CS CONSULTING

GROUP

DUBLIN | LONDON | LIMERICK

Quality Audit Response Document

Proposed Mixed-Use Development

Belgard Square East, Belgard Road and Blessington Road, Dublin 24

Client: Ravensbrook Limited

Job No. Q003

June 2022

CS CONSULTING

GROUP

CS CONSULTING
GROUP

QUALITY AUDIT RESPONSE DOCUMENT

PROPOSED MIXED-USE DEVELOPMENT, BELGARD SQUARE EAST, BELGARD ROAD AND BLESSINGTON ROAD, DUBLIN 24

CONTENTS

Appendix A: Quality Audit by PMCE

File Location: j:\q_jobs\job-q003\b_documents\1.0_civil\4_reports\qa\q003-csc-zz-xx-rp-c-0010 quality audit response document.docx

BS 1192 FIELD	**Q003-CSC-ZZ-XX-RP-C-0010 Quality Audit Response Document**

Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Rev. No.
Q003	LJ	FB	NB	02.06.2022	P1
Q003	LJ	FB	NB	27.05.2022	-

CS CONSULTING
GROUP

1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Ravensbrook Limited to prepare a Quality Audit Response Document to accompany an SHD planning application for a proposed mixed development located on Belgard Square East, Belgard Road and Blessington Road, Dublin 24.

This document is a response to items addressed in the Quality Audit (incl. Road Safety Audit, Walking Audit and Cycling Audit).

The following responses are made to clarify the recommendations of the Quality Audit carried out by PMCE for the Housing Development at Belgard Square East, Tallaght, Co. Dublin.

2.0 RESPONSE TO QUALITY AUDIT

The Quality Audit undertaken by PMCE includes an access, cycling, walking and road safety audit. The following sections outline responses to all items raised within the Quality Audit. Refer to the Quality Audit under separate cover within the application already submitted for further information.

2.1 Road Safety Audit

Item 3.4.1

Two accesses have been indicated to the proposed development from *Belgard Square East. The junction control (stop, yield etc.), and thus priority, at both of the development accesses has not been indicated. The absence of adequate road markings and signage, advising drivers of priority/control, may lead to driver confusion and hesitation resulting in drivers misinterpreting priority at the junction and entering the junction at the same time as opposing vehicles where there is an increased risk of side-on collisions.*

Recommendation:

Ensure the junction control, and priority, at the proposed development accesses is clear via signage and *road marking.*

Response to Item 3.4.1

'STOP' signs and road markings included to indicate priority at development access. Refer to drawing **Q003-CSC-ZZ-XX-DR-C-0022** for further details.

Item 3.4.2

An Emergency Access has been indicated at the rear of the proposed *development on Belgard Road, where a collapsible/demountable bollard will be located to deter unauthorised vehicular entry. Information regarding the swept path analysis of vehicles entering and exiting the development's emergency access has not been provided and it is therefore unclear if a fire tender or ambulance will be able to safely enter and exit the emergency access, and subsequently turn around when within the development.*

Recommendation:

Ensure that emergency vehicles can safely enter, turn, and exit the *development.*

Response to Item 3.4.2

A swept path analysis of emergency vehicles and fire tender has been undertaken to demonstrate that vehicles shall be able to access the development. Please refer to CS Consulting drawing no **Q003-CSC-ZZ-XX-DR-C-0009** for further details

Item 3.4.3

A small surface carpark has been indicated within the proposed development. It is unclear if there will be sufficient space available for drivers to enter and exit all parking spaces within this carpark, particularly those at the end of the aisle and adjacent columns. Should there be insufficient space to safely enter and exit all parking spaces there is an increased risk of low-speed material damage collisions with other parked vehicles, building boundaries or columns within the carpark.

Recommendation:

A swept path analysis should be undertaken within the internal carpark to ensure safe entry and exit to/from all spaces, and the layout revised if necessary.

Response to Item 3.4.3

A swept path analysis has been undertaken to ensure safe entry/exit of vehicles to/from all car parking spaces. Please refer to CS Consulting Drawing no. **Q003-CSC-ZZ-XX-C-0010** for further details.

Item 3.4.4

The carriageway and footway within the proposed development is indicated as being flush, however it is unclear if this also includes the access to the surface level carpark. An uncontrolled pedestrian crossing has not been indicated at this location and it is also unclear if the footway is intended to be continuous across the access, as the location of the Stop Road markings suggests not.

The lack of an appropriate crossing for pedestrians, including dropped kerbs and tactile paving, or a continuous footway, may increase the risk of slips, trips, and falls, particularly for mobility impaired pedestrians, or to visually impaired pedestrians being insufficiently aware that they have entered a carriageway where they are at risk of being struck by a vehicle.

Recommendation:

If the footway on either side of the carpark access is not flush with the access carriageway an uncontrolled pedestrian crossing, including dropped kerbs and tactile paving, should be provided.

Alternatively, if the footway is intended to be continuous across the access the access should be revised to make this clearer to both drivers and pedestrians.

Response to Item 3.4.4

The proposed access has been revised to clearly indicate the continuation of the pedestrian footpath across the proposed junction. The proposed 'STOP' marking have been removed. Please refer to CS Consulting drawing no. **Q003-CSC-ZZ-XX-DR-C-0022** for further details.

Item 3.4.5

A public leisure area has been indicated within the proposed development. A shared pedestrian and cyclist surface has been indicated from Belgard Square East and extending through this public space, where a trail within the public space intersects the shared area at a number of locations.

The Audit Team are concerned that the trail within the public space may not be wide enough to sufficiently cater for both pedestrians and cyclists, and measures (i.e. tactile paving) have not been indicated at the interfaces between the shared area and trail. This could lead to a visually impaired pedestrian being insufficiently aware that they have entered the shared surface where there is an increased risk of conflicts with cyclists.

Recommendation:

Measures, such as tactile paving or sufficient colour/material contrast between the shared surface and adjacent trail, should be provided to advise visually impaired pedestrians of the change in surface.

Response to Item 3.4.5

It is proposed that cyclist will be routed to the east of the proposed public space. A minimum shared width of 3.5m has been provided. This has been

accepted by the audit team. Refer to drawing **Q003-CSC-ZZ-XX-DR-C-0022** for further details.

Item 3.4.6

The development's internal carriageway is indicated as being flush with the footway throughout the development, with both surfaces being delineated by a kerb strip only. Measures have not been indicated to advise visually impaired pedestrians of the potential hazard and this may therefore lead to them inadvertently entering the carriageway from the footway where they are at an increased risk of being struck by a vehicle.

Recommendation:

A tactile strip should be provided within the footway adjacent the kerb strip throughout the development to advise visually impaired pedestrians of the carriageway hazard, and to define the 'safe zone' for them.

Response to Item 3.4.6

A tactile strip shall be provided adjacent to the proposed flush kerb to advice visually impaired users of the carriageway. Please refer to CS Consulting drawing no. **Q003-CSC-ZZ-XX-DR-C-0022** for details.

Item 3.4.7

Raised tables have been indicated at both development access junctions on Belgard Square East. It is unclear if the top of these raised tables will be flush with the adjacent footway or if a level difference will be provided between the edge of the footway and the raised table, away from where tactile paving has been indicated.

If a sufficient level difference between the footway and raised table is not provided, outside the extents of the tactile paving at the pedestrian crossing, a visually impaired pedestrian may be unable to detect the edge

of the footway resulting in them inadvertently entering the carriageway where they are at an increased risk of being struck by a vehicle.

Recommendation:

A level difference of 25mm minimum should be provided between the edge of the footway and the raised table at locations where tactile paving will not be provided such that the carriageway edge can be detected by a visually impaired pedestrian.

Response to Item 3.4.7

A tactile strip has been provided adjacent to where tactile paving is not being provided to advise visual impaired users of the carriageway hazard. This measure has been accepted by the audit team.

Item 3.4.8

Trees have been indicated within footways throughout the proposed development, particularly at the landscaped areas adjacent routes through the development's public space. The height of the canopy of the proposed trees relative to the footway is unclear. If there is insufficient clearance beneath the tree canopy, there is a risk that tree branches may present a hazard to VRUs resulting in personal injuries.

Recommendation:

Ensure sufficient vertical clearance for cyclists and pedestrians is provided beneath tree canopies within the development.

Response to Item 3.4.8

Vertical clearance of minimum 2.5m for cyclists shall be maintained at trees which overhang the proposed shared street. A clear height of 2.0m shall be maintained above footpaths. Where bushes/multisteam trees overhang the

footpath they shall be maintained by the management company to ensure clear footpath width and height is provided.

Item 3.4.9

Information regarding public lighting within the proposed development has not been provided to the Audit Team and it is therefore unclear if the development will be sufficiently lit during the hours of darkness. If not sufficiently lit during the hours of darkness there is a risk that inter-visibility between drivers and vulnerable road users will be reduced resulting in an increased risk of vehicle-pedestrian, or vehicle-cyclist, collisions.

Recommendation:

Ensure the proposed development is sufficiently lit during the hours of darkness.

Response to Item 3.4.9

A public lighting drawing has been prepared by Axiseng Engineering to demonstrate sufficient lighting shall be provided. Please refer to drawing no. **BEL-X-X-DR-AXR-EE-60102** for further details.

Item 3.4.10

Information regarding the proposed drainage provision within the development has not been provided. Should insufficient drainage measures be provided, this could lead to ponding within the development's internal road or footway, particularly as these are at the same level, leading to loss of traction during wet or icy weather resulting in possible loss of control collisions or slips and falls for pedestrian.

Recommendation:

Ensure the carriageway, and footways, within the development are sufficiently drained and that ponding does not occur.

Response to Item 3.4.10

A surface drainage drawing has been prepared for the proposed development. Please refer to CS Consulting Drawing no. **Q003-CSC-ZZ-XX-DR-C-0002** for further details.

Item 3.4.11

Items of street furniture, such as trees, bollards, and planters, have been indicated within the footway throughout the development and these may reduce the effective width of the footway. Should the effective width of the footways within the development be too narrow pedestrians, particularly wheelchair users, may be required to enter the carriageway to avoid obstacles, or opposing pedestrians, where there is an increased risk of being struck by a vehicle.

Recommendation:

Ensure the footways within the development provide an unobstructed width of at least 1.2m minimum.

Response to Item 3.4.11

A minimum unobstructed width of 1.80m has been provided along footpath within the proposed development. Where trees are proposed there shall be slim-stemmed.

Item 3.4.12

A small surface level carpark has been indicated within the proposed development. A dedicated pedestrian walkway has been indicated

through the carpark transitioning to the footway at the carpark access. The carriageway and footway within the proposed development is indicated as being flush, however it is unclear if this also includes the carpark carriageway and adjacent footway. If the carpark carriageway, and subsequently the dedicated pedestrian walkway, is not flush with the adjacent footway pedestrians may be required to mount a full height kerb to access the footway from the carpark. This may lead to trips and falls for pedestrians resulting in personal injury collisions, or to mobility impaired pedestrians, particularly wheelchair users, having to continue within the carriageway to a suitable access location where there is an increased risk of being struck by a vehicle.

