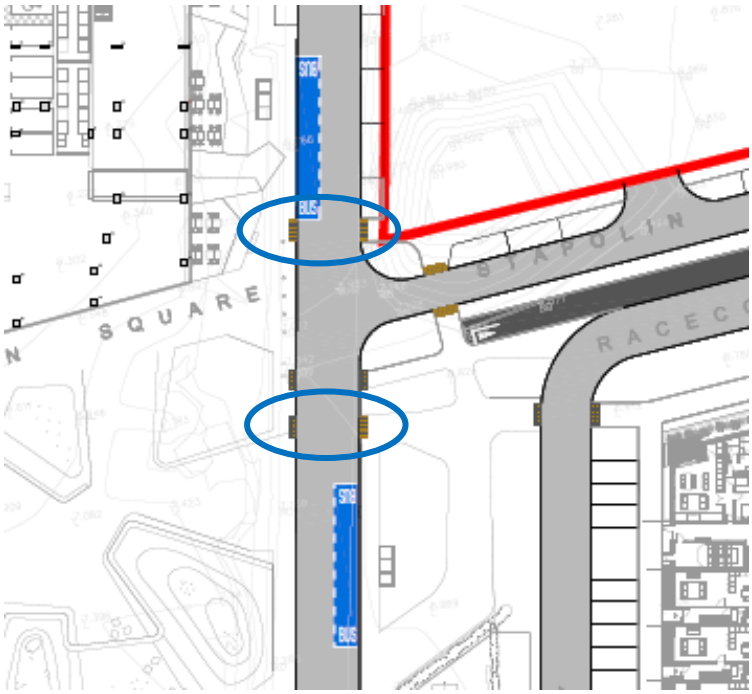


Suggestion:

Ensure adequate visibility splays in accordance with section 4.4.5 of the DMURS are provided. Provide adequate junction control to clearly define vehicular priority at the junction.

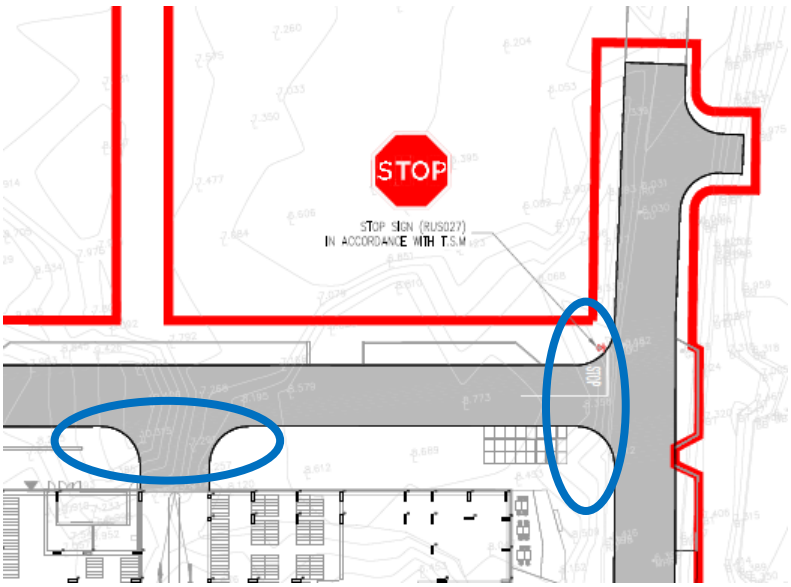
4.13 Issue:

Two-number on-street bus parking bays are provided along Longfield Road. Pedestrian crossings are proposed adjacent to the bus stops. Inter-visibility between drivers of vehicles approaching the pedestrian crossing along Longfield Road and a pedestrian stopped waiting to cross at the pedestrian crossings may be obstructed when a bus is stopped at the bus stop. A lack of adequate inter-visibility may contribute to a pedestrian collision at these locations.



