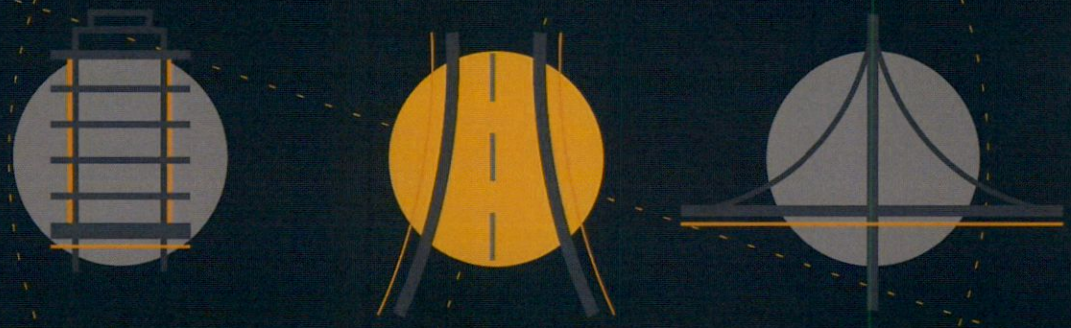
TRANSPORTATION

Clonburris Tile 2

Stage 2 Road Safety Audit

210124-X-90-Z00-XXX-RP-DBFL-CE-0005



May 2023

DBFL CONSULTING ENGINEERS

Project Title:	Clonburris Tile 2		
Document Title:	Stage 2 Road Safety Audit		
File Ref:	210124-X-90-Z00-XXX-RP-DBFL-CE-0005		
Status:	P3 - Planning	Rev:	P01
	S - Issued		

Rev.	Date	Description	Prepared	Reviewed	Approved
P00	29/03/23	First Issue	Sayed Ahmad Saeed	Thomas Jennings	Thomas Jennings
P01	04/05/23	Final	Sayed Ahmad Saeed	Thomas Jennings	Thomas Jennings

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1 INTRODUCTION

1.1 BACKGROUND

This report describes a Stage 2 Road Safety Audit (RSA) carried out for Cairn Homes Ltd. The Audit considers those elements of the design that have safety implications for all road users. The subject development plot has until the recent commencement of construction works been a greenfield site located within the Clonburris Strategic Development Zone lands. The Clonburris SDZ lands have an approximate land area of 280 hectares and at the moment is predominately agricultural in nature, greenfield sites or a construction site. In recent years, Lucan East Educate Together National School and two secondary school; Griffeen Community College and Kishoge Community College, have been constructed on part of the SDZ lands. The SDZ lands also contain a number of private residences, together with traveller accommodation which has been provided by South Dublin County Council. There are two train stations constructed within the SDZ including the Clondalkin-Fonthill station which is currently operational and the Kishoge station which is constructed but not yet operational.

The subject site, which lies to the east of the SDZ lands, is bounded to the east by the R113 Fonthill Road North and to the north by the Kildare railway line. The site is bounded by greenfield sites / construction sites to the west and south. Separate proposals are advanced for the SDZ lands to the south and west of the subject Tile 2 plot. The general location of the subject site is illustrated in Figure 1-1 below, whilst

