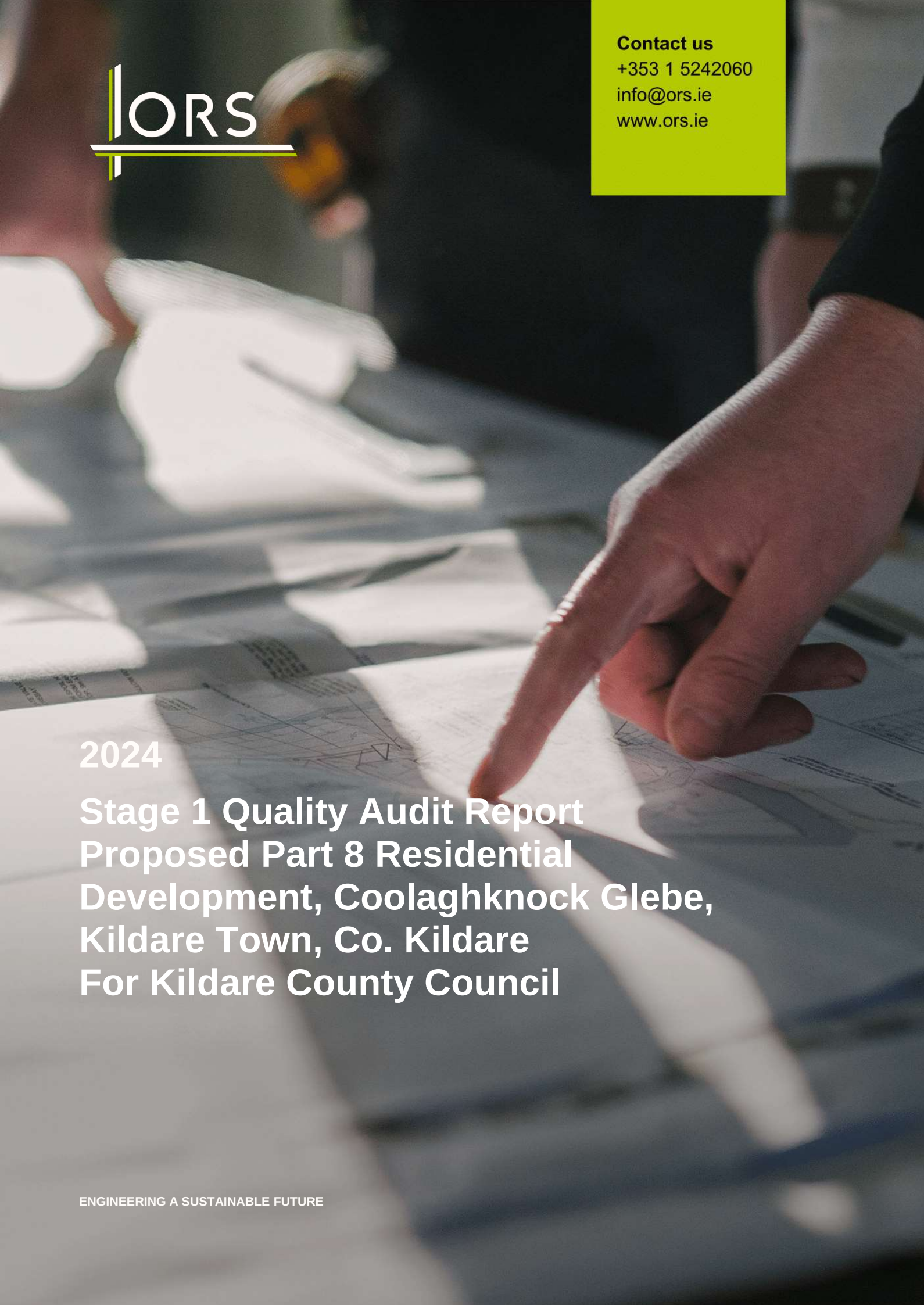

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2024

Stage 1 Quality Audit Report Proposed Part 8 Residential Development, Coolaghknock Glebe, Kildare Town, Co. Kildare For Kildare County Council

ENGINEERING A SUSTAINABLE FUTURE

Stage 1 Quality Audit Report
Proposed Part 8 Residential Development, Coolaghknock Glebe, Kildare Town, County Kildare for Kildare County Council

Document Control Sheet

Client:	Malone O'Regan Consulting Engineers
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1 Introduction

This report documents the findings of a Stage 1 Quality Audit (QA) carried out with respect to a Proposed Residential Development at Connagh Road, Coolaghknock Glebe, Co. Kildare.

The audit team conducted the site visit on Wednesday the 14th of February 2024 to identify elements within the road environment that could impact the accessibility and mobility of road users as well as safety issues observed in the proposed scheme.

The audit team comprised of the following people:

Audit Team Leader:
Adam Price BEng (Hons), CEng, MIEI

Audit Team Member:
Mark Gallagher AEng, MIEI

Audit Team Observer:
Angeliki Kalatha MEng, MSc, MIEI

The audit team reviewed the following documents and drawings provided Malone O'Regan Consulting Engineers:

(1) SHB4-CGK-DR-MOR-CS-P1-101- Proposed Site Layout
(2) SHB4-CGK-DR-MOR-CS-P1-116- Swept Path Analysis Refuse Truck
(3) SHB4-CGK-DR-MOR-CS-P1-117- Swept Path Analysis Fire Tender
(4) SHB4-CGK-DR-MOR-CS-P1-120- Sightline Layout
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(7) SHB4-CGK-DR-MOR-CS-P1-140- Watermain Layout
(8) 2972-SMK-XX-ZZ-DR-E-6033 Public Lighting Ducting Requirements
(9) SHB4-CGK-DR-MOR-CS-P3-155 Rev 0-Link Road Layout.

Documents/Information not supplied:
- Speed Survey
- Departures from Standards.

Guidance and information on the completion of the Quality Audit was found in:

- Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport.
- DMURS Supplementary Material – Advice Note 4 – Quality Audits.
- DMURS Supplementary Material – DMURS Street Design Audit (May 2019).
- Traffic Advisory leaflet 5/11, Department of Transport UK; and
- Building for Everyone - A Universal Design Approach, National Disability Authority.

The audit examined only those issues within the design relating to the road safety implications and accessibility of the scheme and has therefore not examined or verified the compliance of the design in any other criteria.

The Quality Audit should not be treated as a design check. The problems identified and described in this report are considered by the Audit Team to require action to improve the safety of the development and minimise accident occurrence.

All comments, references and recommendations in this audit are in respect of the review of information supplied by Malone O'Regan Consulting Engineers and a subsequent site visit by the audit team.

The information supplied to the Audit Team is also listed in **Appendix A**.