Recommendation:

If the carpark carriageway and adjacent footway is not flush, a dropped kerb, and tactile paving, should be provided where the pedestrian walkway transitions to the footway.

Response to Item 3.4.12

Car park carriageway and adjacent footway shall be flush. This item has been accepted by the audit team. Refer to drawing **Q003-CSC-ZZ-XX-DR-C-0022** for further details.

Item 3.4.13

Bollards have been indicated within the development adjacent the set down area/loading bay and mobility impaired parking space and at the emergency access to the rear of the development. The type of bollards proposed has not been indicated and it is therefore unclear if they will be sufficiently visible during the hours of darkness.

If the bollards are not sufficiently visible to road users during the hours of darkness there is a risk of pedestrians and cyclists colliding with the bollards and suffering personal injury, or drivers striking the bollards resulting in material damage.

Recommendation:

Ensure the bollards provide sufficient contrast to the surrounding environment for visually impaired pedestrians and that a reflective band is fixed to the bollards so that they are sufficiently visible during the hours of darkness.

Response to Item 3.4.13

Proposed bollards shall be equipped with a reflective band to provide sufficient contrast to the surrounding environment.

Item 3.4.14

An emergency access has been indicated to the rear of the development which will be accessed from the Belgard Road. The upstand at the proposed dropped kerb at the access has not been indicated and, if too low, there is a risk that a visually impaired pedestrian may inadvertently enter the carriageway where there is an increased risk of being struck by a vehicle.

Recommendation:

The upstand at the dropped kerb at the proposed emergency access should be a minimum of 25mm.

Response to Item 3.4.14

The upstand at the dropped kerb shall be 25mm. Refer to drawing **Q003-CSC-ZZ-XX-DR-C-0022** for further details.

Item 3.4.15

Uncontrolled pedestrian crossings have been indicated across the accesses to the proposed development and basement carpark access ramp. The tactile paving on both sides of the crossing is not of the required depth for an inline crossing. Additionally, the tactile paving on both sides of the northernmost development access is not of the required depth for an inline crossing across the full width of the crossing.

This may lead to a visually impaired pedestrian stepping over the tactile paving and inadvertently entering the carriageway where they are at an increased risk of being struck by a vehicle.

Recommendation:

Tactile paving at inline pedestrian crossings should be a minimum of 1.2m (three rows of tactile) deep across the full width of the crossing.

Response to Item 3.4.15

Tactile paving of minimum depth 1.2m shall be provided across the full width of crossing. Please refer to CS Consulting drawing no. **Q003-CSC-ZZ-XX-DR-C-0022** for details.

Item 3.4.16

The gradient of the access ramp to the basement carpark has not been indicated and it is therefore unclear if it will be sufficient for drivers and cyclists to traverse safely. If the gradient of the ramp is steeper than 1:20 there is a risk that cyclists may experience discomfort when using the ramp leading to loss of control type collisions. A steep gradient may also lead to

high speeds as vehicles and cyclists descend the ramp and enter the carpark resulting in the potential for loss of control type incidents and collisions with opposing, or parked, vehicle.

Recommendation:

Ensure the gradient of the ramp to the basement carpark is sufficient to permit the safe access and egress for drivers and cyclists.

Response to Item 3.4.16

The proposed access ramp shall have a maximum gradient of 1:15. The proposed ramp is for vehicle use only.

Item 3.4.17

There is an existing dropped kerb on the southern side of Blessington Road to the north of the proposed development, where an existing vehicular access to the site is provided. This location coincides with the proposed pedestrian and cycle access to the development which is indicated as tying into the existing footway at this location. The dropped kerb is indicated as being retained; however it is unclear if vehicular access to the development will be necessary, or possible, from this location. There is a risk of a visually impaired pedestrian inadvertently entering the Blessington Road carriageway via the dropped kerb where there is an increased risk of being struck by a vehicle.

Recommendation:

If vehicular access is not required from this location, the dropped kerb should be replaced with a full height kerb.

Alternatively, if necessary to retain the dropped kerb, ensure it has a minimum upstand of 25mm.

Response to Item 3.4.17

Proposed dropped kerb shall have a minimum upstand of 25mm.

Item 3.4.18

The basement carpark access ramp includes a tight horizontal radius, and it is unclear if two opposing vehicles can pass each other safely on the ramp, particularly when entering/exiting at the bottom of the ramp. If sufficient space is not available on the ramp for two opposing vehicles to pass there is an increased risk of side swipe collisions.

Recommendation:

Confirm, via swept path analysis, that opposing vehicles can safely traverse the basement carpark access ramp. If necessary, revise the layout of the ramp to accommodate two-way traffic.

Response to Item 3.4.18

A swept path analysis has been undertaken to demonstrate that opposing vehicles can transverse the basement access ramp. Please refer to CS Consulting Drawing no. **Q003-CSC-ZZ-XX-DR-C-0011** for further details.

Item 3.4.19

Two lanes, one entry and one exit, have been indicated on the development's basement carpark access ramp, however measures to delineate the opposing lanes have not been indicated. It is likely that the boundary walls and alignment of the ramp will reduce forward visibility for drivers, and a failure to provide measures to delineate the opposing lanes may lead to drivers unintentionally straying into the opposing lane resulting in low speed head-on, or side swipe, collisions.

Recommendation:

Delineation measures should be provided between the opposing traffic lanes on the basement carpark access ramp.

Response to Item 3.4.19

Delineation measures have been shown on the basement access ramp between opposing traffic lanes.

Appendix A: Quality Audit by PMCE

CS CONSULTING

GROUP

Cronin & Sutton Consulting

Housing Development at Belgard Square East, Tallaght, Co. Dublin

Quality Audit

P·M·C·E

May 2022

Cronin & Sutton Consulting

Housing Development at Belgard Road East, Tallaght, Co. Dublin

Quality Audit

Document Ref:	P22-050-UQA-GEN-RP-001

Rev	Prepared By	Reviewed By	Approved By	Issue Date	Reason for Revision
2.0	AP	TAG	AOR/TAG	18th May 2022	Final
1.0	AP	AOR/TAG	AOR	6th May 2022	Draft Report

P·M·C·E

T +353 (1) 464 3041
F +353 (1) 459 1836
info@pmceconsultants.com
www.pmceconsultants.com

Unit 17, Greenmount House
Greenmount Office Park
Harold's Cross, Dublin 6W
D6W VX78, Ireland

Table of Contents

1 Introduction

1.1 General

This report was prepared in response to a request from Mr Fionnán De Burca of Cronin & Sutton Consulting to provide a Quality Audit of a Proposed Housing Development at Belgard Square East. The Quality Audit shall consider the following elements:

- Road Safety Audit
- Access Audit
- Walking Audit
- Non-Motorised User Audit
- Cycle Audit

The Quality Audit followed a site visit on the 15th March 2022. At the time of the site visit the weather conditions were dry and the road surface was dry. Traffic volumes during the site visit were moderate, pedestrian and cyclist volumes were low, and traffic speeds were considered to be generally within the posted speed limit.

This report contains three primary sections, with each section focussing on different implications to the users of the scheme. The 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.

2 Background

A new development is proposed on an existing vacant site to the east of The Square Shopping Centre in Tallaght, Co. Dublin (see Figure 2-1). The development is bounded to the north by the L3019 (Blessington Road), to the east by the R113 (Belgard Road), to the south by existing commercial developments, and to the west by the L3030 (Belgard Square East).

The proposed development includes the construction of a residential complex comprising of three apartment blocks and a basement carpark.

Belgard Road, which forms part of the R113, runs in a north-south direction and is a two-way dual-carriageway with cycle lanes, pedestrian footways and public lighting on either side. Gaps in the central median are provided for right-turns into adjacent developments. Belgard Road starts south of the development site at its junction with the N81, and becomes the Fonthill Road South north of its junction with the N7 (Naas Road), approximately 3km north of the proposed development. Blessington Road runs in an east-west direction and is a two-way dual-carriageway which, in the vicinity of the proposed development, provides a link between Belgard Road and Belgard Square East. Belgard Square East runs in a north-south direction and is a two-way single carriageway road with pedestrian footways and public lighting provided on both sides.

Vehicular entry to the proposed development will be provided at two locations via new priority-controlled access junctions on Belgard Square East. The southernmost junction will provide access to the basement carpark while the northernmost junction will provide access to the development's surface level carpark. Uncontrolled crossings are proposed at both junctions with dropped kerbs and tactile paving. Amendments to the existing footways surrounding the development are proposed as part of the development. An additional access is proposed on Belgard Road which will be used by emergency vehicles only, collapsible bollards used to block access for general vehicles. The footways and carriageway within the proposed development will be at the same level, delineated by a kerb strip.

A landscaped area with pedestrian and cycle routes is proposed within the development, with this area also tying into the amended footway on Blessington Road, Belgard Road, and Belgard Square East. Pedestrian access to the development will be provided from each of the development's surrounding roads.

