consulting engineers

NRB

Quality Audit including a Road Safety Audit, DMURS Street Design Audit, Cycle Audit, Walking Audit, and an Access Audit.

For

Kilternan Village LRD

At

Kilternan,

Co. Dublin

SUBMISSION ISSUE

1st Floor, Apollo Building, Dundrum Road, Dundrum, Dublin 14
Tel: +353 1 292 1941, E-mail: info@nrb.ie, Web: www.nrb.ie

Registered in Ireland No. 491679

Contents

Appendices.....

1.0 INTRODUCTION

1.1 NRB has been commissioned by Thornton O'Connor Town Planning to undertake a Quality Audit on behalf of Atkins on the LRD Application in Kilternan Village, Dublin.

1.2 The Quality Audit has been carried out in accordance with the guidance in the Design Manual for Urban Roads and Streets (DMURS), produced by Department of Transport Tourism and Sport in March 2013 and as updated in June 2019 including Advice Notes.

1.3 This portion of the Quality Audit is a design stage audit and includes a Stage 1 Road Safety Audit, (which has been carried out in accordance with the requirements of TII Publication Number GE-STY-01024, dated December 2017) and a DMURS Street Design Audit, Cycle Audit, Walking Audit, and an Access Audit.

1.4 The Road Safety and Quality Audit Team comprised of;

1.5 Team Leader: Brian McMahon, BE MSc CEng, Cert Comp RSA.

TII Auditor Approval no. BM142319

1.6 Team Member: Norman Bruton, BE CEng FIEI, Cert Comp RSA.

TII Auditor Approval no. NB 168446

1.7 The Audit Report indicates each of the problems identified, provides outline recommendations for solving the problems, presents the Audit Team Statement, and describes a schedule of documents reviewed.

1.8 The Audit included a site visit on the 21st March 2024. The weather at the time of the site visit was overcast but the road surface was dry.

1.9 The response of the Design Team to the Audit should be prepared in the form of an Audit Feedback Form, accepting the changes proposed by the Audit Team or providing an alternative solution to the problem. The Feedback Form is then returned to the Audit Team for review and verification.

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

1.11 The information supplied to the Audit Team is listed in ***Appendix A***. The feedback form is contained in ***Appendix B***, with the problem locations shown in ***Appendix C***.

1.12 No departures from standards have been notified to the Audit Team.

2.0 BACKGROUND

2.1 A Large Residential Development (LRD) scheme is proposed at lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18. The LRD is generally bounded by the Glenamuck Road to the north; Kilternan Country Market and the Sancta Maria property to the north and west; a recently constructed residential development named "Rockville" to the north-east; the Enniskerry Road to the south-west; dwellings to the south; and lands that will facilitate the future Glenamuck Link Distributor Road to the east. This audit is for all Phases of this LRD.

2.2 MCORM have produced preliminary design drawings for the proposed residential scheme.

2.3 The indicative location for the proposed residential scheme is shown below in Figure 2.1.

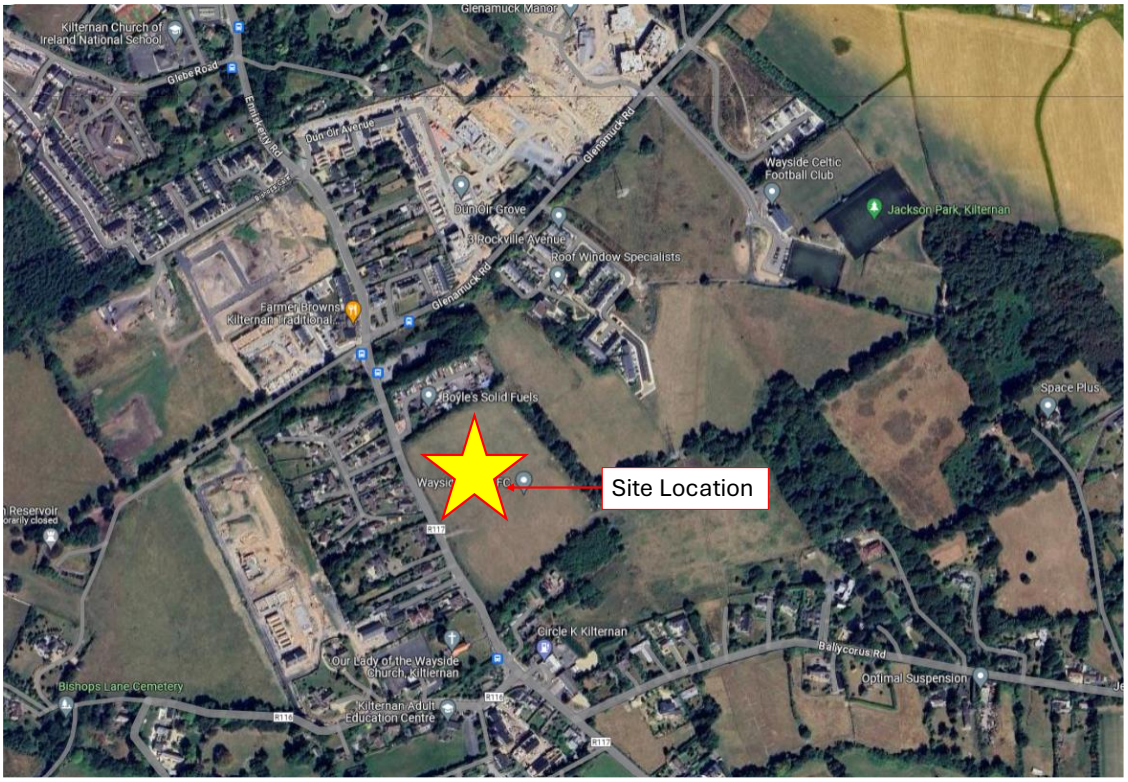


Figure 2.1 – Kilternan Village

2.4 A site visit was undertaken on the 21st of March 2024. The proposed site is currently a green field site. The proposed development will be accessed via the R117 Enniskerry Regional Road and a new road called the Glenamuck Link Distribution Road. The R117 is located in a 50km/h speed limit zone.

2.5 The Enniskerry Road, Glenamuck Road and the Glenamuck Link Distribution Road are outside the scope of the LRD Scheme, and outside the scope of this Audit.

2.6 Discussions were held between the Audit Team Leader and the Design Team on the 26th of March 2024. It was confirmed by the designers that the Enniskerry Road, adjacent to the proposed site would be reduced in width to 6.5m, with a 2.0m wide footpath on the eastern side.

3.0 ITEMS RAISED IN THIS STAGE 1 ROAD SAFETY AUDIT

3.1 Problem

Location / Drawing

Street 5 Road Carriageway Width / Dwg no. 900705 GENERAL ROAD LAYOUT

Problem

Street 5 is shown as a 6.0m wide road carriageway. Dashed lines are shown, which are presumed to indicate a pedestrian path / refuge. While it may be intended to provide contrasting materials (which are important tools for informing drivers of driving conditions) compared to a typical bitumen road surface, it is noted that narrow carriageways are one of the most effective design measures that calm traffic. The 6.0m wide road carriageway will likely encourage motorists to drive at excessive speeds, which may result in a collision with a pedestrian or cyclists using the road.

Shared surface streets can be very intimidating for visually or mobility impaired road users.

Figure 3.1 –Street 5

Recommendation

The road width should be reduced to a **maximum of 4.8m in width consistent with DMURS**. Verges (which can be a hard landscaping) should be provided that act as refuge zones allowing pedestrians (in particular for visually or mobility impaired road users) to step on and off the carriageway to let cars pass. These verges should be 1.2m minimum, thus allowing for the appropriate width for cars turning from perpendicular parking.

3.2 Problem

Location / Drawing

Street 3 Road Carriageway Width / Dwg no. 900705 GENERAL ROAD LAYOUT

Problem

Street 3 is shown as a 6.0m wide, one-way road carriageway. Dashed lines are shown, which are presumed to indicate a pedestrian path / refuge. While it may be intended to provide contrasting materials (which are important tools for informing drivers of driving conditions) compared to a typical bitumen road surface, it is noted that narrow carriageways are one of the most effective design measures that calm traffic. The 6.0m wide road carriageway will likely encourage motorists to drive at excessive speeds, which may result in a collision with a pedestrian or cyclists using the road.

Shared surface streets can be very intimidating for visually or mobility impaired road users.

