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Road Infrastructure Design Report

Strategic Housing Development

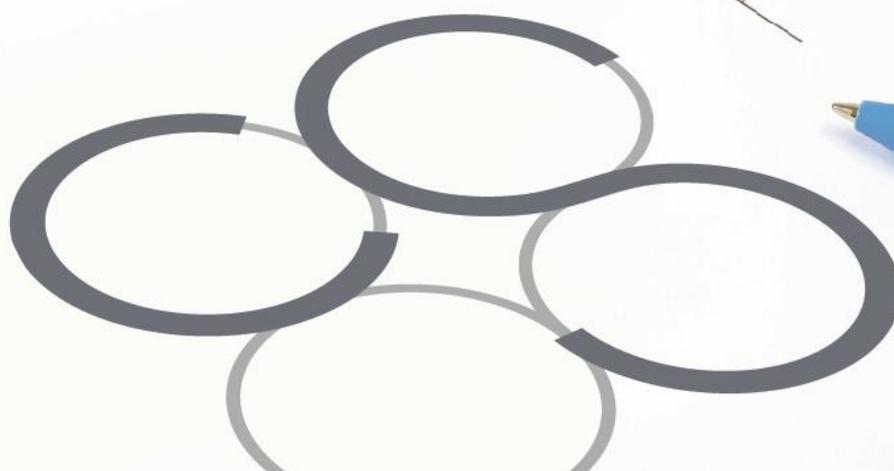
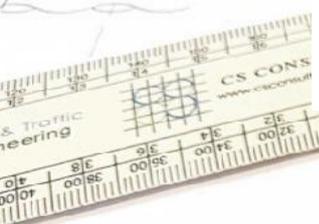
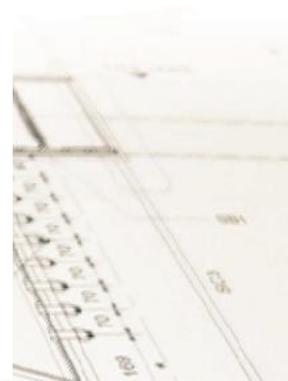
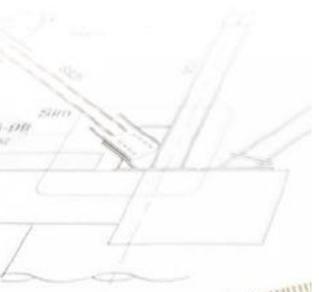
Clonkeen College, Clonkeen Road,
Blackrock, Co. Dublin

Client: Clonkeen Investments DAC

Job No. W012

August 2021

PAC/SHD/162/20



ROAD INFRASTRUCTURE DESIGN REPORT
STRATEGIC HOUSING DEVELOPMENT
CLONKEEN COLLEGE, CLONKEEN ROAD, BLACKROCK, CO. DUBLIN

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Appendix A: DMURS Statement

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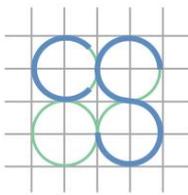
1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Clonkeen Investments DAC to prepare a Road Infrastructure Design Report to accompany a planning application for a proposed 299-unit Strategic Housing Development at Clonkeen College, Clonkeen Road, Blackrock, Co. Dublin.

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

- Dún Laoghaire-Rathdown County Development Plan 2016–2022
- Deansgrange Local Area Plan 2010-2020
- Design Manual for Urban Roads and Streets
- Traffic Signs Manual 2019
- DN-GEO-03060: Geometric Design of Junctions
- National Cycle Manual 2011

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 Clonkeen College, Clonkeen Road, Blackrock, Co. Dublin. The site is located in the administrative jurisdiction of Dún Laoghaire-Rathdown County Council and has a total area of approximately 3.3 ha.

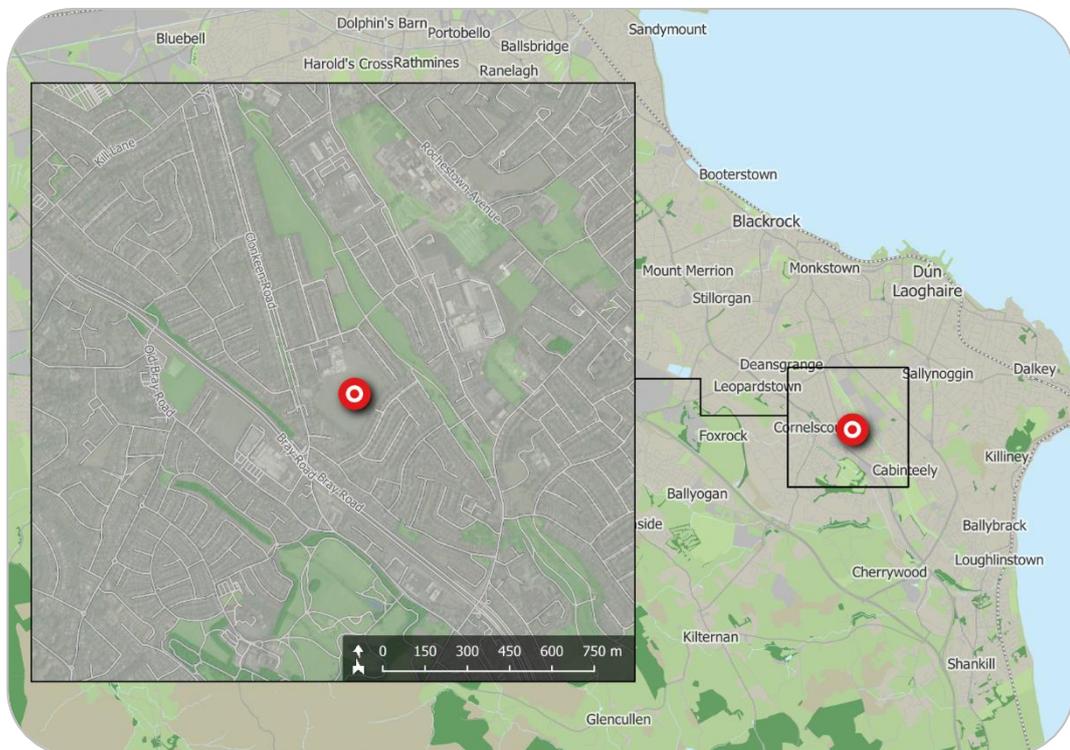


Figure 1 – Location of proposed development site
(map data & imagery: EPA, OSM Contributors, Google)

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 surrounding the site, are shown in more detail in Figure 2.

The site is bounded to the north-west by Clonkeen College, an existing filling station and residential properties, to the north-east, south-east and south-

west by existing residential properties. The site has street frontage of approx. 23m on Meadow Vale, at its northernmost corner.



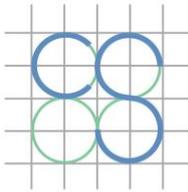
Figure 2 – Site extents and environs
(map data & imagery: NTA, OSM Contributors, Google)

2.2 Existing Land Use

The subject site is generally greenfield, having formed part of the grounds of Clonkeen College. Limited vehicular traffic is currently generated by Edmund Rice House, a school administration building that is located within the subject site. The remainder of the subject site does not currently generate any vehicular traffic.

2.3 Description of Proposed Development

The proposed Strategic Housing Development, with a total gross floor area of c 33,851 sq m, will provide 299 no. residential units and a 1 no. storey 353 sq m childcare facility with dedicated play area 231 sq m. The

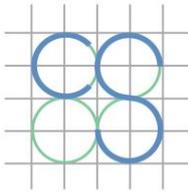


development will consist of 18 no. ground floor 3 bedroom duplex apartments and 18 no. 2 bedroom apartments above and 12 no. ground floor 2 bedroom apartments with 12 no. 3 bedroom duplex apartments above. The 60 no. duplex units are arranged in 6 no. three storey blocks. The development will also consist of 239 no. apartment units (111 no. 1 bedroom apartments, 120 no. 2 bedroom apartments and 8 no. 3 bed apartments) arranged in 4 no. 6 storey blocks over 1 no. storey basement; public open space, communal open space and private open space (including all balconies, terraces and individual unit gardens at all levels); 614 sq m communal resident facilities including concierge and welcome area (195 sq m), residents' flexible work facility (219 sq m), residents' lounge (100 sq m) and residents' gym area (100 sq m).

The development will also provide for the demolition of the 2 no. storey office building ('St. Helen's', Meadow Vale - 470 sq m) to facilitate new vehicular, pedestrian and cyclist access to the site, to the north of the proposed development via Meadow Vale.

The development will also include the provision of 2 no. designated play areas; internal roads and pathways; bin stores; 248 no. car parking spaces, including 167 no. at basement level and 2 no. shared vehicle (GoCar) spaces, 388 no. bicycle parking spaces, and 10 no. motorcycle parking spaces at basement and surface level; hard and soft landscaping; plant; boundary treatments including the repair and replacement of some existing boundary treatments; the provision of new surface water and foul drainage pipes and any required pipe diversion works or build over works; internal foul pumping station; a new internal access road and paths; changes in level; services provision and related pipework, ducting and cabling; electric vehicle charging points; 4 no. stormwater attenuation tanks; 1 no. ESB substation; photovoltaic panels; SUDS including green roof provision; signage; provision for future pedestrian access to Monaloe Park to the east of the development, including the provision of a pedestrian

bridge, extending over the drainage ditch; public lighting and all site development and excavation works above and below ground. The application contains a statement setting out how the proposal will be consistent with the objectives of the Dún Laoghaire-Rathdown County Development Plan 2016-2022. The application contains a statement indicating why permission should be granted for the proposed development, having regard to a consideration specified in section 37(2)(b) of the Planning and Development Act 2000, notwithstanding that the proposed development materially contravenes a relevant development plan or local area plan other than in relation to the zoning of the land.



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:

- Dún Laoghaire-Rathdown County Development Plan 2016–2022
- Deansgrange Local Area Plan 2010-2020
- Traffic Signs Manual 2019
- TII DN-GEO-03060: Geometric Design of Junctions
- National Cycle Manual 2011

3.1 Road Classification

The existing Clonkeen Road and Stillorgan Road, in the vicinity of the development, are arterial streets with a speed limit of 50km/h and 80km/h respectively. Meadow Vale, to the north and east of the development site, is a link street with a speed limit of 30km/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

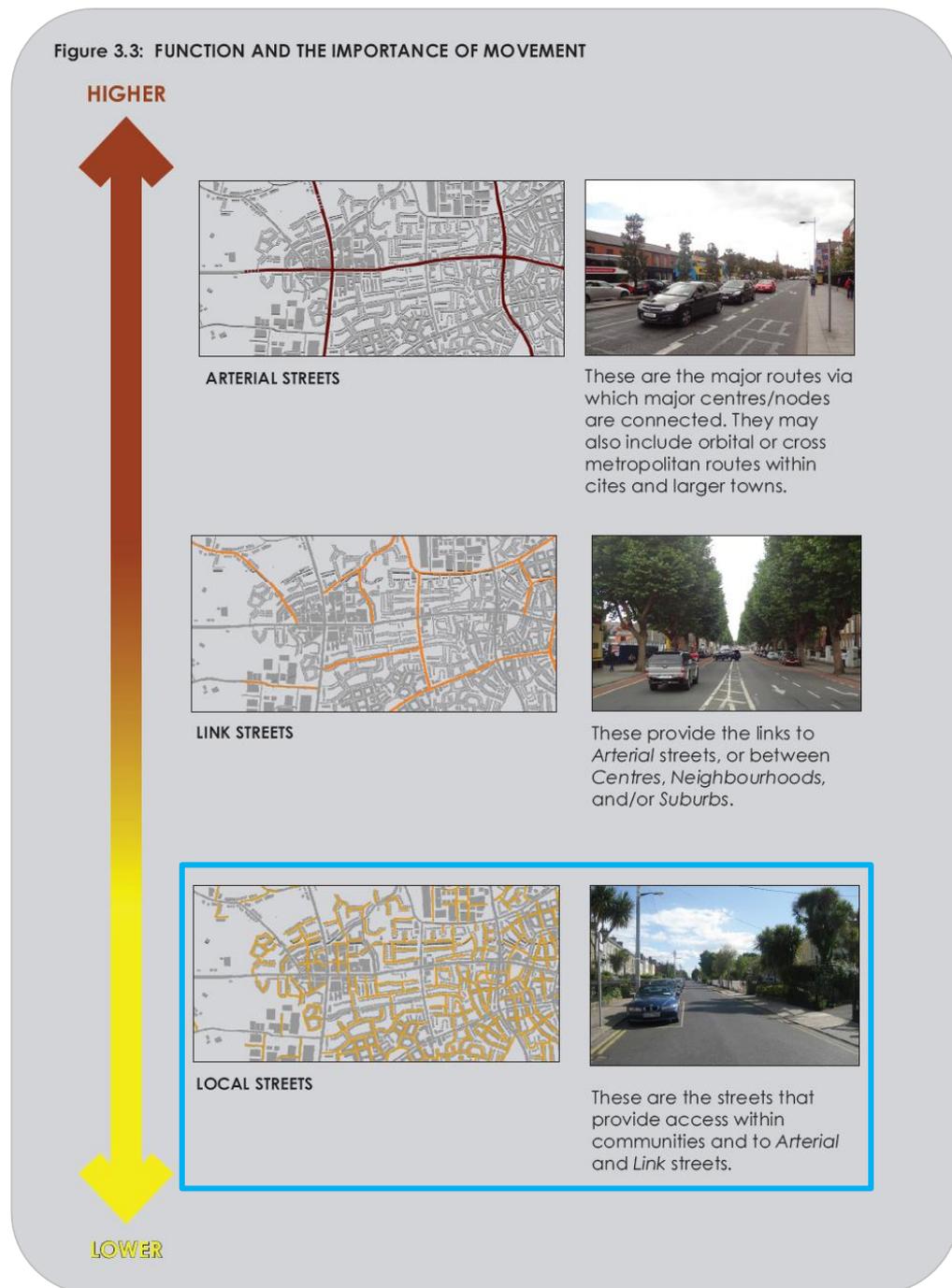
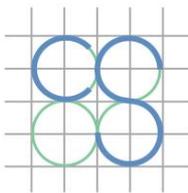


Figure 3 – DMURS Street Classification
(source: *Design Manual for Urban Roads and Streets*)



Following the above classification, the proposed development's internal road network includes a single local street. This is the development's primary internal access road, which extends southward from the vehicular access on Meadow Vale and turns west, following the shape of the development site. This local street gives access to all surface-level car parking within the development, as well as to the ramp serving the development's basement car parking area.

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 4 – Comparison of DMURS terminology with other key publications
(source: *Design Manual for Urban Roads and Streets*)

3.2 Road Design Speeds

All internal roads within the development have been designed for a maximum vehicular traffic speed of 20km/h, prioritising the movement of vulnerable road users. In accordance with DMURS, kerb radii at internal junctions have

been restricted to a maximum of 3.0m, in order to discourage high vehicle speeds.