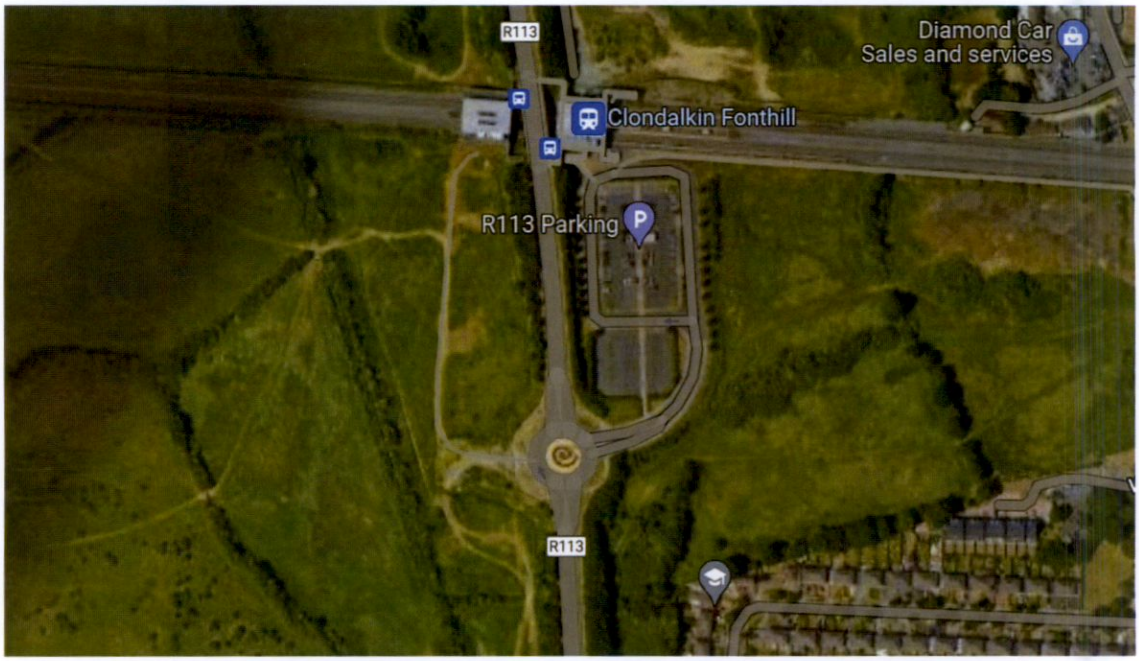


Figure 1-2 illustrates the indicative extent of the subject site lands.

Figure 1-1 Subject Site Location

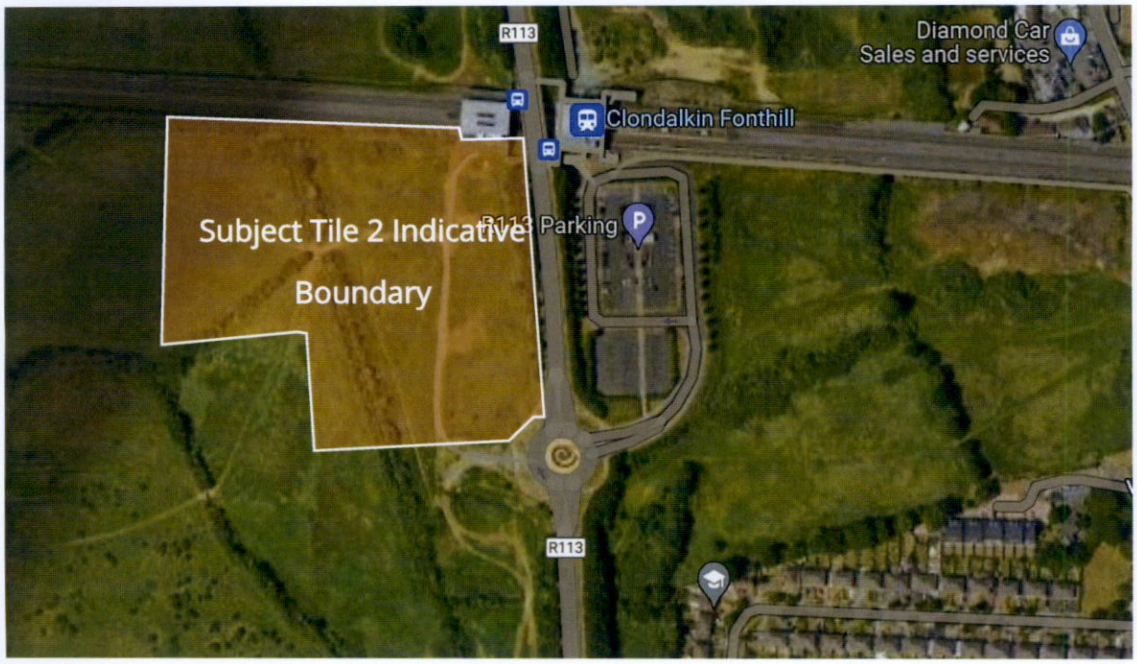


Figure 1-2 Indicative Site Boundary

1.2 Scheme Description

The development will consist of the construction of a mixed-use development on a site of c. 5.18 hectares comprising 594 no. apartments (255 no. 1 bedroom apartments, 307 no. 2 bedroom apartments and 32 no. 3 bedroom apartments), as well as commercial office development in Block C, c. 4,516 sq.m), 1 no. retail unit at ground floor of Block B (c.147.5 sq. m) and 3 no. retail units at ground floor of Block E as follows (c.106.2 sq.m, c.141.6 sq.m and c.492.2 sq.m respectively) a creche (c. 609 sq. m) at ground floor and first floor of Block A. Car parking (396 no. spaces in a mixture of undercroft spaces Block A, Block B&D and Block E&F) and bicycle parking (1,232 no. spaces at undercroft and surface levels) along with all site development and landscaping works including public open space.

The application also includes infrastructure comprising a road layout, surface water drainage, foul drainage and the watermain infrastructure.