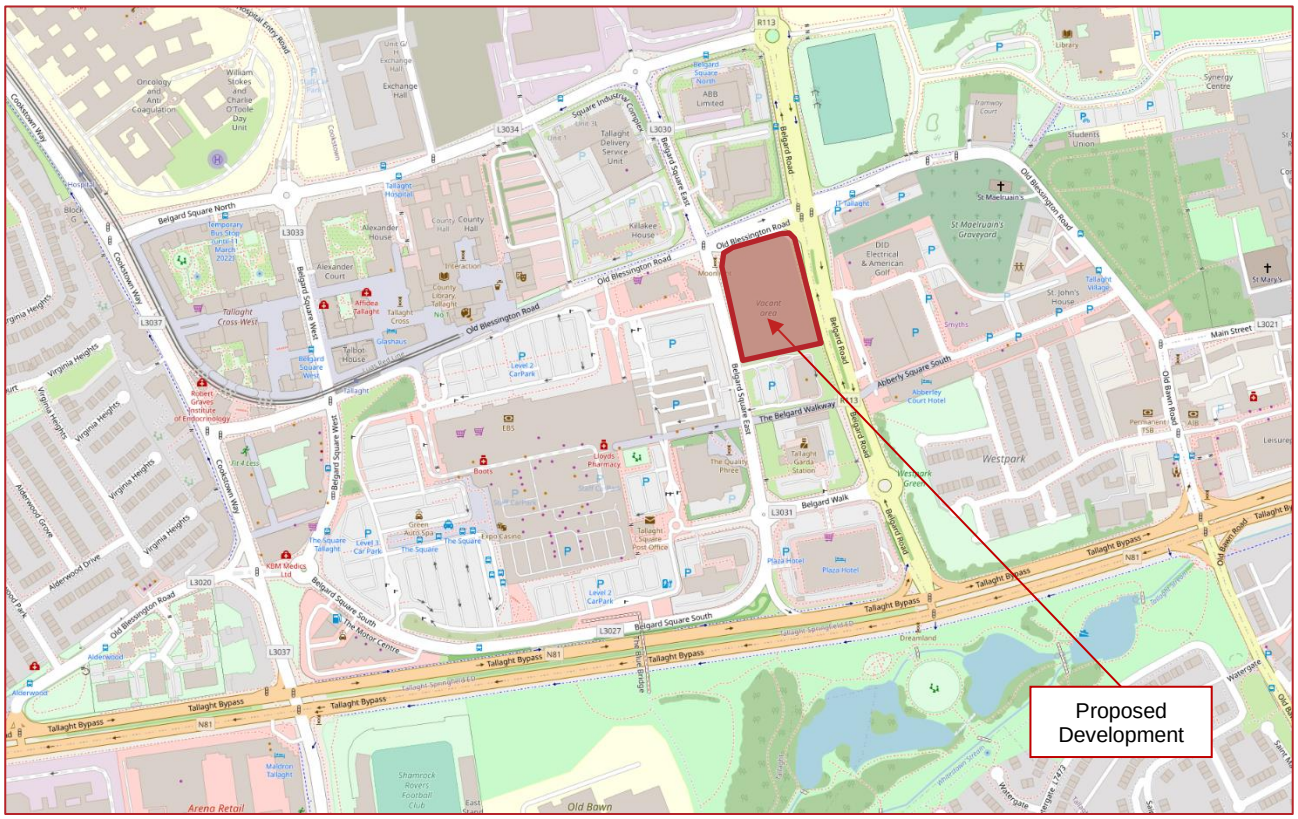


FIGURE 2-1: SITE LOCATION PLAN (SOURCE: WWW.OPENSTREETMAP.ORG)

3 Road Safety Audit

3.1 Introduction

This 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. Antonis Papadakis
(MSc, MIEI)
Road Safety Audit Team Member

The Audit took place between March & May 2022 and comprised an examination of the documents provided by the designers (see section 3.7). A site visit was undertaken on the 15th of March 2022. At the time of the site visit, traffic volumes were moderate, pedestrian and cyclist volumes were low, and speeds were considered to be within the posted speed limit.

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 - Road Safety Audit Problem Locations.

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 Items Not Submitted for Auditing

Details of the following items were not submitted for audit; therefore, no specific problems have been identified at this stage relating to these design elements, however where the absence of this information has given rise to a safety concern it has been commented upon in Section 3.4: -

- Vehicle swept paths
- Drainage
- Public Lighting
- Visibility splays

3.3 Collision History

The Road Safety Authority website (www.rsa.ie) was consulted to identify historical collisions in the vicinity of the proposed scheme. The website includes summary information on recorded collision occurrence for the period 2005 to 2016 (see Figure 3-1).

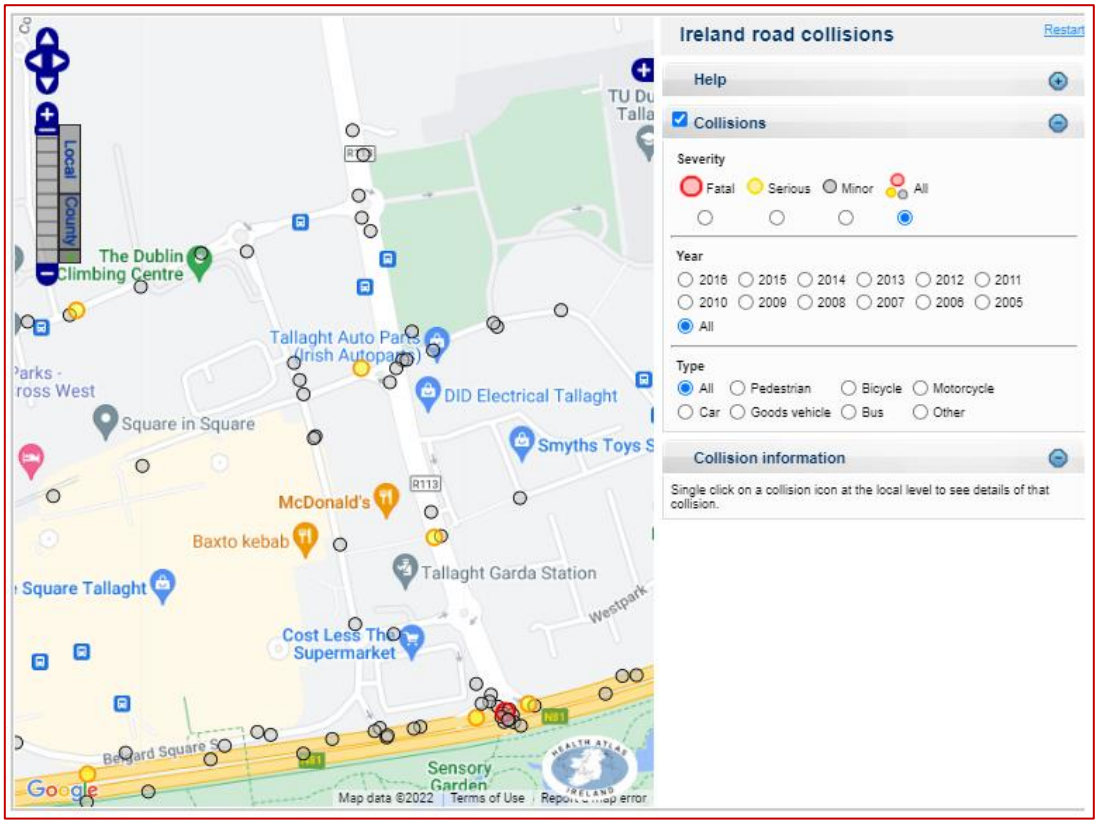


FIGURE 3-1: HISTORICAL COLLISIONS IN THE VICINITY OF THE PROPOSED DEVELOPMENT (SOURCE WWW.RSA.IE)

Two Serious Injury Collisions and ten Minor Injury Collisions were recorded in the vicinity of the proposed development during this time period. Table 3-1 below summarises the collisions recorded.

TABLE 3-1: DETAILS OF RECORDED COLLISIONS IN THE VICINITY OF THE SCHEME

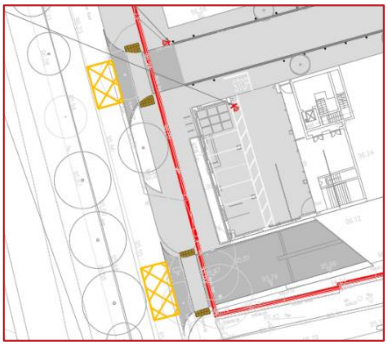
Year	Vehicle	Circumstances	Day	Time	Speed Limit	Location	Severity
2011	Car	Pedestrian	Saturday	03:00 - 07:00	30kph	Old Blessington Road	Serious
2010	Car	Pedestrian	Sunday	03:00 - 07:00	50kph	Belgard Road	Serious
2016	Car	Pedestrian	Wednesday	16:00 - 19:00	50kph	Belgard Square East	Minor
2014	Car	Rear end, straight	Thursday	10:00 - 16:00	30kph	Belgard Square East	Minor
2014	Car	Pedestrian	Monday	10:00 - 16:00	50kph	Belgard Road	Minor
2014	Bus	Pedestrian	Sunday	03:00 - 07:00	50kph	Belgard Road	Minor
2011	Undefined	Pedestrian	Tuesday	10:00 - 16:00	50kph	Belgard Sq E/ Blessington Road Junction	Minor
2010	Car	Pedestrian	Friday	23:00 - 03:00	50kph	Belgard Square East	Minor
2009	Car	Rear end, straight	Friday	16:00 - 19:00	60kph	Belgard Square East	Minor
2008	Car	Rear end, straight	Sunday	10:00 - 16:00	80kph	Belgard Road/Belgard Square East Junction	Minor
2008	Motorcycle	Other	Tuesday	07:00 - 10:00	80kph	Belgard Road/Belgard Square East Junction	Minor
2007	Car	Head-on, right turn	Monday	19:00 - 23:00	50kph	Belgard Road/Belgard Square East Junction	Minor

3.4 Road Safety Audit

3.4.1 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0008 (Rev. P1)*

Summary: *Junction control, or priority, has not been indicated at the accesses to the proposed development.*



Two accesses have been indicated to the proposed development from Belgard Square East. The junction control (stop, yield etc.), and thus priority, at both of the development accesses has not been indicated. The absence of adequate road markings and signage, advising drivers of priority/control, may lead to driver confusion and hesitation resulting in drivers misinterpreting priority at the junction and entering the junction at the same time as opposing vehicles where there is an increased risk of side-on collisions.

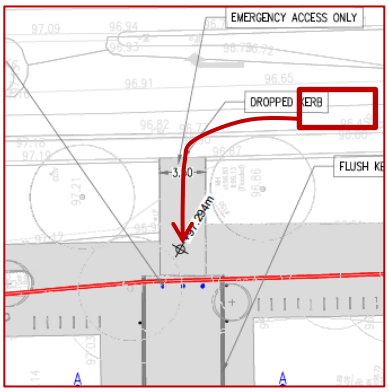
Recommendation

Ensure the junction control, and priority, at the proposed development accesses is clear via signage and road markings.

3.4.2 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *It is unclear if emergency, or larger, vehicles will be able to access the development.*



An Emergency Access has been indicated at the rear of the proposed development on Belgard Road, where a collapsible/demountable bollard will be located to deter unauthorised vehicular entry. Information regarding the swept path analysis of vehicles entering and exiting the development's emergency access has not been provided and it is therefore unclear if a fire tender or ambulance will be able to safely enter and exit the emergency access, and subsequently turn around when within the development.

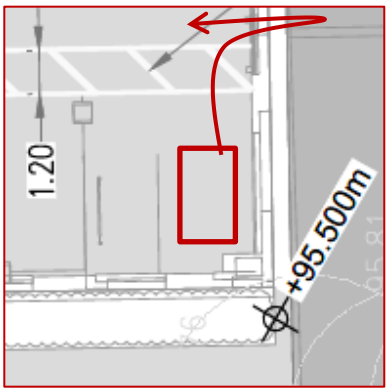
Recommendation

Ensure that emergency vehicles can safely enter, turn, and exit the development.

3.4.3 Problem

Location: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *It is unclear if there is sufficient space for drivers to safely enter/exit all parking spaces within the development's surface carpark.*



A small surface carpark has been indicated within the proposed development. It is unclear if there will be sufficient space available for drivers to enter and exit all parking spaces within this carpark, particularly those at the end of the aisle and adjacent columns. Should there be insufficient space to safely enter and exit all parking spaces there is an increased risk of low-speed material damage collisions with other parked

vehicles, building boundaries or columns within the carpark.