		PEDESTRIAN PRIORITY		VEHICLE PRIORITY		
FUNCTION	ARTERIAL	30-40 KM/H	40-50 KM/H	40-50 KM/H	50-60 KM/H	60-80 KM/H
	LINK	30 KM/H	30-50 KM/H	30-50 KM/H	50-60 KM/H	60-80 KM/H
	LOCAL	10-30 KM/H	10-30 KM/H	10-30 KM/H	30-50 KM/H	60 KM/H
		CENTRE	N'HOOD	SUBURBAN	BUSINESS/ INDUSTRIAL	RURAL FRINGE
		CONTEXT				

Figure 5 – Design Speed Selection Matrix
(source: *Design Manual for Urban Roads and Streets*)

3.3 Road Cross-Section

The road carriageway width within the development has been determined in accordance with DMURS. The development's single local street has a carriageway width of 6.0m, comprising one traffic lane in either direction, with a vehicle turning head provided at the far end of the cul-de-sac development. Car parking areas are arranged so as to minimise conflict with pedestrian movements. Raised footpaths with a minimum width of 1.8m are provided along all parts of the internal road network; these connect to the existing footpaths along Meadow Vale.

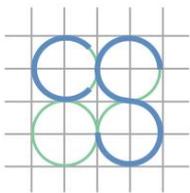
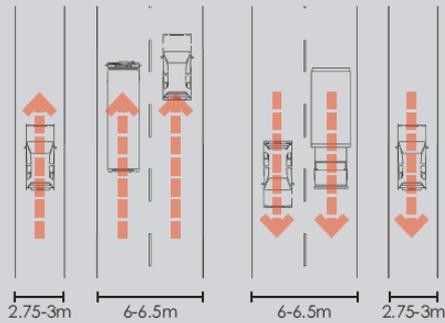
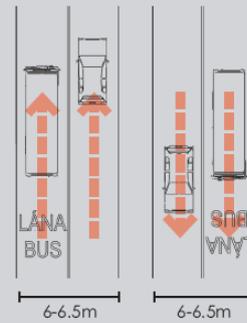


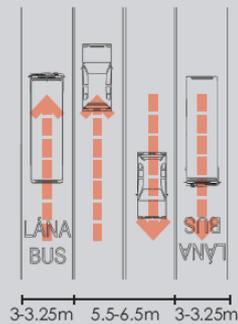
FIGURE 4.55: CARRIAGEWAY WIDTHS
(note: Illustrations do not include cycle facilities)



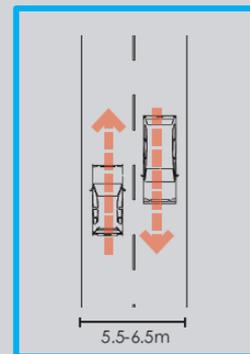
Carriageway widths for heavily-trafficked *Arterial* and *Link* streets in boulevard configuration. Main carriageway suitable for moderate design speeds. Includes access lanes with a lower design speed.



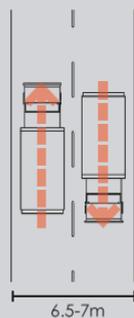
Standard carriageway widths for multi-lane *Arterial* and *Link* streets in boulevard configuration, including bus lanes.



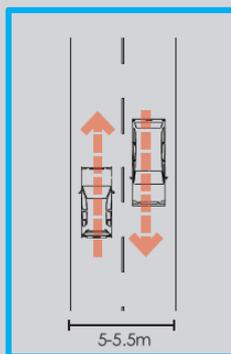
Standard lane/carrigeway widths for multi-lane *Arterial* and *Link* streets, including bus lanes. Range for low to moderate design speeds.



Standard carriageway widths for *Arterial* and *Link* streets. Range for low to moderate design speeds.



Carriageway width for *Arterial* and *Link* streets frequently used by larger vehicles.



Standard carriageway width for *Local* streets



Carriageway width for *Local* streets with a shared surface carriageway.

Figure 6 – Carriageway Widths
(source: *Design Manual for Urban Roads and Streets*)

3.4 Footpaths

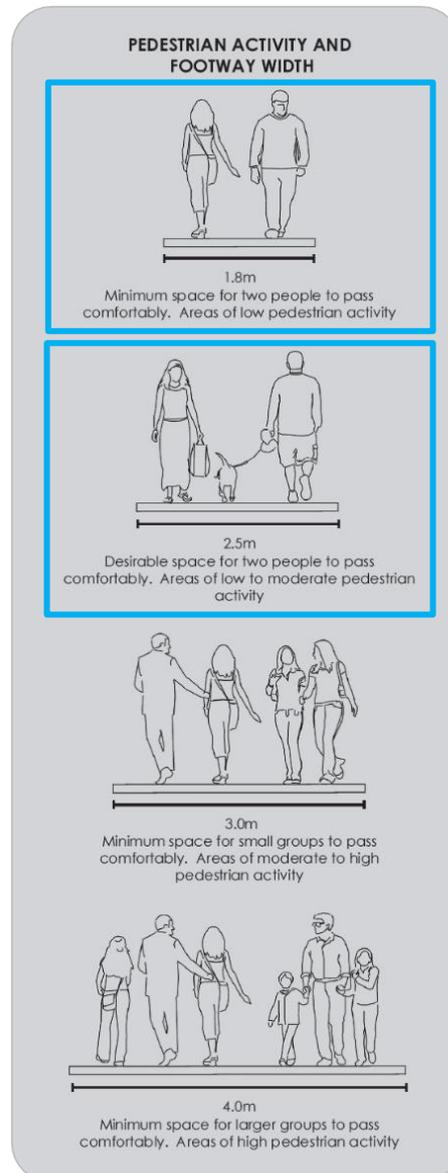
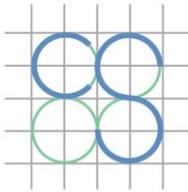


Figure 7 – Recommended footpath widths
(source: *Design Manual for Urban Roads and Streets*)

Footpath widths within the proposed development have been designed in accordance with DMURS. It is proposed to provide a minimum footpath width of 1.8m along all internal roads within the proposed development. Along the northern section of the development's primary access road,



which is expected to carry higher volumes of pedestrian traffic, footpath widths are increased to between 2.2m and 5.2m on the eastern side.

3.5 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. The developments access junctions and internal junctions 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 the development's access junction and key existing junctions on the surrounding road network. Refer to the Traffic and Transport Assessment 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

It is proposed to retain the existing Edmund Rice School Trust access from Meadow Vale, at the northernmost corner of the site, as the single vehicular access to the development. This shall remain in its current configuration of a simple priority-controlled junction, which allows two-way vehicle entry and exit to/from the development, but shall be improved with high-quality surface materials, placing an emphasis on pedestrian priority at grade across the mouth of the junction.

All connections between the development's internal road network and the existing external road network have been designed in accordance with the requirements of the *Design Manual for Urban Roads and Streets (DMURS)*. An unobstructed sight distance of 24m in both directions along Meadow Vale is achieved at the development access, as measured from a set-back of 2.4m from the public road edge, in accordance with DMURS requirements.

An uncontrolled pedestrian crossing shall be provided across the development access at its junction with Meadow Vale, with buff-coloured tactile paving and dropped kerbs to either side. STOP road markings shall be placed at the exit from the development, and kerb radii at the development access junction shall be restricted to a maximum of 6m, to discourage high vehicle speeds on entrance or exit to/from the development.

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 drawing no. W012-CSC-ZZ-XX-DR-C-0008 (Proposed Road Layout).

4.2 Road Alignments and Traffic Calming Measures

All internal roads within the development have been designed for a vehicular traffic speed of 20km/h. Kerb radii at internal junctions have been restricted to a maximum of 3m, in order to discourage high vehicle speeds.

The presence of perpendicular on-street parking bays along 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. Raised tables provide a vertical deflection to act as a further traffic calming measure, as well as directing pedestrian movements at the locations of key desire lines.

4.3 Pedestrians & Cyclists

Safe pedestrian movement is a key consideration in the development layout design; pedestrian and cyclist permeability points have been provided in accordance with pedestrian desire lines. At the development's access junction on Meadow Vale, the minor arm carriageway has been ramped up to footpath level, emphasising pedestrian priority across the junction entrance. STOP road markings are placed behind this ramp at the exit from the development, and kerb radii at the development access junction shall be restricted to 4.5m, to further discourage high vehicle speeds on entrance or exit to/from the development.

Pedestrian and cyclist access to the development shall be accommodated via the main access on Meadow Vale. Footpaths with a minimum width of 1.8m are to be provided along the extents of all internal roads. A segregated cycle/running track has been provided around the perimeter of the development. No on road cycle lanes have been provided within the development; cyclists will share the use of the internal access road with vehicles.

314no. secure and sheltered long-term bicycle parking spaces for apartment and duplex residents shall be provided within storage units and terraces. A further 74no. cycle parking spaces (in the form of 37no. Sheffield stands) shall be provided at suitable surface locations throughout the development, providing short-stay visitor cycle parking and cycle parking to serve the crèche.

4.4 Additional Future Permeability Links

The applicant has sought to facilitate additional pedestrian and cyclist access points on Clonkeen Road (via the neighbouring Texaco filling station to the west) and/or on Monaloe Park Way (to the south-east), to facilitate permeability through the site. To this end, the applicant has engaged in discussions with adjacent landowners.

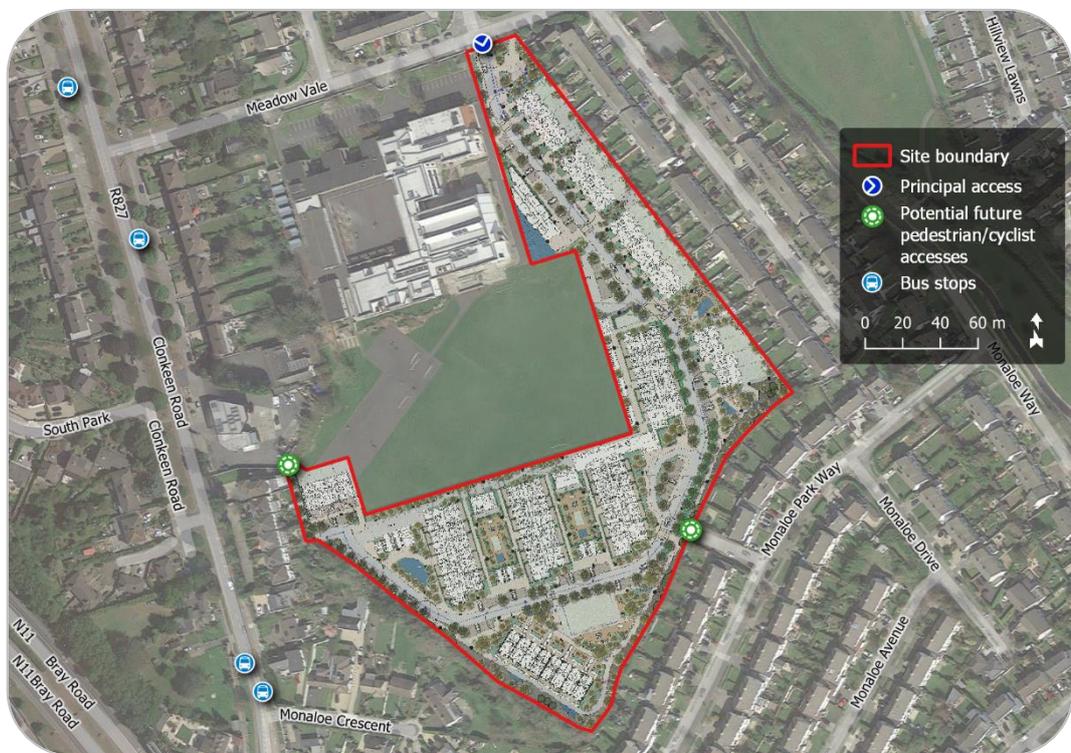
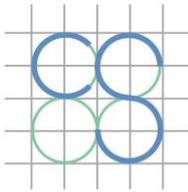


Figure 8 – Provisions for future additional permeability links
(map data & imagery: NTA, OSM Contributors, Google, Doyle & O'Troithigh)



4.4.1 Potential north-western link to Clonkeen Road

The applicant conducted discussions with Texaco (owners of the adjacent filling station), as well as meetings with both Texaco and the board of Clonkeen College, with a view to improving the permeability of the site on its western boundary. Schematic designs for a permeability link via the adjacent filling station were produced as shown in Figure 9. These discussions ultimately concluded without agreement, as Texaco were not prepared to grant a footpath and right of way over their land; Texaco were at that time considering redeveloping the filling station site and felt that the granting of a right of way over their land had potential to distort the future redesign of their premises.

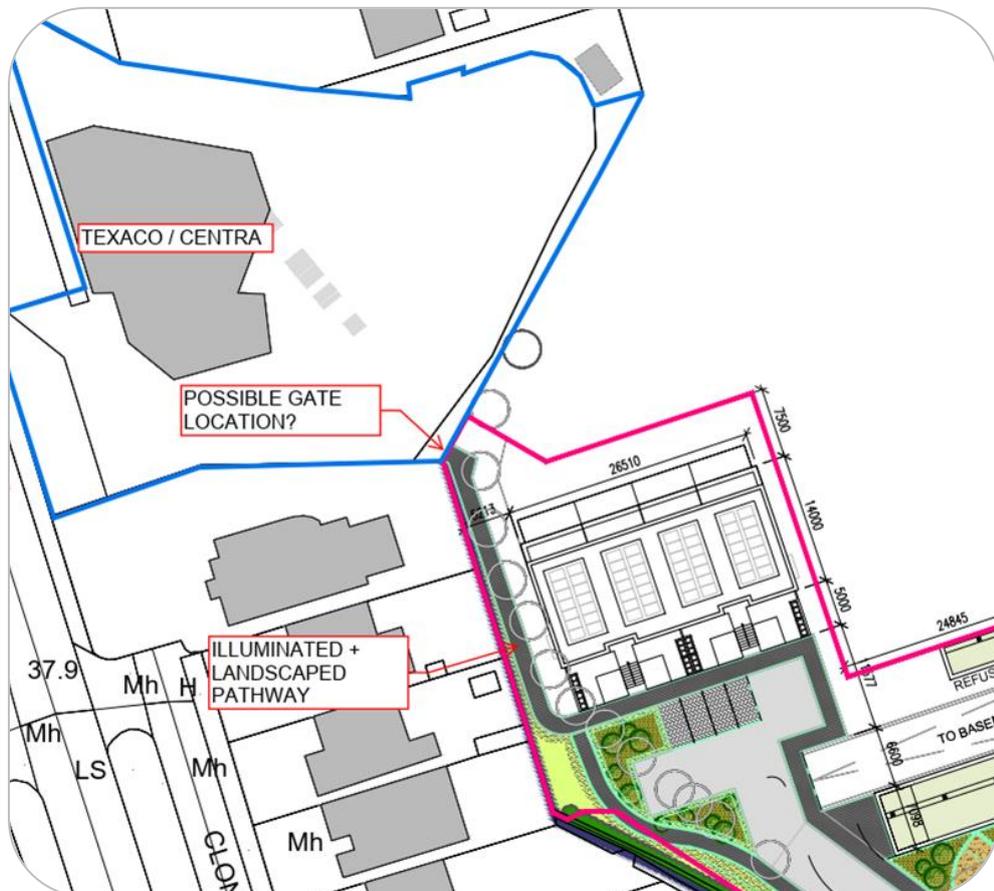


Figure 9 – Schematic of potential western permeability link

As shown in Figure 10, the final landscape design of the proposed development nevertheless maintains a clear corridor along the north-western boundary of the subject site. This allows for the implementation of a footpath and pedestrian/cyclist connection to the Texaco filling station site, should this become possible in the future.