1.3 RSA Scope

The geographical scope of this Stage 2 Road Safety Audit considers all internal transport infrastructure and the subject site access junction on the Clonburris Southern Link Street. The

immediate approaches leading to/from this junction is also included in the scope of the RSA, as illustrated in Figure 1-3 below.

Figure 1-3 Geographical Scope of RSA

The Audit Team membership was as follows:

Team Leader: Thomas Jennings
BEng MSc MIEI MIHT CMILT
TII approval number: *TJ 135381*

Team Member: Sayed Ahmad Saeed
BEng Tech BEng (Hons) MEng MIEI
TII approval number: *SS 3419515*

The Audit comprised a desktop review of the information listed in Section 5 of this report in addition to an examination on-site of the existing local road network characteristics. The site was

initially visited on Tuesday 16th August 2022 between 10:30 and 11:30. A second site visit was undertaken on Tuesday 21st March between 1630 and 1700. At the time of both site visits the weather was dry with all road/footway surfaces being noted as dry.

This Audit has been carried out in accordance with the relevant sections of the Transport Infrastructure Ireland guidance (TII) guidance GE-STY- 01024 December 2017 for Road Safety Audit.

The Audit Team has examined only those issues within the proposed design relating to the road safety implications of the scheme and has therefore not examined or verified the compliance of the design to any other design criteria. The objective of the site visit was quantifying:

- existing traffic (pedestrian, cyclist and vehicular) and travel demand characteristics,
- the provision of dedicated facilities availability for vulnerable road users,
- the likely travel desire lines/links to/from the subject site, and
- any issues that might impact the safety of non-motorised users (NMU's).

The problems identified and described in this report are considered by the Audit Team to require action in order to improve the safety of the Scheme and minimise accident occurrence.

1.4 Collision History

With the objective of ascertaining the road safety record of the immediate routes leading to/from the subject site, the collision statistics as detailed on the Road Safety Authority's (RSA) website (www.rsa.ie) have been examined. The RSA website includes basic information relating to reported collisions over the most recent twelve-year period, from 2005 to 2016 inclusive. Figure 1-4 below highlights the location and severity of all road traffic accidents recorded in the Clonburris area in the period 2005 – 2016. As can be seen from the map, there was no collisions recorded in the immediate vicinity of the subject site during this time.

The review of the RSA data reveals that there was one fatal accident near Clonburris, which occurred in the Grange Castle Business Park. A cluster of minor accidents was recorded to the south of the site on the New Nangor Road, Fonthill Road South and Lucan Newlands Road. Less dense clusters of minor accidents have also been recorded on the Balgaddy Road and Fonthill Road North. In summary the review confirms that no significant incident trends or significant

safety concerns are evident across the local road network immediately adjoining the subject Tile 2 development plot.

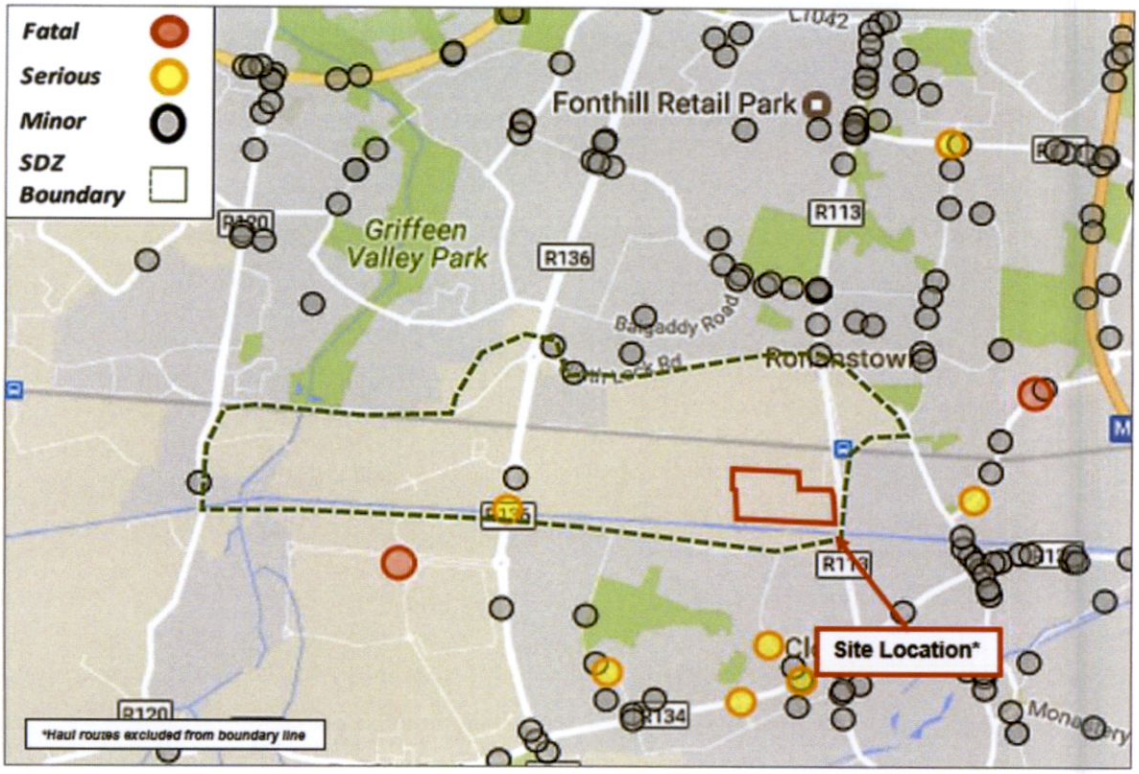
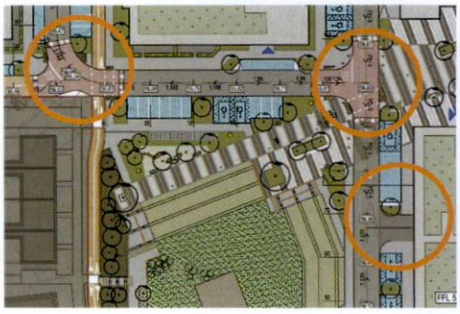


