

OVE Arup & Partners Ireland Ltd

Carrigaline Cycle/Pedestrian
Track - Phase 1
(Section B)

Stage 1 Road Safety Audit

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Rev	Prepared By	Reviewed By	Approved By	Issue Date	Reason for Revision
2.0	AP	TAG	TAG	31 st July 2023	Final Report
1.0	AP	TAG	TAG	1 st June 2023	Draft Report

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1 Introduction

1.1 General

This report results from a Stage 1 Road Safety Audit on the proposed Carrigaline Cycle/Pedestrian Track - Phase 1 Scheme (Section B) carried out at the request of Mr. Greg Zabicki of OVE Arup & Partners Ireland Ltd.

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

Mr. Aly Gleeson

(BSc, MEng, MBA, RSACert, CEng, FIEI)
Road Safety Audit Team Leader

Mr. Antonis Papadakis

(MSc, MIEI)
Road Safety Audit Team Member

The Road Safety Audit took place during April, May and July 2023 and comprised an examination of the documents provided by the designers (see Appendix B). In addition to examining the documents supplied the Road Safety Audit Team visited the site of the proposed measures on 27th of April 2023. Weather conditions during the site visit were wet and the road surface was wet. Traffic volumes during the site visit were low, pedestrian and cycle volumes were low, and traffic speeds were considered to be in general accordance with the speed limit.

Where problems are relevant to specific locations these are shown on drawing extracts within the main body of the report and their locations are shown in Appendix D. Where problems are general to the proposals sample drawing extracts are within the main body of the report, where considered necessary.

This Stage 1 Road Safety Audit has been carried out in accordance with the requirements of GE-STY-01024 - Road Safety Audit (December 2017), contained on the Transport Infrastructure Ireland (TII) Publications website.

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.

1.2 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: -

- Vehicle Swept Paths
- Visibility Splays

2 Project Description

The proposed Carrigaline Cycle/Pedestrian Track - Phase 1 Scheme (Section B) is located in Monkstown, Co. Cork (see Figure 2-1). The scheme commences at the R610 (Strand Road) junction with Castle Road, and extends for approximately 400m to where it terminates at the Monkstown Pier.

The R610 is a two-way single carriageway road, with varying widths of between 6m and 8m. It offers direct access to residential properties and some commercial units from the carriageway.