Figure 10 – Final landscape design proposals at NW boundary
(source: Doyle & O'Troithigh Landscape Architecture)

4.4.2 Potential south-eastern link to Monaloe Park Way

The applicant acknowledges that they own the land up to the watercourse bounding Monaloe Park Way. The road and block wall on the opposite side of this watercourse is taken in charge; there is however a strip of land between the block wall and the watercourse. DLRCC have offered assistance in procuring the title to this strip. The applicant has shown a footpath link to the watercourse and is happy for DLRCC to connect to this footpath link in the future.

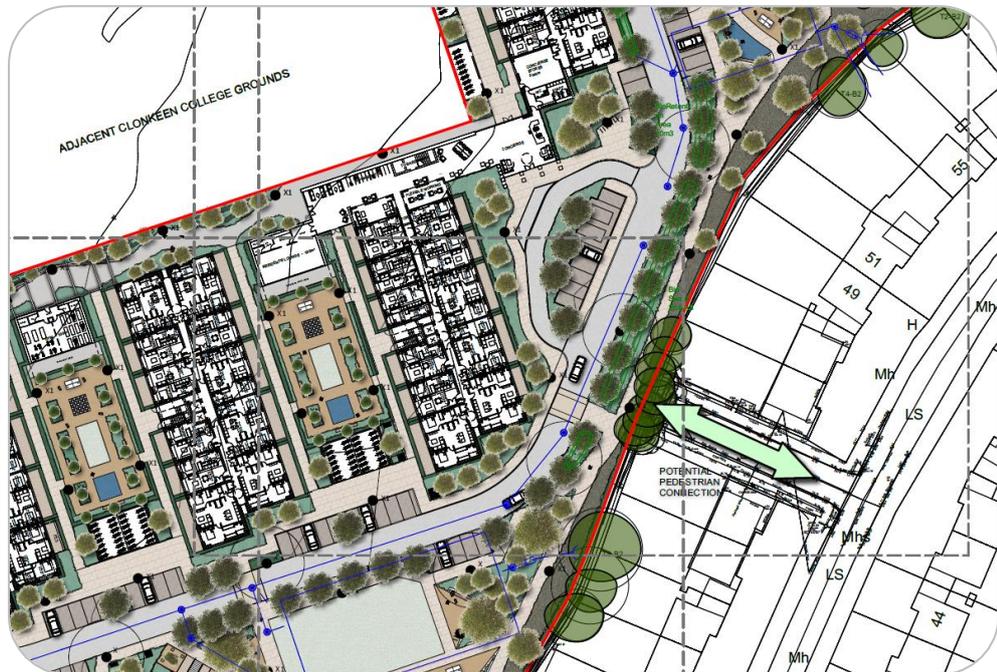
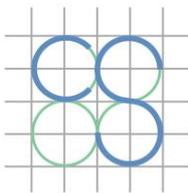


Figure 11 – Final landscape design proposals at SE boundary
(source: Doyle & O'Troithigh Landscape Architecture)

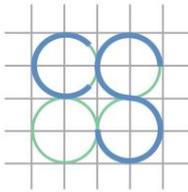
4.5 Servicing and Waste Collection

The internal layout of the development allows both development servicing (such as deliveries) and waste collection to be conducted within the development itself, thereby avoiding the obstruction of either vehicular or pedestrian traffic on Meadow Vale. A dedicated turning area for large vehicles (e.g. refuse collection vehicles and fire tenders) is provided close to the end of the internal access road, avoiding the need for these vehicles to reverse along internal roads.

4.6 Swept Path Analysis

Swept path analyses have been carried out for cars manoeuvring within the proposed development, as well as for a refuse vehicle and a fire tender. These analyses, provided on drawings W012-CSC-ZZ-XX-DR-C-0011 to W012-CSC-ZZ-XX-DR-C-0014 within this planning application, indicate that the

design of the development accesses and internal layout can accommodate these vehicle movements where required.



5.0 INDEPENDENT QUALITY AUDIT

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

- Stage 1/2 Road Safety Audit
- Accessibility & Walkability Audit
- Non-motorised User and Cycle Audit

The Quality Audit was completed in July 2021. 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 W012-CSC-ZZ-XX-DR-C-0033 for details of these design changes.

The Quality Audit report document issued by PMCE, 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 (ABP) and Dún Laoghaire-Rathdown County Council (DLRCC) have reviewed the planning documentation submitted in respect of the proposed development during the pre-application consultation phase of the SHD process (including a previous version of the present Traffic and Transport Assessment). A tripartite pre-application consultation meeting has also been held with An Bord Pleanála and Dún Laoghaire-Rathdown County Council.

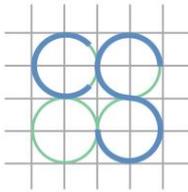
An Bord Pleanála has issued an opinion enumerating the items of specific information that should be submitted with the final application for permission. In the case of the present application, however, no items among these are of relevance to this Traffic and Transport Assessment. This report section therefore addresses only the recommendations of Dún Laoghaire-Rathdown County Council's Transportation Planning Division, which were issued to An Bord Pleanála.

6.1 Recommendations of Dún Laoghaire-Rathdown County Council

The Transportation Planning Division of Dún Laoghaire-Rathdown County Council issued an internal report on the 19th of January 2021, making the following recommendations relating to transportation.

6.1.1 DLRCC Point 1.1 – residential car parking provision

“A total of 389 No. residential parking spaces to serve the proposed 389 No. apartment/duplex units is required. The Applicant shall submit drawings which demonstrate this level of provision. The submitted drawings should clearly demonstrate the (required) number and location of car parking spaces assigned to visitors, car sharing schemes, deliveries etc. The level of provision of disabled/ electric vehicle charging car parking shall also be proportionally increased.”



Drawings shall also demonstrate creche parking provision in accordance with Table 8.2.4 of the current DLRCC County Development Plan. The car parking spaces shall be clearly marked as attaching to a particular apartment/duplex unit and allocated spaces shall not be sold or let to avoid non take up by residents who would then park elsewhere at adjoining residential estates where it will create a nuisance as well as undermining the demand management measures of parking constraint, The Applicants shall give an undertaking in this respect in writing."

Response to DLRCC Point 1.1

As described in the accompanying Traffic and Transport Assessment report, the proposed development shall include a total of 248no. car parking spaces, comprising:

- 234no. residents' spaces permanently assigned to specific units;
- 8no. spaces for visitor use;
- 2no. spaces for shared vehicles; and
- 4no. spaces for crèche use.

The provision of disabled-accessible car parking and EV charging facilities, both of which are included in the above totals, comply with the standards set out in the *Dún Laoghaire-Rathdown Development Plan 2016–2022*.

Refer to the accompanying Traffic and Transport Assessment report for additional details of car parking management provisions.

6.1.2 DLRCC Point 1.2 – electric vehicle charging provision

"The Applicant shall submit revised drawings which demonstrate that all proposed residential car parking spaces should be constructed to be capable of accommodating future electric charging points for electrically operated vehicles (ducting, minipillars etc.). Details of the

proposed type of charging unit to be installed to the proposed operational vehicle charging spaces should also be included.”

Response to DLRCC Point 1.2

32no. car parking spaces within the proposed development shall be equipped with functional EV charging points and shall be reserved for the use of battery-powered electric vehicles. All other car parking spaces within the development shall be ‘future-proofed’ through the inclusion of ducting to allow the rapid future installation of additional EV charging points. Refer to the mechanical and electrical engineering consultant’s documentation for the locations of individual EV charging-equipped parking spaces and for details of the provisions made for accommodating future additional charging points.

6.1.3 DLRCC Point 1.3 – bicycle parking design

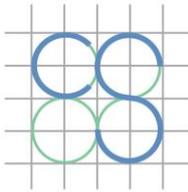
“The Applicant shall submit further details which demonstrate the type of cover of all cycle parking at the site. Arrangements for access and security shall be clearly demonstrated.”

Response to DLRCC Point 1.3

For design details of the proposed internal and external bicycle parking facilities, refer to documentation prepared by Scott Tallon Walker Architects and by Doyle & O’Troithigh Landscape Architecture, respectively.

6.1.4 DLRCC Point 1.4 – permeability discussions

“The Applicant shall furnish details of the extent of discussions with adjacent landowners to facilitate required permeability connections to Clonkeen Road and to Monaloe Park Road.”



Response to DLRCC Point 1.4

As described in sub-section 4.4 of this report, discussions with Texaco (owners of the adjacent filling station at the subject site's western boundary) ultimately concluded without agreement, as Texaco were not prepared to grant a footpath and right of way over their land; Texaco were at that time considering redeveloping the filling station site and felt that the granting of a right of way had potential to distort the future redesign of their premises. The final landscape design of the proposed development nevertheless maintains a clear corridor along the north-western boundary of the subject site. This allows for the implementation of a footpath and pedestrian/cyclist connection to the Texaco filling station site, should this become possible in the future.

Regarding a potential link to Monaloe Park Way, the applicant acknowledges that they own the land up to the watercourse bounding Monaloe Park Way. The road and block wall on the opposite side of this watercourse is taken in charge; there is however a strip of land between the block wall and the watercourse. DLRCC have offered assistance in procuring the title to this strip. The applicant has shown a footpath link to the watercourse and is happy for DLRCC to connect to this footpath link in the future.

6.1.5 DLRCC Point 1.5 – future permeability provision

"The Applicant shall submit revised drawings which demonstrate the provision of Internal connections to facilitate connections through to Clonkeen Road (adjacent to existing Texaco service station) and Monaloe Park Road (at cul-de-sac). These drawings should be submitted irrespective of the provision access at this time."

Response to DLRCC Point 1.5

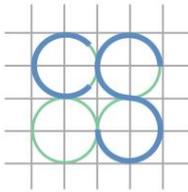
For details of provisions made to facilitate future additional pedestrian/cyclist connections to Clonkeen Road and to Monaloe Park Way, refer to sub-section 4.4 of this report, as well as to the landscaping design documentation prepared by Doyle & O'Troithigh Landscape Architecture (submitted separately with this planning application).

6.1.6 DLRCC Point 1.6 – Quality Audit

“A detailed quality audit carried out to by a suitably qualified and experienced engineering consultant shall be submitted by the applicant. The audit shall include a Road Safety Audit, Access Audit, Cycle Audit and a Walking Audit to demonstrate that appropriate consideration has been given to all relevant aspects of the proposed residential development in accordance with the Design Manual for Urban Roads & Streets (DMURS). The independent Audit Team shall be approved by the Planning Authority (Transportation Planning Section) and all measures recommended by the Auditor shall be undertaken. A feedback report should also be submitted which provides a response to each of the items. Transportation Planning consider that 2.5m wide footpaths should be provided in accordance with Figure 4.34 of DMURS 2019 and the provision of high-quality pedestrian facilities. The suitability of the use of the basement ramp to partially facilitate a turning area for Fire-Tender/Refuse Collection should be addressed.”

Response to DLRCC Point 1.6

As described in Section 5.0 of this report, an independent Quality Audit of the proposed development layout and access arrangements has been conducted by PMCE Consulting Engineers on behalf of CS



Consulting. This incorporates a Stage 1/2 Road Safety Audit, an Accessibility & Walkability Audit, and a Non-motorised User and Cycle Audit. The Quality Audit report document issued by PMCE, together with the audit response form, are provided as Appendix B to this report. Refer to CS Consulting drawing W012-CSC-ZZ-XX-DR-C-0033 for details of the design changes made in response to the recommendations of the Quality Audit.

Other design changes made following issue of Dún Laoghaire-Rathdown County Council's opinion include:

- the provision of a dedicated turning area for large vehicles, obviating the need to use any part of the basement access ramp for this purpose; and
- widening of footpaths to provide a footpath with a minimum width of 2.5m along the development's main access road.

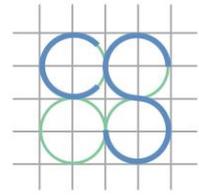
6.1.7 DLRCC Point 1.7 – Construction Management Plan

"The Applicant shall submit a detailed Construction Management Plan to the Planning Authority (Transportation Planning Section) indicating measures dealing with:

- a) Traffic management plan including Construction vehicular access to site in particular to avoid conflict between construction activities and traffic on the Public Road.*
- b) How it will be intended to avoid conflict between construction activities and pedestrian/cyclist/vehicular movements.*
- c) Where it is intended to provide for site staff car parking during construction in that is not acceptable to have long term parking in the nearby residential areas."*

Response to DLRCC Point 1.7

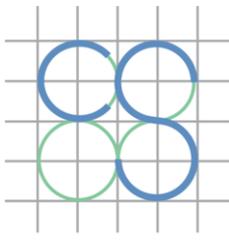
A Construction Environmental Management Plan (CEMP) has been prepared by AWN Consulting and is submitted under separate cover as part of this planning application.



CS CONSULTING
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Appendix A

DMURS Statement



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Strategic Housing Unit
An Bord Pleanála
64 Marlborough Street, Dublin 1
D01 V902

Sent By: Email

Job Ref: W012

A-NB

Date: 22-Jul-21

RE: Proposed Strategic Housing Development at Clonkeen Road, Blackrock, 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 Clonkeen Investments DAC to develop a DMURS Statement of Consistency to accompany a planning application for a proposed 299-unit Strategic Housing Development at Clonkeen College, Clonkeen Road, Blackrock, Co. Dublin.

Traffic & Transportation

The proposed scheme is designed in compliance with the following:

- Design Manual for Urban Roads and Streets (2019)
- Dún Laoghaire-Rathdown Development Plan 2016-2022
- National Cycle Manual (2011)
- Greater Dublin Area Cycle Network Plan

Internal Road Layout

The internal road layout of the proposed development is designed in accordance with the guidance provided in the *Design Manual for Urban Roads and Streets* (DMURS). As stated in the introduction to the DMURS:

“Better street design in urban areas will facilitate the implementation of policy on sustainable living by achieving a better balance between all modes of transport and road users. It will encourage more people to choose to walk, cycle or use public transport by making the experience safer and more pleasant.”

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D. Rehill, O. Sullivan, C. Sutton-Smith, E. Sutton, P. Sutton
Associate Directors: C. Barry, C. Twomey | Associates: D. Byrne, G. Lindsay

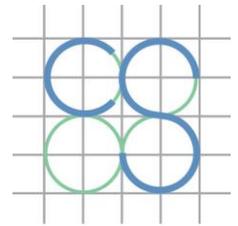
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Given the location, shape and topography of the site, and the scale and type of the residential development proposed, we submit that the proposed site layout is well suited to this infill site.

The development layout design put forward provides for a local street with perpendicular car parking spaces, plantings and high-quality pedestrian facilities. The development design ensures pedestrian permeability to the north.

The development layout incorporates features that benefit vulnerable road users by encouraging low vehicle speeds (such as reduced road corner radii, kerb buildouts, plantings, etc.), following the principle that roads should serve a community and not dominate it. The provision of good permeability for pedestrians, cyclists & public transport are all key objectives of the proposed site layout.