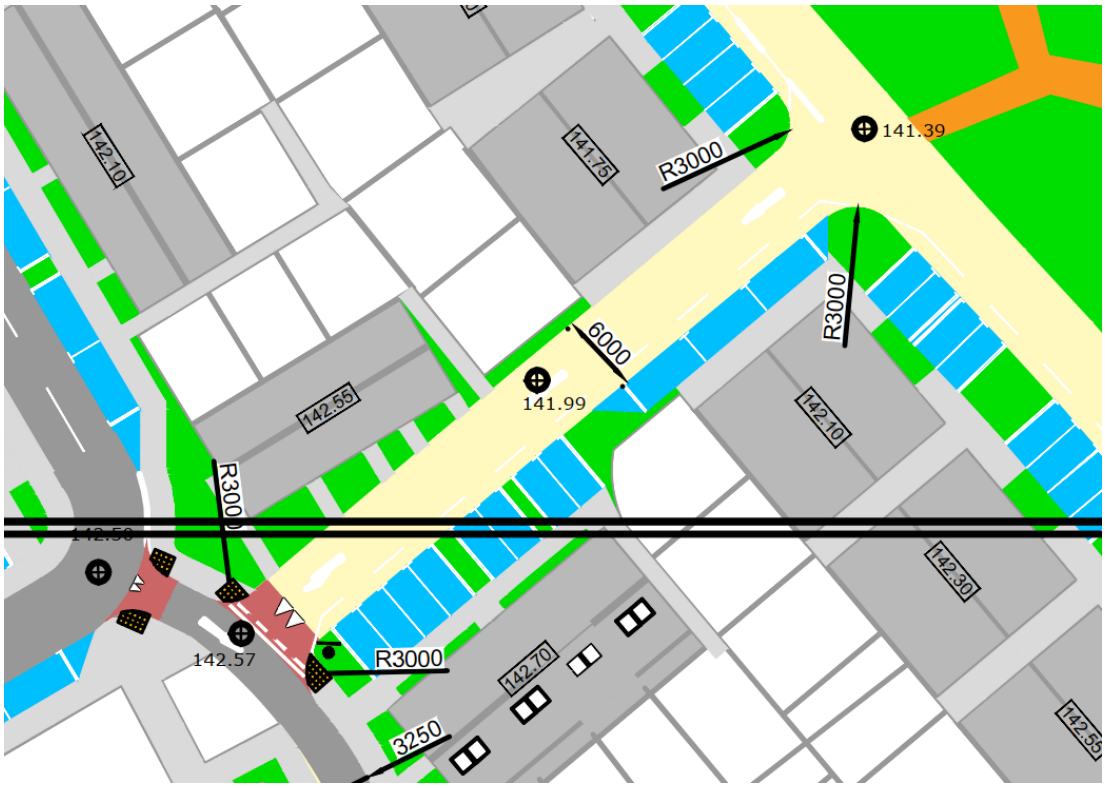


Figure 3.2 –Street 3

Recommendation

The road width should be reduced to **a maximum of 4.8m in width**. Verges (which can be hard landscaping) should be provided that act as refuge zones allowing pedestrians (in particular for visually or mobility impaired road users) to step on and off the carriageway to let cars pass. These verges should be 1.2m minimum, thus allowing for the appropriate width for cars turning from perpendicular parking.

3.3 Problem

Location / Drawing

Street 3 - Street 2 Junction / Dwg no. 900705 GENERAL ROAD LAYOUT

Problem

The 'Pedestrian Path' on Street 3, ends before the junction with Street 2. Pedestrians will be vulnerable to vehicles, in particular fast moving vehicles, turning left from Street 3. Furthermore, the radius appears larger than 3m.

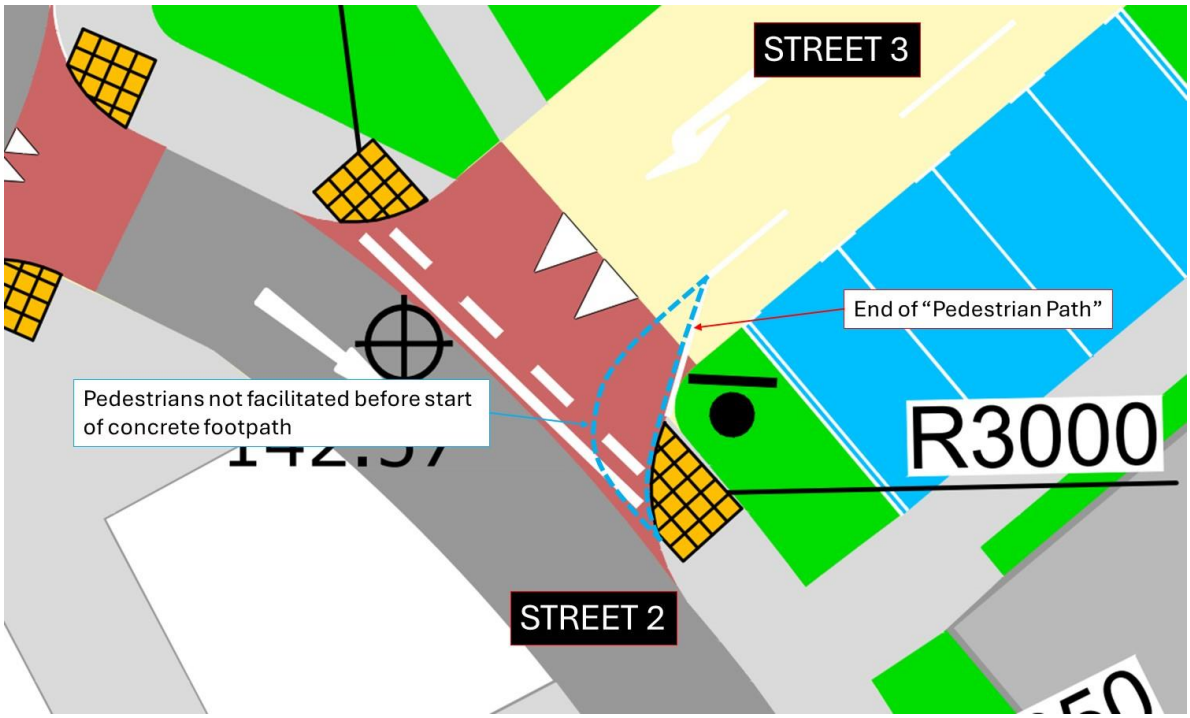


Figure 3.3 – Junction Street 3 - Street 2

Recommendation

The footpath on Street 2 should be extended back onto Street 3, so that pedestrians are not vulnerable to vehicles which are turning left from Street 3 onto Street 2.

3.4 Problem

Location / Drawing

Throughout the Scheme / Dwg no. 900705 GENERAL ROAD LAYOUT

Problem

Solid white lines are shown on all uncontrolled pedestrian crossings throughout the scheme. But as these are uncontrolled crossings, solid white lines should not be provided, as motorists have priority. The solid white lines may lead to confusion as to who has priority, with pedestrians stepping out onto the road carriageway when there is not a safe gap in the traffic, leading to a collision. The change in material and vertical deflection should mean that the crossings act as Courtesy crossings, which allow pedestrians to informally assert a degree of priority over drivers

Figure 3.4 – Solid White Lines at Uncontrolled Crossings

Recommendation

The solid white lines should be removed.

3.5 Problem

Location / Drawing

Throughout the Scheme / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

The Public Lighting are shown in locations where they will both obstruct both pedestrian and vehicle movements, which could lead collision with the poles resulting in injury.

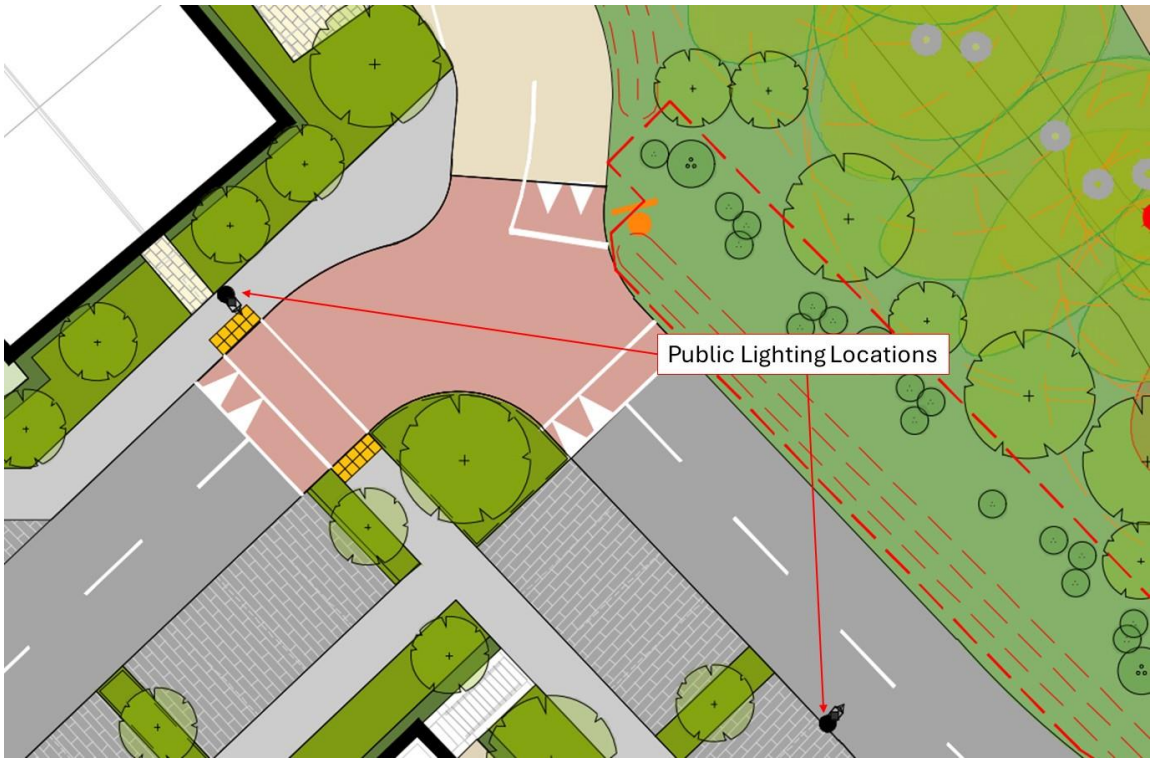


Figure 3.5 – Public Lighting Locations

Recommendation

A review of Public Lighting locations should be undertaken. Ideally, the public lighting is set back off the pedestrian footpaths and therefore not obstructing pedestrian movement.