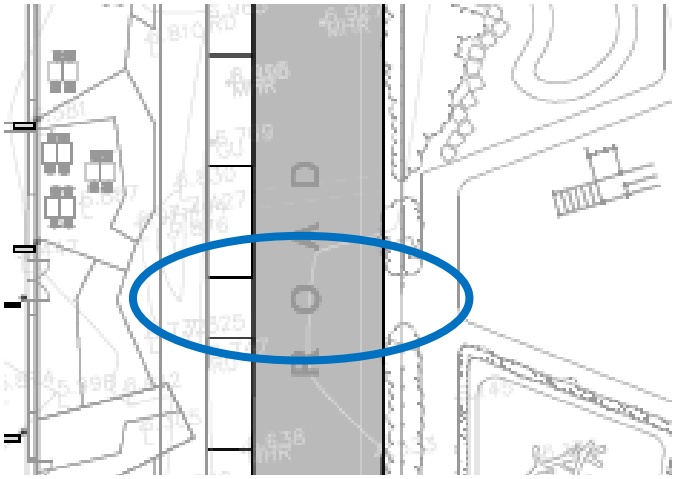
Suggestion:
Move the on-street bus stops or relocate the pedestrian crossings to ensure visibility splays are provided.

4.14 Issue:
There are no pedestrian crossing facilities provided to cater for pedestrians crossing the Bus Route arm of its junction with Longfield Road and crossing the proposed access to the underground car park. A lack of an adequate pedestrian crossing may contribute to a pedestrian collision at this location.



Suggestion:
Provide pedestrian crossing facilities to cater for the desired route for pedestrians.

4.15 Issue:
Pedestrian crossing facilities are provided along Longfield Road. However, no dropped kerbs or tactile paving is shown to be provided at the intermediate crossing point. A lack of an adequate pedestrian crossing may contribute to a pedestrian collision at this location.

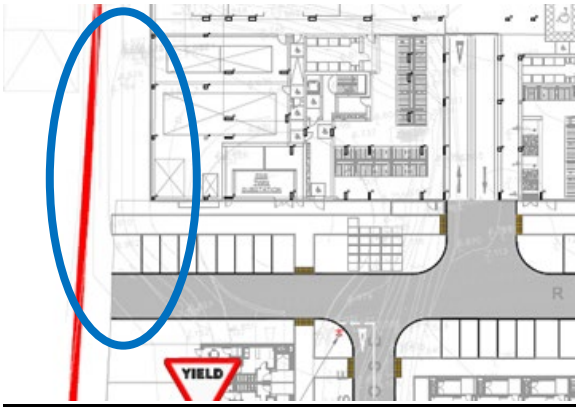


Suggestion:
Provide dropped kerbs and tactile paving at the proposed pedestrian crossing.

4.16 Issue:
A pedestrian route is provided through Stapolin Square to cater for pedestrians travelling from Longfield Road to the existing train station via Stapolin Square. Steps are provided along this pedestrian route which may cause difficulty for mobility impaired pedestrians. No alternative route is proposed for mobility impaired pedestrians through Stapolin Square.