2 Background

2.1 Description of the Proposed Development

ORS have been commissioned by NDFA on behalf of Kildare County Council to conduct a DMURS Quality Audit (including a stage 1 Road Safety Audit) for a proposed residential development located just off Melitta Road in Kildare town, County Kildare. The site is within an undeveloped area in Kildare town. The proposed development will consist of the following:

1. 131 no. residential units including 89 no. houses and 42 no. own door apartment / duplex units to be delivered on a phased basis, comprising 42 no. one bed units; 36 no. two bed units; 45 no. three bed units; and 8 no. four bed units; with renewable energy design measures (which may be provided externally) for each housing unit.

2. Rear garden sheds serving the residential units.

3. 1 no. crèche facility of 325sqm with potential for community use until such time as crèche becomes viable.

4. Landscaping works including provision of (a) open space and kick about areas; (b) natural play features; (c) new pedestrian and cycle connections; (d) compensatory tree planting; and (e) infiltration basin.

5. Associated site and infrastructural works including provision for (a) 2 no. ESB substations and switch rooms; (b) car and bicycle parking; (d) public lighting; (e) bin storage; (f) temporary construction signage; (g) estate signage; and (h) varied site boundary treatment comprising walls and fencing; and all associated site development works.

The site has been approved by the Department of Housing, Local Government & Heritage is and is included in PPP National Social Housing Programme, Bundle 4 and 5. The subject site is located on Phase 2 New Residential zoned lands, to the east of Kildare in Collaghknock Glebe.

A segregated footpath is located along the northbound carriageway of Connagh Road. These continuous footpaths connect to the junction with Melitta Road/Connagh Road to the northwest direction of the application site enhancing accessibility to the broader road network and public transport. The development will have a sole vehicular entrance to the northwest boundary of the application site off Connagh Road via a 3-arm access junction.

The speed limit along the Connagh Road is 30km/h as it is a residential zone.

Please refer to **Figure 2.1** displayed below, which provides an overview of the site location.

Figure 2.1: Site Location Map (Source: Google Earth)

Figure 2.2 shows the proposed site layout provided by Malone O'Regan Consulting Engineers.

Figure 2.2: Site Layout (Source: Malone O'Regan Consulting Engineers)

2.2 Existing Road Network

As previously noted, vehicular access is via Connagh Road which is to the northwest of the site and further connects Melitta Road (R413) to the northeast of the site to the proposed site access junction. The road features footpath on northbound direction of the carriageway and the carriageway width is approximately 6.9 metres with no lane designations or road markings on the surface. Street lighting, footways of varying widths and dropped kerbs, as well as traffic calming measures are present near the proposed project site. The carriageway does not feature any lines.

Access to the housing estate is off Melitta Road (R413)/Connagh Road Junction. Melitta Road (R413) is a two-way single carriageway regional road with footpaths on either side of the road.

It features a carriageway width of 7.5 metres in the vicinity of the site. The alignment of the road is relatively straight in the vicinity of the site and the posted speed limit is 50 km/h. The existing road network is equipped with road markings and signage, while the pavement is generally in good condition,

Figure 2.3 shows Connagh Road at the frontage of the proposed site entrance. During the site visit it was evident that the existing 'Stop' road marking had significantly worn away over time.

Figure 2.3: Connagh Road at the site frontage (Source: ORS, February 2024)

3 Quality Audit Scope

The primary goal of a Quality Audit is to ensure that high-quality places are delivered and maintained by all relevant parties, ultimately benefiting all end users. During that process, the Quality Audit team considers access for disabled people, pedestrians, cyclists, and drivers of motor vehicles to ensure that the scheme is inclusive and caters to the needs of all users.

The scope of this Quality Audit is to review the proposed layouts supplied by the Design Team and make recommendations in line with guidelines as per the Design Manual for Urban Roads and Streets (DMURS) and the Transport Infrastructure Ireland Road Safety Audit Standard GE-STY-01024, to ensure compliance and good practice of regulations defined in these standards documents.

The introduction of DMURS have sought to improve the design of streets in urban areas and to facilitate the implementation of policy on sustainable living by achieving a better balance between all modes of transport and road users. The introduction of DMURS is intended to encourage more people to walk, cycle or use public transport by making the experience safer and more pleasant.

In general, the principles of DMURS are intended to lower traffic speeds, reduce unnecessary car use, and create a built environment that promotes healthy lifestyles and responds more sympathetically to the distinctive nature of the individual communities and places.

DMURS Quality Audits are undertaken to demonstrate that appropriate consideration has been given to the relevant aspects of the design from a DMURS point of view. The benefits of undertaking a DMURS Quality Audit are as follows:

- The needs of all user groups and the design objectives of the project are fully considered.
- An audit enables the project's objectives to be delivered by putting in place a check procedure.
- It can contribute to cost efficiency in design and implementation.
- A DMURS Quality Audit encourages engagement with stakeholders.

This Quality Audit will be divided into the following assessments:

- A DMURS Street Design Audit
- Additional Audits (Access, Walking and Cycling Audits)
- A Road Safety Audit.

A DMURS audit template, consisting of a series of short tables, is available online by the Department for Transport, Tourism and Sport (DTTAS) and has been adopted into this report.

This Quality Audit was carried out to identify any potential difficulties road users, particularly mobility impaired users, older people and families with children may encounter when accessing the proposed housing development and to address any safety issues associated with the proposal. The elements found in this Audit that require further consideration with the guidelines set out in DMURS are outlined at the following pages.

4 DMURS Street Design Audit

4.1 Overview

The DMURS Street Design Audit is an essential tool for evaluating the compliance of street designs with the principles outlined in the Design Manual for Urban Roads and Streets (DMURS). This audit serves to ensure that key considerations outlined in DMURS have been appropriately addressed. The audit focuses on four critical aspects of street design, namely:

- Connectivity.
- Self-Regulating Street Environment.
- Pedestrian and Cycling Environment; and
- Visual Quality.