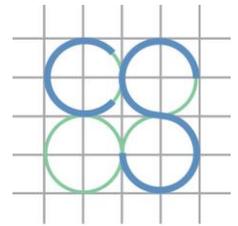
The objectives of the site layout design are:

- to keep vehicle speeds low;
- to minimise the intrusion of vehicle traffic;
- to ensure ease of access for emergency services;
- 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.

Traffic calming and VRU protection measures implemented in the design include:

- designated raised pedestrian crossing points;
- ramped area to reduce speed on entering and exiting the basement parking;
- smaller junction corner radii;
- cul-de-sac road layout;
- horizontal alignment constraints to restrict vehicle speeds;
- landscaping to frame vehicle sightlines internally;
- a road design for a maximum vehicle speed of 20km/h.

The proposed internal service road has a width of 6.0m to permit safe access for service and emergency vehicles, with a vehicle turning head provided at the far end of the cul-de-sac development. Car parking areas are arranged so as to minimise conflicts with pedestrian movements. Raised footpaths flank the service road to either side, connecting to the existing footpaths along Meadow Vale.



Large vehicles such as waste collection trucks and furniture lorries are allowed for in the design, notwithstanding that their movements shall be infrequent in comparison to passenger cars. The swept paths of these vehicles have been considered to ensure circulation without overdesigning the kerb radii. Overdesign would result in the negative effect of encouraging car drivers to travel at higher than desired speeds. Kerb radii at all internal junctions have been restricted to a maximum of 3.0m.

With reference to carparking, the proposed development incorporates:

- Surface level car parking in proximity to dwelling entrances.
- Perpendicular spaces along internal roads to promote lower vehicle speeds.
- Planted bays every 6 spaces as per DMURS standards.

The internal layout of the proposed development incorporates numerous design features such as distinctive surface materials and colours, strong landscaping proposals and modern furniture structures, in order to establish a sense of place within an urban neighbourhood environment.

An independent Quality Audit of the proposed development layout and access arrangements has been conducted; this incorporates a Stage 1/2 Road Safety Audit, an Accessibility & Walkability Audit, and a Non-motorised User and Cycle Audit. The Quality Audit report document issued by PMCE, together with the audit response form, are provided as Appendix B to the accompanying Road Infrastructure Design Report prepared by CS Consulting. Refer to CS Consulting drawing W012-CSC-ZZ-XX-DR-C-0033 for details of the design changes made in response to the recommendations of the Quality Audit.

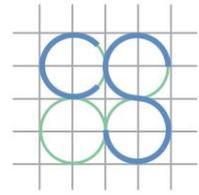
Niall Barrett

Director

Chartered Civil & Traffic Engineer

B.Eng (Hons), CEng, M.I.E.I., Cert Health & Safety, Cert RSA

for Cronin & Sutton Consulting



CS CONSULTING
GROUP

Appendix B

Independent Quality Audit

Cronin & Sutton Consulting

Proposed Residential
Development at Clonkeen
College, Co. Dublin

Quality Audit

Cronin & Sutton Consulting

Proposed Residential Development at Clonkeen College, Co. Dublin

Quality Audit

Document Ref:	P21-080-UQA-GEN-RP-001
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Rev	Prepared By	Reviewed By	Approved By	Issue Date	Reason for Revision
3.0	AOR	MAH	AOR	22 nd July 2021	Final
2.0	AOR	MAH	AOR	22 nd July 2021	Clarification of scope
1.0	AOR	MAH/TAG	AOR	16 th July 2021	Draft Report

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1 Introduction

1.1 General

This report was prepared in response to a request from Mr Gordon Finn of Cronin & Sutton Consulting to provide a Quality Audit for the Proposed Residential Development at Clonkeen College, Co. Dublin. The Quality Audit shall consider the following elements:

- Stage 1 & 2 Road Safety Audit;
- Access Audit;
- Walking Audit;
- Non-Motorised User Audit; and
- Cycle Audit.

The Quality Audit took place during June and July 2021 and comprised an examination of the documents provided by the designers (see Section 3.6).

The Quality Audit followed a site visit on the 1st July 2021. At the time of the site visit the weather was dry and the ground surface was dry, traffic volumes were low and vehicle speeds were considered to be within the posted speed limit. Pedestrian and cyclist volumes were low.

This report contains three primary sections, with each section focussing on different implications to the users of the scheme. The Stage 1 & 2 Road Safety Audit identifies safety implications of the scheme, whilst the Accessibility & Walking Audit focusses more on accessibility implications for vehicles and pedestrians associated with the development. Finally, the Non-Motorised User and Cycle Audit predominantly focusses on cycle use, as pedestrians have been discussed as part of the accessibility and walking audit, and there are currently no requirements for equestrians as part of this development.

The scope of this Quality Audit includes the proposed development and the existing section of Meadow Vale between the proposed development access and its junction with Clonkeen Road.

2 Background

It is proposed to construct a residential development on greenfield sites to the east and south of Clonkeen College in Co. Dublin (see location in Figure 2.1). The development will include both single residential units and apartment blocks. On-street parking will be provided at ground level, however, the majority of the parking for the proposed development will be provided in a basement carpark accessed from the main development access road via a ramp.

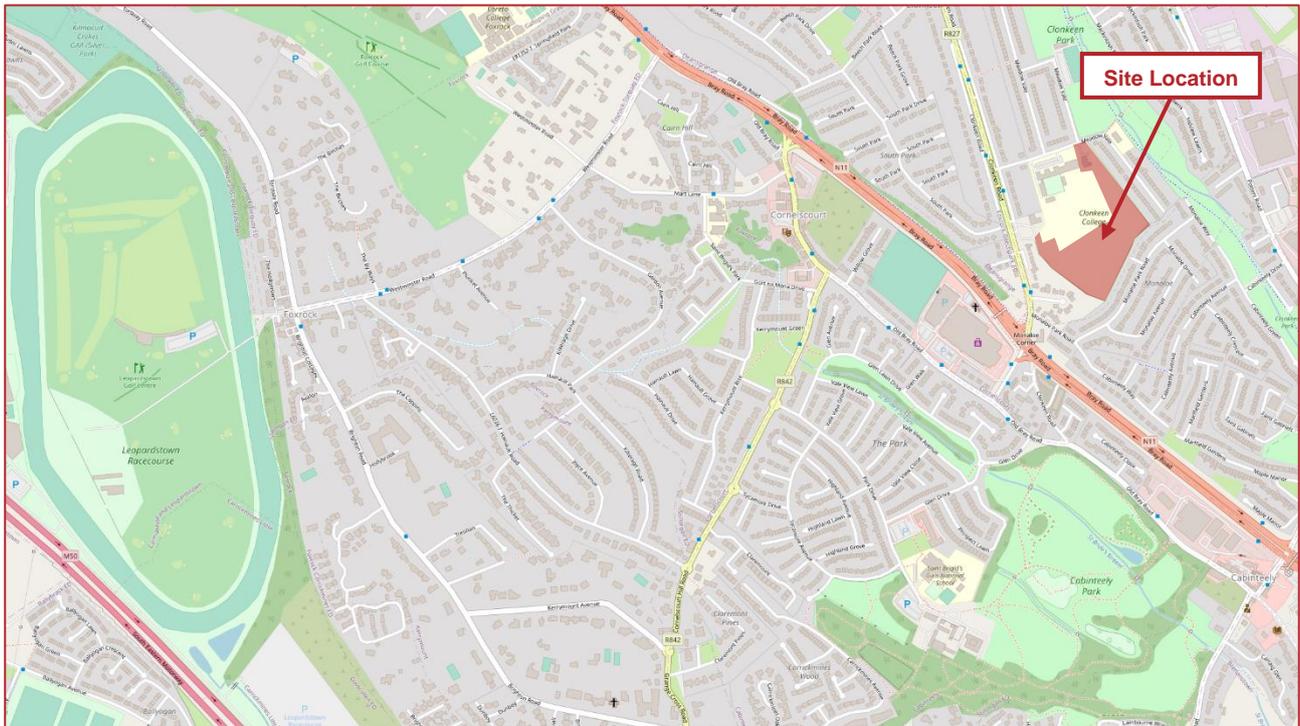


FIGURE 2.1: SITE LOCATION PLAN (SOURCE: WWW.OPENSTREETMAPS.ORG)

Access to the development will be provided from a new priority-controlled T-Junction on the southern side of Meadow Vale, approximately 55m east of the existing Clonkeen College access, where an existing access is located. A two-way single carriageway access road will extend from this junction through the development terminating at a cul de sac adjacent the basement carpark access ramp. Residential apartment blocks will be provided on both sides of the carriageway with uncontrolled pedestrian crossings provided intermittently along the access road. The pedestrian crossings will be located on raised tables. Footpaths are also proposed on both sides of the access road. Bicycle parking facilities, both sheltered and unsheltered, are proposed throughout the development. The footpaths within the proposed development will tie-into the existing footpaths on the southern side of Meadow Vale.

The proposed development is bounded to the north by Meadow Vale and Clonkeen College Grounds and by residential boundaries to the east, south and west.

Meadow Vale is an existing residential cul de sac extending from its junction with Clonkeen Road in the east. It is a single carriageway road with footpaths on both sides and has a posted speed limit of 30kph. It provides direct access to a number of residential properties on its northern side as well as other residential streets. It also provides direct access to Clonkeen College on its southern side. Meadow Vale also provides access to the Cuala GAA Club and Meadow Vale Tennis Club.

3 Road Safety Audit

3.1 Introduction

This Stage 1 & 2 Road Safety Audit has been carried out in accordance with the requirements of GE-STY-01024 (previously NRA HD19/15) dated December 2017, contained on the Transport Infrastructure Ireland (TII) Publication's website.

The members of the Road Safety Audit Team are independent of the design team, and include:

Mr. Alan O'Reilly
(BA BAI MSc CEng MIEI RSACert)
Road Safety Audit Team Leader

Mr. Mazen Al Hosni
(BEng, MIEI)
Road Safety Audit Team Member

The Stage 1 & 2 Road Safety Audit took place during June and July 2021 and comprised an examination of the documents provided by the designers (see section 3.6). A site visit was undertaken on the 1st July 2021. At the time of the site visit the weather was dry, the ground surface was dry, traffic volumes were low and vehicle speeds were considered to be within the posted speed limit. Pedestrian and cyclist volumes were low.

Where problems are relevant to specific locations these are shown on drawing extracts within the main body of the report. Where problems are general to the proposals sample drawing extracts are within the main body of the report, where considered necessary. Road Safety problem locations are also shown in Appendix A.

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety and considers the perspective of all road users. It has not been examined or verified for compliance with any other standards or criteria. The problems identified in this report are considered to require action in order to improve the safety of the scheme and minimise collision occurrence.

If any of the recommendations within this road safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments made within the report under the heading of Observations are intended to be for information only. Written responses to Observations are not required.

3.2 Collision History

The Road Safety Authority website (www.rsa.ie) was consulted to identify historical collisions on Clonkeen Road and Meadow Vale in the vicinity of the proposed development. The website includes summary information on recorded collision occurrence for the period 2005 to 2016 (see Figure 3.1).

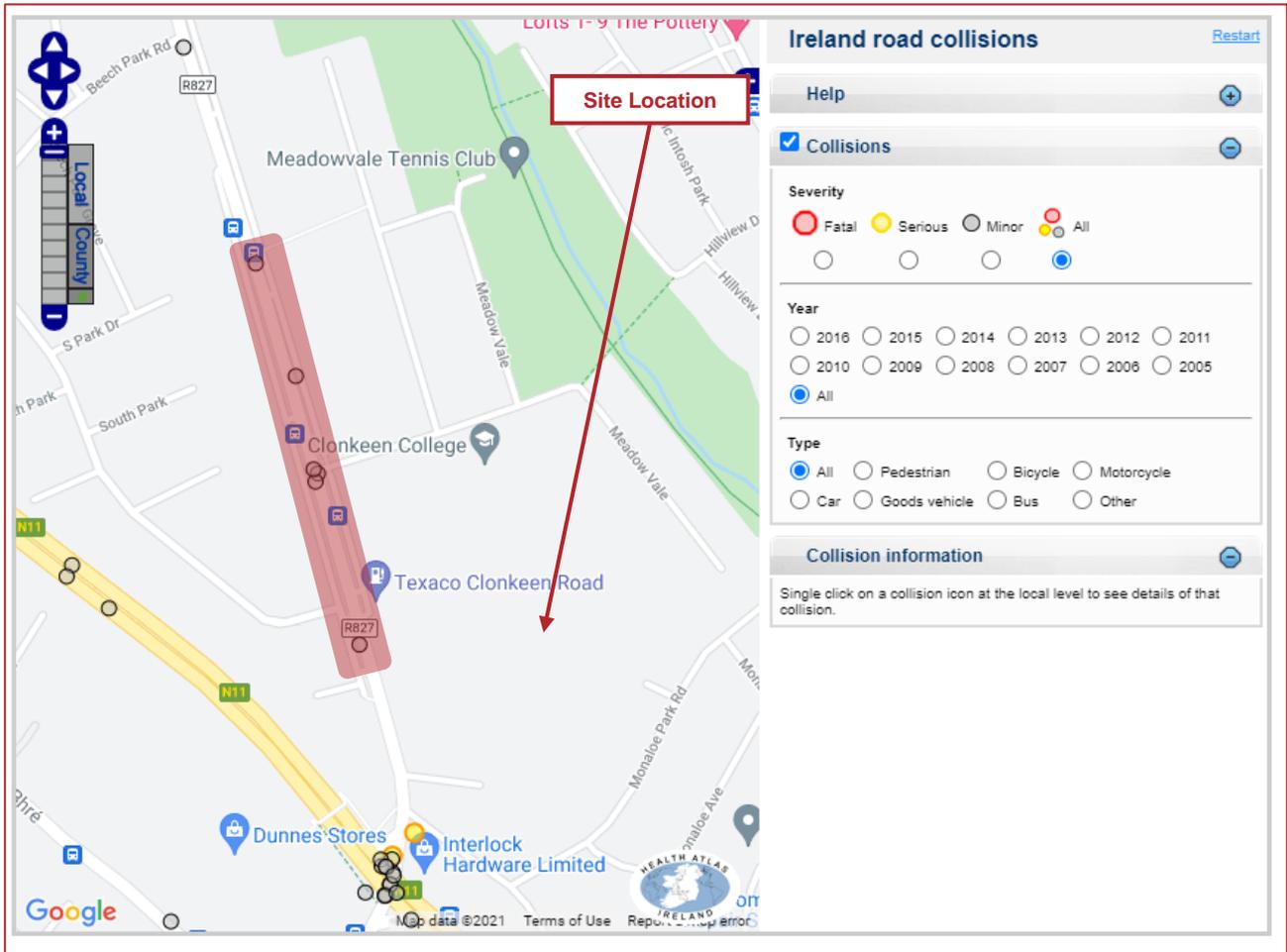


FIGURE 3.1: HISTORICAL COLLISIONS ON CLONKEEN ROAD AND MEADOW VALE IN THE VICINITY OF THE PROPOSED RESIDENTIAL DEVELOPMENT (SOURCE WWW.RSA.IE)

Five Minor Injury collisions have been recorded on Clonkeen Road in the vicinity of its junction with Meadow Vale. No collisions were recorded on Meadow Vale.