Figure 1-4 Collision Record

2 ITEMS RAISED DURING THIS STAGE 1/2 ROAD SAFETY AUDIT

2.1 PROBLEMS AT GENERAL LOCATIONS

2.1.1 Problem (G1) – Junction Visibility Splay



The proximity of car parking spaces and trees throughout the site may obstruct driver's visibility at the internal junctions. Failure to provide sufficient visibility splays for vehicle drivers at all junctions and access/egress points to off-street car parking areas could result in overshoot incidents or side impact collisions with existing vehicle drivers and opposing vehicles/cyclists travelling along the road.

Recommendation:

Ensure sufficient visibility is provided at all junctions and vehicle access points by ensuring tree species are chosen such that trees (canopy height of the trees and trunk girth), landscaping and car parking do not obstruct the visibility splay.

2.1.2 Problem (G2) – Landscaping adjacent to pedestrian routes

The masterplan drawing indicates the provision of trees adjacent to pedestrian and cycle routes throughout the site. The audit team are concerned that landscaping may encroach into the pedestrian and cycle routes and reduce their effective width or overhang the routes resulting in head/eye injuries.

Recommendation:

Ensure adequate side and height clearance is provided to all pedestrian/cycle routes. Ensure tree species are chosen such that the canopy of the trees can be maintained at a minimum of 2.5m above footpaths and cycle routes.

2.1.3 Problem (G3) – Road Markings and Signage

The drawings provided for the purposes of the RSA do not show details of road markings and signage at all junctions. Failure to provide the appropriate regulatory signs and associated lines

may result in vehicles failing to stop at the minor arm of junctions which may lead to side impact collisions with vehicles travelling along the major arm through junctions.

Recommendation:

It is recommended that signs and lines should be provided in accordance with the requirements of the Traffic Signs Manual.

2.1.4 Problem (G4) – Street Lighting

No details regarding the proposed schemes street lighting have been provided to the audit team. As a result, the audit team cannot comment upon the appropriateness of the proposed schemes street lighting strategy.

Recommendation:

Ensure appropriate street lighting is provided across All pedestrian, cycle, and vehicle routes.

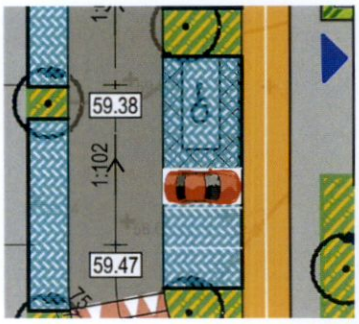
2.1.5 Problem (G5) – Waste Bin Transfer Locations

No details regarding the proposed schemes location of waste bin transfer points is provided. Should waste bins be inappropriately stored in the path of pedestrians or cyclists, this could limit the space available to pedestrians and / or cyclists which could lead to pedestrians stepping into the path of cyclists / vehicles or cyclist weaving into the path of pedestrians. This could result in pedestrian / vehicle conflicts or pedestrian / cyclist conflicts.

Recommendation:

Ensure appropriate locations are provided for waste bin transfer which does not obstruct cycle tracks or reduce footpaths to such an extent that pedestrian must leave the footpath to move around bins. It is recommended that an appropriate route (width, dropped kerbs, gradient etc) is provided between all waste bin transfer and / or storage areas and the location of where the waste collection vehicle will be temporary parked during collection activities.