4.2 Connectivity

Connectivity				
Key Issues	**Key DMURS Reference**	**Comments**	**Audit Suggestion**	**Design Team Response**
Strategic routes/major desire lines been identified and are clearly incorporated into the design.	3.1 – Integrated Street Network 3.2.1 – Movement Function 3.3.1 – Street layouts 3.3.4 – Wayfinding	3.1 – The internal network connects dwelling entrances with parking area and the open spaces. 3.2.1 – The development creates a permeable network for pedestrians restricting private vehicles, with the provision of cul-de-sacs. 3.3.1 – The design creates a strong sense of enclosure by using landscaping to enclose the streets and development as a whole. 3.3.4 – Site layout is legible directing users towards site and building entrances.		
Multiple points of access are provided to the site/place, in particular for sustainable modes.	3.3.1 – Street Layouts 3.3.3 – Retrofitting	3.3.1 – The development maximises the number of walkable routes between destinations within the development through the provision of carriageway adjacent to footpaths and footpaths at open spaces. 3.3.3 – The development creates a permeable network for pedestrians with restrictions on the	It is unclear how the new proposed pedestrian link integrates with the Connagh Road Estate. It is also unclear how pedestrian, and cyclists will integrate at the main access as no	Layout amended on drawings submitted for planning

		movement of private vehicles.	crossing points have been provided.	
Accessibility throughout the site is maximised for pedestrians and cyclists, ensuring route. choice.	3.3.1 – Street Layouts 3.3.2 – Block Sizes 3.4.1 – Vehicle Permeability	3.3.1 – Adequate number of footpaths. 3.3.2 – The maximum block dimension does not exceed 120m. 3.4.1 – The development has created a network with restrictions on the movement of private vehicles. However, the site provides through accessibility by road, which will benefit construction traffic and service vehicles.	Cyclists will be required to share the road with vehicles, dismount and reach their destination through the provided footpaths.	Noted. This is considered appropriate given low-density nature of proposed housing.
Through movements by private vehicles on local streets are discouraged by an appropriate level of traffic calming measures.	3.2.1 – Movement Function 3.2.2 – Place Context 3.4.1 – Vehicle Permeability	3.2.1 – The development comprises local (internal) street network which only provides access within the site and does not provide a through route for vehicles. 3.2.2 – The development comprises an appealing living place enriched with valuable green attributes. 3.4.1 – The site has created a network with restrictions on the movement of private vehicles through the use of cul-de-sacs.		

4.3 Self-Regulating Street Environment

Self-Regulating Street Environment				
Key Issues	**Key DMURS Reference**	**Comments**	**Audit Suggestion**	**Design Team Response**
A suitable range of design speeds have been applied with regard to context and function.	3.2.1 – Movement Function 3.2.3 – Place Context 4.1.1 – A Balanced Approach to Speed	3.2.1 – It is not clear what the intended speed limit is on the internal road network. 3.2.3 – An appropriate speed limit should be applied in the context of the proposed design. 4.1.1 – The design provides for limited traffic calming measures which could result in higher speeds through the development.	As the proposed scheme is a residential development a speed limit <30km/h should be applied, and clearly indicated.	Local Authority to consider introduction of 30km/h speed limit at junction with Melitta Road.
The street environment will facilitate the creation of a traffic calmed environment via the use of 'softer' or passive measures.	4.2.1 – Building Height and Street Width 4.2.2 – Street Trees 4.2.3 – Active Street Edges 4.2.4 – Signage and Line Marking 4.2.7 – Planting 4.4.2 – Carriageway Surfaces 4.4.9 - On-Street Parking Advice Note 1 – Transitions and Gateways	4.2.2 – Tree plantings are proposed in the layout plan. 4.2.3 – Active Street edges are provided through the provision of own door accessed dwellings throughout the development. 4.2.4 – Signage kept to minimum. 4.2.7 – Planting is used to create a softer landscape and encourage slower speeds. 4.4.2 – To reinforce narrower carriageways each parking bay is finished so that it is clearly distinguishable from the main carriageway. 4.4.9 – On-street parking has been provided throughout the site and the access road which will visually narrow the carriageway.	The type of tree planting proposed should be such that tree canopies do not obscure visibility splays from junctions and pedestrian crossings.	Trees to have 2m clear stem

A suitable range of design standards / measures have been applied that are consistent with the applied design speeds.	4.4.1 - Carriageway Widths 4.4.4 – Forward Visibility 4.4.5 – Visibility Splays 4.4.6 – Alignment and curvature 4.4.7 – Horizontal and Vertical Deflections Advice Note 1 – Transitions and Gateways	4.4.1 – The proposed internal carriageway will be 6m wide. 4.4.4 – Forward visibility has been reduced through the provision of on-street parking and trees, increasing driver's caution. 4.4.5 – Junction visibility splays in accordance with DMURS for a 30km/h speed limit. 4.4.6 – The development features changes in horizontal curvature and vertical deflections, promoting lower speeds.		

4.4 Pedestrian and Cycling Environment

Pedestrian and Cycling Environment				
Key Issues	**Key DMURS Reference**	**Comments**	**Audit Suggestion**	**Design Team Response**
The built environment contributes to the creation of a safe and comfortable pedestrian environment.	4.2.1 – Building Height and Street Width 4.2.3 – Active Street Edges 4.2.5 – Street Furniture 4.4.9 – On-Street parking	4.2.1 – Limitations in cross-sectional width and the emphasis on delivering segregated footpath on both sides of the road, and the provision of direct access to building entrances enhance pedestrian safety. 4.2.3 – Active Street edges provide passive surveillance of the street environment and promote pedestrian activity. 4.2.5 –Street furniture such as seatings, picnic tables are provided in certain sections of the development. However, streetlight columns are proposed at footpath edges, throughout the site. 4.2.9 – On-street parking is proposed throughout the site contributing to pedestrian comfort by providing a buffer between the carriageway and the footpath.	Designers should prevent the encroachment of streetlights onto the footway, as it can pose a safety hazard. Where a lighting pole is to be installed, they should ensure that the minimum footpath width, as per DMURS requirements, is taken into consideration. Designers should prioritise sufficient lighting in all open public areas. Designers should ensure that tree canopies over time do not impede the illumination provided by street lighting.	Street lighting plan coordinated with landscape architect's design and included within planning submission.
Junctions been designed to ensure the needs of pedestrians and cyclists are prioritised.	4.3.2 – Pedestrian Crossings 4.3.3 – Corner Radii 4.4.3 – Junction Design 4.4.7 – Horizontal and Vertical Deflections	4.3.2 – Pedestrian crossings are provided on or adjacent to desire lines throughout the development. 4.3.3 – Corner radii of 4.5-5.0m have generally been provided throughout the site and appear to be appropriate for the type of development.	The proposed locations of pedestrian crossings to be positioned along pedestrian desire lines. Appropriate tactile paving and dropped kerbs to be provided at every crossing point location.	Layout amended on drawings submitted for planning