Recommendation

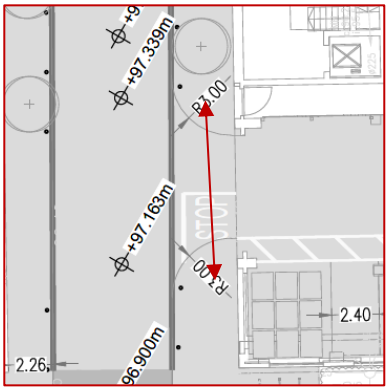
A swept path analysis should be undertaken within the internal carpark to ensure safe entry and exit to/from all spaces, and the layout revised if necessary.

3.4.4 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *A pedestrian crossing has not been indicated across the access to the development's surface carpark and it is unclear if the footway is intended to be continuous across the access.*

The carriageway and footway within the proposed development is indicated as being flush, however it is unclear if this also includes the access to the surface level carpark. An uncontrolled pedestrian crossing has not been indicated at this location and it is also unclear if the footway is intended to be continuous across the access, as the location of the Stop road markings suggests not.



The lack of an appropriate crossing for pedestrians, including dropped kerbs and tactile paving, or a continuous footway, may increase the risk of slips, trips, and falls, particularly for mobility impaired pedestrians, or to visually impaired pedestrians being insufficiently aware that they have entered a carriageway where they are at risk of being struck by a vehicle.

Recommendation

If the footway on either side of the carpark access is not flush with the access carriageway an uncontrolled pedestrian crossing, including dropped kerbs and tactile paving, should be provided.

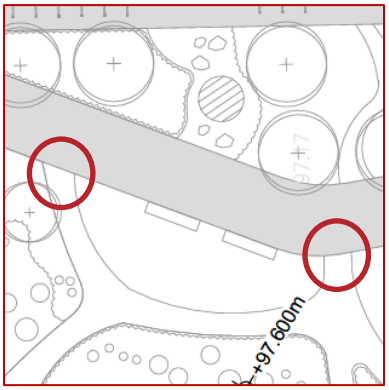
Alternatively, if the footway is intended to be continuous across the access the access should be revised to make this clearer to both drivers and pedestrians.

3.4.5 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *Tactile paving has not been indicated at the transitions between the shared pedestrian and cyclist route through the proposed public space and the paths within the public space which may lead to visually impaired pedestrians inadvertently entering the shared area where they are at risk of being struck by a cyclist.*

A public leisure area has been indicated within the proposed development. A shared pedestrian and cyclist surface has been indicated from Belgard Square East and extending through this public space, where a trail within the public space intersects the shared area at a number of locations.



The Audit Team are concerned that the trail within the public space may not be wide enough to sufficiently cater for both pedestrians and cyclists, and measures (i.e. tactile paving) have not been indicated at the interfaces between the shared area and trail. This could lead to a visually impaired pedestrian being insufficiently aware that they have entered the shared surface where there is an increased risk of conflicts with cyclists.

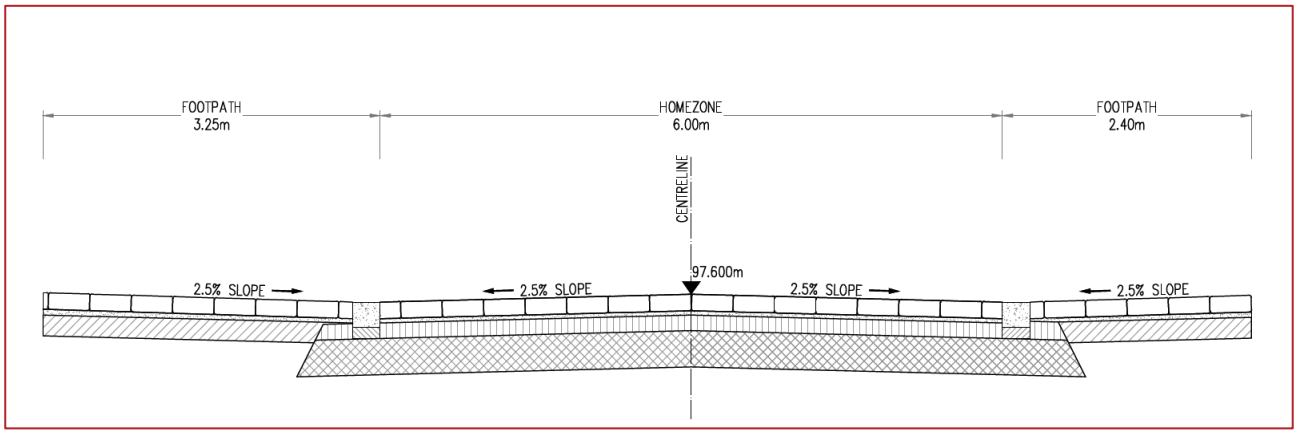
Recommendation

Measures, such as tactile paving or sufficient colour/material contrast between the shared surface and adjacent trail, should be provided to advise visually impaired pedestrians of the change in surface.

3.4.6 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0021 (Rev. -)*

Summary: *Visually impaired pedestrians may inadvertently enter the development's internal carriageway where they are at an increased risk of being struck by a vehicle.*



The development's internal carriageway is indicated as being flush with the footway throughout the development, with both surfaces being delineated by a kerb strip only. Measures have not been indicated to advise visually impaired pedestrians of the potential hazard and this may therefore lead to them inadvertently entering the carriageway from the footway where they are at an increased risk of being struck by a vehicle.

Recommendation

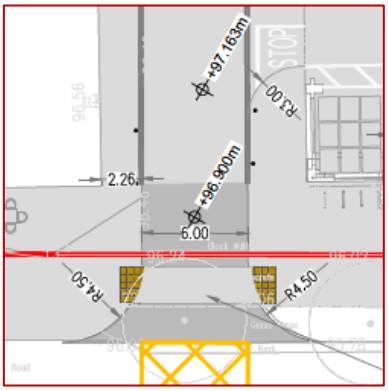
A tactile strip should be provided within the footway adjacent the kerb strip throughout the development to advise visually impaired pedestrians of the carriageway hazard, and to define the 'safe zone' for them.

3.4.7 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *It is unclear if a visually impaired pedestrian will be able to detect the edge of the carriageway at the raised tables at both development accesses.*

Raised tables have been indicated at both development access junctions on Belgard Square East. It is unclear if the top of these raised tables will be flush with the adjacent footway or if a level difference will be provided between the edge of the footway and the raised table, away from where tactile paving has been indicated.



If a sufficient level difference between the footway and raised table is not provided, outside the extents of the tactile paving at the pedestrian crossing, a visually impaired pedestrian may be unable to detect the edge of the footway resulting in them inadvertently entering the carriageway where they are at an increased risk of being struck by a vehicle.

Recommendation

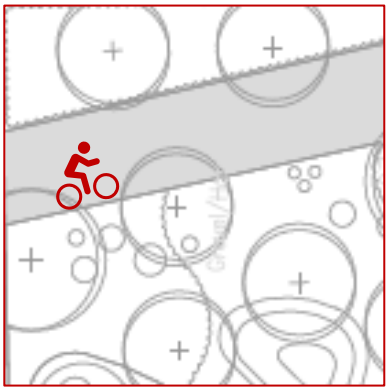
A level difference of 25mm minimum should be provided between the edge of the footway and the raised table at locations where tactile paving will not be provided such that the carriageway edge can be detected by a visually impaired pedestrian.

3.4.8 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *Low hanging tree canopies may obstruct vulnerable road users (VRUs) along pedestrian/cycle routes.*

Trees have been indicated within footways throughout the proposed development, particularly at the landscaped areas adjacent routes through the development's public space. The height of the canopy of the proposed trees relative to the footway is unclear. If there is insufficient clearance beneath the tree canopy, there is a risk that tree branches may present a hazard to VRUs resulting in personal injuries.



Recommendation

Ensure sufficient vertical clearance for cyclists and pedestrians is provided beneath tree canopies within the development.

3.4.9 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *It is unclear if the proposed development will be sufficiently lit during the hours of darkness.*

Information regarding public lighting within the proposed development has not been provided to the Audit Team and it is therefore unclear if the development will be sufficiently lit during the hours of darkness. If not sufficiently lit during the hours of darkness there is a risk that inter-visibility between drivers and vulnerable road users will be reduced resulting in an increased risk of vehicle-pedestrian, or vehicle-cyclist, collisions.

Recommendation

Ensure the proposed development is sufficiently lit during the hours of darkness.

3.4.10 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *It is unclear if the carriageway within the proposed development will sufficiently shed surface water.*

Information regarding the proposed drainage provision within the development has not been provided. Should insufficient drainage measures be provided, this could lead to ponding within the development's internal road or footway, particularly as these are at the same level, leading to loss of traction during wet or icy weather resulting in possible loss of control collisions or slips and falls for pedestrians.

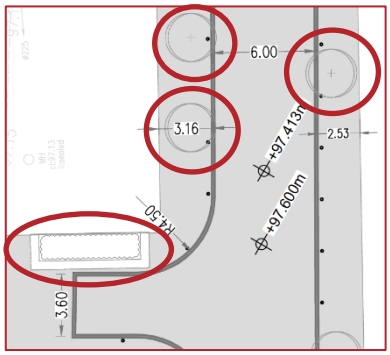
Recommendation

Ensure the carriageway, and footways, within the development are sufficiently drained and that ponding does not occur.

3.4.11 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *The effective width of footways at a number of locations within the proposed development appears narrow as physical obstacles, such as trees and bollards, reduce the effective width of the footway.*



Items of street furniture, such as trees, bollards, and planters, have been indicated within the footway throughout the development and these may reduce the effective width of the footway. Should the effective width of the footways within the development be too narrow pedestrians, particularly wheelchair users, may be required to enter the carriageway to avoid obstacles, or opposing pedestrians, where there is an increased risk of being struck by a vehicle.

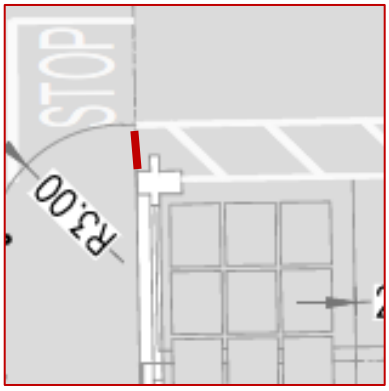
Recommendation

Ensure the footways within the development provide an unobstructed width of at least 1.2m minimum.