3.6 Problem

Location / Drawing

Throughout the Scheme / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

Some of the tactile paving is not orientated in the correct direction. Visually impaired people use the orientation of the tactile paving to align themselves correctly before crossing the road. Incorrectly aligned tactile paving will direct people out onto the junction, which could result in a collision between a pedestrian and vehicle.

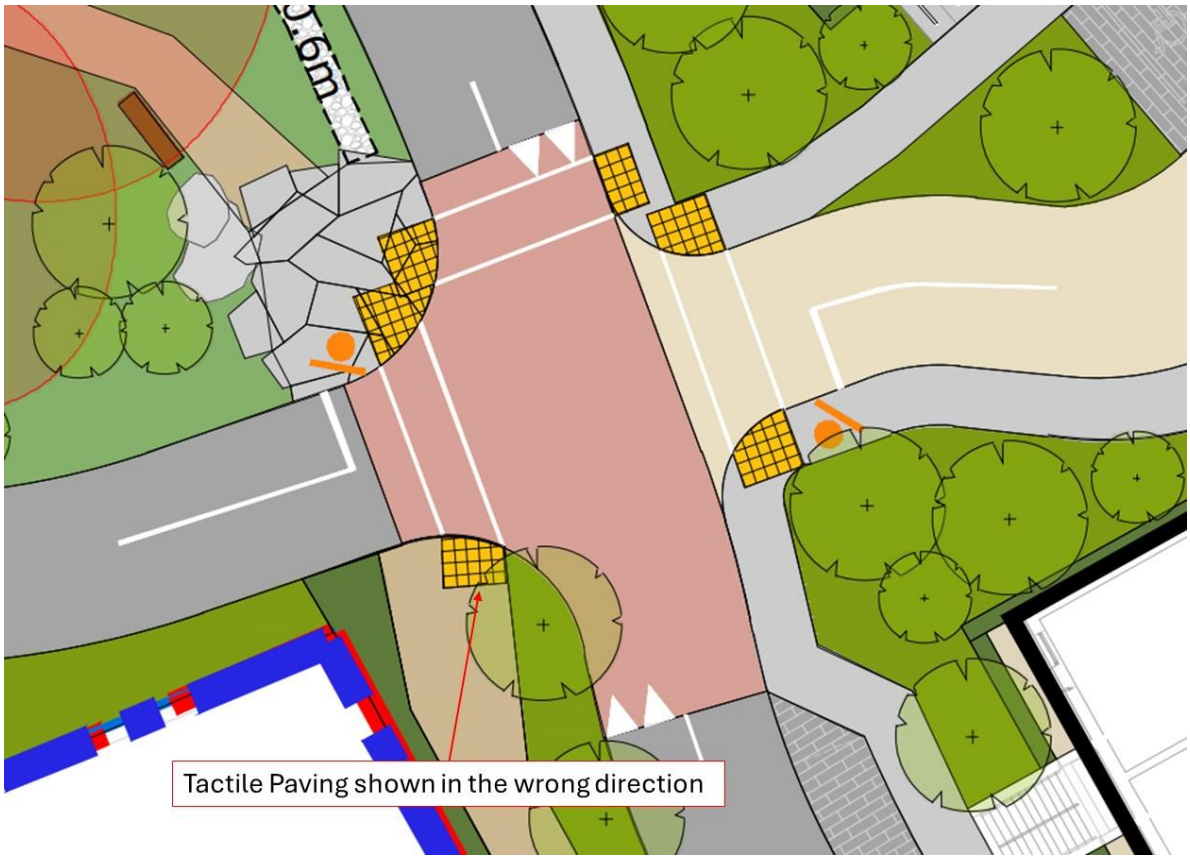


Figure 3.6 – Tactile Paving

Recommendation

All the tactile paving through the scheme should be designed in accordance with the "*Guidance on the Use of Tactile Paving Surfaces*". The back edge of the tactile surface should be at right angles to the direction of crossing.

3.7 Problem

Location / Drawing

Proposed T-Junction / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

There are no tie-ins with the on-road pedestrian refugee and the tactile paving, with a stop line extending across the pedestrian refugee, resulting in a kerb protruding into the junction which could be a hazard for vehicles.

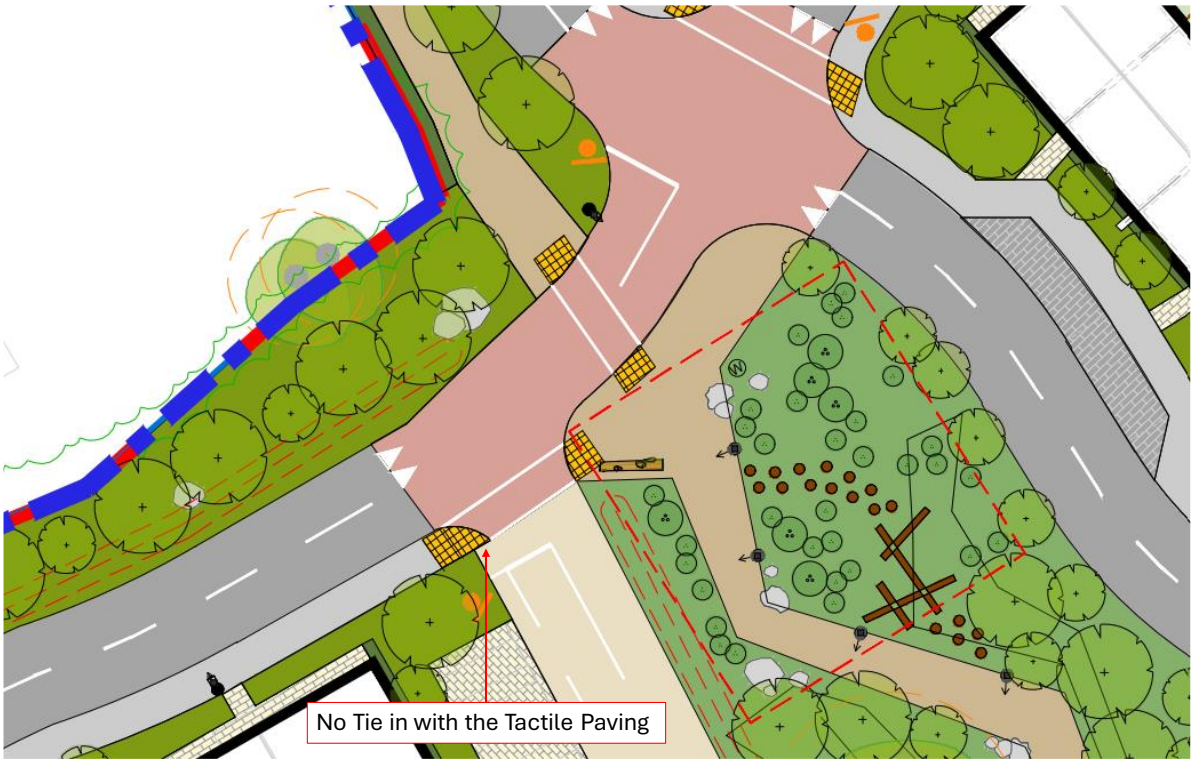


Figure 3.7 – No Tie-In with Tactile Paving

Recommendation

An appropriate tie-in should be provided.

3.8 Problem

Location / Drawing

Enniskerry Road Southern Access / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

A tree has been provided to the left of the access, while there is a building close to the road edge, which may impede the exit visibility and result in vehicles exiting when it is unsafe to do so resulting in a side impact collision.

Figure 3.8 – Enniskerry Road Southern Access

Recommendation

Ensure that appropriate exit visibility is provided. While slim objects such as signs, public lighting columns and street trees may be provided, designers should be aware of their cumulative impact.

4.0 ITEMS RAISED IN THIS DMURS AUDIT

4.1 Location / Drawing

Throughout Scheme / Dwg no. 900705 GENERAL ROAD LAYOUT

Problem

While the majority of junction corner radii within the LRD scheme are 3.0m, there are still some junction radii shown as 4.5m. Large corner radii could lead to excessive vehicle speeds, which could lead to a collision with a pedestrian crossing the road or a vehicle.

DMURS notes that "*where design speeds are low and movements by larger vehicles are infrequent, such as on Local streets, a maximum corner radii of 1-3m should be applied*". All the roads within the LRD are Local Streets.

Where the LRD connects into the external road network, such as the junctions on the Enniskerry Road, the Glenamuck Road, and the Glenamuck Road Distribution Road, the corner radii can be increased.