		4.4.3 – Junctions are designed with crossings on almost all arms. 4.4.7 – Vertical deflections in the form of raised tables at junctions prevent excessive junction speeds.		
Footpaths are continuous and wide enough to cater for the anticipated number of pedestrian movements.	3.2.1 – Movement Function. 3.2.3 – Place Context. 4.2.5 – Street Furniture 4.3.1 – Footways, Verges and Strips 4.3.2 – Pedestrian Crossings	3.2.1 – The development maximises the number of walkable routes between destinations within the development. 3.2.3 – The development comprises an appealing living place with green attributes and footpath width compliant with DMURS. 4.2.5 – The use of street furniture is limited and mostly present at the open public spaces. 4.3.1 – Segregated footpaths where space permits. Footways are 2 to 2.3 m in certain locations, but they are generally of a wider nature which is greater than the minimum requirement of 1.8m.		
The particular needs of visually and mobility impaired users been identified and incorporated in the design.	4.2.5 – Street Furniture 4.3.1 – Footways, Verges and Strips 4.3.2 – Pedestrian Crossings 4.3.4 – Pedestrianised and Shared Surfaces	4.3.1 – Segregated footpath provided on main desire lines with separation from vehicles where space permits. Accessible parking spaces are proposed throughout the site with measures to allow mobility impaired users to enter adjacent footpaths. 4.3.2 – Pedestrian crossing points are equipped with tactile paving to alert the visually impaired	Drop-kerbs/ramps and appropriate tactile paving at the car park area, close to every accessible parking space should be provided. Tactile paving and drop kerbs should be appropriately placed to not conflict with the vehicular traffic. Tactile paving should be provided at all pedestrian crossing points to maintain consistency.	Layout amended on drawings submitted for planning

		pedestrians of changes in priority and to allow them to orientate themselves at crossings. 4.3.4 – Tactile paving is not provided at all pedestrian crossing thresholds.		
Cycling facilities will cater for cyclists of all ages and abilities.	3.2.1 – Movement Function 3.2.3 – Place Context 4.3.5 – Cycle facilities	4.3.5 – Dedicated cycling lanes are not provided. Cyclists will share the carriageway with motorised road users.	Appropriate dismount signage for cyclists to be installed throughout pedestrianised areas to reduce possibility of conflicts.	No significant pedestrianised areas are included within the scheme which would warrant dismount signage.

4.5 Visual Quality

Visual Quality				
Key Issues	**Key DMURS Reference**	**Comments**	**Audit Suggestion**	**Design Team Response**
The landscape plan responds to the street hierarchy and the value of the place.	3.2.1 – Movement Function 3.2.3 – Place Context 4.2.2 – Street Trees 4.2.7 – Planting Advice Note 1 – Transitions and Gateways	3.2.1 – The landscaping is designed to follow travel routes, enhancing both functionality and appearance. 3.2.3 – The development embodies an appealing living environment with an emphasis on green features, enhancing the sense of place and discouraging excessive speeds. 4.2.2 – The inclusion of street trees across the site enhances the sense of enclosure achieving both a sense of place and a traffic calming effect. 4.2.7 – Planting is proposed to create a softer landscape. Street trees also serve as practical sustainable drainage system measure.		
Street furniture is orderly placed.	3.2.1 – Movement Function 3.2.3 – Place Context 4.2.5 – Street Furniture 4.3.1 Footways, Verges and Strips	4.2.5 – Street furniture is used sparingly throughout the site and walking routes, primarily located at public open spaces. 3.2.3, 4.2.5 – Street furniture is appropriate to the context. 4.3.1 – Streetlight columns are proposed along footpaths.	Streetlights should be strategically placed to ensure they do not impede safe pedestrian movement.	Refer to streetlighting site plan included within planning documentation
The use of signage and line marking has been minimised.	3.2.1 – Movement Function 3.2.3 – Place Context 4.2.4 – Signage and Line Marking	4.2.4 – Details of signage are provided, and signage is kept to the minimum required.	Signage poles positioning should not hinder safe pedestrian passage.	Refer to streetlighting site plan included within planning documentation

Materials and finishes used throughout the scheme have been selected from a limited palette and respond to the value of the place?	3.2.1 – Movement Function 3.2.3 – Place Context. 4.2.6 – Materials and Finishes 4.2.8 – Historic Contexts 4.3.2 – Pedestrian Crossings 4.4.2 – Carriageway Surfaces Advice Note 2 – Materials and Specifications	3.2.1 – Materials and finishes are chosen to improve movement by creating visual distinctions between surfaces. 4.3.2 – Different surface textures and materials at pedestrian crossings act as traffic calming and indicate the crossing location to drivers.		

5 Additional Audits

5.1 Accessibility and Walkability Audit

The proposed site will be accessed off Connagh Road to the northwest of the site by means of a new priority T-junction. This will be the sole vehicular entrance to the site. Connagh Road is then connected to the wider regional road network via the 3-arm Melitta Road (R413)/ Connagh Road junction.

Pedestrians will have segregated access/egress points to the development close to the vehicular entrance. From these access points, footpaths will extend throughout the development area. No accessibility issues have been identified relating to dwelling accesses. The proposed footpath starting from Connagh Road runs along either side of the road throughout the development. However, it is unclear how the proposed footpath will connect with the existing pedestrian infrastructure and the wider road network.

Designated cycle facilities are absent along the Connagh Road and its vicinity. Consequently, the site does not include dedicated cycling facilities. However, as the immediate vicinity of the site is a residential area, the speed limit is 30 km/h which is considered to be safe for cyclists to share the road with vehicular traffic. Furthermore, the lower speed limit shall also provide safer crossing of pedestrians.

The site is well accessible via footpaths that connects the site to the town centre which has several local amenities.

5.2 Public Transport Network

Public transport accessibility is provided by 2No. bus stops located approximately 1.6 km from the proposed development on R415 (Station Road), as shown in **Figure 5.1** overleaf, corresponding to a walking time of roughly 20 minutes. This bus stops service the 883 TFI Local Link Kildare South Dublin, facilitating travel between Athy and Newbridge with a frequency of every 3 hours per day. There are continuous footpaths leading the site to the bus stops. None of the bus stops are designed for disabled users.

Kildare is well connected to other cities by rail network. Kildare station is located ca. 1.8 km from the proposed development. This train station is served by Dublin Heuston - Cork; Dublin Heuston - Galway; Dublin Heuston - Limerick and Ennis; Dublin Heuston - Limerick via Nenagh; Dublin Heuston – Tralee; Dublin Heuston – Waterford; Dublin Heuston - Westport and Ballina; Galway - Limerick; Grand Canal Dock and Dublin Heuston – Portlaoise.

Continuous footpaths lead from the site to the nearby bus stops, featuring controlled and uncontrolled pedestrian crossings along the route.