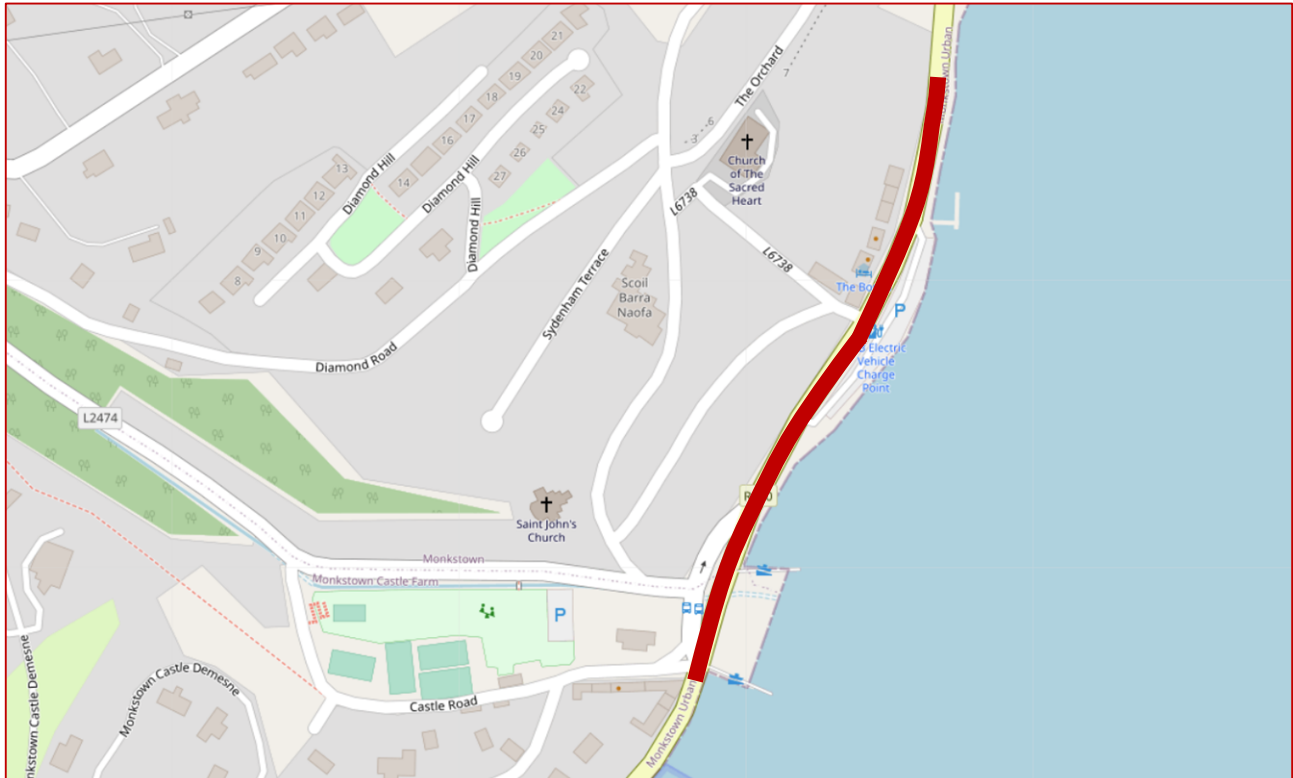


FIGURE 2-1: LOCATION PLAN (SOURCE: WWW.OPENSTREETMAP.ORG)

The main elements of the proposed Scheme include:

- Shared pedestrian and cyclist facilities and associated infrastructure, including crossing arrangements.
- Revised layouts of the Monkstown Pier and Sand Quay carparks, including bicycle, mobility impaired and electric vehicle parking spaces.
- Removal of planter, wall, height restriction barrier.
- Relocation of height restrictions locally and recycling facility from the Monkstown Pier car park.
- Relocation of garden walls and the mobility impaired parking spaces from sailing club.
- Retaining parallel parking on the western side of Strand Road.
- Proposed vegetation and street furniture.

3 Main Report

3.1 Problem

Location: Drawing no. 281905-UM-SB-ML-DR-CH-00012

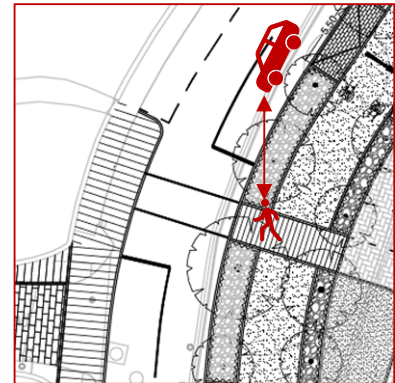
Summary: Unclear what type of pedestrian crossing is proposed, and insufficient forward visibility towards the crossing for approaching drivers.

It is unclear what type of crossing (e.g. Zebra, Pelican, Toucan, etc.) is proposed on Strand Road north of its junction with Glen Road. Forward visibility towards signals or Belisha beacons may be restricted by the horizontal alignment to the north of the crossing and by the row of trees at the edge of the footpath.

Should a driver's visibility to a pedestrian (or cyclist) waiting at the crossing be restricted there is a risk of drivers overshooting the stop line and colliding with vulnerable road users.

Recommendation

Ensure sufficient inter-visibility is provided between drivers & pedestrians waiting to cross. Additionally, undertake an assessment of the demands in this area to determine the most appropriate form of crossing.



3.2 Problem

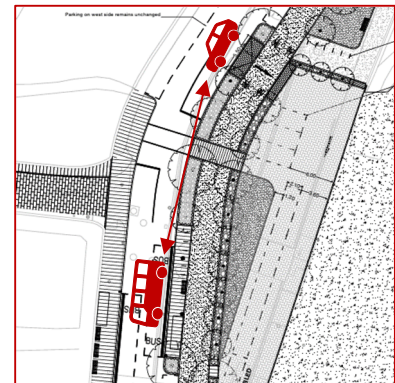
Location: Drawing no. 281905-UM-SB-ML-DR-CH-00012

Summary: Bus stop provided directly after horizontal curve.

The southbound bus stop on Strand Road has been indicated directly after a horizontal curve. A stationary bus may not be seen by southbound drivers travelling around the bend due to the restrictions to visibility splayed posed by the horizontal alignment, the trees and roadside furniture, leading to rear-end-shunt collisions.

Recommendation

Review visibility at this location, and if required, the bus stop should be relocated.



3.3 Problem

Location: Drawing no. 281905-UM-SB-ML-DR-CH-00012

Summary: Parking provision may restrict pedestrian movement into and out of the carpark, and limit inter-visibility.

Once fully occupied, the parking provision within the carpark near the controlled pedestrian crossing may restrict pedestrian movement and inter-visibility between pedestrians and other users of the carpark. This may result in vehicle/pedestrian collisions.

Recommendation

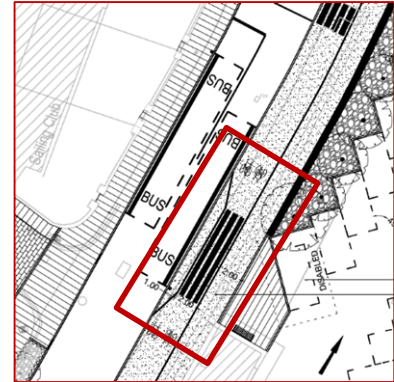
A greater offset between the likely pedestrian desire line and the adjacent parking provision should be provided, noting that there may be groups of pedestrians entering the carpark.