Three of these collisions occurred at the Clonkeen Road/Meadow Vale junction. The first included a rear end shunt collision involving a goods vehicle and occurred in 2015 on a Monday between 10am and 4pm. The second also involved a goods vehicle, but did not specify the type of collision. It occurred in 2013 on a Tuesday between 7pm and 11pm. The final collision recorded at the junction occurred on a Friday in 2008 between 7pm and 11pm and involved a car and a pedestrian.

Two collisions occurred to the north of the Clonkeen Road/Meadow Vale junction. One was a rear end shunt collision which occurred on a Monday in 2010 between 7pm and 11pm and involved a car while the other was an angle, right-turn collision involving a motorcycle which occurred on a Thursday in 2005 between 7am and 10am.

The final collision recorded was a head-on collision which occurred to the south of the Clonkeen Road/Meadow Vale junction on a Thursday in 2009 between 4pm and 7pm and involved a car.

The level of detail provided on the RSA collision database does not permit a forensic assessment of the collisions noted above.

3.3 Stage 1 & 2 Road Safety Audit

3.3.1 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Unclear if the proposed development will be sufficiently lit.

Information regarding the public lighting provision within the proposed development has not been provided to the Audit Team. It is therefore unclear if the development will be sufficiently lit, particularly along pedestrian routes to the rear of apartment buildings away from the development's primary access road. A failure to sufficiently light the development may lead to reduced inter-visibility between road users within the development and an increased risk of collisions between vehicles and Vulnerable Road Users (VRUs).

Recommendation

Ensure sufficient lighting is provided within the proposed development, particularly within areas isolated from the main access road.

3.3.2 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: It is unclear if there is sufficient drainage provision within the proposed development.

Information regarding drainage and the location of manholes/gullies has not been provided to the Audit Team and it is therefore unclear if the proposed drainage measures will sufficiently shed surface water from the carriageway and VRU routes. Should inadequate drainage measures be provided, this could lead to ponding on the footpath or within the carriageway at pedestrian crossings resulting in slips, trips and falls during wet or icy weather.

Recommendation

Provide sufficient drainage throughout the scheme ensuring the carriageway and pedestrian routes are adequately drained.

3.3.3 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: It is unclear if the swept path of large vehicles, such as emergency vehicles and refuse trucks, can be accommodated within the development access road, at set down areas and when turning within the proposed development.

Information regarding the swept path of large vehicles (refuse trucks, emergency vehicles, delivery vehicles etc.) has not been provided to the Audit Team. It is therefore unclear if these vehicles will have sufficient space within the development at horizontal curves, when undertaking u-turns, and when traversing the set down areas proposed, without crossing over into the opposing traffic lane, mounting footpaths or colliding with roadside furniture. If sufficient space is not available for large vehicles to travel, and turn safely within the development, this could lead to these vehicles having to reverse back through the development when exiting which could lead to an increased risk of collisions with other vehicles or VRUs.

Recommendation

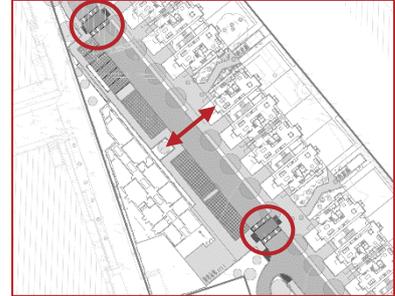
Ensure the internal road network within the development can accommodate the swept path of large vehicles.

3.3.4 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Drivers, or passengers, parked in the perpendicular parking spaces are unlikely to travel to the pedestrian crossings at either end of the parking resulting in them crossing the carriageway at locations where drivers may be less attentive to them increasing the risk of collisions.

A row of perpendicular parking spaces has been indicated on the western side of the development access road to the south of its junction with Meadow Vale. A raised uncontrolled pedestrian crossing has been indicated at both ends of this row of parking spaces. The Audit Team are concerned that, should a driver park in the spaces near the centre of the row of spaces, they, or their passengers, are unlikely to travel to the formal crossing points instead choosing to cross the carriageway between the two crossings.



Drivers approaching this location may be less attentive to pedestrians crossing the carriageway away from the formal crossing points leading to reduced reaction time and an increased risk of collisions with pedestrians.

Recommendation

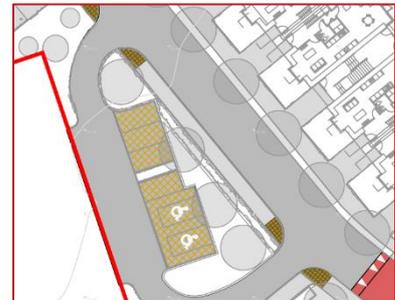
An uncontrolled crossing, with dropped kerbs and appropriate tactile paving, should be provided at the gap indicated in the proposed parking provision.

3.3.5 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Drivers/passengers, including the mobility impaired, must enter the carriageway when exiting parked vehicles at the set down/parking area to the north of the first apartment block.

A row of parking spaces, including two mobility impaired spaces, has been indicated to the north of the first apartment block within the proposed development. A link to the proposed footpath has not been indicated at this location resulting in vehicle occupants, including the mobility impaired, having to enter the carriageway or adjacent verge after exiting their vehicle where there is an increased risk of being struck by a vehicle or slips and falls respectively.



Recommendation

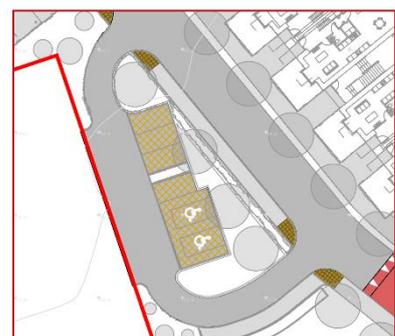
A footpath should be provided adjacent the parking spaces and a link/formal crossing provided so that vehicle occupants can access the surrounding footpath network.

3.3.6 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: It is unclear if the proposed set down/parking areas to the north and south of the first apartment block within the proposed development are intended to be one- or two-way.

Two set down/parking areas have been indicated to the north and south of the first apartment block within the proposed development. It is unclear if these areas are proposed to be one-way or two-way. They do not appear to have sufficient width for two-way traffic, however, no measures have been indicated (i.e. signs or road markings) restricting entry at one of the accesses.



If sufficient space is not available within the carriageway at these locations for two-way traffic, there is an increased risk of head-on collisions should drivers enter from opposing ends.

Recommendation

If the carriageway is not sufficiently wide for two-way traffic the carriageway at this location should be clearly marked as one-way only. Signs and road markings should be provided at the entry/exit to these areas clearly advising drivers where entry is permitted/restricted.



3.3.7 Problem

Location: General Problem - Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Dropped kerbs and tactile paving have not been indicated at the mobility impaired parking spaces within the proposed development.

Mobility impaired parking spaces have been indicated throughout the proposed development. However, dropped kerbs and tactile paving have not been indicated adjacent these mobility impaired parking spaces. This could lead to a mobility impaired driver/occupant being unable to ascend the kerb and access the footpath after exiting their vehicle resulting in them having to travel within the carriageway to the nearest access location, where there is an increased risk of being struck by a vehicle.



Recommendation

Ensure dropped kerbs, and the appropriate tactile paving, are provided adjacent mobility impaired parking spaces within the proposed development.

3.3.8 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Uncontrolled pedestrian crossings have not been indicated across the entries/exits to/from the set down area.

Access/egress to/from a set down area has been indicated to the south of the first apartment block within the proposed development. Parking spaces have been indicated within the 'island' created by the entry and exit with a footpath indicated in front of the parking spaces. Pedestrian crossings, including dropped kerbs and tactile paving, have however not been indicated across the entry/exit providing access from the island parking to the footpaths north and south of the set down area. This could lead to mobility impaired drivers/passengers experiencing difficulty when accessing the footpaths adjacent the apartment blocks increasing the risk of trips and falls should they attempt to descend high kerbs.



Recommendation

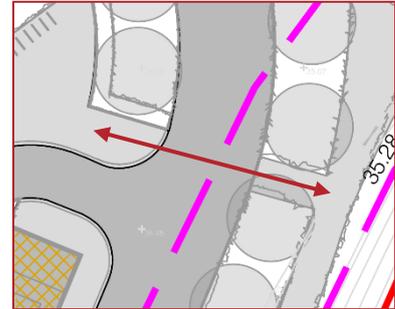
Provide uncontrolled pedestrian crossings, including dropped kerbs and tactile paving, across the entry/exit to the set down area at this location.

3.3.9 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: The footpath on both sides of the access road carriageway terminates abruptly with no measures provided to access the opposing footpath.

The footpath adjacent the southernmost set down area terminates abruptly at the access road carriageway, opposite a similar arrangement on the eastern side of the access road, and a pedestrian crossing has not been indicated. It is likely that a pedestrian desire line will exist at this location between the apartment blocks on the western side of the carriageway and the recreation area on the eastern side. Approaching drivers may be less attentive to pedestrians crossing at this location as a designated crossing point has not been indicated leading to reduced reaction times and an increased risk of vehicle-pedestrian collisions.



Additionally, mobility impaired pedestrians, who attempt to cross at this location, could experience difficulty when descending the high kerbs increasing the risk of trips and falls.

Recommendation

A formal pedestrian crossing, with dropped kerbs and tactile paving, should be provided at this location.

3.3.10 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Parking spaces indicated to the rear of the footpath may increase the risk of collisions between VRUs and vehicles entering/exiting these spaces.

Parking spaces have been indicated to the rear of the footpath at the southernmost set down area within the proposed development with access to the spaces provided from the primary development access road. This could lead to an increased risk in collisions between VRUs on the footpath and vehicles entering, or exiting, the parking spaces.



Recommendation

The layout of the parking spaces should be amended such that the footpath passes to the rear of the spaces or that access to the parking spaces is from the set down area rather than the primary access road.

3.3.11 Problem

Location: General Problem - Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Trees indicated adjacent pedestrian crossings may restrict inter-visibility between road users.

Trees have been indicated adjacent pedestrian crossings throughout the proposed development. This could lead to the inter-visibility between pedestrians and drivers at crossings being restricted which could lead to drivers failing to slow down, or stop, when approaching, or at, crossings resulting in vehicle pedestrian collisions.



Recommendation

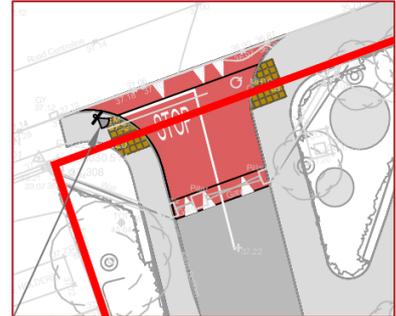
Ensure trees adjacent pedestrian crossings do not restrict inter-visibility between road users.

3.3.12 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: The Stop line at the proposed development access has been indicated on the proposed raised-table ramp crossing where drivers may approach without due care and consideration to approaching pedestrians.

The Stop line at the proposed development access has been indicated on the proposed raised-table ramp crossing. This could lead to side road drivers entering the raised-table crossing without due care and consideration for approaching pedestrians increasing the risk of vehicle-pedestrian collisions.



Recommendation

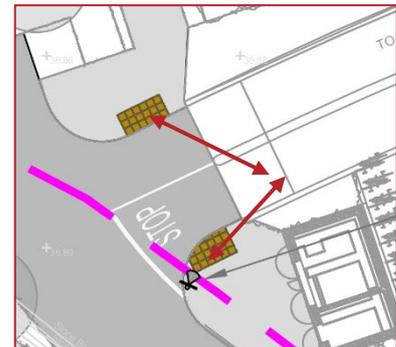
The Stop line should be provided on the carriageway upstream of the ramp so that drivers are required to stop before entering the crossing, increasing their awareness to approaching pedestrians, before slowly moving forward and pausing again before entering the major road.

3.3.13 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: The ramp walls at the basement carpark ramp may restrict inter-visibility between drivers ascending the ramp and pedestrians waiting to cross the carriageway.

An uncontrolled pedestrian crossing has been indicated across the entry/exit to/from the basement carpark. It is unclear if sufficient inter-visibility will be achievable between drivers exiting the basement and pedestrians waiting at the pedestrian crossing due to the ramp walls at this location, as details of the wall (i.e. height) have not been indicated. Should pedestrians have insufficient visibility towards a vehicle ascending the ramp, there is a risk that they may commence a crossing ahead of an approaching vehicle whose driver may have insufficient time to react safely, increasing the risk of vehicle-pedestrian collisions.



Recommendation

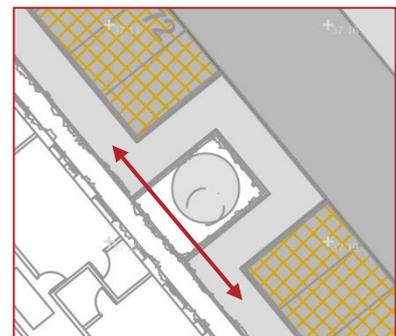
Ensure sufficient inter-visibility is provided between drivers ascending the basement carpark access ramp and pedestrians waiting at the uncontrolled crossing at this location.

3.3.14 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: The footpath does not follow the expected pedestrian desire line which may lead to pedestrians walking through the tree pit increasing the risk of trips and falls.

The footpath at the gap between the perpendicular parking spaces on the western side of the development access road south of its junction with Meadow Vale diverts to the front of a proposed tree pit at this location rather than following the shortest route along the building boundary which would be the expected pedestrian desire line. This could lead to VRUs walking over the tree pit rather than following the footpath, increasing the risk of trips and falls, should the tree pit surround be raised, or slips during wet and icy weather.



Recommendation

The tree pit should be reduced in size and the footpath at this location continued to the rear of the tree pit. The footpath adjacent the road edge, however, should be retained, as per the Recommendation in 3.3.4.

3.3.15 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: It is unclear if cyclists will have safe access to bicycle parking facilities within the development.

Bicycle parking facilities, including both unsheltered bicycle stands and sheltered parking areas, have been indicated throughout the proposed development. While the bicycle stands have been indicated, in most cases, at wide sections of footpath close to dropped kerbs, where cyclists can safely access the stands, the sheltered bicycle parking has been indicated to the rear of buildings and adjacent narrower sections of footpath. It is also unclear if a dropped kerb will be provided near these facilities or if cyclists will be required to travel in narrow footpath with pedestrians.



If safe access is not provided close to the sheltered bicycle parking facilities, there is a risk of cyclists falling from their bicycle as they mount high kerbs or having to travel in narrower sections of footpath with pedestrians from dropped kerb accesses increasing the risk of conflicts between pedestrians and cyclists.

Recommendation

Ensure safe access for cyclists, via dropped kerbs, is provided close to bicycle parking facilities and that the routes to/from the cycle parking facilities are sufficiently wide to safely accommodate both pedestrians and cyclists.

3.3.16 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Pedestrian desire line is not catered for in front of the apartment block on the western side of the development access road.

The footpath at the edge of the carriageway on the western side of the development access road terminates at the first apartment block within the proposed development where it diverts to the rear of the building. This footpath then terminates at the building entrance. Pedestrians who wish to continue further into the development are unable to do so at this location. Measures have also not been indicated where the footpath terminates to cross to the footpath on the eastern side of the carriageway.