3.4.12 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *Pedestrians may be required to mount/dismount a full height kerb when accessing the footway adjacent to the carpark.*



A small surface level carpark has been indicated within the proposed development. A dedicated pedestrian walkway has been indicated through the carpark transitioning to the footway at the carpark access. The carriageway and footway within the proposed development is indicated as being flush, however it is unclear if this also includes the carpark carriageway and adjacent footway. If the carpark carriageway, and subsequently the dedicated pedestrian walkway, is not flush with the adjacent footway pedestrians may be required to mount a full height kerb to access the footway from the carpark. This may lead to trips and falls for pedestrians resulting in personal injury collisions, or to mobility impaired pedestrians, particularly wheelchair users, having to continue within the carriageway to a suitable access location where there is an increased risk of being struck by a vehicle.

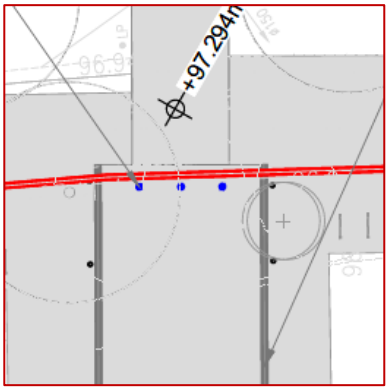
Recommendation

If the carpark carriageway and adjacent footway is not flush, a dropped kerb, and tactile paving, should be provided where the pedestrian walkway transitions to the footway.

3.4.13 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *Unclear if bollards within the development will be sufficiently visible during the hours of darkness.*



Bollards have been indicated within the development adjacent the set down area/loading bay and mobility impaired parking space and at the emergency access to the rear of the development. The type of bollards proposed has not been indicated and it is therefore unclear if they will be sufficiently visible during the hours of darkness.

If the bollards are not sufficiently visible to road users during the hours of darkness there is a risk of pedestrians and cyclists colliding with the bollards and suffering personal injury, or drivers striking the bollards resulting in material damage.

Recommendation

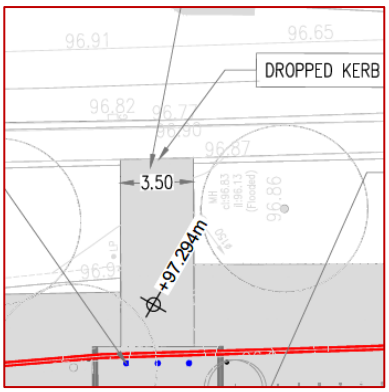
Ensure the bollards provide sufficient contrast to the surrounding environment for visually impaired pedestrians and that a reflective band is fixed to the bollards so that they are sufficiently visible during the hours of darkness.

3.4.14 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *Risk of visually impaired pedestrians descending the dropped kerb at the emergency access and entering the Belgard Road carriageway, where there is an increased risk of being struck by a vehicle.*

An emergency access has been indicated to the rear of the development which will be accessed from the Belgard Road. The upstand at the proposed dropped kerb at the access has not been indicated and, if too low, there is a risk that a visually impaired pedestrian may inadvertently enter the carriageway where there is an increased risk of being struck by a vehicle.



Recommendation

The upstand at the dropped kerb at the proposed emergency access should be a minimum of 25mm.

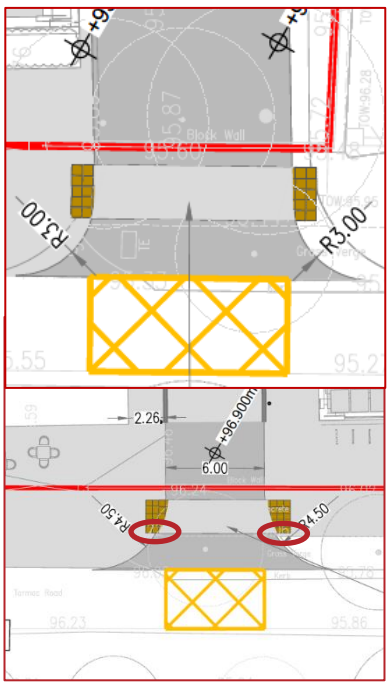
3.4.15 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *Tactile paving is not of the required depth.*

Uncontrolled pedestrian crossings have been indicated across the accesses to the proposed development and basement carpark access ramp. The tactile paving on both sides of the crossing is not of the required depth for an inline crossing. Additionally, the tactile paving on both sides of the northernmost development access is not of the required depth for an inline crossing across the full width of the crossing.

This may lead to a visually impaired pedestrian stepping over the tactile paving and inadvertently entering the carriageway where they are at an increased risk of being struck by a vehicle.



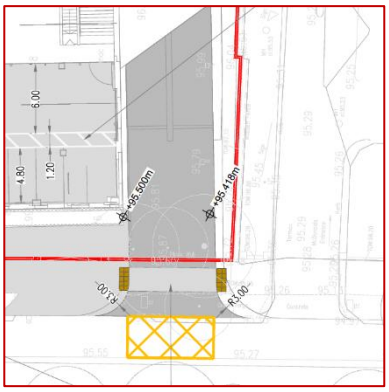
Recommendation

Tactile paving at inline pedestrian crossings should be a minimum of 1.2m (three rows of tactile) deep across the full width of the crossing.

3.4.16 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *The gradient of the access ramp to the basement carpark has not been indicated.*



The gradient of the access ramp to the basement carpark has not been indicated and it is therefore unclear if it will be sufficient for drivers and cyclists to traverse safely. If the gradient of the ramp is steeper than 1:20 there is a risk that cyclists may experience discomfort when using the ramp leading to loss of control type collisions. A steep gradient may also lead to high speeds as vehicles and cyclists descend the ramp and enter the carpark resulting in the potential for loss of control type incidents and collisions with opposing, or parked, vehicles.

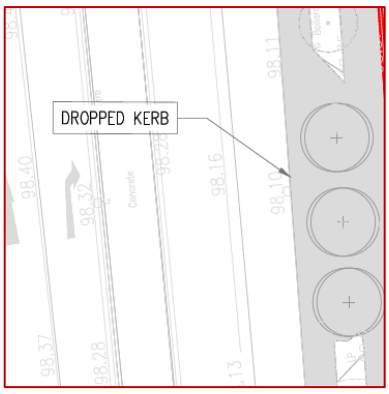
Recommendation

Ensure the gradient of the ramp to the basement carpark is sufficient to permit the safe access and egress for drivers and cyclists.

3.4.17 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XX-DR-C-0006 (Rev. P3)*

Summary: *Risk of visually impaired pedestrians descending the existing dropped kerb on Blessington Road and entering the carriageway, where there is an increased risk of being struck by a vehicle.*



There is an existing dropped kerb on the southern side of Blessington Road to the north of the proposed development, where an existing vehicular access to the site is provided. This location coincides with the proposed pedestrian and cycle access to the development which is indicated as tying into the existing footway at this location. The dropped kerb is indicated as being retained, however it is unclear if vehicular access to the development will be necessary, or possible, from this location. There is a risk of a visually impaired pedestrian inadvertently entering the Blessington Road carriageway via the dropped kerb where there is an increased risk of being struck by a vehicle.

Recommendation

If vehicular access is not required from this location, the dropped kerb should be replaced with a full height kerb.

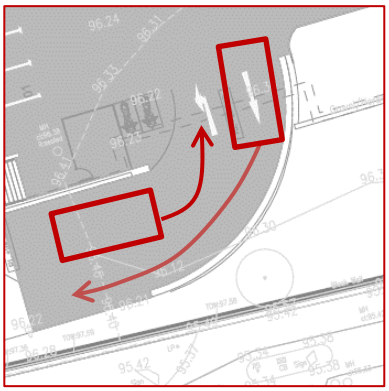
Alternatively, if necessary to retain the dropped kerb, ensure it has a minimum upstand of 25mm.

3.4.18 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XXDR-C-0008 (Rev. P1)*

Summary: *Unclear if two opposing vehicles can safely pass each other on the basement carpark access ramp.*

The basement carpark access ramp includes a tight horizontal radius, and it is unclear if two opposing vehicles can pass each other safely on the ramp, particularly when entering/exiting at the bottom of the ramp. If sufficient space is not available on the ramp for two opposing vehicles to pass there is an increased risk of side swipe collisions.



Recommendation

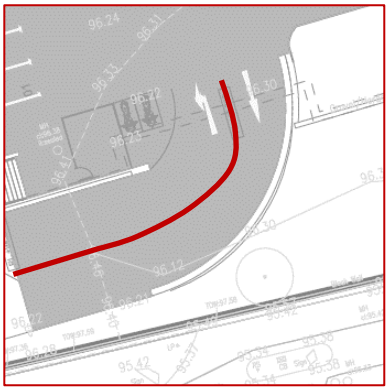
Confirm, via swept path analysis, that opposing vehicles can safely traverse the basement carpark access ramp. If necessary, revise the layout of the ramp to accommodate two-way traffic.

3.4.19 Problem

Drawing: *Drawing no. Q003-CSC-ZZ-XXDR-C-0008 (Rev. P1)*

Summary: *Risk of low speed head-on or side swipe collisions on the basement carpark access ramp.*

Two lanes, one entry and one exit, have been indicated on the development's basement carpark access ramp, however measures to delineate the opposing lanes have not been indicated. It is likely that the boundary walls and alignment of the ramp will reduce forward visibility for drivers, and a failure to provide measures to delineate the opposing lanes may lead to drivers unintentionally straying into the opposing lane resulting in low speed head-on, or side swipe, collisions.



Recommendation

Delineation measures should be provided between the opposing traffic lanes on the basement carpark access ramp.

3.5 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: 18th May 2022

ROAD SAFETY AUDIT TEAM MEMBER

Antonis Papadakis Signed: 

Dated: 18th May 2022

3.6 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	☐	☑
2.	Departures from Standard	☐	☑
3.	Scheme Drawings	☑	☐
4.	Scheme Details such as signs schedules, traffic signal staging	☐	☑
5.	Collision data for existing roads affected by scheme	☐	☑
6.	Traffic surveys	☐	☑
7.	Previous Road Safety Audit Reports and Designer's Responses/Feedback Form	☐	☑
8.	Previous Exception Reports	☐	☑
9.	Start date for construction and expected opening date	☐	☑
10.	Any elements to be excluded from audit	☐	☑

Any other information? ☐ ☑
(if 'Yes', describe below)

3.7 Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REV.
Proposed Road Layout	Q003-CSC-ZZ-XX-DR-C-0006	P3
Typical Road Cross Sections	Q003-CSC-ZZ-XX-DR-C-0021	-
Proposed Road Markings and Signs Ground and Basement Level	Q003-CSC-ZZ-XXDR-C-0008	P1

3.8 Road Safety Audit Feedback Form

Scheme: Belgard Square East

Route No.: Belgard Square East, Belgard Road, Blessington Road

Audit Stage: 1 **Date Audit Completed:** 29.04.2022

	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)**
3.4.1	Yes	Yes		
3.4.2	Yes	Yes		
3.4.3	Yes	Yes		
3.4.4	Yes	Yes		
3.4.5	Yes	No	Cyclists shall be re-routed to the east of the courtyard area. Minimum shared width of 3.5m has been provided.	Yes
3.4.6	Yes	Yes		
3.4.7	Yes	No	A tactile strip shall be provided to inform visually impaired users of the carriageway.	Yes
3.4.8	Yes	Yes		
3.4.9	Yes	Yes		
3.4.10	Yes	Yes		
3.4.11	Yes	Yes		
3.4.12	No	No	The car park carriageway and adjacent footway shall be flush.	Yes
3.4.13	Yes	Yes		
3.4.14	Yes	Yes		
3.4.15	Yes	Yes		
3.4.16	Yes	Yes		
3.4.17	Yes	Yes		
3.4.18	Yes	Yes		
3.4.19	Yes	Yes		

Signed: Designer **Date** 18.05.2022

Signed: Audit Team Leader **Date** 18th May 2022

Signed: Employer **Date** 26th May 2022

4 Accessibility & Walkability Audit

4.1 Introduction

A new residential development is proposed to the east of The Square Shopping Centre in Tallaght, Co. Dublin. The development is located in an urban area close to The Square and adjacent Industrial Estates. The proposed development includes the construction of a residential complex comprising of three apartment blocks and a basement carpark.