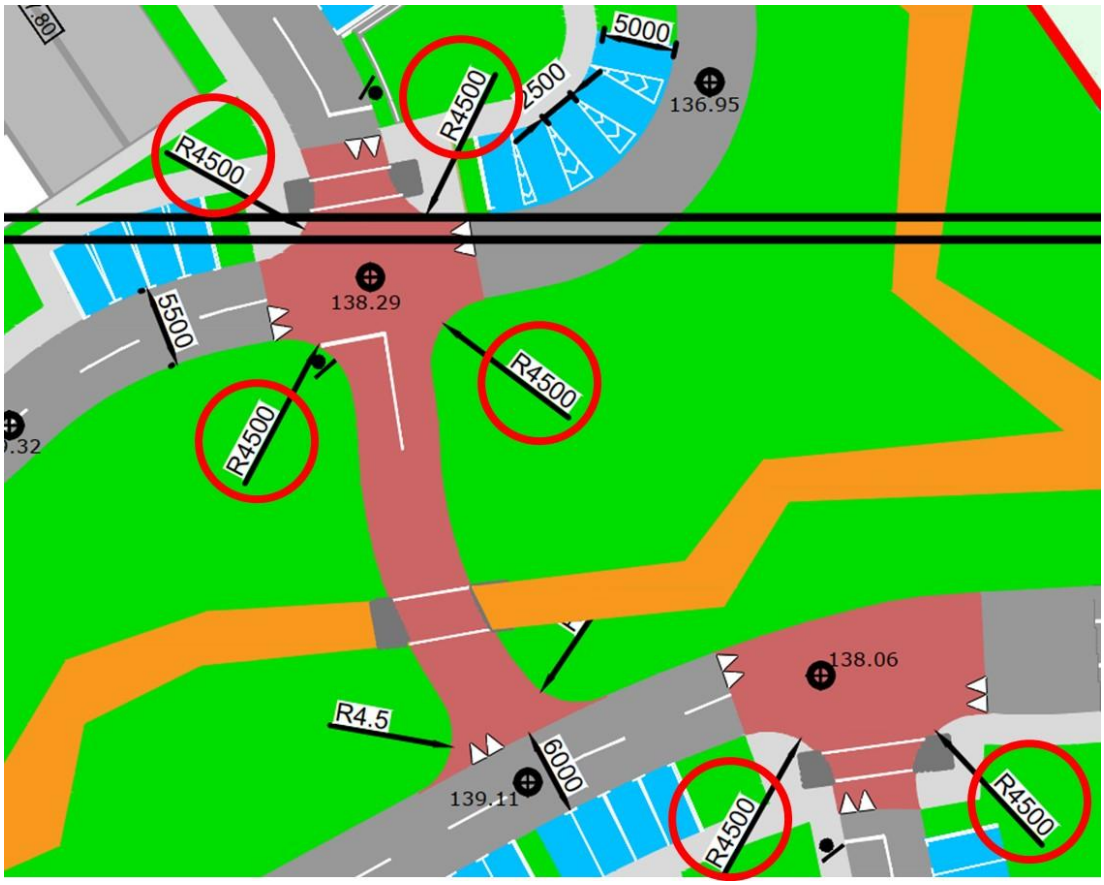


Figure 4.1 – Example Street 11

Recommendation

The corner radii at the junction should be reduced to accord with DMURS.

5.0 ITEMS RAISED IN THIS CYCLE AUDIT

5.1 Location / Drawing

Glenamuck Road Junction / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

The Cycle Manual notes that there are a number of different layouts which can be adopted where cycle tracks cross the mouth of side roads at priority junctions, including those that are fully set back, partially set back, or have no set back, but that the choice is will depend on a number of factors including the available space and the road function and context.

The proposed layout shows a scheme with no set back, of which there are two options in the Cycle Manual. However, the preferred option arrangement is that cycle facilities are fully set back 5m from the road edge as it has a number of advantages, including improving the conflict angle so motorists have better visibility of crossing cyclists and cyclists are kept out of blind spots.

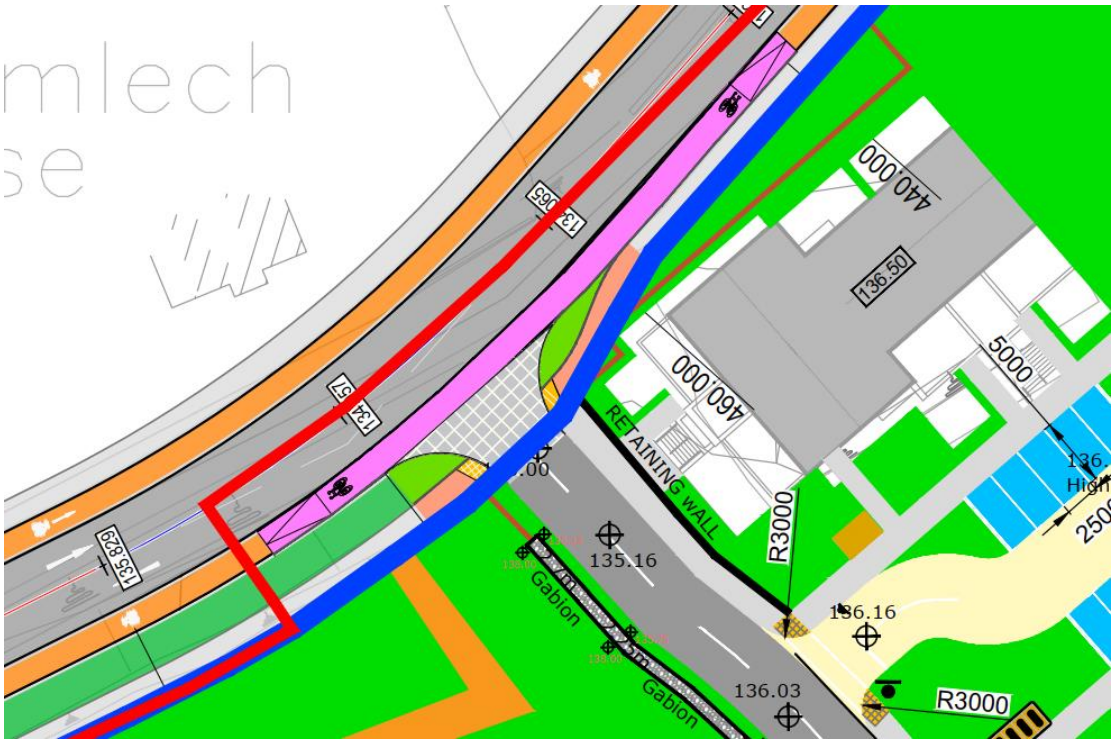


Figure 5.1 – Glenamuck Road Access

Recommendation

The cycle tracks should be set back 5m at the priority junction, as per Cycle Manul design guidance.

5.2 Location / Drawing

Enniskerry Road Junction / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

The last cycle parking space is located too close to the road carriageway. There is a risk that a pedestrian will have to step out onto the road carriageway when locking or unlocking their bike, putting them at risk with a collision with a passing vehicle.

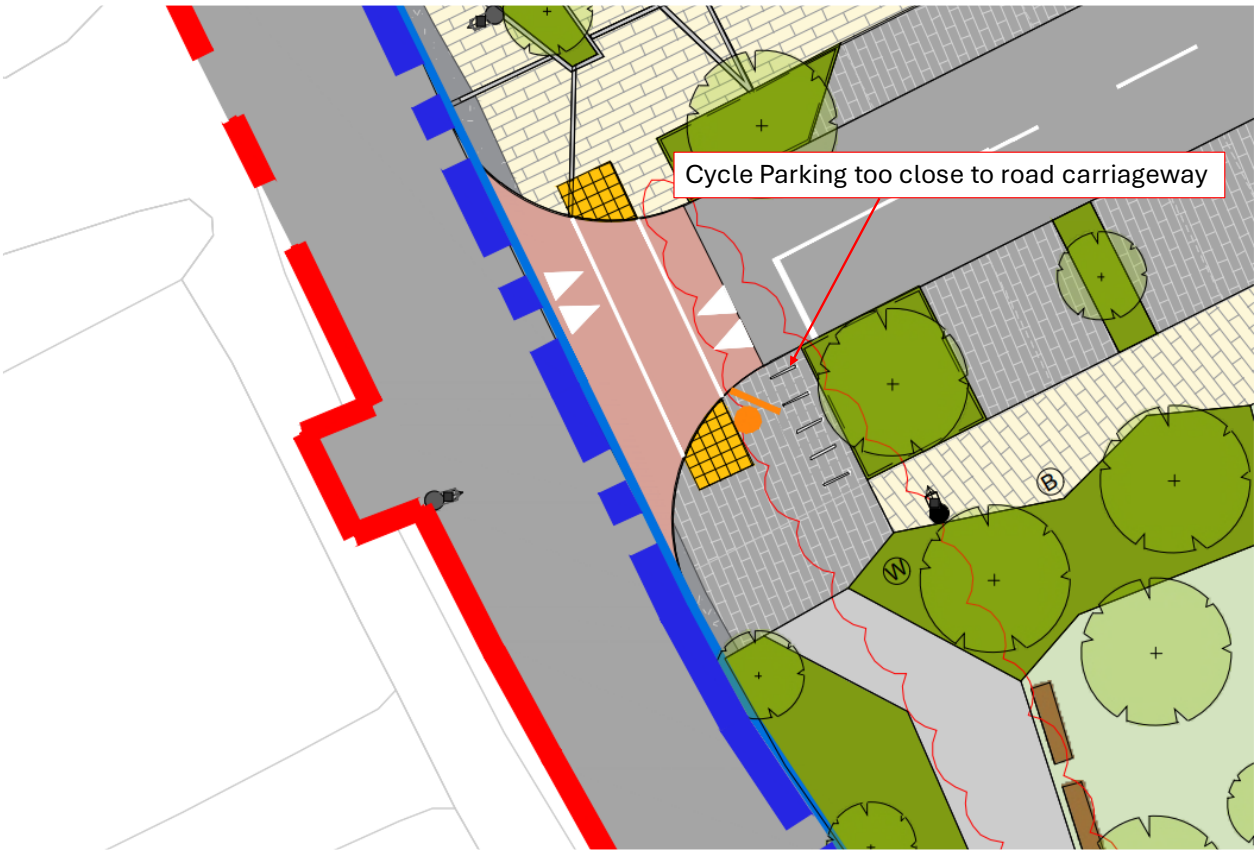


Figure 5.2 – Enniskerry Road Access

Recommendation

The cycle parking space should be relocated.