2.1.6 Problem (G6) – Disabled Car Parking

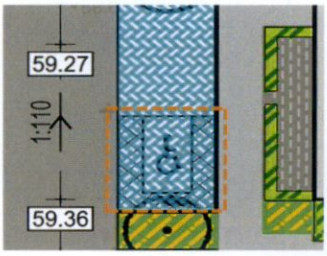


A number of parallel disabled car parking bays are proposed within a row of perpendicular car parking bays along the internal roads. It is unclear to the audit team if the disabled parking bays are accessible when the adjacent perpendicular car parking spaces are occupied by vehicles. Failure to provide adequately sized perpendicular parking bays with aisles of sufficient width and length could result in material damage incidents as vehicle drivers try to manoeuvre into/out of parking bays.

Recommendation:

It is recommended that all disabled car parking bays are designed in accordance with the appropriate design guidance. A tracking analysis should be undertaken to determine if all disabled parking bays are accessible. Sufficient side clearance to structures should be provided.

2.1.7 Problem (G7) - Accessible Parking Spaces



A number of parallel and perpendicular disabled car parking bays have been proposed along the internal roads. The auditors note that dropped kerb facilities have not been provided which may lead to mobility impaired persons experiencing difficulty or trip and fall when accessing the footpath.

Recommendation:

It is recommended to provide appropriate dropped kerb facilities at all disabled car parking locations in accordance with the appropriate design guidance.

2.1.8 Problem (G8) – Car Parking Bays

The auditors note that there are several parallel and perpendicular car parking spaces proposed along the internal streets which have no delineating line marking. It is unclear if these are standard widths & length spaces. In the absence of guidance road marking a single vehicle may encroach upon two (or more) car parking bays subsequently reducing the number of available on-site car parking spaces. In turn this could lead to indiscriminate car parking on verges, footpath and / or

in close proximity to internal junctions which could subsequently contribute to accessibility (blocked footpaths) and road safety (e.g. manoeuvring and / or visibility) issues.

Recommendation:

It is recommended that all parking bays are delineated with line markings to ensure the appropriate number of car parking spaces remain available and sized in accordance with the appropriate design guidance.

2.1.9 Problem (G9) – Access Routes to Off-Street Car Parking

At each of the two vehicle access routes leading to/from the off-street internal car parking facilities no tactile paving or dropped kerbs are provided. This could lead to difficulties for road users, particularly wheelchair users and partially sighted pedestrians, who may encounter difficulties with a raised kerb treatment or be unaware of the presence of moving vehicles at these locations as this crossing the vehicle route.

Recommendation:

It is recommended that dropped kerbs and tactile paving is provided along the pedestrian route in accordance with the appropriate design recommendations. Alternatively if local levels permit the footpath could remain raised across the vehicle route with priority provided to pedestrians.

2.1.10 Problem (G10) – Bicycle Parking

Whilst bicycle parking is detailed at a number of locations in the drawings presented for this road safety audit, the parking provided seems to be focused upon a couple of areas. In the absence of a good distribution of bicycle parking opportunities (both long stay and short stay) across the site in convenient locations to the proposed buildings entrance / exit points, the auditors are concerned that cyclists may park there bicycles indiscriminately across the site. This could lead to practices where bicycles locked to street furniture (e.g. light columns, railings etc) are blocking paths resulting in a potential trip hazard and even blockage of the path for some users (e.g. wheelchair, pram users etc).

Recommendation:

It is recommended that an appropriate quantum (and type) of bicycle parking is distributed across the site and provided in close proximity to the entrance / exit points of the proposed residential building blocks in reference to best practice guidance.

2.2 PROBLEMS AT SPECIFIC LOCATIONS

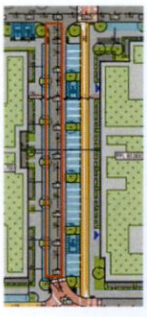
2.2.1 Problem (S1) – Long Straight Horizontal Alignment

The internal local roads seem to comprise 6m wide long straight sections. This could lead to high vehicle speeds. Higher speeds would lead to higher severity injury collisions should a driver lose control or come into contact with another road user.

Recommendation:

It is recommended that the suitable traffic calming measures are provided to reduce vehicular speeds along the local road and that local streets are compliant with the principles as set out in DMURS. This could include the narrowing of the internal carriageways to 5.5m in accordance with DMURS recommendations for 'local' streets.