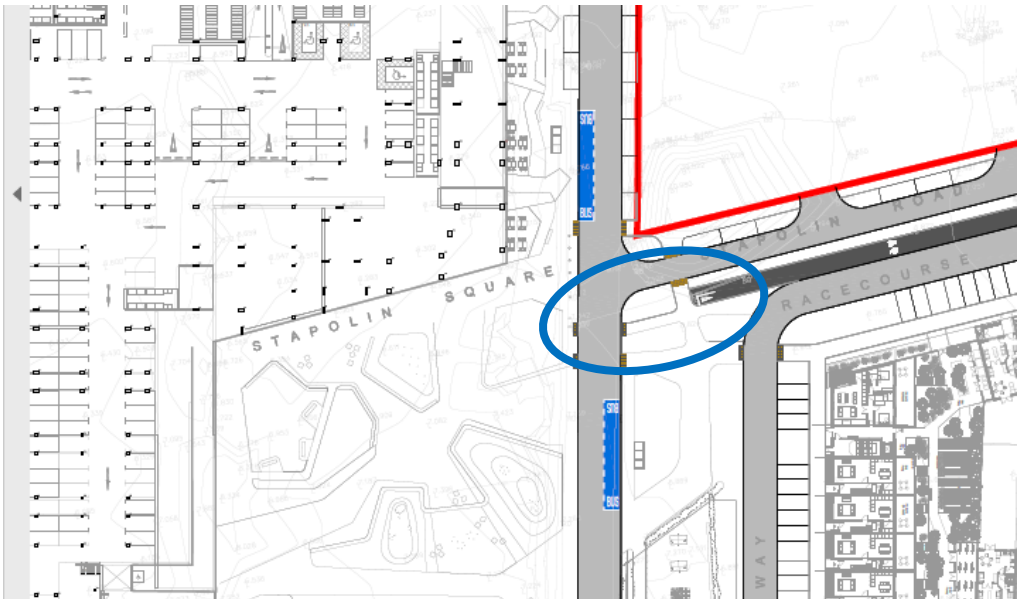
Suggestion:
Ensure mobility impaired facilities are provided within Stapolin Square to allow mobility impaired pedestrians to access the train station via Stapolin Square.

4.17 Issue:
A pedestrian or cycle link is not shown to be provided from the western end of Red Arches Road to allow pedestrians and cyclists to access the existing train station from this location.



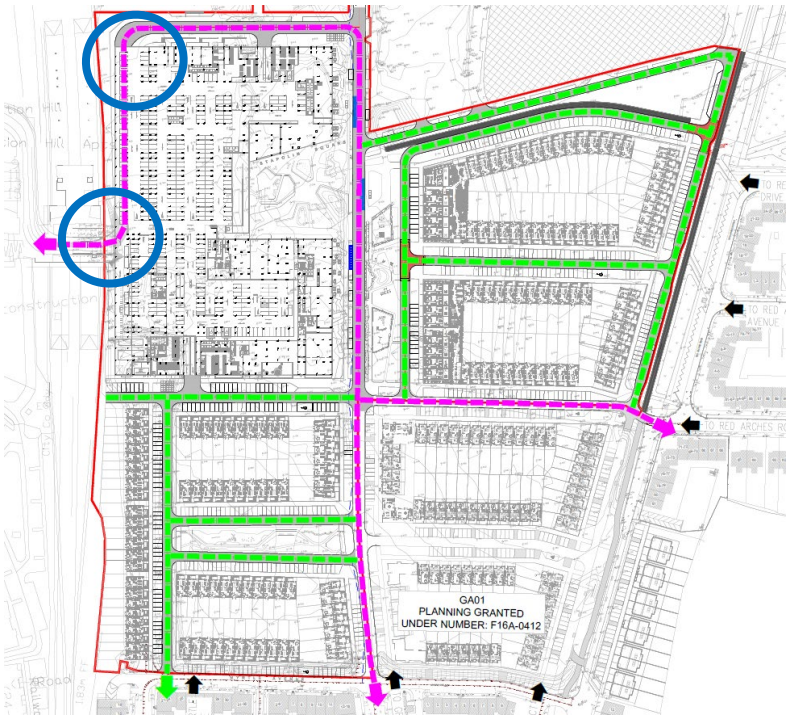
Suggestion:
Provide a pedestrian and cycle link from the western end of Red Arches Road to the existing train station.

4.18 Issue:
The proposed cycle facility provided adjacent to Racecourse Crescent terminates at Longfield Road. No cycle facilities are provided through Stapolin Square to cater for cyclists accessing the existing train station.



Suggestion:
Provide cycle facilities via Stapolin Square to the existing train station.

4.19 Issue:
The proposed route indicated in magenta below is labelled as a link route. There are two number low radius bends along this route. It is unclear whether the geometry proposed along this link road is in accordance with the DMURS standard for link streets.