3.4 Problem

Location: Drawing no. 281905-UM-SB-ML-DR-CH-00013

Summary: Bus Stop layout may increase the risk of pedestrian/cyclist collisions.

The proposed works include shared use facilities for pedestrians and cyclists, however in the location of the southbound bus stop, the cyclist and pedestrian facilities are locally segregated. The segregated facilities demand several elements to operate such as tactile paving arrangements, and traffic signs as the facility transitions between the different cross sections. As these demands occur within a limited section of the scheme, the RSA Team is concerned that the segregated facilities will lead to confusion and the introduction of conflict points between road users.



Furthermore, the cycle track is narrowed at the proposed bus stop, with cyclists required to continue through a narrow channel where pedestrians will be waiting for the bus, or bus passengers will be disembarking. This will bring cyclists and pedestrians into direct conflict, and may lead to pedestrian/cyclist collisions, particularly where visually impaired pedestrians are using the bus stop. This problem will likely be exacerbated by the growth of battery powered bicycles and scooters, where users can travel at, and maintain, high speeds on the cycle track.

Recommendation

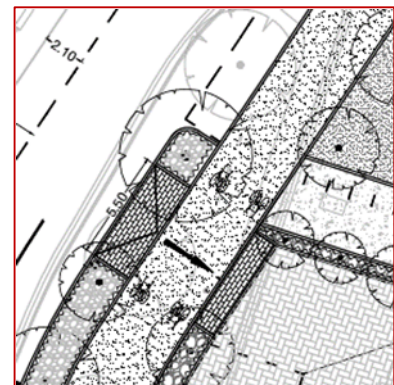
The layout should be simplified to remove the need for complex cross sectional transitions and conflict zones presented in the current design.

3.5 Problem

Location: Drawing no. 281905-UM-SB-ML-DR-CH-00012 & Drawing no. 281905-UM-SB-ML-DR-CH-00013

Summary: Inter-visibility between road users and oncoming vehicles might be obscured at both carpark accesses.

Trees, parallel parking, and other street furniture may reduce visibility for motorists entering/exiting the two carparks. Insufficient visibility may lead to unsafe entering/exiting manoeuvres resulting in side-on collisions and vehicle/pedestrian collisions.



Recommendation

Adequate inter-visibility should be available for all manoeuvres likely to be undertaken at the carpark accesses.

3.6 Problem

Location: Drawing no. 281905-UM-SB-ML-DR-CH-00012 & Drawing no. 281905-UM-SB-ML-DR-CH-00013

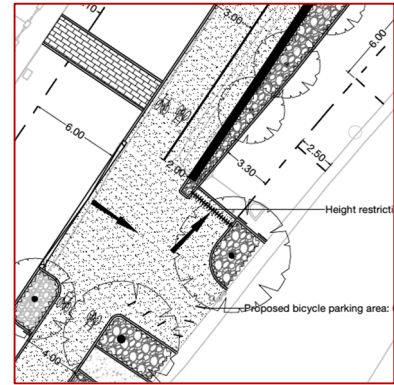
Summary: Swept path analysis within the carparks has not been provided to the Audit Team and it is therefore unclear if all vehicles can safely complete turning manoeuvres within the extents of their traffic lane.

Information regarding the swept path analysis of vehicles entering/exiting the two carparks has not been provided to the Audit Team. It is unclear if the revised road layout at the carpark accesses will accommodate the swept path of all vehicles, particularly cars towing boats, entering and exiting the carpark areas.

If vehicles cannot complete turning manoeuvres within the carriageway extents there is a risk of kerb strikes, collisions with other road users or collisions with items of roadside furniture.

Recommendation

Ensure the swept path of all vehicles can safely enter/exit the carparks.



3.7 Problem

Location: Drawing no. 281905-UM-SB-ML-DR-CH-00012 & Drawing no. 281905-UM-SB-ML-DR-CH-00013

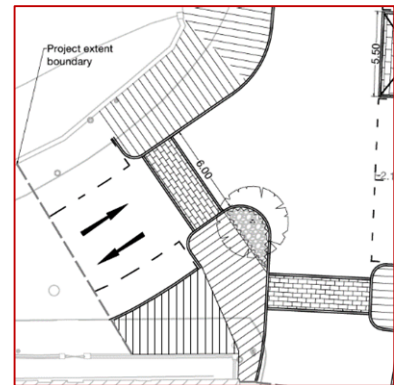
Summary: No junction control or priority type has been indicated at junctions within the scheme extents.