Pedestrian access to the proposed development will be provided from the existing road network at a number of locations, including via footways adjacent to the vehicular access on Belgard Square East, a new pedestrian/cyclist only access from the existing footway on the southern side of Blessington Road and a new pedestrian/cyclist only access at the rear of the development from the western side of Belgard Road. An uncontrolled pedestrian crossing is proposed across the Belgard Square East vehicular accesses with dropped kerbs and tactile paving indicated.

Amendments to the existing footways surrounding the development are proposed as part of the development, which will include widening the existing footways and providing new landscaping and seating areas, and these amended footways will tie-into the existing footways on Blessington Road, Belgard Road and Belgard Square East. Existing pedestrian crossing facilities are provided at the signalised junctions between Belgard Road and Blessington Road, and Belgard Square East and Blessington Road at the northwest and northeast extents of the proposed development connecting the development with the footway facilities on the surrounding road network. The development will therefore be well served by footways within the surrounding road network.

Within the development, a landscaped area with pedestrian and cyclist routes is proposed, with this area tying into the amended footways on Blessington Road, Belgard Road, and Belgard Square East. Pedestrian and cyclist routes between the three apartment blocks, the public space and surface carpark within the development are also proposed through the provision of a shared street layout with the carriageway and adjacent footways located at the same level, delineated by a kerb strip.

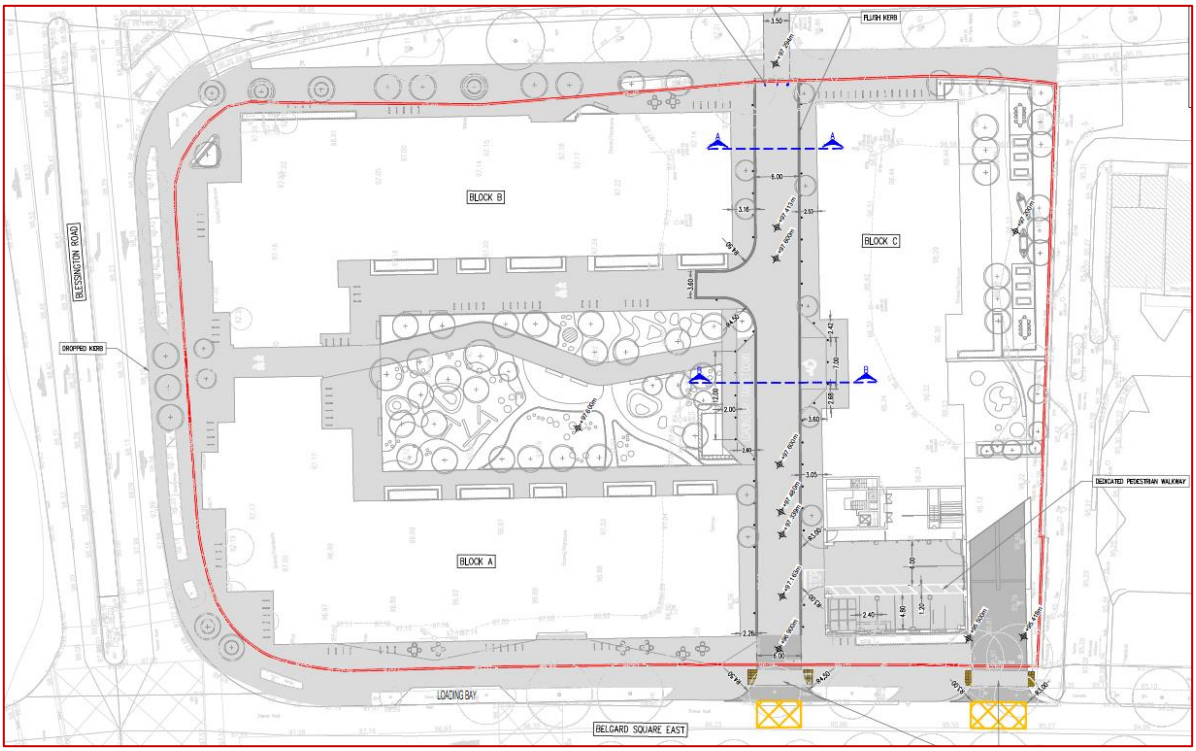


FIGURE 4-1: LAYOUT OF THE PROPOSED DEVELOPMENT

4.1.1 Access to local bus network

There are several bus stops located in the vicinity of the proposed development. The closest bus stops to the proposed development, and the bus routes which serve them, are detailed in Table 4-1 below. The distance to these bus stops has been measured using the development access junction on Belgard Square East as the origin point.

TABLE 4-1 BUS ROUTES NEAR DEVELOPMENT

Bus Stop (Name)	Bus Stop (Number)	Proximity to the development	Bus Route	Travelling between
Tallaght, Blessington Road (Eastbound)	4436	200m	27	Clare Hall to Jobstown
			54A	Pearse Street to Ellensborough/Kiltipper Way
			65	Poolberg Street to Valleymount Road
			75,75A	Dún Laoghaire to The Square Tallaght
			77A	Bianconi Avenue to Barrow Street
			175	UCD to Citywest
Tallaght Village (Eastbound/Westbound)	4435/2557	650m	27	Clare Hall to Jobstown
			54A	Pearse Street to Ellensborough/Kiltipper Way
			65	Poolberg Street to Valleymount Road
			75,75A	Dún Laoghaire to The Square Tallaght
			77A	Bianconi Avenue to Barrow Street
			175	UCD to Citywest
Belgard Road (Northbound)	2363	250M	76, 76A	Glenaulin to Belgard Square South
			175	Blanchardstown SC - Belgard Square South
Belgard Square North (Southbound)	2346	270m	27	Clare Hall to Jobstown
			65	Poolberg Street to Valleymount Road
			77A	Bianconi Avenue to Barrow Street
			175	UCD to Citywest

4.1.2 Access to the Luas

The proposed development is located close to two Luas stops, 'Tallaght (The Square)' and 'Tallaght Hospital,' both of which are on the Red Line.

The 'Tallaght (The Square)' and 'Tallaght Hospital' Luas stops are located approximately 500m and 900m from the proposed development respectively. Given its proximity to the Luas Red Line, which connects the development to Dublin City Centre, where railway services are available at Heuston, and Connolly, Train Stations, as well all other locations serviced by the Red Line (see Figure 4-2), the development is considered to have high quality access to Dublin's light rail, as well as national railway, networks.

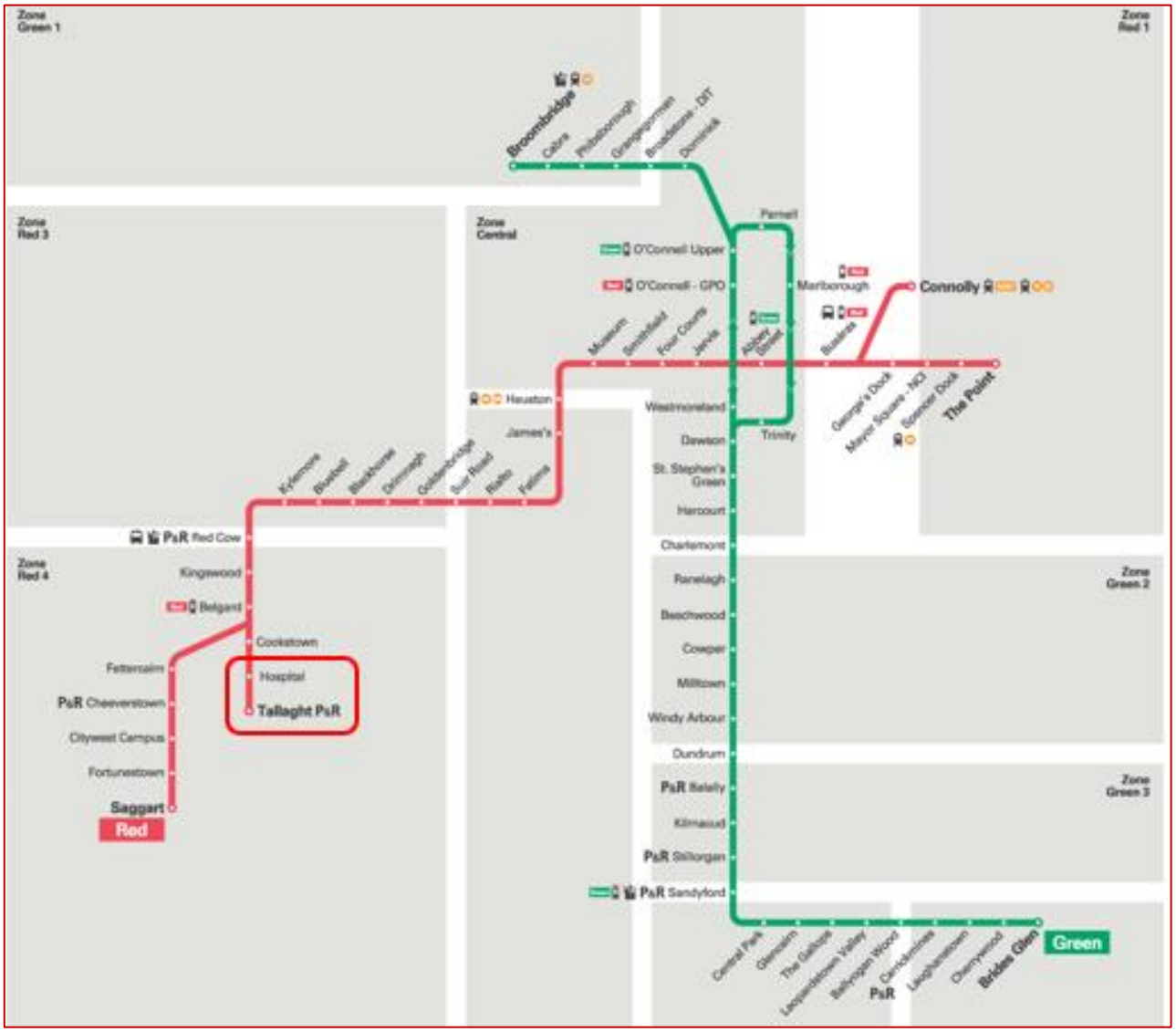


FIGURE 4-2: DUBLIN RAIL NETWORK

The proposed development is therefore well served by existing public transport services.