This could lead to visually, and mobility, impaired pedestrians being unable to safely and independently navigate the road layout and being stranded within the footpath at this location. Pedestrians may continue within the verge where there is an increased risk of trips and falls or cross the carriageway to the opposing footpath where there is an increased risk of being struck by a vehicle should drivers be less attentive to pedestrians crossing away from formal crossing points.

Recommendation

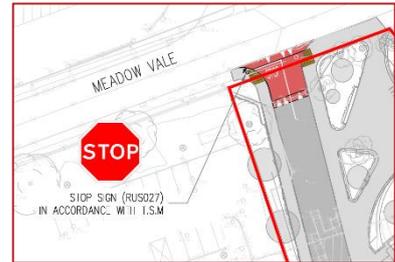
A footpath should be provided in front of the apartment building linking the footpaths proposed at either end or a formal pedestrian crossing provided at this location to allow pedestrians to cross to the eastern side of the carriageway and continue their journey.

3.3.17 Problem

Location: General Problem - Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Mounting height of signs within the development has not been indicated.

The mounting height of Stop signs within the proposed development has not been indicated. It is therefore unclear if these signs will provide sufficient clearance to pedestrians and cyclists. If signs are mounted too low there is a risk that pedestrians and cyclists may collide with the sign face resulting in personal injury.



Recommendation

Ensure a minimum clearance of 2.3m is provided to the bottom of the sign face where pedestrians are likely to pass beneath the sign, and 2.5m where cyclists are likely to pass beneath the sign.

3.3.18 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0026

Summary: Hazard tactile paving has not been indicated at the top and bottom of steps within the proposed development.

Hazard tactile paving has not been indicated at the top and bottom of steps within the proposed development. This may lead to visually impaired pedestrians being insufficiently aware that they are approaching a flight of steps increasing the risk of slips, trips, and falls should visually impaired pedestrians continue toward the vertical hazard without due care and attention.



Recommendation

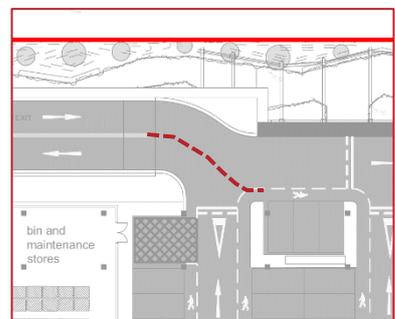
Corduroy hazard tactile paving should be provided at the top and bottom of all flights of steps within the proposed development.

3.3.19 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0027

Summary: Risk of poor lane discipline at the bottom of the basement carpark access ramp may lead to head-on or side swipe collisions.

At the bottom of the basement carpark access ramp drivers entering the carpark must proceed straight ahead while drivers exiting the westernmost aisle of parking spaces can turn left to exit the carpark or right to proceed back through the carpark. Lane guidance markings have not been indicated at the bottom of the ramp to guide drivers into the correct lane when entering the carpark. This could lead to drivers encroaching into the opposing lane and possible head-on, or side swipe, collisions with vehicles exiting the carpark.



Recommendation

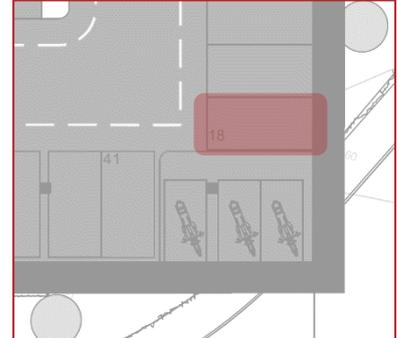
Measures should be provided to guide drivers entering the carpark into the correct lane.

3.3.20 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0027

Summary: It is unclear if drivers will be able to safely access, and exit, parking space no. 18 in the south-eastern corner of the carpark.

Parking space no. 18 has been indicated in the south-eastern corner of the basement carpark. It is unclear if drivers will be able to safely enter, and exit, this parking space due to its location and proximity to parking space no. 41. If drivers experience difficulty in accessing/egressing this space there is a risk of material damage collisions with adjacent parked vehicles.



Recommendation

Ensure, through a swept path analysis, that safe access, and egress, is possible to/from parking space no. 18.

3.3.21 Problem

Location: Drawing W012-CSC-ZZ-XX-DR-C-0027

Summary: Unclear if the gradient of the access ramp to the basement car park is sufficient.

The gradient of the access ramp to the basement carpark has not been indicated and is therefore unclear. If the gradient is too steep there is a risk that vehicles may roll backwards when pulling off from a stopped start on the ramp increasing the risk of rear-end shunts with following vehicles or over acceleration resulting in high take off speeds and potential collisions with vehicles ahead.

It is also unclear if a driver's forward visibility when ascending the ramp will be impacted by the rise of the ramp. This could lead to drivers being insufficiently aware of a hazard at the top of the ramp, resulting in collisions.

Recommendation

Ensure the gradient of the basement carpark access ramp is sufficient such that it does not result in drivers experiencing difficulties on the ramp, or limited forward visibility.

3.4 Road Safety Audit Team Statement

We certify that we have examined the drawings referred to in this report. The examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme.

The problems identified have been noted in this report together with associated safety improvement suggestions, which we would recommend should be studied for implementation.

The Road Safety Audit Team has not been involved in the design of this scheme.

ROAD SAFETY AUDIT TEAM LEADER

Alan O'Reilly

Signed:



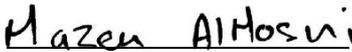
Dated:

22nd July 2021

ROAD SAFETY AUDIT TEAM MEMBER

Mazen Al Hosni

Signed:



Dated:

22nd July 2021

3.5 Road Safety Audit Brief Checklist

Have the following been included in the audit brief?: (if 'No', reasons should be given below)

	Yes	No
1. The Design Brief	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Departures from Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Scheme Drawings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Scheme Details such as signs schedules, traffic signal staging	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Collision data for existing roads affected by scheme	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Traffic surveys	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Previous Road Safety Audit Reports and Designer's Responses/Feedback Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Previous Exception Reports	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Start date for construction and expected opening date	<input type="checkbox"/>	<input type="checkbox"/>
10. Any elements to be excluded from audit	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Any other information?

(if 'Yes', describe below)

Yes No

3.6 Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
Proposed Road Layout	W012-CSC-ZZ-XX-DR-C-0008	P2
Proposed Road Markings and Traffic Signs Ground Level	W012-CSC-ZZ-XX-DR-C-0026	-
Road Markings and Traffic Signs. Basement	W012-CSC-ZZ-XX-DR-C-0027	-

3.8 Road Safety Audit Feedback Form

Scheme: Proposed Residential Development at Clonkeen College, Co. Dublin

Route No.: R827 (Clonkeen Road) and Meadow Vale

Audit Stage: Stage 1 & 2 RSA **Date Audit Completed:** 15th July 2021

To Be Completed By Designer				To Be Completed By Audit Team Leader
Paragraph No. in Safety Audit Report	Problem Accepted (Yes/No)	Recommended Measure(s) Accepted (Yes/No)	Describe Alternative Measure(s). Give reasons for not accepting recommended measure	Alternative Measures or Reasons Accepted by Auditors (Yes/No)
3.3.1	Yes	Yes		
3.3.2	Yes	Yes		
3.3.3	Yes	Yes		
3.3.4	Yes	Yes		
3.3.5	Yes	Yes		
3.3.6	Yes	Yes		
3.3.7	Yes	Yes		
3.3.8	Yes	Yes		
3.3.9	Yes	Yes		
3.3.10	Yes	Yes		
3.3.11	Yes	Yes		
3.3.12	Yes	Yes		
3.3.13	Yes	Yes		
3.3.14	Yes	Yes		
3.3.15	Yes	Yes		
3.3.16	Yes	Yes		
3.3.17	Yes	Yes		

3.8 Road Safety Audit Feedback Form

Scheme: Proposed Residential Development at Clonkeen College, Co. Dublin

Route No.: R827 (Clonkeen Road) and Meadow Vale

Audit Stage: Stage 1 & 2 RSA Date Audit Completed: 15th July 2021

To Be Completed By Designer				To Be Completed By Audit Team Leader
Paragraph No. in Safety Audit Report	Problem Accepted (Yes/No)	Recommended Measure(s) Accepted (Yes/No)	Describe Alternative Measure(s). Give reasons for not accepting recommended measure	Alternative Measures or Reasons Accepted by Auditors (Yes/No)
3.3.18	Yes	Yes		
3.3.19	Yes	Yes		
3.3.20	Yes	Yes		
3.3.21	Yes	Yes		

Signed:  Designer Date 22.07.2021

Signed:  Audit Team Leader Date 22nd July 2021

Signed:  Employer Date 23rd 7 21

4 Accessibility & Walkability Audit

4.1 Introduction

The proposed residential development will be accessed from Meadow Vale, approximately 200m to the east of its junction with Clonkeen Road. The footpaths within the proposed residential development are proposed to tie-into the existing footpath on the southern side of Meadow Vale. An uncontrolled pedestrian crossing is proposed at the access to the proposed development with dropped kerbs and associated tactile paving. To the east of the proposed access, two pedestrian entrances to the development will be provided with the easterly most access entering onto a large pedestrian 'plaza' area. Footpaths will be provided on both sides of the primary development access road which runs through the development. Four uncontrolled pedestrian crossings of the access road will be provided intermittently throughout its length with tactile paving provided either side of these crossings. Uncontrolled pedestrian crossings of side roads and accesses along the access road will also be provided. Footpaths are also proposed to the rear of some of the residential units within the proposed development. A number of courtyard/leisure areas are also proposed throughout the development with benches proposed at these locations.

Between its junction with Clonkeen Road and the proposed development access, Meadow Vale provides a continuous footpath on its southern side with vehicular access provided across the footpath at the entrance to Clonkeen College. Between the Meadow Vale/Clonkeen Road junction and the entrance to Clonkeen College the footpath on the southern side of Meadow Vale is signed as a shared pedestrian and cycle path.

On its northern side, a footpath is provided between Clonkeen Road and the side road junction opposite Clonkeen College. A continuous footpath is provided between Clonkeen Road and this side road junction. A formal uncontrolled crossing is not currently provided across this side road with a dropped kerb provided on one side of the crossing only, and no tactile paving on either side. To the east of this side road the footpath continues as far as the development access where it terminates at another side road junction.



An uncontrolled crossing of Meadow Vale with dropped kerbs is provided upstream of its junction with Clonkeen Road, however, no tactile paving is provided at this crossing. Pedestrian guardrail is located at the edge of the kerb on both sides of Meadow Vale throughout the junction radii at its junction with Clonkeen Road. While there are no footpaths on either side of Clonkeen Road there are footpaths on service roads which run either side of, and parallel to, Clonkeen Road. There is a signalised pedestrian crossing of Clonkeen Road immediately to the north of its junction with Meadow Vale providing a pedestrian link between these service roads.



Meadow Vale has a posted speed limit of 30kph and 'SLOW' road markings are provide on the carriageway in both traffic lanes to the east of its junction with Clonkeen Road.

4.1.1 Access to public transport network

The development is well served by Transport for Ireland, and local, bus services which are located within walking distance of the development on Clonkeen Road, the N11 and Pottery Road. The development is also situated close to future BusConnects routes which can be expected to provide high quality bus corridors between Dublin City Centre and its suburbs.

A list of bus routes servicing the area is provided in Table 4-1, including the distance from these bus stops to the proposed development. The distances indicated have their origin at the proposed site access.

The proposed development is also located in close proximity via car to the LUAS light rail network. The nearest LUAS stops to the proposed development which include Park & Ride facilities are the Stillorgan LUAS Stop (12-minute car journey from the development) and the Carrickmines Luas Stop (9-minute car journey from the development) both of which are on the Green LUAS Line. The LUAS Green Line extends from Brides Glen, in southeast County Dublin, to Broombridge, in north County Dublin, passing through Dublin City Centre where Heuston Railway Station and Connolly Railway Station are located.

The Carrickmines Railway Station is also located near the proposed development. This can be accessed on foot in under 40 minutes, by bicycle in 12-minutes or via an 8-minute car journey.

The proposed development will, therefore, have access to good quality public transport networks.

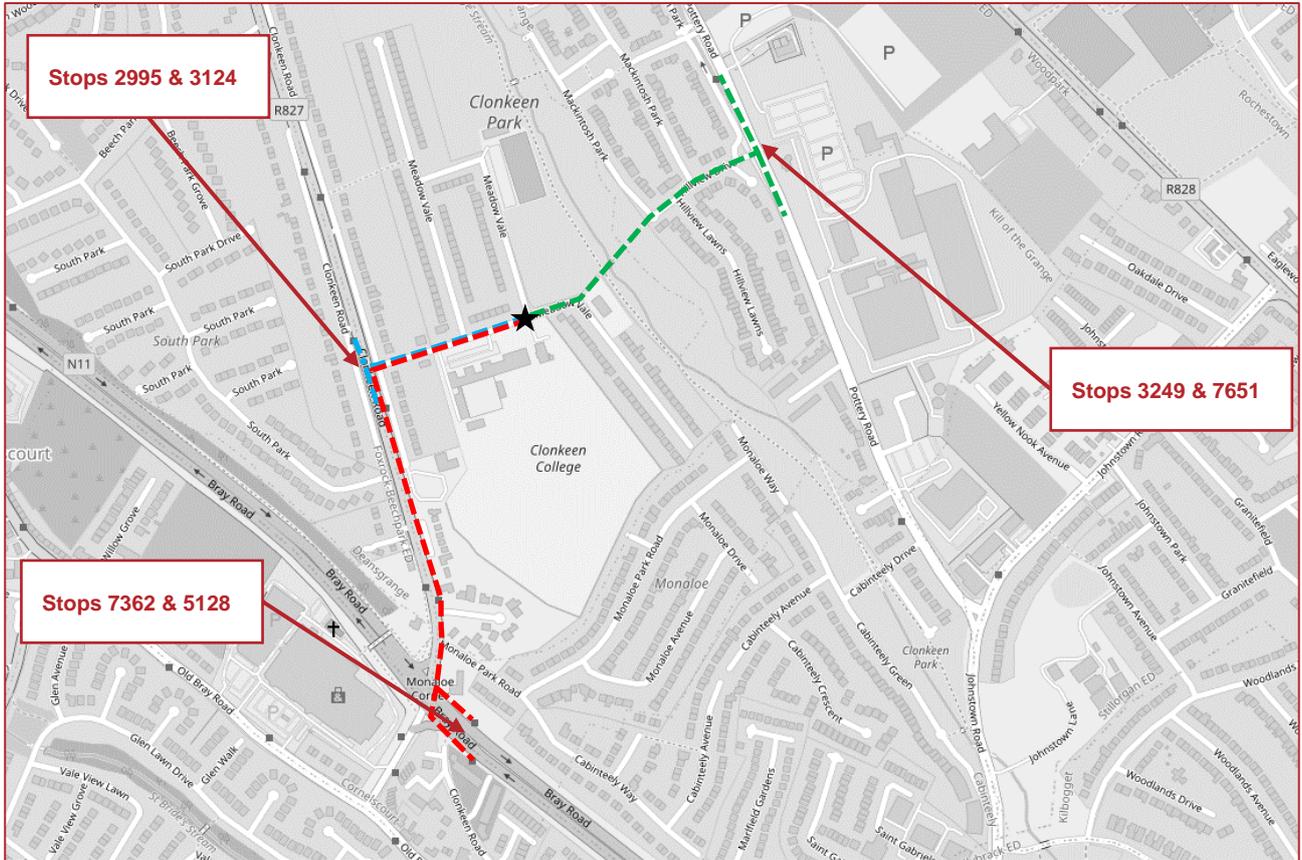


FIGURE 4.1: WALKING ROUTES FROM THE PROPOSED DEVELOPMENT ACCESS TO NEARBY BUS STOPS

TABLE 4-1: BUS ROUTES CLOSE TO THE PROPOSED RESIDENTIAL DEVELOPMENT

Bus Stop (Name)	Bus Stop (Number)	Proximity to the development	Bus Route	Travelling between
South Park	2995	290m West (4-minute walk)	84	Newcastle to Blackrock
			84A	Bray Rail Station to Blackrock
South Park	3124	240m West 3-minute walk	84	Blackrock to Newcastle
			84A	Blackrock to Bray Rail Station
Mackinstosh Park	3249	450m East (6-minute walk)	63	Dún Laoghaire to Kiltiernan
			63A	Dún Laoghaire to Kiltiernan
Amgen	7651	450m East (6-minute walk)	63	Kiltiernan to Dún Laoghaire
			63A	Kiltiernan to Dún Laoghaire
Clonkeen Road	7362	700m South (9-minute walk)	63	Kiltiernan to Dún Laoghaire
			63A	Kiltiernan to Dún Laoghaire
			84X	Hawkins Street to Newcastle/Kilcoole
			143	Sandyford Luas Stop to Southern Cross Road, Bray
			145	Heuston Station to Balywaltrim, Bray
			155	St. Margaret's Road, Ikea, Ballymun to Bray Rail Station
			181	Dawson Street to Glendalough
Cornelscourt Centre	5128	700m South (9-minute walk)	63	Dún Laoghaire to Kiltiernan
			63A	Dún Laoghaire to Kiltiernan
			84X	Newcastle/Kilcoole to Hawkins Street
			143	Southern Cross Road, Bray to Sandyford Luas Stop
			155	Bray Rail Station to St. Margaret's Road, Ikea, Ballymun