2.2.2 Problem (S2) – Perpendicular Parking along Cycle Track

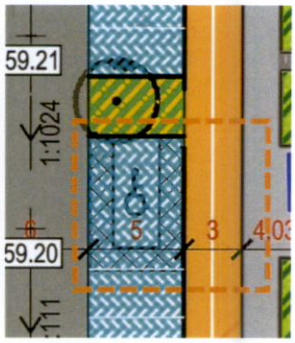


The proposed perpendicular car parking spaces abutting the cycle track could result in parked vehicles overhanging into the cycle track reducing the effective width available for cyclists. This could lead to injuries to cyclists through collisions with parked vehicles.

Recommendation:

It is recommended that appropriate design measures are incorporated to actively safeguard the appropriate width of the cycle track to ensure no encroachment by the parked vehicles. Measures that could be considered include the introduction of a buffer area between the parking bays and cycle track or the implementation of vehicle stop blocks within the perpendicular car parking spaces.

2.2.3 Problem (S3) – Mobility Impaired Parking Bays

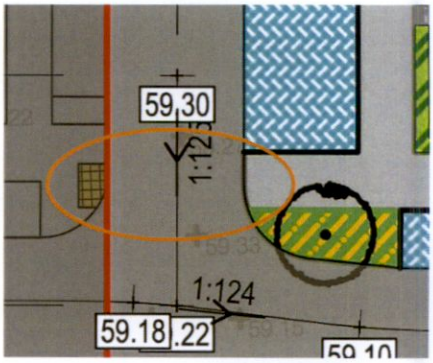


Two number mobility impaired parking bays are proposed parallel to the cycle track. This will require localised dropped kerb facilities within the cycle track to allow access from parking bay level to cycle track / footpath level. Cyclists travelling at speed may not be aware of the sudden change in level which could lead to cyclists losing control and potentially colliding with other cyclists, pedestrians or parked vehicles.

Recommendation:

Further to item S2, it is recommended that a raised buffer area is introduced between the mobility impaired parking parallel bay and the cycle track with dropped kerbs provided. The layout of 'parallel' disabled bays should respect the guidance outlined in the Traffic Signs Manual.

2.2.4 Problem (S4) – Dropped Kerbs and Tactile Paving

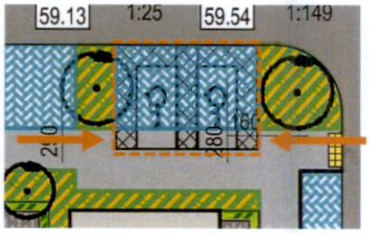


The auditors note that the corresponding tactile and dropped kerb is missing at the uncontrolled crossing in south western corner of the development. This could lead to confusion for road users particularly wheelchair users and partially sighted pedestrians who may encounter difficulties crossing the road carriageway.

Recommendation:

It is recommended that dropped kerbs and / or tactile paving in accordance with the appropriate design recommendations is provided at (i) all key pedestrian travel desire lines that require a pedestrian to cross a road carriageway, (ii) in advance of steps, and (iii) dropped kerbs at disabled car parking bays and pedestrian routes across segregated cycle tracks.

2.2.5 Problem (S5) - Accessible Parking Spaces

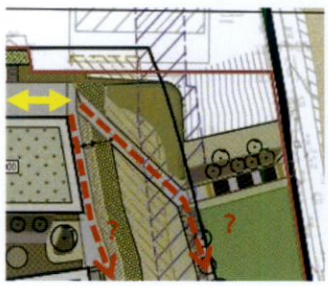


The two disabled car parking bays situated at north-eastern corner of the western block are extended into the footpath which may lead to pedestrians particularly visually impaired persons trip and fall or collide with parked vehicles.

Recommendation:

It is recommended to keep the footpath free of any obstructions.

2.2.6 Problem (S6) – Termination of Shared Pedestrian / Cycle Route



A shared pedestrian / cycle route is proposed internally parallel along the length of the development sites northern boundary. The width of this shared route suddenly narrows in the northeast corner of the site with the route splitting into two onward paths to the south and southeast (up gradient at the embankment). The widths of these two onward paths seem to be narrow to accommodate both cyclists and pedestrians.

A narrow shared pedestrian / cycle route could led to conflicts / collisions between these two active travel user groups when seeking to pass one another.

Recommendation:

The designers are requested to confirm the extent of the formal shared pedestrian / cycle path network ensuring that no cul-de-sac (dead end terminations) arrangements are proposed. It is recommended that appropriate path widths in refence to the National Cycle Manual guidance is provided on all such shared active travel paths.

2.2.7 Problem (S7) – Gradients of Paths

From the drawings presented for the purpose of road safety audit, the auditors have not been able to established the gradient of the proposed pedestrian and shared pedestrian / cycle paths as indicated along the embankment at the eastern side of the development site. Excessive gradients will be challenging to some active travel users resulting in accessibility issues in parallel with contributing to potential excessive downhill speeds for cyclists which in turn to lead to collisions with other path users or lose of control of the bicycle. Wheelchair users and children push chair users could also encounter difficult with steep downhill gradients.