The junction control (stop, yield etc.) at the junctions and carpark accesses within the proposed scheme has not been indicated. It is therefore unclear who has priority at these junctions.

This could result in driver confusion and hesitation leading to collisions should drivers assume that they have priority over vehicles in adjacent roads leading to low speed collisions and material damage.

Recommendation

Ensure the junction control at all junctions is clear and that drivers are sufficiently advised of the priority.



3.8 Problem

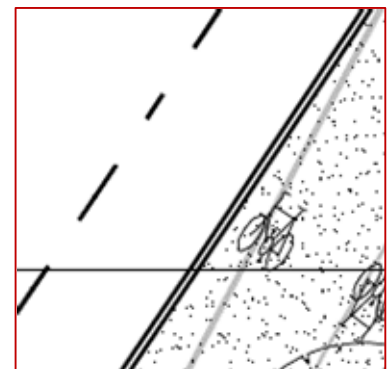
Location: Drawing no. 281905-UM-SB-ML-DR-CH-00012 & Drawing no. 281905-UM-SB-ML-DR-CH-00013

Summary: The proximity of the proposed parallel parking and the adjacent cyclists/pedestrian facilities may result in vehicle doors opening into the cyclists/pedestrian facilities presenting an obstacle for cyclists.

Parallel parking is proposed directly adjacent the cyclist/pedestrian facilities on the eastern side of Strand Road with a kerb indicated between the parking and the pedestrian/cyclist facilities. The proximity of the parking bays to the pedestrian/cyclist facilities may result in a vehicle door opening into the cyclist/pedestrian facilities and presenting an obstacle to cyclists resulting in personal injury collisions.

Recommendation

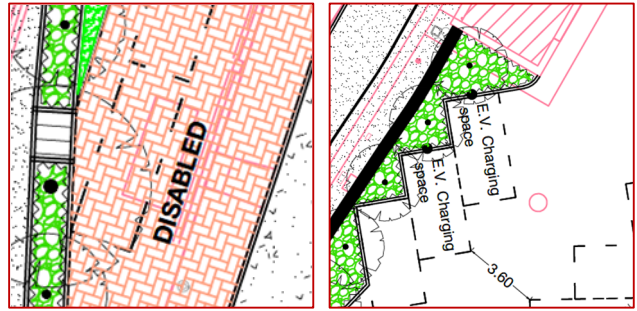
A buffer zone should be provided between the cyclist/pedestrian facilities and the parking bays.



4 Observations

- 4.1 Most of the proposed parking spaces within the carpark appear to have similar dimensions, which do not appear to make allowance for EV parking space requirements. There is a risk, therefore, that carparking spaces intended to accommodate mobility impaired and EV parking will be insufficient sized.

Sufficient space should be provided at the proposed mobility impaired and EV parking spaces in accordance with the Traffic Signs Manual.



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.

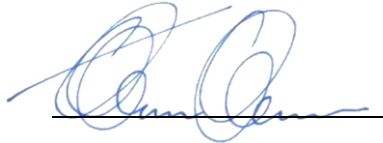
The problems identified have been noted in this report together with associated safety improvement suggestions, which we would recommend should be studied for implementation.

No one on the Road Safety Audit Team has been involved with the design of the scheme.

ROAD SAFETY AUDIT TEAM LEADER

Aly Gleeson

Signed:



Dated:

31.7.2023

ROAD SAFETY AUDIT TEAM MEMBER

Antonios Papadakis

Signed:



Dated:

31.7.2023

Appendix A – Road Safety Audit Brief Checklist

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

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

Any other information?

(if 'Yes', describe below)

<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Appendix B – Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
Concept Design Plan – North Option 2 Platform wall moved	281905-UM-SB-ML-DR-CH-00013	P01.05
Concept Design Plan – South Option 2 Platform wall moved	281905-UM-SB-ML-DR-CH-00012	P01.05

Appendix C – Feedback Form

Road Safety Audit Feedback Form

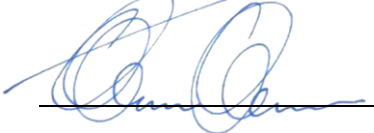
Scheme: Carrigaline Cycle/Pedestrian Track - Phase 1 (Section B)

Route No.: R610

Audit Stage: 1 **Date Audit Completed:** 31.07.2023

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)
3.1	Yes	Yes		
3.2	Yes	No	Adequate sight distance is available at the location in question.	Yes
3.3	Yes	Yes		
3.4	Yes	Yes		
3.5	Yes	Yes		
3.6	Yes	Yes		
3.7	Yes	Yes		
3.8	Yes	Yes		

Signed:  Designer **Date** 26.07.2023

Signed:  Audit Team Leader **Date** 31.07.2023

Signed: _____ Employer **Date** _____

Appendix D – Problem Locations