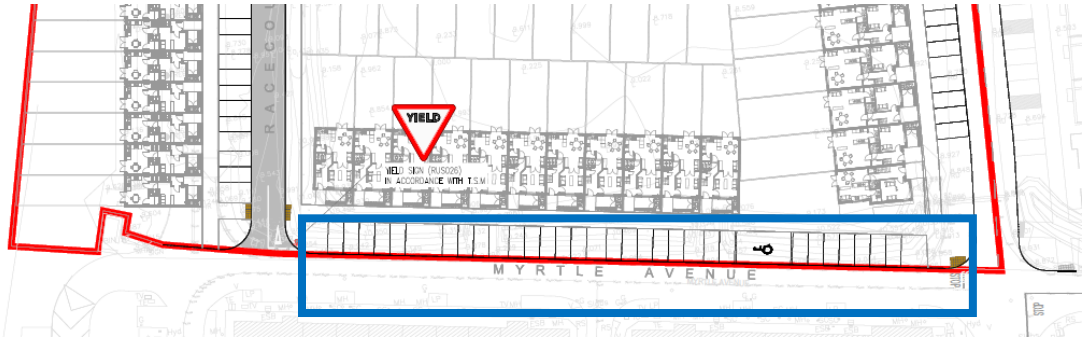


Suggestion:
Ensure the link road is designed in accordance with DMURS standard for link streets.

4.20 Issue:
Swept analysis for a bus travelling along the bus route has not been carried out. There are two number low radius bends along the bus route and a bus may over-run the centreline and track into the opposing lane which may contribute to a collision at these locations.

Suggestion:
Carry out swept analysis along the bus route to ensure that a bus does not track into the opposing lane.

4.21 Issue:
Parallel and perpendicular parking is provided along Myrtle Avenue. Drivers may have difficulty manoeuvring into and out of the parking spaces due the narrow carriageway width along Myrtle Avenue.



Suggestion:
Ensure adequate carriageway width is provided to allow drivers of vehicles to easily access and exit the parking spaces along Myrtle Avenue.

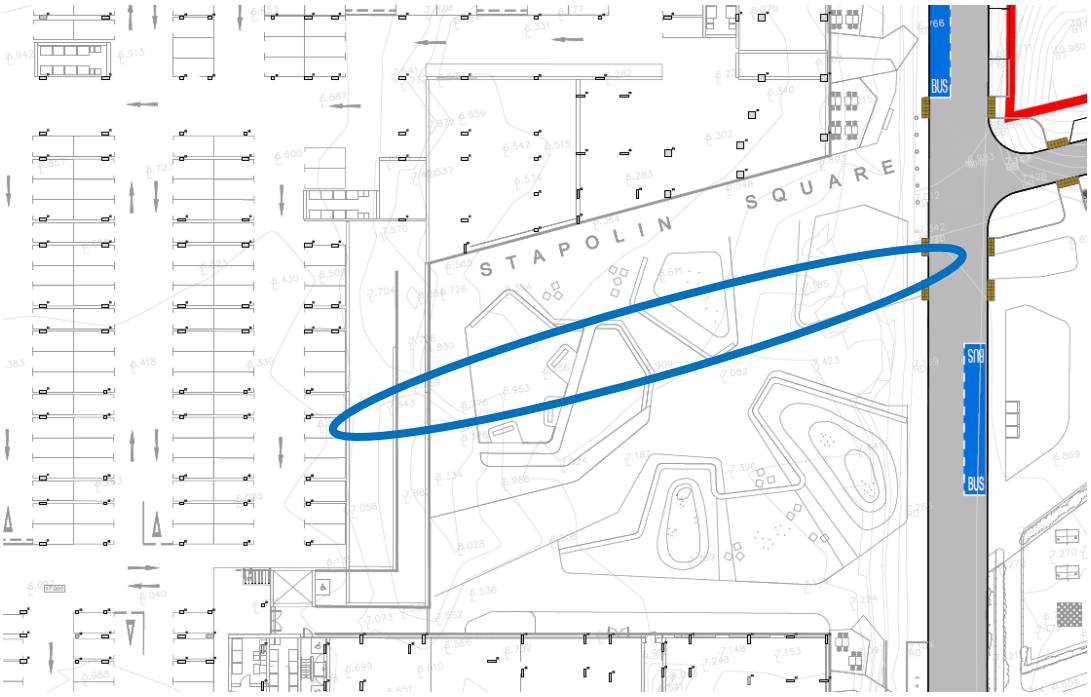
4.22 Issue:
The aisle width located adjacent to the proposed stairwell in the underground carpark is narrow and may not cater for vehicles manoeuvring at this location.