6.0 ITEMS RAISED IN THIS WALKING AUDIT

6.1 Location / Drawing

Proposed Pedestrian Crossings / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

The pedestrian crossings are shown on the vertical part of the ramps. This could lead to pedestrians tripping or falling as a change in slope is not anticipated.

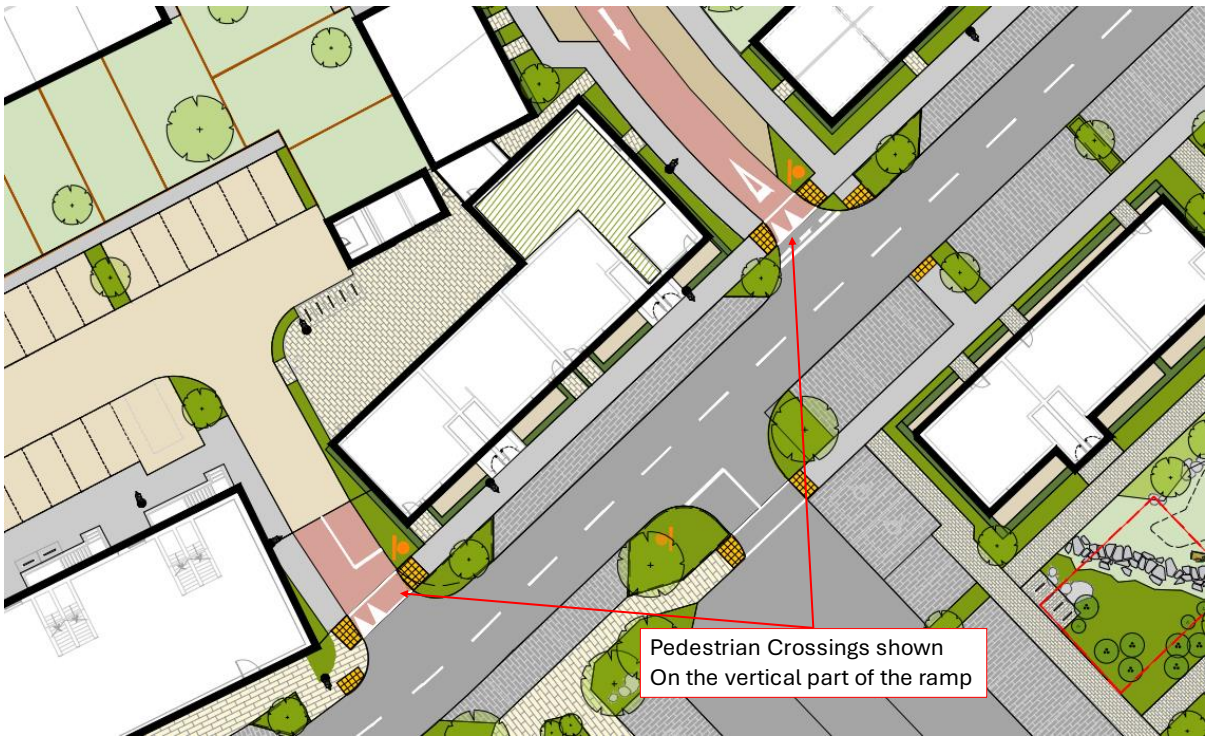


Figure 6.1 – Proposed Pedestrian Crossings

Recommendation

The proposed ramps should be brought forward so that pedestrians are crossing on the flat part of the ramp.

6.2 Location / Drawing

Steps into Adjoining Site / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

It appears that that steps are provided to an adjacent site. Steps without tactiles or railings could lead to trips or falls.

Figure 6.2 – Steps to Adjoining Site

Recommendation

Appropriate tactile paving and rails should be provided at all pedestrian steps throughout the scheme.

6.3 Location / Drawing

Footpath Arrangement / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

The proposed footpath does not lead to the pedestrian crossing, but to the front of the ramp. This could result in some pedestrians, in particular people using wheelchairs having difficulty crossing at this location.

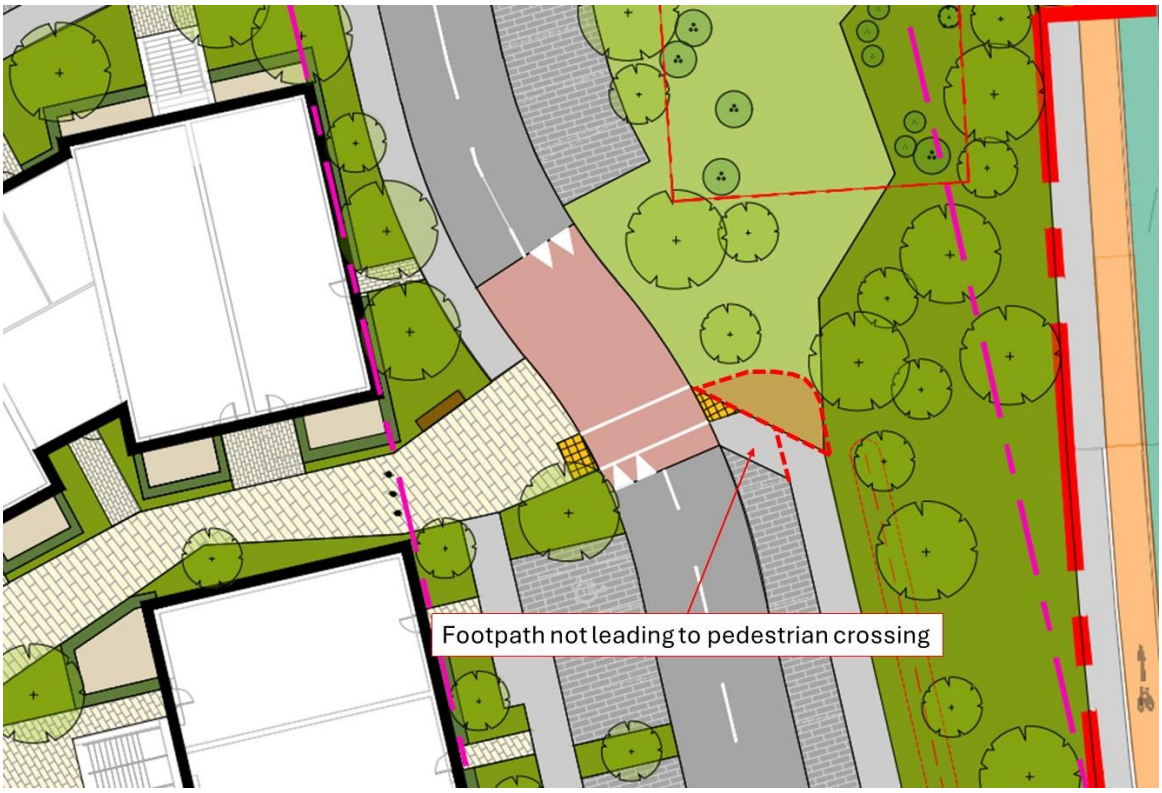


Figure 6.3 – Footpath to pedestrian crossing

Recommendation

The footpath should be brought around the back of the tactile paving.

6.4 Location / Drawing

Footpath Arrangement / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

A desire line will exist between the landscaped area to the south and the residential developments to the north. No crossing point has been proposed on the eastern side of the junction, which will make it more difficult for the visually impaired and those using wheelchairs to cross at this location.