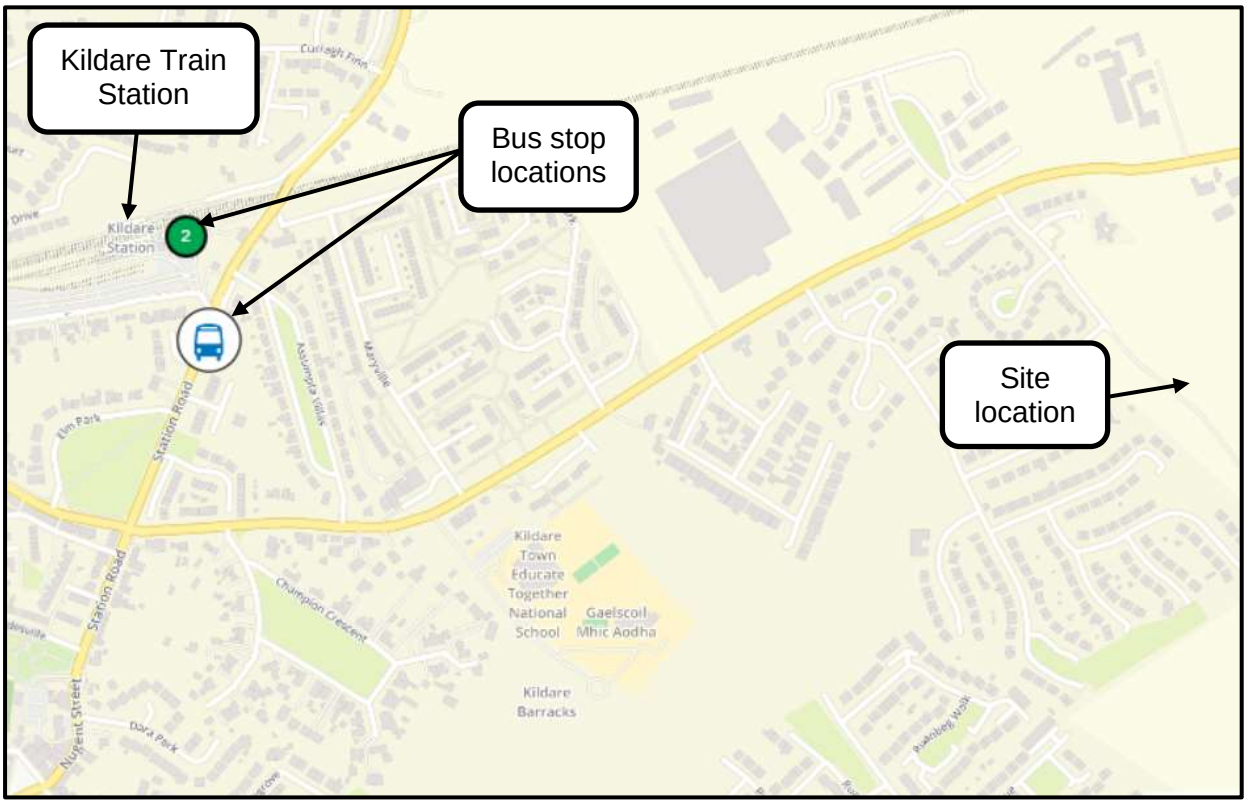


Figure 5.1: Bus stops in the vicinity of the development (Source: TFI)

5.3 Cycle Audit

Currently there is no dedicated cycle infrastructure in place within the scheme. Cyclists are expected to share the public road network with motorists. The drawings indicate the presence of 36 No. cycle parking facilities in the form of 18 Sheffield stands located in the play area and the landscaped area to the southwestern boundary of the proposed development which is not in the proximity of the proposed houses. Even though cycle parking spaces are provided, they do not adhere to the specifications outlined in Kildare County Council's Development Plan (KCDP 2023 - 2029) requirements. These specifications should ensure that the cycle parking is both secure and aligned with the standards (sheltered or unsheltered).

Creating a sense of safety is crucial for encouraging the use of cycle stands. Cyclists may be deterred from utilising them if they perceive the locations as unsafe or if their bicycles will be exposed to weather. Such concerns could potentially lead to informal parking on footways or at property entrances, resulting in reduced pedestrian accessibility.

6 Road Safety Audit

6.1 Introduction

This report documents the findings of a Stage 1 Road Safety Audit (RSA) carried out with respect to a Proposed Residential Development at Coolaghknock Glebe, Kildare Town, County Kildare.

The audit team conducted the site visit on Wednesday the 14th of February 2024. The audit was carried out in the offices of ORS on Friday the 16th of February 2024.

The audit team comprised of the following people:

Audit Team Leader:
Adam Price BEng (Hons), CEng, MIEI

Audit Team Member:
Mark Gallagher AEng, MIEI

Audit Team Observer:
Angeliki Kalatha MEng, MSc, MIEI

During the site visit the weather was partly cloudy with occasional sun. The road surface was dry, and the traffic levels were noted to be low across the audit period.

Previous Road Safety Audits were not available for review. The audit team reviewed the following documents and drawings provided by Malone O'Regan Consulting Engineers.

(1) SHB4-CGK-DR-MOR-CS-P1-101- Proposed Site Layout
(2) SHB4-CGK-DR-MOR-CS-P1-116- Swept Path Analysis Refuse Truck
(3) SHB4-CGK-DR-MOR-CS-P1-117- Swept Path Analysis Fire Tender
(4) SHB4-CGK-DR-MOR-CS-P1-120- Sightline Layout
(5) SHB4-CGK-DR-MOR-CS-P1-121- Proposed Road Signs and Markings
(6) SHB4-CGK-DR-MOR-CS-P1-130- Foul Sewer and Surface Water Drainage Layout
(7) SHB4-CGK-DR-MOR-CS-P1-140- Watermain Layout
(8) 2972-SMK-XX-ZZ-DR-E-6033 Public Lighting Ducting Requirements
(9) SHB4-CGK-DR-MOR-CS-P3-155 Rev 0-Link Road Layout.

Documents/Information not supplied:

- Speed Survey
- Departures from Standards.

The terms of reference / procedure for the Audit were as per the relevant sections of the **Transport Infrastructure Ireland Road Safety Audit Standard GE-STY-01024.** The audit examined only those issues within the design relating to the road safety implications of the

scheme and has therefore not examined or verified the compliance of the designs to any other criteria. The Road Safety Audit should not be treated as a design check.

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

All comments, references and recommendations in this safety audit are in respect of the review of information supplied by Malone O'Regan Consulting Engineers.

Section 6.2 of this report presents the findings of the Stage 1 Road Safety Audit of the proposed residential development. For development's description and site layout please refer to **Section 2**.

The information supplied to the Audit Team is also listed in **Appendix A**.

A feedback form for the Designer to complete is contained in **Appendix B**.

6.2 Problems Raised from the Road Safety Audit

The following are problems and recommendations to address the safety issues associated with the proposal. The recommendations are proposed to the designer of the scheme to reduce any safety risks associated with it.

Due to ongoing review of road traffic collision data by the Road Safety Authority website, no traffic collision data could be obtained for the vicinity of the proposed development site.

6.2.1 Potential Problems Identified

Problem No.1: Uncontrolled Crossing Points
Location: Northwestern Site Boundary
The audit team note from the drawings that there are no uncontrolled crossings shown at the entrance and exit locations. The drawings also detail crossing points which do not link in with crossing facilities on the opposite side of the carriageways. The audit team is concerned that the lack of appropriate crossing points at the main exit point in particular and at the locations identified could lead to trips and falls for vulnerable users.