Recommendation:

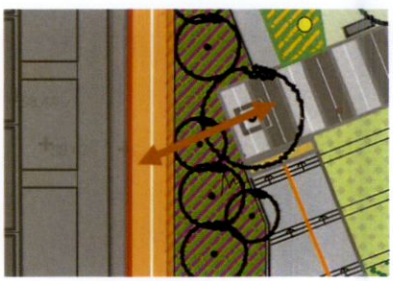
It is recommended that all footpaths and shared pedestrian / cycle paths are designed in reference to the appropriate design guidance in regard to gradients.

3 COMMENTS

3.1.1 Comment (C1) – Existing Bus Stop Desire Line

The future external road enhancements include for 2 no. new bus stops on the R113. It is unclear if these bus stops will replace the existing bus stops locate further north at the train station. If the bus stops to the north are proposed to be retained, there will remain a desire line across the R113 to the north which will be intensified following implementation of the subject scheme. Accordingly, it is recommended that a controlled pedestrian crossing is provided to the north of the R113 should these bus stops be retained.

3.1.2 Comment (C2) – Cycle Track Connectivity



It is unclear if the proposed pedestrian facility that runs diagonally through the subject site is proposed to also accommodate cyclists. There is no cycle connection between this facility and the proposed north / south cycle track operating on the western side of the site. Should cyclist be permitted to use this facility, it is recommended that a connection to the cycle track is incorporated into the design.

4 AUDIT TEAM STATEMENT

4.1 AUDIT TEAM STATEMENT

I certify that I have examined the drawings and other information listed in Chapter 5. This Audit has been carried out with the sole purpose of identifying any features of the Design that could be removed or modified to improve the safety of the Scheme. The problems that I have identified have been noted in the report, together with suggestions for improvement which we recommend should be studied for implementation.

Audit Team Leader: Mr. Thomas Jennings *BEng MSc MIEI MIHT CMILT*
DBFL Consulting Engineers (Waterford)

Signed: 

Date: 04/05/2023

Audit Team Member: Mr. Sayed Ahmad Saeed *BEng Tech BEng (Hons) MEng MIEI*
DBFL Consulting Engineers (Dublin)

Signed: 