Suggestion:
Ensure adequate aisle width is provided to cater for vehicles manoeuvring at this location.

4.23 Issue:
There are a number of locations within the underground car park where entry prohibition and priority at junctions are not indicated which may lead to confusion for drives of vehicles at these locations.

Suggestion:
Ensure entry prohibition and priority at junctions are indicated within the underground car park.

4.24 Issue:
A direct link for pedestrians from the proposed bus stops on Longfield Road to the underground car park through Stapolin Square does not appear to be provided.



Suggestion:
Provide pedestrian access to the underground car park to cater for the desired route for pedestrians travelling from the bus stops on Longfield Road.

4.25 Issue:
A number of lifts are shown to be provided to access the south part of the underground carpark. However, no pedestrian access appears to be provided to the northern half of the underground car park. A lack of adequate access points for pedestrians may lead to an increased risk of a pedestrian collision within the underground carpark.

Suggestion:
Ensure entry prohibition and priority at junctions are indicated within the underground car park.

QUALITY AUDIT FEEDBACK FORM

Scheme: Proposed Residential Development at Baldoyle QA1

Audit Reference No.: 20117-01-001

Date Audit Completed: 22th October 2020

Paragraph No. in Safety Audit Report	To Be Completed By Designer			To Be Completed by Audit Team Leader
	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted.	Alternative measures or reasons accepted by auditors (yes/no)
4.1	Yes	Yes	----------	----------
4.2	Yes	Yes	----------	----------
4.3	Yes	Yes	----------	----------
4.4	Yes	Yes	----------	----------
4.5	Yes	Yes	----------	----------
4.6	Yes	Yes	----------	----------
4.7	Yes	Yes	----------	----------
4.8	No	No	North-south pedestrian movement catered for by crossing immediately to west. No pedestrian crossing provided to east of junction, so as not to encourage pedestrians crossing in proximity to undercroft parking access.	YES
4.9	Yes	Yes	----------	----------
4.10	Yes	Yes	----------	----------
4.11	Yes	Yes	----------	----------
4.12	Yes	Yes	----------	----------
4.13	Yes	Yes	----------	----------
4.14	Yes	Yes	----------	----------
4.15	Yes	Yes	----------	----------
4.16	Yes	Yes	----------	----------
4.17	No	No	Existing lift and stair access to railway station to be relocated to open space at centre of Stapolin Square. Pedestrian/cyclist access route along western site boundary not necessary or practicable.	----------
4.18	No	No	Stapolin Square includes shared pedestrian/cyclist facilities giving access from Longfield Road to railway station (with stairs and lifts). Dedicated cycle tracks through Stapolin Square not considered practical.	----------
4.19	No	No	This road to carry no vehicular traffic with exception of buses and taxis. Swept path analysis confirms that corner radii can accommodate their movements.	----------
4.20	Yes	Yes	----------	----------
4.21	Yes	Yes	----------	----------
4.22	Yes	Yes	----------	----------
4.23	Yes	Yes	----------	----------
4.24	Yes	Yes	----------	----------
4.25	Yes	Yes	----------	----------

Signed ..... **Design Team Leader** **Date** 07.05.2021

Print Name Gordon Finn

Quality Audit Signed off ..... **Audit Team Leader** **Date** 7/5/21

Print Name George Frisby

Please complete and return to:

Roadplan Consulting Ltd.
7, Ormonde Road
Kilkenny
Email: info@roadplan.ie