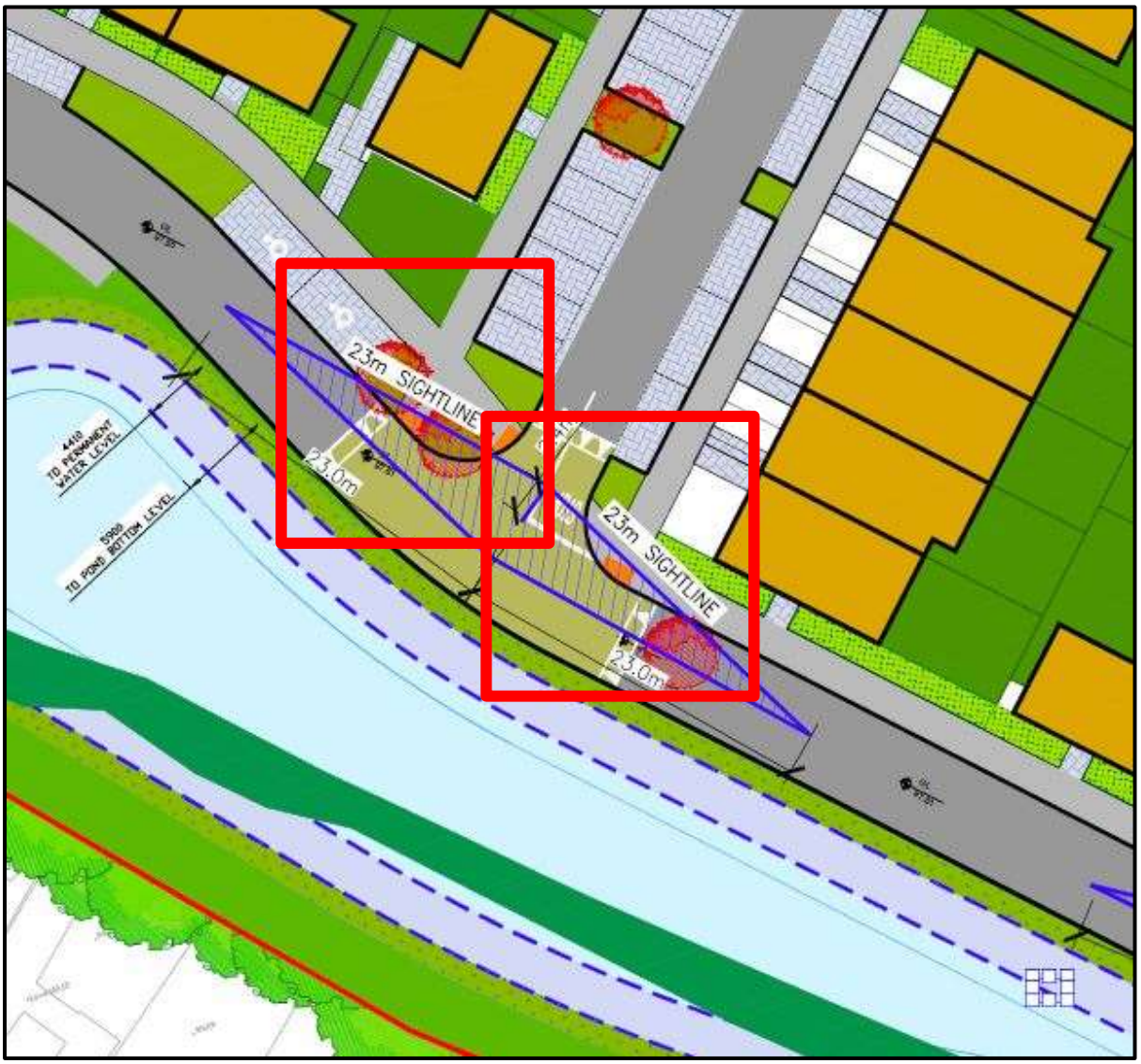
Recommendation:
The design team should ensure crossing facilities are provided on both sides of the carriageway and to ensure that there are clear linkages along pedestrian desire lines to tie-in with the existing infrastructure within Coonagh Estate Road.

Problem No.2: Accessible Car Parking Bay Throughout the Estate
Location: Car Parking Area
The audit team note that access to pedestrian paths from the disabled parking space is not facilitated by means of dropped kerbs or footpaths. These facilities aid users with specific mobility needs and the omission of dropped kerbs and connective paths may result in wheelchair users having to travel along the roadway to find a suitable location to mount the footpath which could increase the risk of conflicts with vehicles on the access road.

The audit team also note that the accessible parking bay identified is obstructed by other parking facilities like cycle parking facilities. This could result in hinderance while parking the vehicle into the accessible bay.

Recommendation:
The design team should ensure that details and locations of dropped kerbs, connecting footpaths and tactile paving are provided for at the disabled parking spaces as recommended in the National Disability Authority publication ‘Building for Everyone: A Universal Design Approach’. The design team should also ensure that other infrastructure or street furniture does not interfere with the safe use of the disabled parking bays.

Problem No.3: Landscape - Sightlines
Location: Internal Junctions
The audit team observed from the provided drawings that the proposed landscaping within the development might adversely affect the visibility of road users and pedestrians if not appropriately positioned. This could result in reduced forward visibility at the junction, consequently increasing the risk of collisions with pedestrians at the crossing.



Recommendation:
The design team should ensure that trees are carefully chosen and strategically positioned so that they do not impede visibility for road users, pedestrians, and cyclists. The design team should also ensure that sightlines are achieved to the nearside road edge.

Problem No.4: Adjacent Crossing Point
Location: Uncontrolled Crossing Point to adjoining Footpath/Green Area (Various Locations)
The audit team note from the drawings provided that there are several uncontrolled crossing points proposed along the main access road, but tactile paving and dropped kerbs are not replicated on the opposite side of the road. The audit team is concerned that there would be a step up to the path which could lead to trips and falls for vulnerable users.

Recommendation:
The design team should ensure that adequate provisions are made for vulnerable users crossing at these locations.

Problem No.5: Crossing Point Orientation/Location
Location: Various Locations Throughout the Development
The audit team note from the drawings provided that there is a pedestrian crossing proposed at the location identified which is not at right angles to the main carriageway and is located on the ramped section which could lead to a section being at ramp height and the other being sloped. The audit team is concerned that there would be an issue due to the level which could lead to trips and falls for vulnerable users.

Recommendation:
The design team should relocate the proposed crossing point to a more suitable location, away from the proposed ramps for raised tables and ensure that it is orientated at right angles to the main carriageway.

Problem No.6: Parking Spaces at Crossing Locations
Location: Various Locations Throughout the Development
The audit team note from the drawings provided that there are parking spaces near the uncontrolled crossings proposed at the locations identified. The audit team has concerns that the proximity of parking spaces could restrict the visibility for users at the crossing and in particular mobility impaired users which could increase the likelihood of potential conflicts with vehicles. The audit team also note that certain crossing points are positioned to the rear of parking spaces which could potentially result in conflicts with vehicles reversing out of parking spaces.