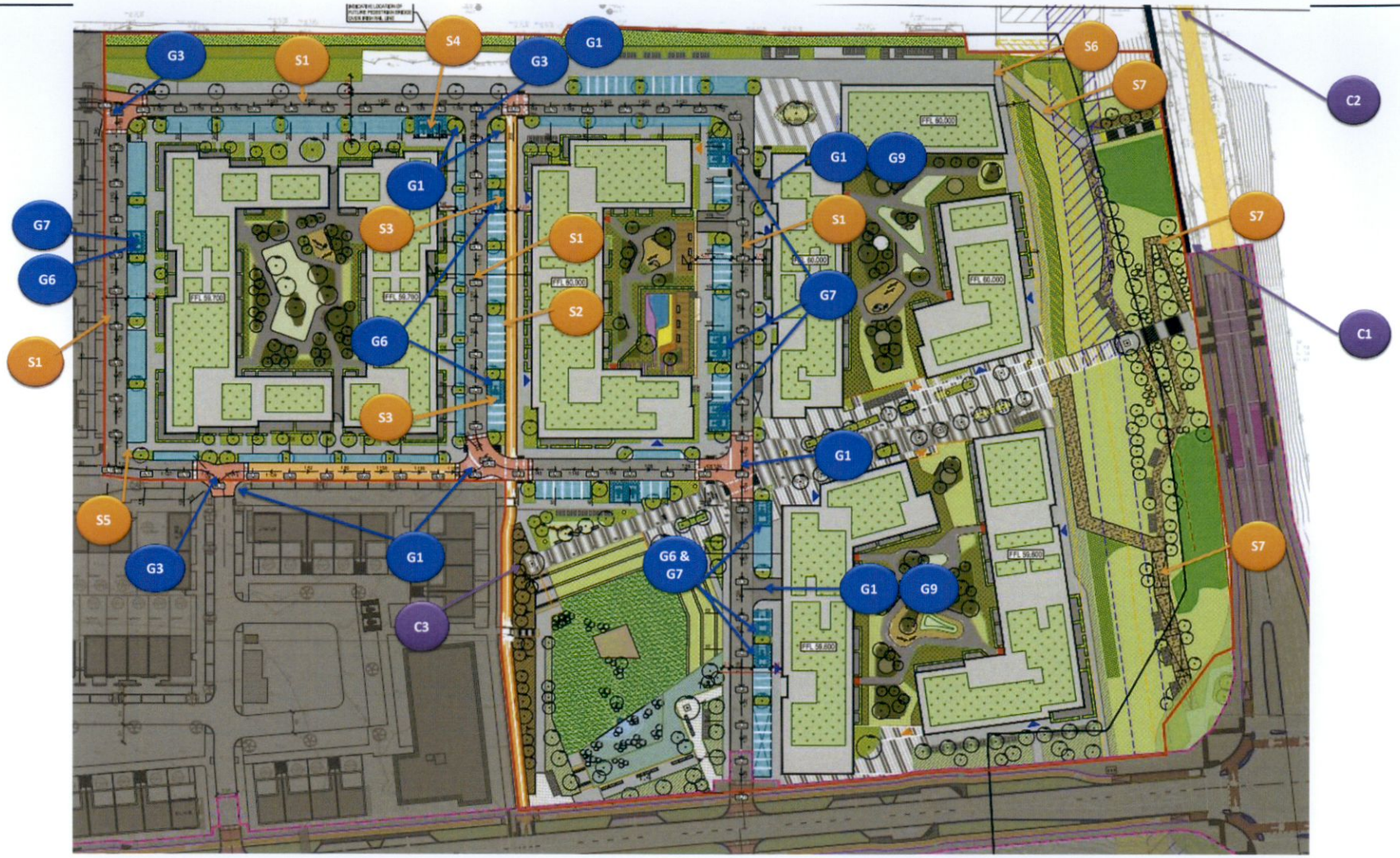
Date: 04/05/2023

5 LIST OF INFORMATION RECEIVED

Items Received		Yes/No	Details
1	Scheme Description	Yes	Draft TTA Provided
2	Project Brief	No	
3	Scheme / Project Drawings	Yes	• CLB-1B-95-SW-TM-DR-DBFL-CE-1001 Roads Layout Rev 0 (DBFL Consulting Engineers)
4	Departures from Standard	No	
5	Traffic Signal Information	N/A	
6	Road Signs & Road Marking Details	No	
7	Traffic Count Information	No	
8	Speed Survey Data	No	
9	Collision Data	Yes	TTA Provided
10	Previous Road Safety Audit Reports	No	
11	Relevant Design Standards	No	
12	Public Transport Information	Yes	TTA Provided
13	Other Information	No	

Table 5-1 Information Received as basis for Road Safety Audit

Appendix A : Problem Location Figure



Project :	Clonburris Tile 2	Designed :	SAS	Prepared:	SAS
		Date :	March 2023	Checked :	TJ
Client :	Cairn Homes Lts.	Scale :	NTS		
Drawing Title :	Stage 1/2 RSA Problem Locations	File Ref :	210124-X-90-2000-XXX-RP-DBFL-CE-0005 RSA S1/2 Figure		
		Drawing No :	CLB-1B-95-SW-DTM-DR-DBFL-CE-1001		

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*Note: For general problems, examples of locations are indicated. Not all occurances of the specific general problem reference are shown

Appendix B : Feedback Form

210124

STAGE 1/2 ROAD SAFETY AUDIT FEEDBACK FORM

Scheme: Clonburris, Tile 2.

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Audit Stage: Stage 2

Date Audit Completed: March 2023

To be Completed By Designer				To be Completed by Audit Team Leader
Problem No. in Quality Audit Report	**Problem accepted (yes/no)**	**Recommended measure accepted (yes/no)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted.**	**Alternative measures or reasons accepted by Auditors (yes/no)**
G1	yes	yes		noted
G2	yes	yes		noted
G3	yes	yes		noted
G4	yes	yes		noted
G5	yes	yes		noted
G6	yes	yes		noted
G7	yes	yes		noted
G8	yes	yes		noted
G9	yes	yes		noted
G10	yes	yes		noted
S1	yes	yes		noted
S2	yes	yes		noted
S3	yes	yes		noted
S4	yes	yes		noted
S5	yes	yes		noted
S6	No	No	The Shared pedestrian route as required by the Clonburris SDZ indicates that the shared ped/cycle route terminates where it meets the cycle track at the northern border of the site. The path travelling east after the junction is a pedestrian footpath only.	Ensure the termination of the shared ped/cycle path is obvious to the cyclists and that a connection to

				the road carriageway is provided/accommodated.
S7	yes	yes		noted

Signed: _____ **Designer:** Dieter Bester **Date:** 24/04/2023

Signed: _____ **Audit Team Leader:** Thomas Jennings **Date:** 04/05/2023

Signed: _____ **Employer:** _____ **Date:** _____

Please complete and return to safety auditor.