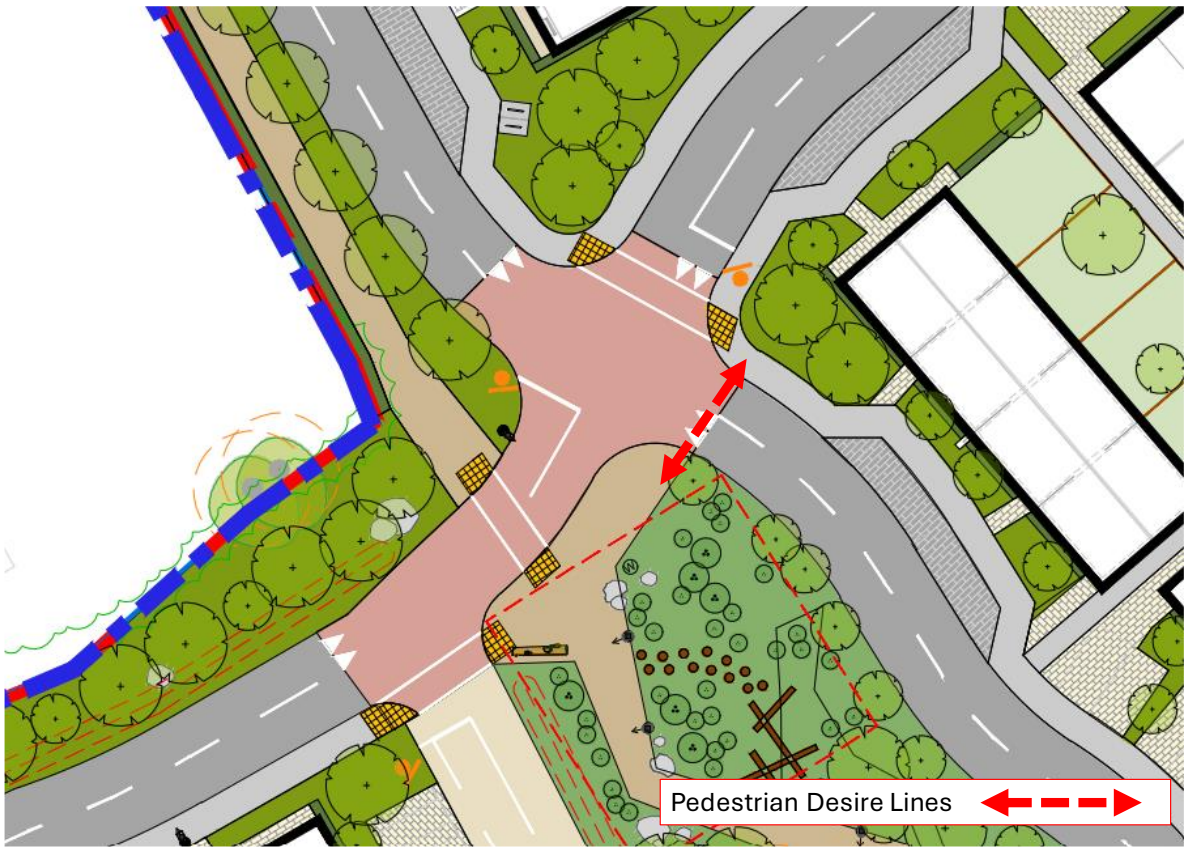


Figure 6.4 – Raised Table

Recommendation

A pedestrian crossing, including a dropped kerb and tactile paving should be provided on the eastern side of the junction.

6.5 Location / Drawing

Pedestrian Desire Line on Street 2 / Dwg no. 900705 GENERAL ROAD LAYOUT

Problem

A landscape strip impedes the pedestrian desire line across the junction. Visually impaired road users may be at risk of a trip.

Figure 6.5 – Pedestrian Desire Line on Street 2

Recommendation

The pedestrian crossing should be realigned, or the landscape area altered.

7.0 ITEMS RAISED IN THIS ACCESS AUDIT

7.1 Location / Drawing

Pedestrian Access at Glenamuck Link Distribution Road / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

A desire line will exist between the 2no. housing developments across the Glenamuck Link Distribution Road, and for those pedestrians wishing to travel south. No crossing point has been proposed across the GLDR. In addition, pedestrians will likely wish to cross the grassed open space rather than using the longer proposed footpath at the entrance/exit to the north. A lack of hard standing on the desire line could lead to slips and falls in the grassed areas (particularly in winter).

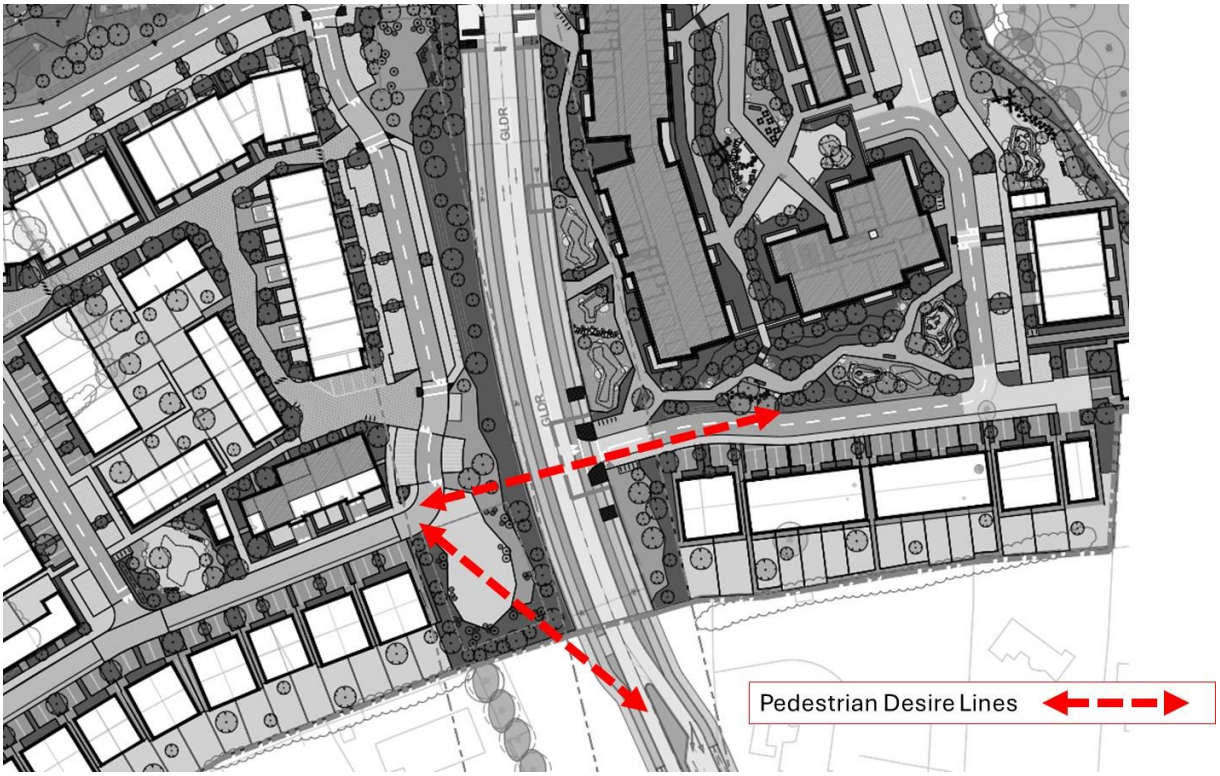


Figure 7.1 – Pedestrian Desire Lines on GLDR

Recommendation

It is recommended that an appropriate safe crossing point be provided, including a footpath connection on the desire line.

7.2 Location / Drawing

Duplex Block B / Dwg no. Site Layout Plan-PL101-105

Problem

It is unclear how pedestrians are to walk to and from the area behind Duplex Block B, with no footpath provided. It appears that pedestrians will have to walk on the road, or cross the road to the footpath on the other side, but there is a strip of grass/landscaping impeding access to the road.

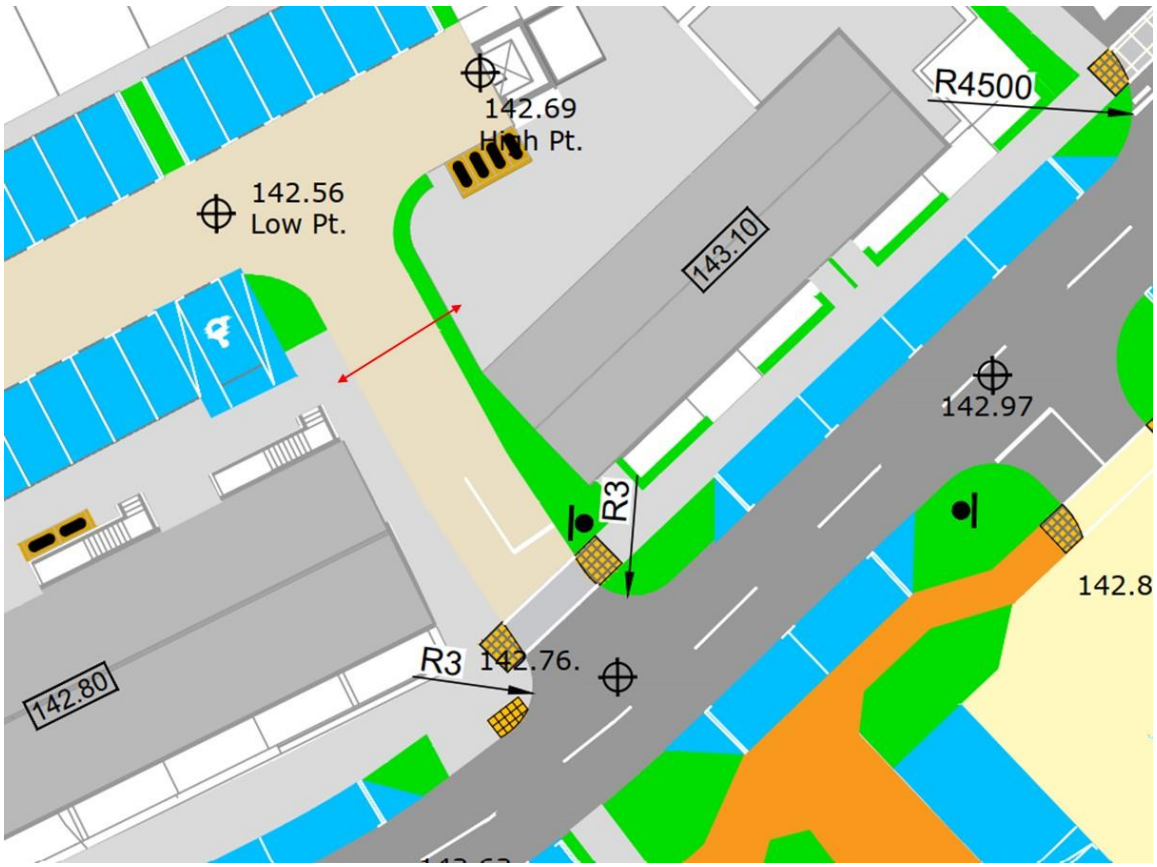


Figure 7.2 – Duplex Block B

Recommendation

A safe crossing should be provided to allow pedestrians access to and from Duplex Block B.