Recommendation:
The design team should relocate the parking spaces to a more suitable location and ensure appropriate separation distance between the parking spaces and the crossing locations to ensure appropriate visibility can be achieved.

Problem No.7: Illegal Parking
Location: Area Identified
The audit team note from the plans provided that part of the turning bay is in front of one of the properties which could result in illegal parking. This could potentially result in an increased risk of vehicle conflict with larger vehicles using the turning area.

Recommendation:
The design team should reconfigure the area to mitigate the safety risk associated with illegally parked cars.

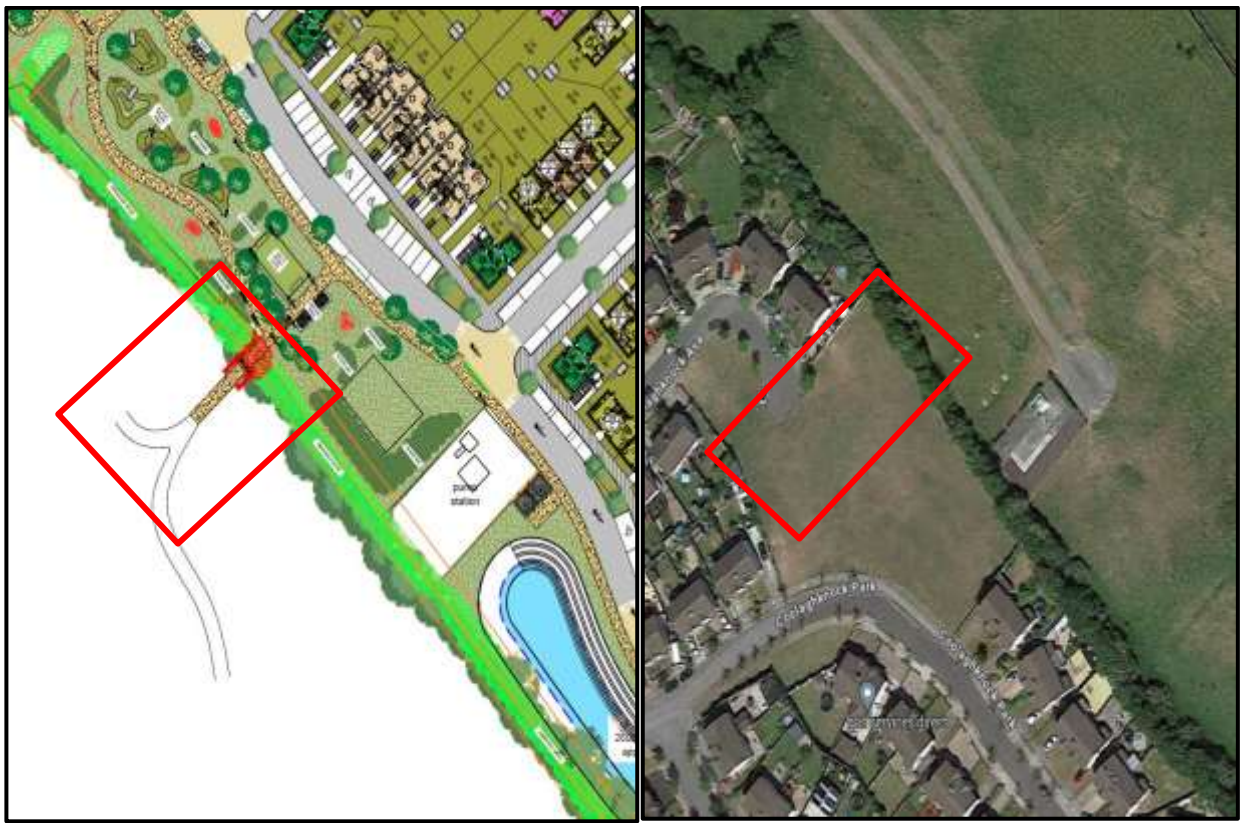
Problem No.8: Manhole/Utility Lids within Tactile Paviours
Location: Uncontrolled Crossings Throughout the Estate
The audit team note from the drainage plans provided that Manholes/Utility Lids are denoted within the tactile paving. The audit team would have concerns that these manholes/utility lids placed within the tactile paving could lead to a misinterpretation of the distance to the crossing which could lead to a conflict between a vulnerable road user and vehicles. The positioning of manhole lids on pedestrian crossing points could also result in trip and falls among vulnerable users.

Recommendation:
The design team should relocate the manholes/utility lids to ensure they are not within the tactile paving area. The design team should also ensure that manhole lids are positioned outside of pedestrian routes if possible.

Problem No.9: Protection to Attenuation Pond
Location: Southwest Corner of the Site
The audit team note that the attenuation pond runs parallel to the proposed access road and that no protection is provided for vulnerable users. The audit team would have concerns that a vulnerable road user could inadvertently enter the attenuation pond which could result in potential drowning type incidents for vulnerable users.

Recommendation:
The design team should provide adequate protection to the attenuation pond is provided to prevent vulnerable users form entering the pond area.

Problem No.10: Tie-in to Existing Footpath
Location: To Southwest to Coolaghknock Avenue Estate
The audit team note from the drawing's that the proposed footpath connects to the existing estate via a footpath, however there is no footpath in the area in the Coolaghknock Avenue Estate. Lack of a tie-in to an existing footpath could lead to pedestrian confusion.



Recommendation:
The design team should provide detail how it is proposed to connect the proposed pedestrian facilities to the pedestrian facilities within the Coolaghknock Avenue estate.

Problem No.11: Existing Road Markings Worn
Location: Various Locations on the Link Road to Melitta Road
The audit team note from the site visit that the existing road markings on the link road to Melitta Road are worn. Road markings assist in informing road users of the presence of ramps and controls at junctions. Worn road markings may lead to vehicles not being alerted to oncoming hazards which may result in vehicle-to-vehicle conflicts.

Recommendation:
The design team should ensure that the road markings on the link road are appropriately positioned and repainted.

6.2.2 General Problems Identified

Problem No.12: Slow Zone Signage
Location: Throughout Scheme (Including Link Road)
The audit team note from the drawings provided that there is no slow zone signage provided throughout the estate. Slow zone signage is to be used where there is a high level of vulnerable road users, and their needs are deemed to take precedence over those of motorist.

Recommendation:
The design team should ensure provide slow zone signage throughout the estate.

Problem No.13: Drainage
Location: Throughout Scheme
The audit team note from the drawings provided that there are no drainage channels/ gully positions shown for the development. However, it is unclear if gullies and channels are positioned appropriately in accordance with site levels. Inadequate gully positioning may lead to issues of ponding in areas of the development which poses a risk of slips, trips or falls to vulnerable road users.