4.1.3 Local Amenities

Tallaght village is located approximately 300m to the north and east of the proposed development, and includes a number of amenities, as detailed in Table 4-2.

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

Amenity	Distance (approx.)	Journey Time (approx.)	Direction from Development
Aldi Supermarket	750m	9min	Northwest
Russell Medical Centre	650m	9min	West
Tallaght University Hospital	900m	11min	Northwest
County Library	700m	8min	Northwest
Square Tallaght Shopping mall	300m	4min	Southwest
McDonald's fast food restaurant	50m	1min	South
Centra Belgard Road	350m	5min	East
Saint Maelruain's Church	650m	8min	East
TUD Tallaght	500m	7min	Northeast
Tallaght Stadium	950m	12min	Southwest
Old Bawn Community School	900m	12min	Southwest
Circle K	700m	9min	Southwest
Sean Walsh Memorial Park	350m	5min	South

4.2 Footways

Accessibility issues relating to Footways have been discussed in Sections 3.4.5, 3.4.6, 3.4.11 & 3.4.12.

4.3 Building Accesses

4.3.1 Issue

Mobility parking spaces have been indicated within the proposed basement carpark at two locations. While it is assumed that these parking spaces will be located adjacent an elevator, it is unclear from the drawing provided if one is proposed close to the mobility parking spaces. If elevators are not provided close to mobility parking spaces, mobility impaired pedestrians may be required to travel long distances to access an elevator to proceed to surface level, or may be restricted from accessing the surface level.

Recommendation

Ensure the mobility parking spaces are close to an elevator such that mobility impaired pedestrians can access the buildings at surface level after parking their vehicle in the basement carpark.

4.4 Pedestrian Crossing Facilities

Accessibility issues relating to Pedestrian Facilities have been discussed in Sections 3.4.4, & 3.4.15.

4.5 Target Groups

Accessibility issues relating to Target Groups (i.e. visually, and mobility, impaired etc.) have been discussed in Sections 3.4.5, 3.4.6, 3.4.7, 3.4.12, 3.4.14, 3.4.15 & 3.4.17.

4.6 Traffic Volumes (Pedestrian/Vehicular etc.)

No accessibility issues have been identified relating to Traffic Volumes.

4.7 Non-motorised user provision

Accessibility issues relating to non-motorised user provision have been discussed in Sections 3.4.4, 3.4.5, 3.4.6, 3.4.7, 3.4.8, 3.4.11, 3.4.12, 3.4.14, 3.4.15 & 3.4.17.

4.8 Subways

No accessibility issues have been identified relating to Subways.

4.9 Junctions

Accessibility issues relating to Junctions have been discussed in Section 3.4.1.

4.10 Signage

Accessibility issues relating to Signage have been discussed in Section 3.4.1.

4.11 Public Transport

No accessibility issues have been identified relating to Public Transport.

4.12 Lighting

Accessibility issues relating to Lighting have been discussed in Section 3.4.9.

4.13 Visibility

Accessibility issues relating to Visibility have been discussed in Section 3.4.19.

4.14 Waste Facilities within the Development

4.14.1 Issue

Bin stores appear to be located within the basement carpark. It is unclear where refuse will be collected from and if, and how, bins will be transported to surface level, if the collection point is located here. Large, heavy bins may have to be transported long distances from bin stores to collection points which may result in difficulties for maintenance/refuse operatives. Additionally, it is unclear how refuse will be collected from the development, and how refuse trucks will access the collection location.

The absence of a detailed refuse strategy could lead to maintenance/refuse operatives and refuse trucks drivers having difficulty in transporting, and accessing, bins respectively.

Recommendation

A refuse strategy for the proposed development should be prepared which clearly outlines how refuse is to be stored, transported, and collected and how refuse vehicles are to access the collection point.

4.15 Carriageway Markings for Pedestrians

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

4.16 Parking

4.16.1 Issue

Electric Vehicle (EV) parking spaces have not been indicated within the development's surface or basement carpark, however it is likely that a portion of the parking spaces will be required for EVs. These spaces typically require additional width to support a buffer zone to account for potentially different charging port connections on vehicles. The additional width allows space for electric cables, as well as user access to connect/disconnect the charging cables.

All of the parking spaces within the carpark appear to have similar dimensions. There is a risk therefore that, should any of these spaces be designated for EVs as the design progresses, the required space will not be available to accommodate the necessary buffer zone and infrastructure for EV parking spaces.

Recommendation

A sufficient number of parking spaces within the development's carparks should be designated as EV parking spaces and sufficient space should be provided at these spaces in accordance with Section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings.'

Other accessibility issues relating to Parking have been discussed in Section 3.4.3.

4.17 Emergency Vehicles

4.17.1 Issue

An emergency access has been indicated to the rear of the proposed development on Belgard Road which will be accessed via a dropped kerb and link through the existing verge. A cycle track, segregated from the traffic lane via a kerb, is currently provided at this location between the northbound carriageway and verge on Belgard Road. It is unclear if the layout of the cycle track will be revised to accommodate emergency vehicles at this location.

If a sufficient vehicular access is not provided across the cycle track at the location of the proposed emergency access, emergency vehicles will be required to mount the cycle track kerb which may impede access, slow response times or damage the cycle track.

Recommendation

The existing cycle track on Belgard Road at the proposed emergency access should be amended to ensure easy, and quick, access for emergency vehicles.

Other accessibility issues relating to Emergency Vehicles have been discussed in Section 3.4.2.

5 Non-motorised User and Cycle Audit

5.1 External Cycle Provision

Cycle tracks are provided along both sides of Belgard Road to the east of the development commencing approximately 300m to the south at its intersection with the N81 National Road. These continue northwards on Belgard Road towards Cookstown Road and provide a link between the proposed development and Tallaght village and Kilnamanagh.

There are currently no existing cycle facilities on Belgard Square East to the west of the proposed development and on the southern side of Blessington Road at the proposed development's northern boundary, with cyclists required to share the carriageway with motorised vehicles. An existing segregated eastbound cycle track is however provided on the northern side of Blessington Road.

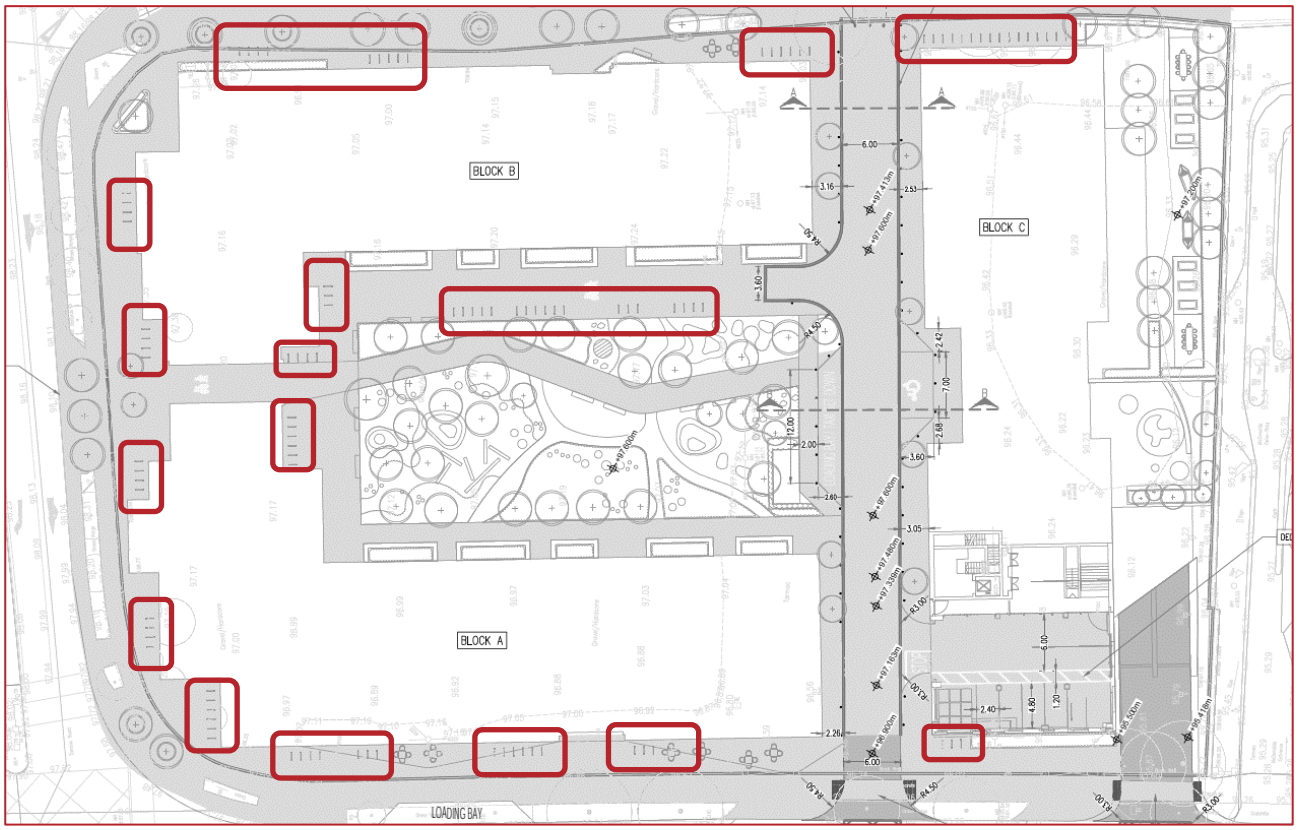
The proposed development includes amendments to the existing footways on Belgard Square East, Blessington Road and Belgard Road around the development's boundary which includes widening the existing footways improving measures for cyclists on Belgard Square East and the southern side of Blessington Road and providing improved connectivity for cyclists between the proposed development and the existing cycle facilities on the surrounding road network.

5.2 Internal Cycle Provision

A shared pedestrian and cyclist route is proposed through the development from the development access on Belgard Square East and a new pedestrian and cyclist only access on Blessington Road. This shared surface will tie into the existing footway on the Belgard Square East, Blessington Road and Belgard Road to the west, north and east respectively. It will provide a route to cycle parking stands within the proposed development as well as an access to the apartment blocks. Cycle parking stands are also proposed within the amended existing footways on Belgard Square East and Belgard Road.