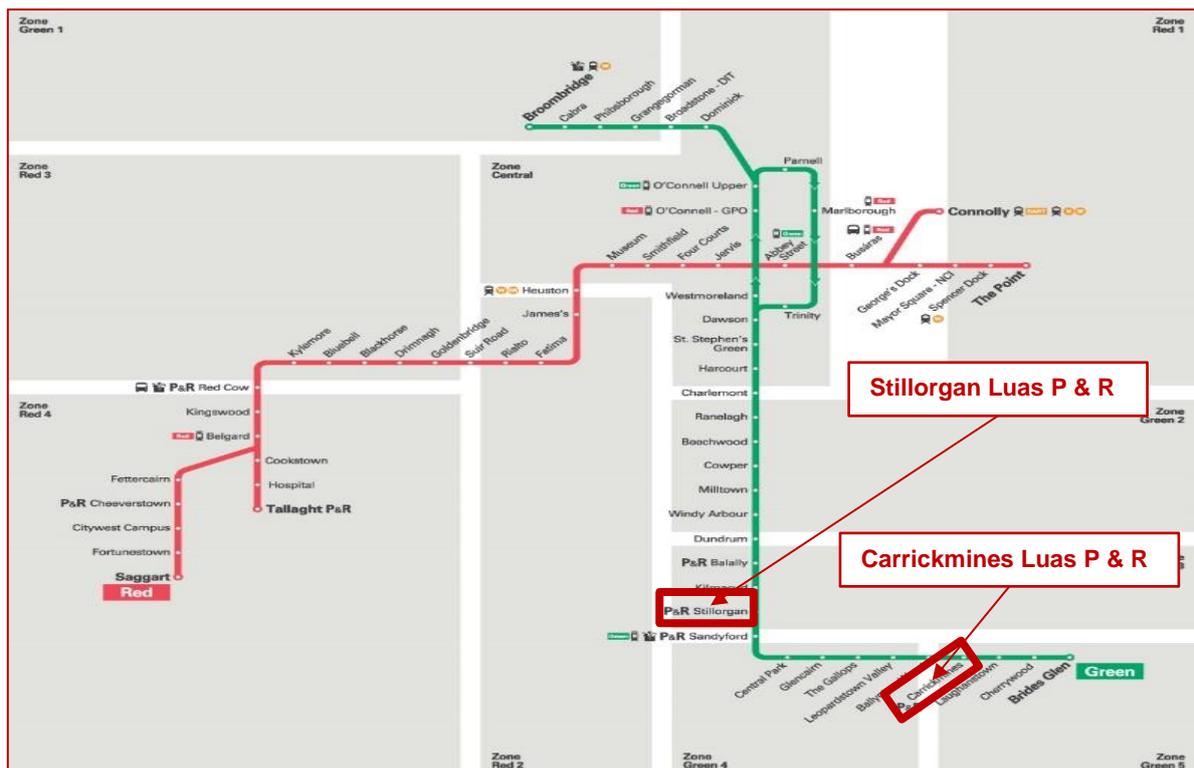


FIGURE 4.2: LUAS MAP SHOWING BOTH THE RED, AND GREEN, LUAS LINES AND THE STILLORGAN AND CARRICKMINES PARK & RIDE FACILITIES

4.1.2 Local Amenities

The development is located less than 1km from Cabinteely and Cornelscourt, 2km from Deansgrange, and less than 5km from Dún Laoghaire and Glenageary. These are small towns or villages which include supermarkets, restaurants, bars and other amenities. Pedestrian routes are well served between the development and these towns/villages, with walking journey times ranging between 10 and 50 minutes and cycle journey times ranging between 4 and 15 minutes.

A selection of other amenities located nearby are listed in Table 4-2, including the distance to these amenities and the pedestrian journey times. Given the urban character of the area in which the proposed development is located, pedestrian routes are well catered for, including pedestrian crossings, footpaths of varying widths and dropped kerb accesses.

Given the variety of amenities available to residents of the proposed development, as highlighted in Table 4-2, the development is considered to be well served by both essential, and recreational, amenities.

TABLE 4-2: LOCAL AMENITIES CLOSE TO THE PROPOSED DEVELOPMENT

Amenity	Distance (approx.)	Journey Time on Foot / Bicycle (approx.)	Direction from Development
Cabinteely Park	900m	12 minutes / 5 minutes	South
Cabinteely Community School	1.4km	18 minutes / 5 minutes	Southeast
St. Brigid's National School	1.5km	20 minutes / 8 minutes	West
Dunnes Stores Supermarket	850m	11 minutes / 5 minutes	Southwest
Trinity Care Foxrock Nursing Home	1.5km	20 minutes / 8 minutes	West
Lidl Supermarket	1.2km	14 minutes / 5 minutes	North
Supervalu Deansgrange	1.1km	13 minutes / 4 minutes	North
Blackrock College RFC	2.4km	30 minutes / 9 minutes	North
Stradbrook Rugby Club	2.9km	35 minutes / 10 minutes	North
Dlr Leisure Monkstown	2.6km	33 minutes / 10 minutes	Northeast
Dún Laoghaire Institute of Art, Design & Technology	1.9km	24 minutes / 8 minutes	Northeast
Sandycove Castle	4.5km	56 minutes / 18 minutes	Northeast
Sandycove Beach	4.7km	57 minutes / 19 minutes	Northeast
Killiney Hill	4.1km	56 minutes / 19 minutes	Southeast
Killiney Golf Course	2.6km	33 minutes / 11 minutes	East
Kilbogget Park	2.0km	24 minutes / 6 minutes	Southeast
Seapoint Rugby Club	2.0km	24 minutes / 7 minutes	Southeast
Forty Foot	4.8km	59 minutes / 19 minutes	Northeast

4.2 Building Accesses

No accessibility issues have been identified relating to Building Accesses.

4.3 Pedestrian Crossing Facilities

4.3.1 Issue

Dropped kerbs and tactile paving have not been provided in all instances across existing side roads on the northern side of Meadow Vale between the proposed development access and Clonkeen Road. In some cases, dropped kerbs have been provided but these do not include tactile paving and do not align with the corresponding access point on the opposite side of the side road.

A failure to provide dropped kerbs at crossings of side roads could lead to mobility impaired pedestrians experiencing difficulties in descending/ascending kerbs. Failing to provide tactile paving at crossings may lead to visually impaired pedestrians inadvertently entering the carriageway while misaligned crossing points may lead to visually impaired pedestrians being directed away from the corresponding crossing point and into the carriageway thus being unable to safely and independently navigate the road layout.



Recommendation

Formal uncontrolled pedestrian crossings, including dropped kerbs and tactile paving, should be provided across existing side roads on Meadow Vale.

4.3.2 Issue

There is an existing uncontrolled pedestrian crossing of Meadow Vale to the east of its junction with Clonkeen Road. While dropped kerbs have been provided on both sides of the crossing, tactile paving has not been provided. This could lead to visually impaired pedestrians inadvertently entering the carriageway at the dropped kerb.



Recommendation

Tactile paving should be provided on both sides of this uncontrolled pedestrian crossing. It is likely that existing manhole chamber covers will encroach into the tactile paving at this location. Inset tactile paving covers should therefore be provided, or stick-on tactile paving provided, on the existing chamber covers.

4.3.3 Issue

There is an existing signalised pedestrian crossing provided on Clonkeen Road to the north of the Meadow Vale junction linking two parallel service roads to the east and west of Clonkeen Road. On the eastern side of the crossing the tactile paving currently directs pedestrians into the carriageway of the service road. Similarly, on the western side of the crossing, the tactile paving currently extends to a dropped kerb at the edge of the service road with no corresponding dropped kerb provided on the opposite side of the service road. This may lead to visually impaired pedestrians being insufficiently aware that they are entering a carriageway and thus being unable to safely and independently navigate the road layout.



Recommendation

On the eastern side of Clonkeen Road the footpath on the northern side of Meadow Vale should be extended through the junction corner radii as far as the signalised crossing and a full height kerb provided where the stem of the tactile paving terminates.



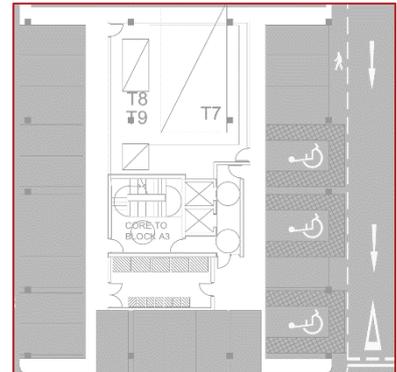
On the western side of the crossing the stem of the tactile paving should terminate at the location where the footpath changes direction. Buff coloured tactile paving, 1.2m deep, should be provided at the existing dropped kerb and a new dropped kerb provided on the other side of the service road with a similar tactile paving arrangement, ensuring the dropped kerbs and tactile paving are aligned.

Other issues relating to the Pedestrian Crossing Facilities within the proposed development have been discussed in Sections 3.3.4, 3.3.8, 3.3.9 and 3.3.11.

4.4 Target Groups (i.e. visually & mobility impaired etc.)

4.4.1 Issue

It is unclear if the areas hatched in white on the drawing, within the basement carpark, will be at the same level as the carriageway or if a raised kerb will be provided at these locations and if so, what height this kerb will be. This is a particular concern adjacent mobility impaired parking spaces as high kerbs may present difficulties for mobility impaired vehicle occupants in accessing the stairwells/elevators after exiting their vehicle.



Recommendation

If these areas are proposed to be at a different level to the carpark carriageway a dropped kerb should be provided adjacent mobility impaired parking spaces to allow mobility impaired vehicle occupants to exit the carriageway.

Other issues relating to the Target Groups (i.e. visually & mobility impaired etc.) within the proposed development have been discussed in Sections 3.3.7, 3.3.18, 4.3.2 and 4.3.3.

4.5 Subways

No accessibility issues have been identified relating to Subways.

4.6 Junctions

Issues relating to the Junctions within the proposed development have been discussed in Sections 3.3.6 and 3.3.12.

4.7 Signage

4.7.1 Issue

The existing Stop sign on Meadow Vale at its junction with Clonkeen Road is leaning towards the carriageway. This could increase the risk of the sign being struck by high sided vehicles which overhang the verge.



Recommendation

The sign should be straightened or replaced if necessary.

Other issues relating to the Signage within the proposed development have been discussed in Section 3.3.17.

4.8 Public Transport

No accessibility issues have been identified relating to Public Transport.

4.9 Lighting

Issues relating to the Lighting within the proposed development have been discussed in Section 3.3.1.

4.10 Visibility

Issues relating to the visibility within the proposed development have been discussed in Sections 3.3.11, 3.3.13 and 3.3.21.

4.11 Waste Facilities within the Development

4.11.1 Issue

It is unclear how refuse will be collected from the development, and how refuse trucks will access the location of the bin stores/bin collection points. Bin stores appear to have been indicated adjacent duplexes within the development while bin stores for the apartment buildings have been indicated within the basement carpark. While bins at duplexes are likely to be collected from the edge of the carriageway, it is unclear however how bins will be transported from the basement carpark to their collection point which is also assumed to be a surface level. This could lead to maintenance operatives having to transport large bins long distances, and potentially along ramps, for collection. The absence of a detailed refuse strategy could lead to refuse trucks having difficulty in accessing the refuse stores or to maintenance operatives having difficulty transporting bins from the bin stores to the collection points, if at a different location.

Recommendation

Ensure a refuse strategy is developed clearly explaining how refuse is to be transported, and collected, and how refuse vehicles are to access the bin stores/collection points.

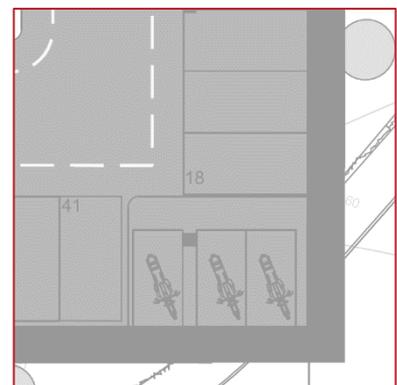
4.12 Carriageway Markings for Pedestrians

No accessibility issues have been identified relating to Carriageway Markings for Pedestrians.

4.13 Parking

4.13.1 Issue

Three motorcycle parking spaces have been indicated in the south-eastern corner of the basement carpark. While it is unclear from the drawing provided, there does not appear to be sufficient space for motorcyclists to access/egress these parking spaces should the adjacent carparking spaces, or motorcycle parking spaces, be occupied. If these spaces cannot be accessed this could lead to motorcyclists parking their motorcycles in inappropriate locations where they may restrict access for other road users or to them being unable to exit these spaces within the space available.



Recommendation

Ensure motorcyclists have sufficient space to access, and exit, these three motorcycle parking spaces when adjacent parking spaces are occupied. If sufficient space is not available at this location for the number of spaces indicated, some of the spaces should be removed or relocated.