Recommendation:
The design team should ensure that drainage gullies and channels are positioned strategically to avoid the risk of ponding and in particular at proposed pedestrian crossing points.

7 Audit Team Statement

We certify that we have examined the drawings listed in Appendix A and examined the site by means of a site visit. This examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified to improve the DMURS compliance and safety of the scheme. The issues that we have identified have been noted in the report, together with suggestions for improvement, which we recommend should be studied for implementation.

Audit Team Leader: Adam Price: BEng (Hons), CEng, MIEI
ORS
Signed: 

Date: 28th February 2024

Audit Team Member: Mark Gallagher, MIEI
ORS
Signed: 

Date: 28th February 2024

Audit Team Observer: Angeliki Kalatha: MEng, MSc, MIEI
ORS

Date: 28th February 2024

Appendix A – Inspected Documents

The audit team reviewed the following documents and drawings provided by Malone O'Regan Consulting Engineers:

(1) SHB4-CGK-DR-MOR-CS-P1-101- Proposed Site Layout
(2) SHB4-CGK-DR-MOR-CS-P1-116- Swept Path Analysis Refuse Truck
(3) SHB4-CGK-DR-MOR-CS-P1-117- Swept Path Analysis Fire Tender
(4) SHB4-CGK-DR-MOR-CS-P1-120- Sightline Layout
(5) SHB4-CGK-DR-MOR-CS-P1-121- Proposed Road Signs and Markings
(6) SHB4-CGK-DR-MOR-CS-P1-130- Foul Sewer and Surface Water Drainage Layout
(7) SHB4-CGK-DR-MOR-CS-P1-140- Watermain Layout
(8) 2972-SMK-XX-ZZ-DR-E-6033 Public Lighting Ducting Requirements
(9) SHB4-CGK-DR-MOR-CS-P3-155 Rev 0-Link Road Layout.

Appendix B – Designer Response Form

Job: 231860 – Proposed Residential Development at Coolaghknock Glebe, Co. Kildare

Stage of Audit: Stage 1

Date Audit Completed: 15/05/2024.

Problem Reference in Safety Audit Report	To Be Completed by the Designer			To be Completed Audit Team Leader
	Problem Accepted (Yes/No)	Recommendation Accepted (Yes/No)	Alternative Option (Describe) (Only complete if recommendation not accepted)	Alternative Option Accepted by Auditors (Yes/No)
P1	Yes	Yes		
P2	Yes	Yes		
P3	Yes	Yes		
P4	Yes	Yes		
P5	Yes	Yes		
P6	Yes	Yes		
P7	Yes	Yes		
P8	Yes	Yes		
P9	Yes	Yes		
P10	Yes	Yes		
P11	Yes	Yes		
P12	Yes	Yes		
P13	Yes	Yes		

Signed:…… …….. Designer Date:…20/05/2024…

Signed:……Audit Team Leader Date:20/05/2024……

Signed:……. Employer Date:……

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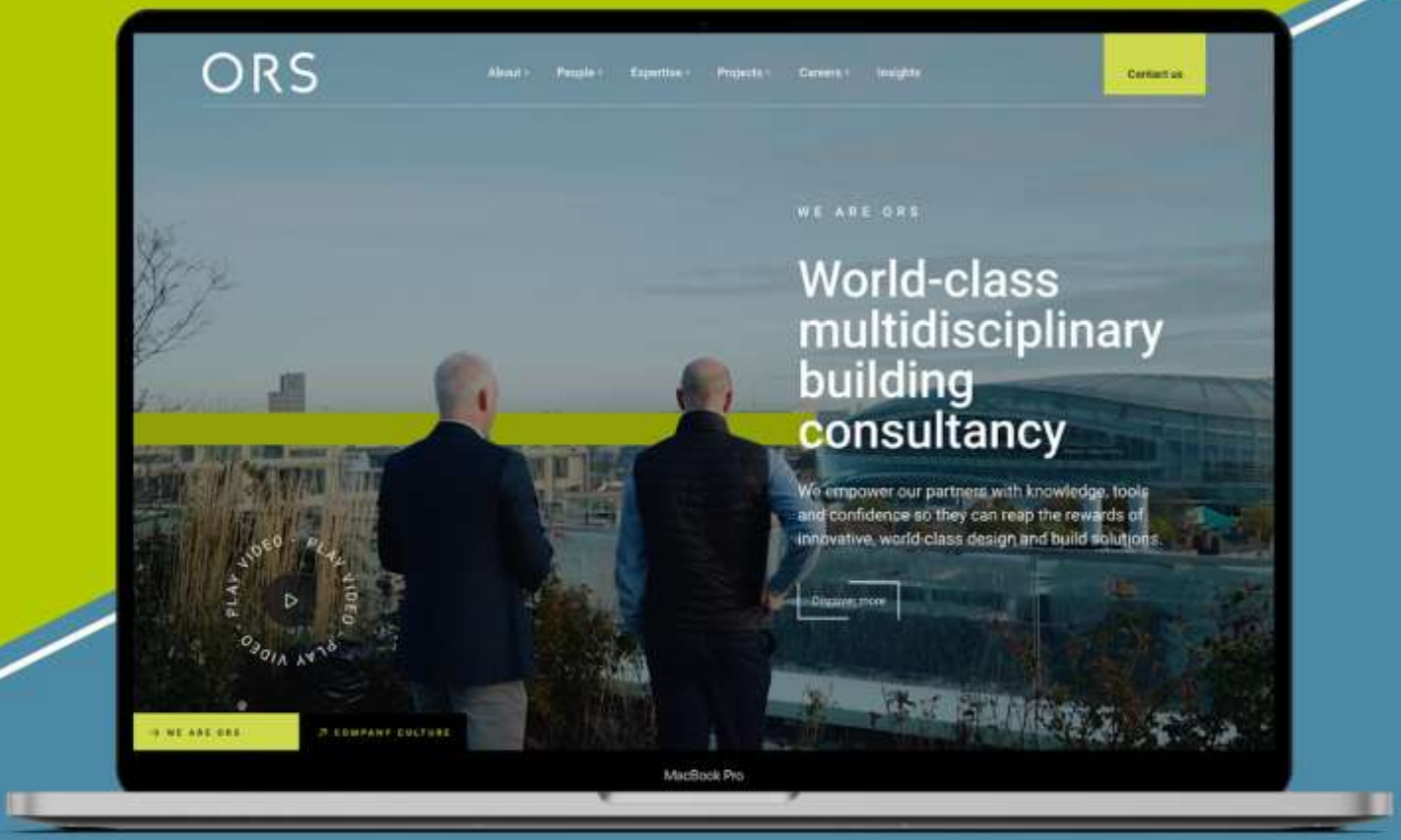

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