7.3 Problem

Location / Drawing

Southern Plaza / Dwg no. L1_100_GENERAL ARRANGEMENT PLAN

Problem

It is unclear what is proposed on the road carriageway beside the pedestrian plaza.

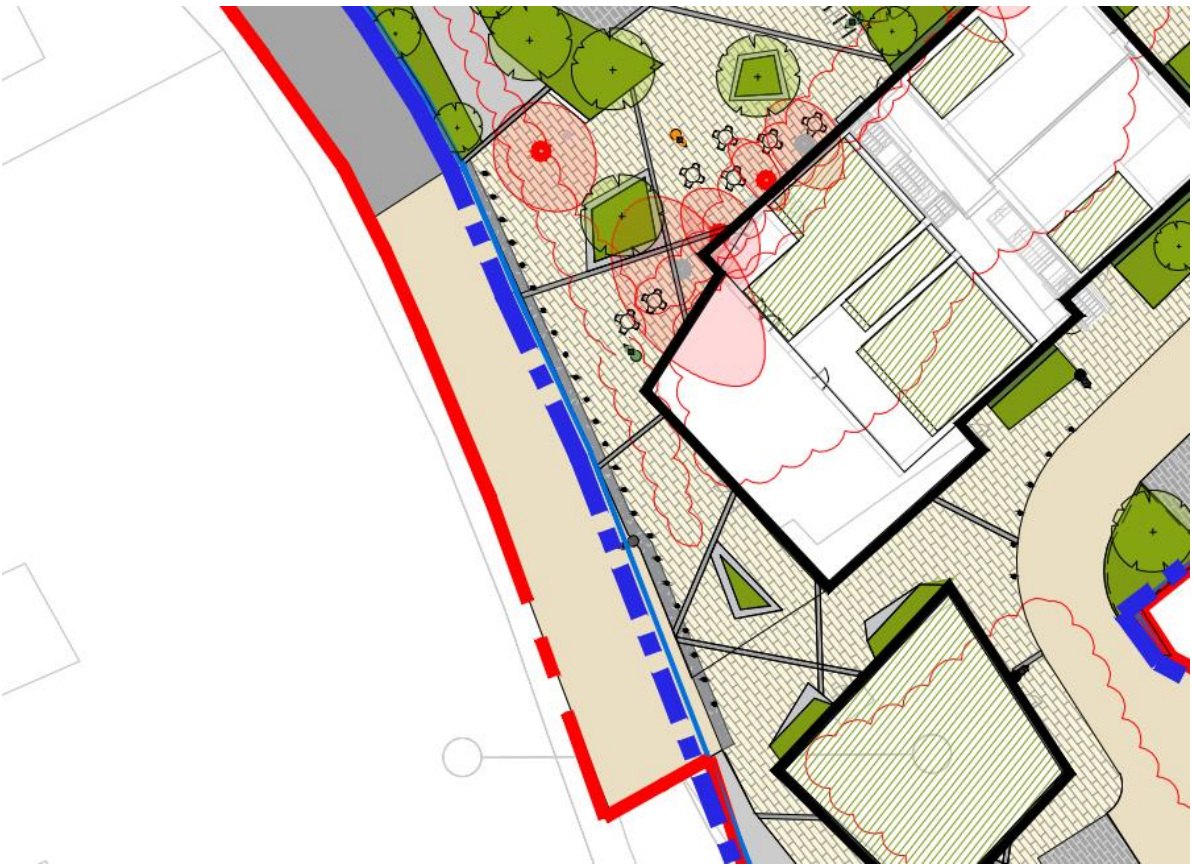


Figure 7.3 – Pedestrian Plaza beside the Enniskerry Road

Recommendation

A raised table should be provided to ensure slower speeds passed the pedestrian plaza. Sharks teeth to be provided etc.

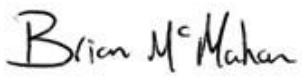
8.0 AUDIT TEAM STATEMENT

This portion of the Quality Audit has been carried out in accordance with the guidance given in DMURS and takes into consideration the principles approaches and standards of that Manual.

We certify that the site was visited and that this audit has been carried out in accordance with the Transport Infrastructure Ireland Road Safety Audit Guidelines GE-STY-01027-01 and Standard GE-STY-01024-07.

The Road Safety Audit 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 audit has been carried out by the persons named below who have not been involved in any design work on this scheme as a member of the Design Team.

Name:	Brian McMahon	**Signed**	
Position:	Audit Team Leader	**Date:**	07.06.2024
Name:	Norman Burton	**Signed**	
Position:	Audit Team Member	**Date:**	07.06.2024

Appendix A - List of Material Provided to the Design Team

Drawing Number – L1_100_GENERAL ARRANGEMENT PLAN_SHEET LAYOUT_LRD

Drawing Number – 04 - 900705 GENERAL ROAD LAYOUT

Drawing Number – 04 - 900706 GENERAL ROAD LAYOUT SHEET 1 OF 4
Drawing Number – 04 - 900706 GENERAL ROAD LAYOUT SHEET 2 OF 4
Drawing Number – 04 - 900706 GENERAL ROAD LAYOUT SHEET 3 OF 4
Drawing Number – 04 - 900706 GENERAL ROAD LAYOUT SHEET 4 OF 4

Drawing Number – 04 - 900720 MASTERPLAN JUNCTIONS
Drawing Number – 04 - 900727 JUNCTION LAYOUT SHEET 1 OF 2
Drawing Number – 04 - 900727 JUNCTION LAYOUT SHEET 2 OF 2

Drawing Number – 21009.2 - PL101 - Site Layout Plan

Drawing Number – 04 - 900710 PEDESTRIAN AND CYCLIST ROUTES

Drawing Number – 04 - 900711 PEDESTRIAN AND CYCLIST ROUTES SHEET 1 OF 3
Drawing Number – 04 - 900711 PEDESTRIAN AND CYCLIST ROUTES SHEET 2 OF 3
Drawing Number – 04 - 900711 PEDESTRIAN AND CYCLIST ROUTES SHEET 3 OF 3

Drawing Number – 04 04 - 900701 STREET TYPOLOGY PLAN

Drawing Number – 04 - 900702 STREET TYPOLOGY PLAN SHEET 1 OF 3
Drawing Number – 04 - 900702 STREET TYPOLOGY PLAN SHEET 2 OF 3
Drawing Number – 04 - 900702 STREET TYPOLOGY PLAN SHEET 3 OF 3

Appendix B - Feedback Forms (QA)

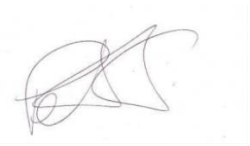
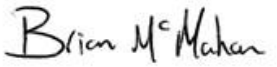
Scheme: Kilternan Village LRD

Stage: LRD Quality Audit

Date Site Visit Completed: 21/03/2024

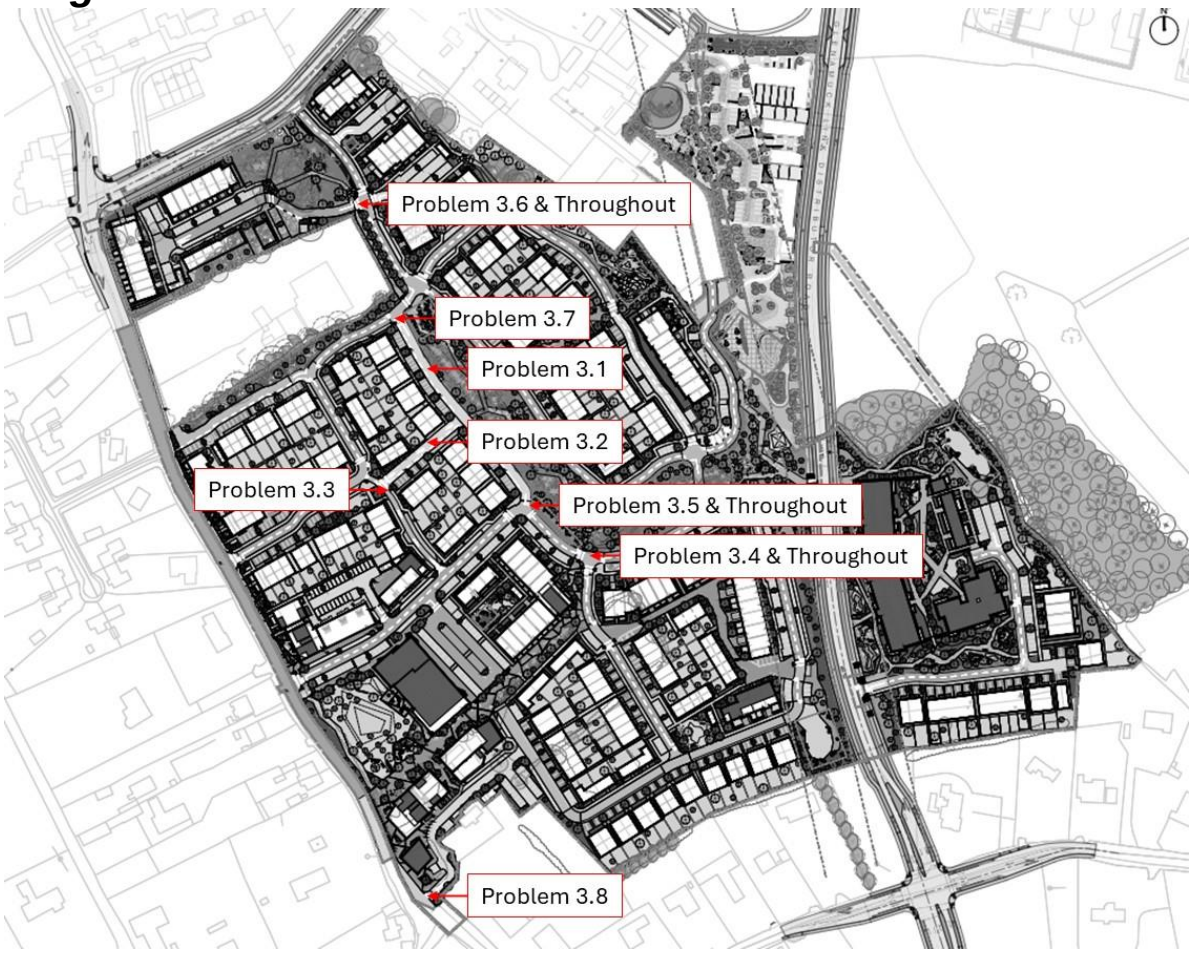
Paragraph No. in Safety Audit Report	To be Completed by Designer			To be completed by Audit Team Leader
	Problem Accepted (Yes / No)	Recommended Measure Accepted (Yes / No)	Describe Alternative Measure(s). Give reasons for not accepting recommended measure	Alternative Measures accepted by auditors (Yes / No)
3.1	Y	N	The design accords with DMURS. The street has a 4.8m carriageway with a 1.2m pedestrian comfort strip. This is delineated by a dashed line in the drawings. In -situ the design will incorporate different material finished that will further reinforce the shared nature of the surface.	Y
3.2	Y	N	Vehicle tracking and movement has dictated that this short street section is design as shown. Space is required for larger vehicles to access and fpr so perpendicular cars to access / egress car parking space. The street. Changes shared street is design for very low speeds and very low volumes and the shared space will act as a part of the social aspect of the community fostering play etc.	Y
3.3	Y	Y		
3.4	Y	Y		
3.5	Y	Y	the location of lighting will be reviewed and changed where required.	Y
3.6	Y	Y		
3.7	Y	Y		
3.8	Y	Y		
4.1	Y	Y		
5.1	Y	N	Cycle track is designed in accordance with the Cycle Design Manual. As noted there are a number of options for priority junctions. The design shown is the CDM TL403 - Standard cycle track crossing side road with priority – no -set back. As noted in CDM 4.3.3.1 "Where cycle tracks cross the mouth of side roads at priority	Y