4.13.2 Issue

Electric Vehicle (EV) parking spaces have not been indicated within the basement carpark. It is likely that there will be a requirement for a proportion of the proposed parking provision to be designated for EVs. EV parking spaces generally require increased dimensions to accommodate the charging infrastructure including a buffer zone to account for vehicles with varying charging port locations. The size of the parking spaces proposed at surface level, and within the basement carpark, however, with the exception of those indicated as mobility impaired parking spaces, all appear to be the same.

Should any of these spaces be designated for EVs, there is a risk that the required space will not be available to accommodate the necessary buffer zone and infrastructure resulting in parking spaces having to be removed potentially compromising the level of parking required, and potentially preventing the required number of EV parking spaces being provided.

Recommendation

If EV parking spaces are required, space should be provided in accordance with section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings.'

Other accessibility issues relating to the Parking within the proposed development have been discussed in Sections 3.3.5, 3.3.7, 3.3.10 and 3.3.20.

5 Non-motorised User and Cycle Audit

5.1 External Cycle Provision

A shared pedestrian and cycle path is provided on the southern side of Meadow Vale between its junction with Clonkeen Road and the entrance to Clonkeen College. There are currently no other existing cycle facilities on Meadow Vale between its junction with Clonkeen Road and the proposed development access. Cycle tracks are however provided on Clonkeen Road to the north and south of the junction with Meadow Vale.

Meadow Vale is however an existing residential street with a posted speed limit of 30kph and provides no through roads within the existing residential road network. Speeds are therefore likely to be low creating a safer environment for cyclists. The surrounding road network, in particular Clonkeen Road, is located in an urban area with a posted speed limit of 50kph and footways on the service roads which run parallel to, and on both sides of, Clonkeen Road.

A review of the Road Safety Authority's collision records does not highlight a pattern of cycling collisions during the period 2005 to 2016.



5.1.1 Issue

The existing drainage gullies on Meadow Vale are dished and are unlikely to be cycle friendly. It is likely that the proposed development will generate an increase in bicycle trips along Meadow Vale as residents of the development travel to/from the cycle tracks on Clonkeen Road. This could lead to cyclists suddenly swerving to avoid the gullies where there is an increased risk of being struck by a following vehicle whose driver may not anticipate the sudden change in direction or to cyclists potentially losing control of their bicycle should they travel over the gullies.



Recommendation

Existing gullies on Meadow Vale should be replaced with cycle friendly gullies.

5.2 Internal Cycle Provision

While the road network within the proposed development does not propose designated cycle facilities, it is likely that the low vehicle speeds on the surrounding road network will also be evident within the development. The private car parks, and residential blocks, within the development will provide cycle parking facilities, including unsheltered facilities within widened footpaths and courtyard areas and sheltered facilities at various locations within the development. Traffic calming via raised tables and raised table crossings will also be provided to passively control vehicle speeds creating a safer environment for cyclists within the carriageway. The urban 30kph - 50kph speed limit and passive speed controls can be expected to create a more cycle-friendly environment for users of the development.

Issues relating to the external cycle provision on Meadow Vale have been discussed in Section 3.3.15.

5.3 Quality Audit Action Plan

Issue	Situation	Action/Adjustment	Priority	Cost
4.3	Drivers, or passengers, parked in the perpendicular parking spaces may be unlikely to travel to the pedestrian crossings at either end of the parking resulting in them crossing the carriageway at locations where drivers may be less attentive to them increasing the risk of collisions.	An uncontrolled crossing, with dropped kerbs and appropriate tactile paving, should be provided at the gap indicated in the proposed parking provision.	1	B
	Uncontrolled pedestrian crossings have not been indicated across the entries/exits to/from the set down area.	Provide uncontrolled pedestrian crossings, including dropped kerbs and tactile paving, across the entry/exit to the set down area at this location.	1	B
	The footpath on both sides of the access road carriageway terminates abruptly with no measures provided to access the opposing footpath.	A formal pedestrian crossing, with dropped kerbs and tactile paving, should be provided at this location.	1	B
	Trees indicated adjacent pedestrian crossings may restrict inter-visibility between road users.	Ensure trees adjacent pedestrian crossings do not restrict inter-visibility between road users.	1	A
4.3.1	There is a lack of formal pedestrian crossings across side roads on Meadow Vale between the proposed development access and Clonkeen Road.	Formal uncontrolled pedestrian crossings, including dropped kerbs and tactile paving, should be provided across existing side roads on Meadow Vale.	2	B
4.3.2	Tactile paving has not been indicated at the existing uncontrolled crossing of Meadow Vale to the east of its junction with Clonkeen Road.	Tactile paving should be provided on both sides of this uncontrolled pedestrian crossing. It is likely that existing manhole chamber covers will encroach into the tactile paving at this location. Inset tactile paving slabs should therefore be provided in the chamber cover or stick-on tactile paving provided on the existing chamber covers.	2	A
4.3.3	Tactile paving at existing signalised pedestrian crossing of Clonkeen Road extends into the carriageway of the parallel service road on the eastern side.	On the eastern side of Clonkeen Road the footpath on the northern side of Meadow Vale should be extended through the junction corner radii as far as the signalised crossing and a full height kerb provided where the stem of the tactile paving terminates.	2	B
4.4	Dropped kerbs and tactile paving have not been indicated at the mobility impaired parking spaces within the proposed development.	Ensure dropped kerbs, and the appropriate tactile paving, are provided adjacent mobility impaired parking spaces within the proposed development.	1	A
	Hazard tactile paving has not been indicated at the top and bottom of steps within the proposed development.	Corduroy hazard tactile paving should be provided at the top and bottom of all flights of steps within the proposed development.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
	Tactile paving has not been indicated at the existing uncontrolled crossing of Meadow Vale to the east of its junction with Clonkeen Road.	Tactile paving should be provided on both sides of this uncontrolled pedestrian crossing. It is likely that existing manhole chamber covers will encroach into the tactile paving at this location. Inset tactile paving slabs should therefore be provided in the chamber cover or stick-on tactile paving provided on the existing chamber covers.	2	A
	Tactile paving at existing signalised pedestrian crossing of Clonkeen Road extends into the carriageway of the parallel service road on the eastern side.	<p>On the eastern side of Clonkeen Road the footpath on the northern side of Meadow Vale should be extended through the junction corner radii as far as the signalised crossing and a full height kerb provided where the stem of the tactile paving terminates.</p> <p>On the western side of the crossing the stem of the tactile paving should terminate at the location where the footpath changes direction. Buff coloured tactile paving, 1.2m deep, should be provided at the existing dropped kerb and a new dropped kerb provided on the other side of the service road with a similar tactile paving arrangement, ensuring the dropped kerbs and tactile paving are sufficiently aligned.</p>	2	B
4.4.1	It is unclear if the areas hatched in white on the drawing, within the basement carpark, will be at the same level as the carriageway or if a raised kerb will be provided at these locations and if so, what height this kerb will be. This is a particular concern adjacent mobility impaired parking spaces as high kerbs may present difficulties for mobility impaired vehicle occupants in accessing the stairwells/elevators after exiting their vehicle.	If these areas are proposed to be at a different level to the carpark carriageway a dropped kerb should be provided adjacent mobility impaired parking spaces to allow mobility impaired vehicle occupants to exit the carriageway.	1	A
4.6	It is unclear if the proposed set down/parking areas to the north and south of the first apartment block within the proposed development are intended to be one- or two-way.	If the carriageway is not sufficiently wide enough for two-way traffic the carriageway at this location should be clearly marked as one-way only. Signs and road markings should be provided at the entry/exit to these areas clearly advising drivers where entry is permitted/restricted.	1	A
	The Stop line at the proposed development access has been indicated on the proposed raised-table ramp crossing where drivers may approach without due care and consideration to approaching pedestrians.	It would be preferable if the Stop line was provided on the carriageway upstream of the ramp so that drivers are required to stop before entering the crossing, increasing their awareness to approaching pedestrians, before slowly moving forward and pausing again before entering the major road.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
4.7	Mounting height of signs within the development has not been indicated.	Ensure a minimum clearance of 2.3m is provided to the bottom of the sign face where pedestrians are likely to pass beneath the sign, and 2.5m where cyclists are likely to pass beneath the sign.	1	A
4.7.1	The existing Stop sign on Meadow Vale at its junction with Clonkeen Road is leaning towards the carriageway. This could increase the risk of the sign being struck by high sided vehicles which overhang the verge.	The sign should be straightened or replaced if necessary.	1	A
4.9	Unclear if the proposed development will be sufficiently lit.	Ensure sufficient lighting is provided within the proposed development, particularly within areas isolated from the main access road.	1	C
4.10	Trees indicated adjacent pedestrian crossings may restrict inter-visibility between road users.	Ensure trees adjacent pedestrian crossings do not restrict inter-visibility between road users.	1	A
	The ramp walls at the basement carpark ramp may restrict inter-visibility between drivers ascending the ramp and pedestrians waiting to cross the carriageway.	Ensure sufficient inter-visibility is provided between drivers ascending the basement carpark access ramp and pedestrians waiting at the uncontrolled crossing at this location.	1	A
	Unclear if the gradient of the access ramp to the basement car park is sufficient.	Ensure the gradient of the basement carpark access ramp is sufficient such that it does not result in drivers experiencing difficulties on the ramp, or limited forward visibility.	1	A
4.11.1	It is unclear how refuse will be collected from the development, and how refuse trucks will access the location of the bin stores/bin collection points.	Ensure a refuse strategy is developed clearly explaining how refuse is to be transported, and collected, and how refuse vehicles are to access the bin stores/collection points.	1	A
4.13	Drivers/passengers, including the mobility impaired, must enter the carriageway when exiting parked vehicles at the set down/parking area to the north of the first apartment block.	A footpath should be provided adjacent the parking spaces and a link/formal crossing provided so that vehicle occupants can access the surrounding footpath network.	1	B
	Dropped kerbs and tactile paving have not been indicated at the mobility impaired parking spaces within the proposed development.	Ensure dropped kerbs, and the appropriate tactile paving, are provided adjacent mobility impaired parking spaces within the proposed development.	1	A
	Parking spaces indicated to the rear of the footpath may increase the risk of collisions between VRUs and vehicles entering/exiting these spaces.	The layout of the parking spaces should be amended such that the footpath passes to the rear of the spaces or that access to the parking spaces is from the set down area rather than the primary access road.	1	B
	It is unclear if drivers will be able to safely access, and exit, parking space no. 18 in the south-eastern corner of the carpark.	Ensure, through a swept path analysis, that safe access, and egress, is possible to/from parking space no. 18.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
4.13.1	Three motorcycle parking spaces have been indicated in the south-eastern corner of the basement carpark. While it is unclear from the drawing provided, there does not appear to be sufficient space for motorcyclists to access/egress these parking spaces should the adjacent carparking spaces, or motorcycle parking spaces, be occupied.	Ensure motorcyclists have sufficient space to access, and exit, these three motorcycle parking spaces when adjacent parking spaces are occupied. If sufficient space is not available at this location for the number of spaces indicated, some of the spaces should be removed or relocated.	1	A
4.13.2	Electric Vehicle (EV) parking spaces have not been indicated within the basement carpark.	If EV parking spaces are required, space should be provided for these at this early design stage, in accordance with section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings.'	1	C
5.1.1	The existing gullies on Meadow Vale are not cycle friendly.	Existing gullies on Meadow Vale should be replaced with cycle friendly gullies.	2	B
5.2	It is unclear if cyclists will have safe access to bicycle parking facilities within the development	Ensure safe access for cyclists, via dropped kerbs, is provided close to bicycle parking facilities and that the routes to/from the cycle parking facilities are sufficiently wide enough to safely accommodate both pedestrians and cyclists.	1	A

Priority

- 1 – Immediate works required;
- 2 – Essential works required within 1 year;
- 3 - Desirable works required within 2 years;
- 4 – Long term works;
- 5 - Specific needs (e.g. pedestrian desire line not catered for)

Cost (Indicative cost only)

- A – Up to €2,500
- B – From €2,500 up to €10,000
- C - Between €10,000 up to €20,000
- D – Above €20,000

6 Appendix A – Stage 1 & 2 Road Safety Audit Problem Locations

Problem 3.3.12

Problem 3.3.14

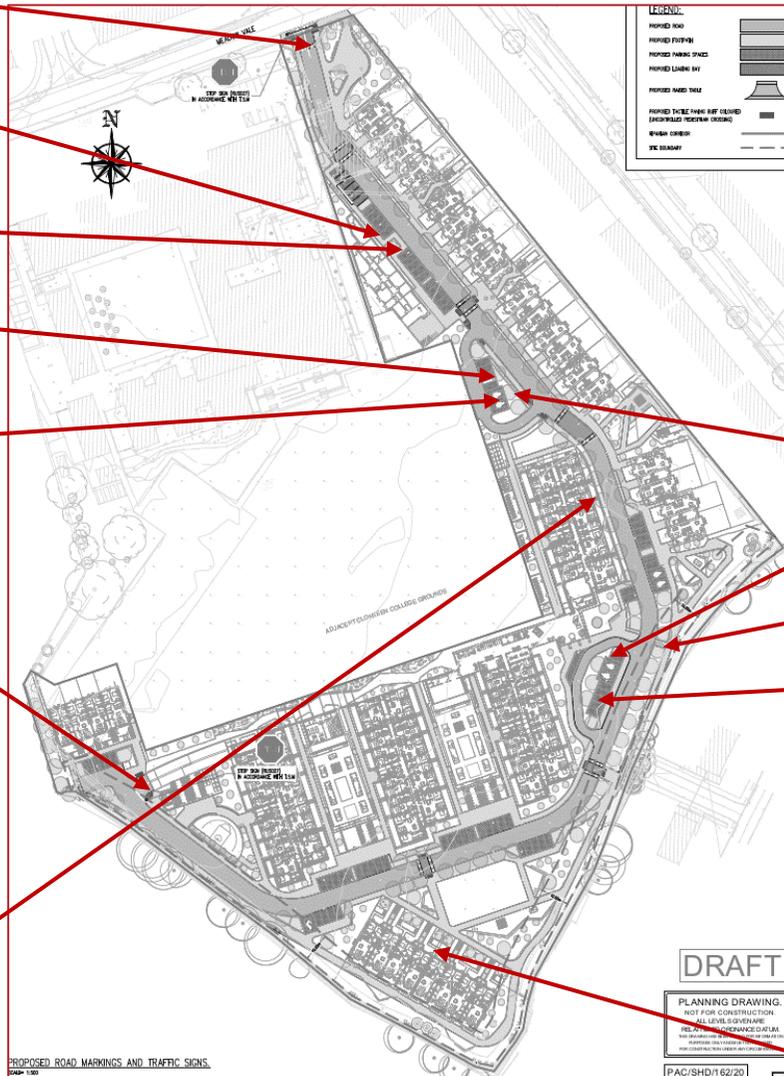
Problem 3.3.4

Problem 3.3.5

Problem 3.3.8

Problem 3.3.13

Problem 3.3.16



- General Problem 3.3.1
- General Problem 3.3.2
- General Problem 3.3.3
- General Problem 3.3.7
- General Problem 3.3.11
- General Problem 3.3.15
- General Problem 3.3.17

Problem 3.3.6

Problem 3.3.9

Problem 3.3.10

Problem 3.3.18

Problem 3.3.21

Problem 3.3.19

Problem 3.3.20