The proposed development will provide cyclist permeability between Belgard Road, Blessington Road and Belgard Square East.

5.2.1 Issue



It is unclear if the proposed cycle parking stands within the development and on the amended footways on Belgard Square East, Belgard Road and Old Blessington Road will be sheltered. Users may be discouraged from using cycle stands if they believe the locations are unsafe, or if their bicycle will be exposed to the weather. This may encourage informal parking on footways or at property accesses within the proposed development, thereby restricting pedestrian access.

Recommendation

Ensure sheltered cycle parking is provided in certain locations, and strategically located to benefit cyclists within the development.

5.3 Quality Audit Action Plan

Issue	Situation	Action/Adjustment	Priority	Cost
4.2	Tactile paving has not been indicated at the transitions between the shared pedestrian and cyclist route through the proposed public space and the paths within the public space which may lead to visually impaired pedestrians inadvertently entering the shared area where they are at risk of being struck by a cyclist.	Measures, such as tactile paving or sufficient colour/material contrast between the shared surface and adjacent trail, should be provided to advise visually impaired pedestrians of the change in surface.	1	A
	Visually impaired pedestrians may inadvertently enter the development's internal carriageway where they are at an increased risk of being struck by a vehicle.	A tactile strip should be provided within the footway adjacent the kerb strip throughout the development to advise visually impaired pedestrians of the carriageway hazard, and to define the 'safe zone' for them.	1	B
	The width of footways at a number of locations within the proposed development appear narrow as physical obstacles, such as trees and bollards, reduce the effective width of the footway.	Ensure the footways within the development provide an unobstructed width of 1.2m minimum.	1	A
	Pedestrians may be required to mount/dismount a full height kerb when accessing the footway adjacent to the carpark.	If the carpark carriageway and adjacent footway is not flush, a dropped kerb, and tactile paving, should be provided where the pedestrian walkway transitions to the footway.	1	A
4.3.1	Mobility parking spaces have been indicated within the proposed basement carpark at two locations. While it is assumed that these parking spaces will be located adjacent an elevator, it is unclear from the drawing provided if one is proposed close to the mobility parking spaces.	Ensure the mobility parking spaces are close to an elevator such that mobility impaired pedestrians can access the buildings at surface level after parking their vehicle in the basement carpark.	1	D
4.4	A pedestrian crossing has not been indicated across the access to the development's surface carpark and it is unclear if the footway is intended to be continuous across the access.	If the footway on either side of the carpark access is not flush with the access carriageway an uncontrolled pedestrian crossing, including dropped kerbs and tactile paving, should be provided. Alternatively, if the footway is intended to be continuous across the access the access should be revised to make this clearer to both drivers and pedestrians.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
	Tactile paving at the proposed uncontrolled pedestrian crossings of the development accesses is not of the required depth.	Tactile paving at inline pedestrian crossings should be a minimum of 1.2m (three rows of tactile) deep across the full width of the crossing.	1	A
4.5	Tactile paving has not been indicated at the transitions between the shared pedestrian and cyclist route through the proposed public space and the paths within the public space which may lead to visually impaired pedestrians inadvertently entering the shared area where they are at risk of being struck by a cyclist.	Measures, such as tactile paving or sufficient colour/material contrast between the shared surface and adjacent trail, should be provided to advise visually impaired pedestrians of the change in surface.	1	A
	Visually impaired pedestrians may inadvertently enter the development's internal carriageway where they are at an increased risk of being struck by a vehicle.	A tactile strip should be provided within the footway adjacent the kerb strip throughout the development to advise visually impaired pedestrians of the carriageway hazard, and to define the 'safe zone' for them.	1	B
	It is unclear if a visually impaired pedestrian will be able to detect the edge of the carriageway at the raised tables at both development accesses.	A level difference of 25mm minimum should be provided between the edge of the footway and the raised table at locations where tactile paving will not be provided such that the carriageway edge can be detected by a visually impaired pedestrian.	1	A
	Pedestrians may be required to mount/dismount a full height kerb when accessing the footway adjacent to the carpark.	If the carpark carriageway and adjacent footway is not flush, a dropped kerb, and tactile paving, should be provided where the pedestrian walkway transitions to the footway.	1	A
	Risk of visually impaired pedestrians descending the dropped kerb at the emergency access and entering the Belgard Road carriageway, where there is an increased risk of being struck by a vehicle.	The upstand at the dropped kerb at the proposed emergency access should be a minimum of 25mm.	1	A
	Tactile paving at the proposed uncontrolled pedestrian crossings of the development accesses is not of the required depth.	Tactile paving at inline pedestrian crossings should be a minimum of 1.2m (three rows of tactile) deep across the full width of the crossing.	1	A
	Risk of visually impaired pedestrians descending the existing dropped kerb on Old Blessington Road and entering the carriageway, where there is an increased risk of being struck by a vehicle.	If vehicular access is not required from this location, the dropped kerb should be replaced with a full height kerb. Alternatively, if necessary to retain the dropped kerb, ensure it has a minimum upstand of 25mm.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
4.7	A pedestrian crossing has not been indicated across the access to the development's surface carpark and it is unclear if the footway is intended to be continuous across the access.	If the footway on either side of the carpark access is not flush with the access carriageway an uncontrolled pedestrian crossing, including dropped kerbs and tactile paving, should be provided.	1	A
	Tactile paving has not been indicated at the transitions between the shared pedestrian and cyclist route through the proposed public space and the paths within the public space which may lead to visually impaired pedestrians inadvertently entering the shared area where they are at risk of being struck by a cyclist.	Measures, such as tactile paving or sufficient colour/material contrast between the shared surface and adjacent trail, should be provided to advise visually impaired pedestrians of the change in surface.	1	A
	Visually impaired pedestrians may inadvertently enter the development's internal carriageway where they are at an increased risk of being struck by a vehicle.	A tactile strip should be provided within the footway adjacent the kerb strip throughout the development to advise visually impaired pedestrians of the carriageway hazard, and to define the 'safe zone' for them. It is unclear if a visually impaired pedestrian will be able to detect the edge of the carriageway at the raised tables at both development accesses.	1	B
	It is unclear if a visually impaired pedestrian will be able to detect the edge of the carriageway at the raised tables at both development accesses.	A level difference of 25mm minimum should be provided between the edge of the footway and the raised table at locations where tactile paving will not be provided such that the carriageway edge can be detected by a visually impaired pedestrian.	1	A
	Low hanging tree canopies may obstruct vulnerable road users (VRUs) along pedestrian/cycle routes.	Ensure sufficient vertical clearance for cyclists and pedestrians is provided beneath tree canopies within the development. Also, a maintenance strategy should be developed ensuring VRU routes within the development are kept clear of obstacles and debris.	1	A
	The width of footways at a number of locations within the proposed development appear narrow as physical obstacles, such as trees and bollards, reduce the effective width of the	Ensure the footways within the development provide an unobstructed width of 1.2m minimum.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
	Pedestrians may be required to mount/dismount a full height kerb when accessing the footway adjacent to the carpark.	If the carpark carriageway and adjacent footway is not flush, a dropped kerb, and tactile paving, should be provided where the pedestrian walkway transitions to the footway.	1	A
	Risk of visually impaired pedestrians descending the dropped kerb at the emergency access and entering the Belgard Road carriageway, where there is an increased risk of being struck by a vehicle.	The upstand at the dropped kerb at the proposed emergency access should be a minimum of 25mm.	1	A
	Tactile paving at the proposed uncontrolled pedestrian crossings of the development accesses is not of the required depth.	Tactile paving at inline pedestrian crossings should be a minimum of 1.2m (three rows of tactile) deep across the full width of the crossing.	1	A
	Risk of visually impaired pedestrians descending the existing dropped kerb on Old Blessington Road and entering the carriageway, where there is an increased risk of being struck by a vehicle.	If vehicular access is not required from this location, the dropped kerb should be replaced with a full height kerb. Alternatively, if necessary to retain the dropped kerb, ensure it has a minimum upstand of 25mm.	1	A
4.9	Junction control, or priority, has not been indicated at the accesses to the proposed development.	Ensure the junction control, and priority, at the proposed development accesses is clear via signage and road markings.	1	A
4.10	Junction control, or priority, has not been indicated at the accesses to the proposed development.	Ensure the junction control, and priority, at the proposed development accesses is clear via signage and road markings.	1	A
4.12	It is unclear if the proposed development will be sufficiently lit during the hours of darkness.	Ensure the proposed development is sufficiently lit during the hours of darkness.	1	D
4.13	Risk of low speed head-on or side swipe collisions on the basement carpark access ramp.	Delineation measures should be provided between the opposing traffic lanes on the basement carpark access ramp.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
4.14.1	Bin stores appear to be located within the basement carpark. It is unclear where refuse will be collected from and if, and how, bins will be transported to surface level, if the collection point is located here. Large, heavy bins may have to be transported long distances from bin stores to collection points which may result in difficulties for maintenance/refuse operatives. Additionally, it is unclear how refuse will be collected from the development, and how refuse trucks will access the collection location. The absence of a detailed refuse strategy could lead to maintenance/refuse operatives and refuse trucks drivers having difficulty in transporting, and accessing, bins respectively.	A refuse strategy for the proposed development should be prepared which clearly outlines how refuse is to be stored, transported and collected and how refuse vehicles are to access the collection point.	1	A
4.16.1	Electric Vehicle (EV) parking spaces have not been indicated within the development's surface or basement carpark, however it is likely that a portion of the parking spaces will be required for EVs.	A sufficient number of parking spaces within the development's carparks should be designated as EV parking spaces and sufficient space should be provided at these spaces in accordance with Section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings.'	1	D
4.16	It is unclear if there is sufficient space for drivers to safely enter/exit all parking spaces within the development's surface carpark.	A swept path analysis should be undertaken within the internal carpark to ensure safe entry and exit to/from all spaces, and the layout revised if necessary.	1	A
4.17.1	It is unclear if the layout of the cycle track on Belgard Road will be revised to accommodate emergency vehicles at this location.	The existing cycle track on Belgard Road at the proposed emergency access should be amended to ensure easy, and quick, access for emergency vehicles.	1	B
4.17	It is unclear if emergency, or larger, vehicles will be able to access the development.	Ensure that emergency vehicles can safely enter, turn, and exit the development.	1	A
5.2.1	It is unclear if the proposed cycle parking stands within the development and on the amended footways on Belgard Square East, Belgard Road and Old Blessington Road will be sheltered.	Ensure cycle parking stands are sheltered and, where located in areas away from high pedestrian volumes, ensure cycle stands are secure and the surrounding area sufficiently lit.	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 - Road Safety Audit Problem Locations