			junctions, there are a number of different layouts which can be adopted. The choice of layout will likely depend on a number of factors including the available space and the road function and context. " TL403 was chosen due to space constraints and level defences between Glenamuck Rd and site entrance that dictated the design chosen.	
5.2	Y	Y		
6.1	Y	Y		
6.2	Y	Y		
6.3	Y	Y		
6.4	Y	Y		
6.5	Y	Y		
7.1	Y	Y	The location of the crossing of the GLDR to connect the two site will need to be discussed and agreed with the GDRS team. Upon agreement the path and crossing will be provided by the client.	Y
7.2	Y	Y		
7.3	Y	Y		

Name:	Peter Foley	**Signed**	
Position:	Design Team Leader	**Date:**	12/06/2024
Name:	Brian McMahon	**Signed**	
Position:	Audit Team Leader	**Date:**	13/06/2024
Name:	Phillip Assaf	**Signed**	
Position:	Employer / Developer	**Date:**	14/06/24

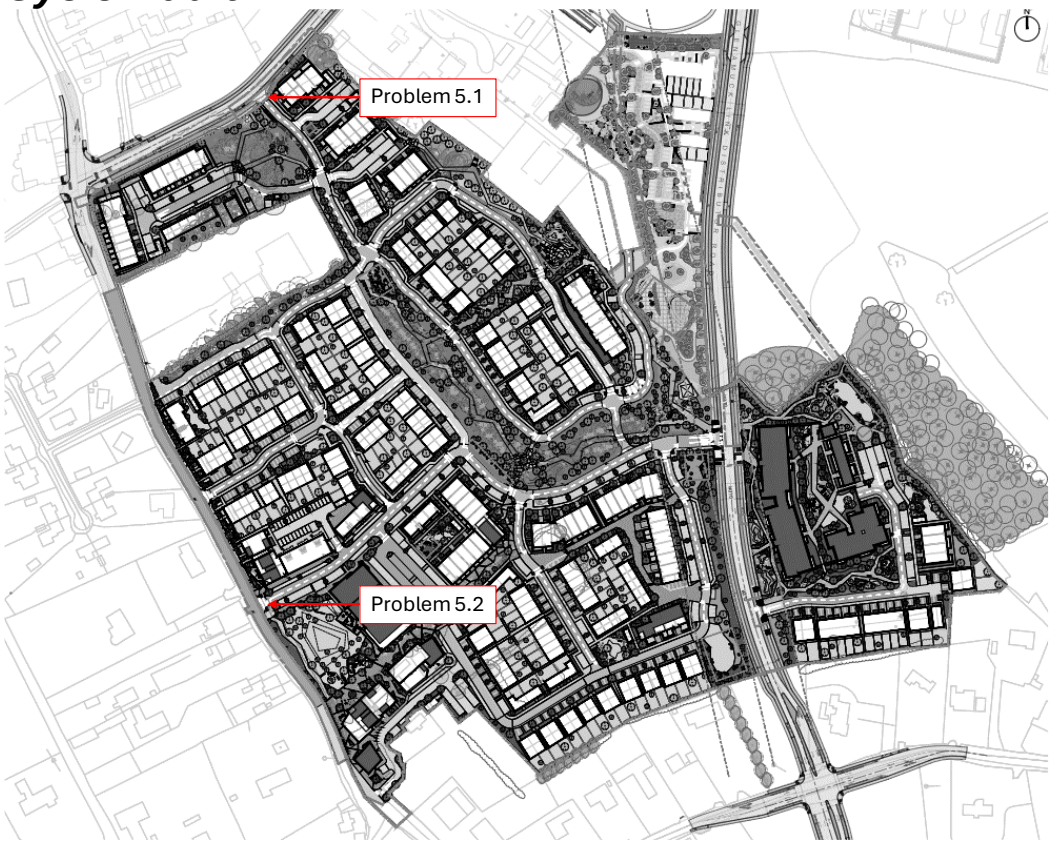
Appendix C – Problem Locations

Stage 1 RSA

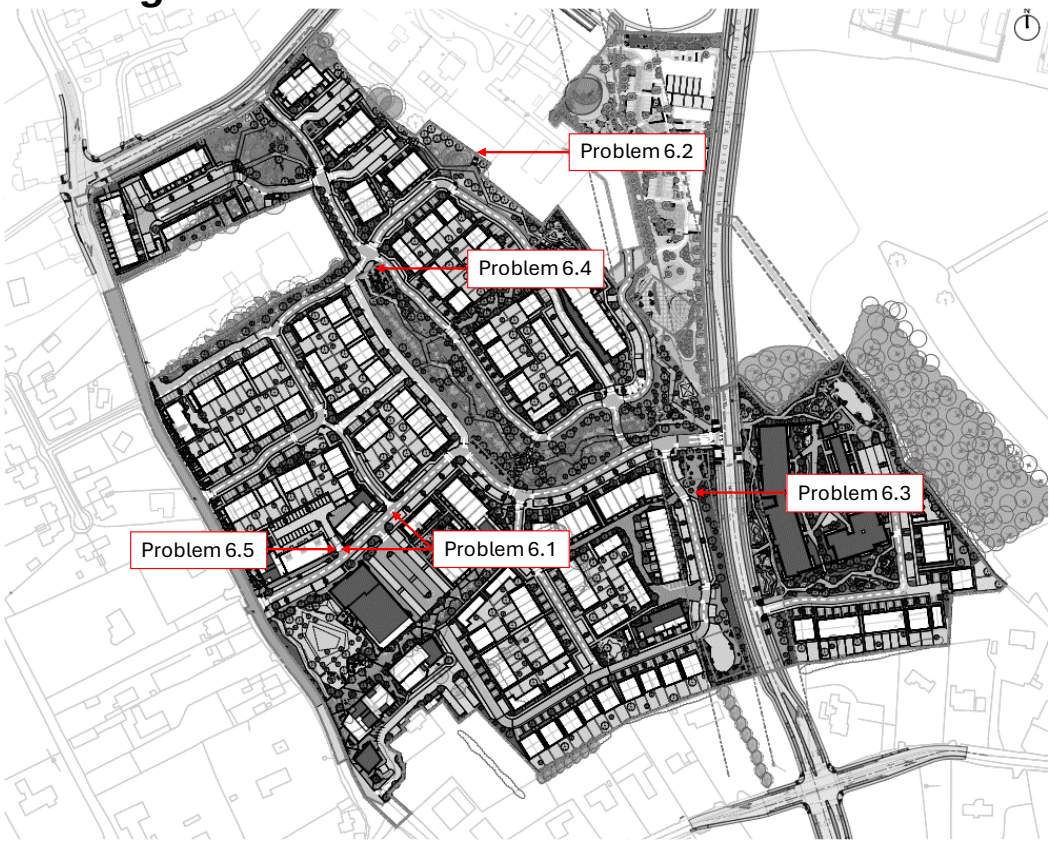


DMURS Audit

Cycle Audit



Walking Audit



Access Audit