Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Dublin Street North Regeneration Project & Urban Renewal Scheme

N54 – Dublin Street and Old Cross Square, Monaghan Town.

INSERT TII Ref. No. – N/A

Comhairle Contae Mhuineacháin
Monaghan County Council

McAdam
ENHANCING LOCAL COMMUNITIES

Date: 09/04/2025

Revision – Rev0

Contents

1 Introduction

This document has been prepared in accordance with Transport for Infrastructure Ireland (TII) publication DN-GEO-03030: Design Phase Procedure for Road Safety Improvement Schemes, Urban Renewal Schemes and Local Improvements Schemes (https://www.tiipublications.ie/library/DN-GEO-03030-03.pdf).

DN-GEO-03030 Standard sets out the procedures to be followed for the technical aspects of the Design Phase of the following scheme types: -

- Road Safety Improvement Schemes (RSIS) that have already been approved at Feasibility and Options Stage of TII Publications (Standards) GE-STY-01037.
- **Urban Renewal Schemes (URS) i.e. schemes that are designed in accordance with The Design Manual for Urban Roads and Streets (DMURS).**
- Road Safety Improvement aspects (i.e. design elements) of Pavement Asset Repair and Renewal (PARR) Schemes. TII Publications (Standards) AM-PAV-06049.
- Local Improvement Schemes (LIS) e.g. local authority general improvement schemes which have not been identified as Road Safety Improvement Schemes, schemes led, funded or partly funded by other agencies, development led schemes and/or community schemes

The scheme design outlined in this report is in accordance with The Design Manual for Urban Roads and Streets (DMURS) and as such, for the purposes of this report, is classified as an **Urban Renewal Scheme (URS).**

1.1 Project Background & Project Description

The Dublin Street North Regeneration Plan (Variation No. 3 to the Monaghan County Development Plan) includes public realm improvements to Dublin Street (N54), the 'Backlands' to the north of Dublin Street, The Diamond Centre car park and Old Cross Square, at Monaghan Town.

The design proposals include;

- Creation of new shared surface, 'Russell Row' through the 'Backlands' area to the rear of properties fronting Dublin Street.
- Public Realm Improvements, including re-organisation of existing car parking spaces at the Diamond Centre Car Park and Old Cross Square.
- Public Realm Improvements at Dublin St, including footway widening, re-organisation of parking spaces and traffic calming measures.
    - Public realm improvements include the creation of urban civic spaces, pedestrian pavements, steps, cycle routes and street furniture
- Creation of new 'Community Garden' at an area known locally as 'Infirmary Hill'
- Creation of future development plots at Russell Row to align with the Dublin Street North Regeneration Plan
- Reinforcement of existing vegetation and new soft landscaping throughout
- New boundary treatments
- Lighting upgrades to existing street lighting and new street lighting at Russell Row.
- Upgrading and installation of new utility services and CCTV

A car parking spaces for 48 cars is provided at Russell Row. Existing car parking spaces at Dublin St, Diamond Centre Car Park and Old Cross Square are relocated to the proposed new car park at Russell Row.

Therefore, the design includes a total of nine additional car parking spaces provided across the site area.

1.2 Urban Renewal Scheme Design – Dublin St & Old Cross Square

As noted, the project includes public realm / urban renewal upgrades to Dublin Street and Old Cross Square, Monaghan.

Dublin St and Old Cross Square are part of the N54 National Secondary Route and thus this Design Report describes the Urban Renewal design proposals for Dublin St and Old Cross Square.

The scheme design for Dublin St and Old Cross Square is in accordance with The Design Manual for Urban Roads and Streets (DMURS).

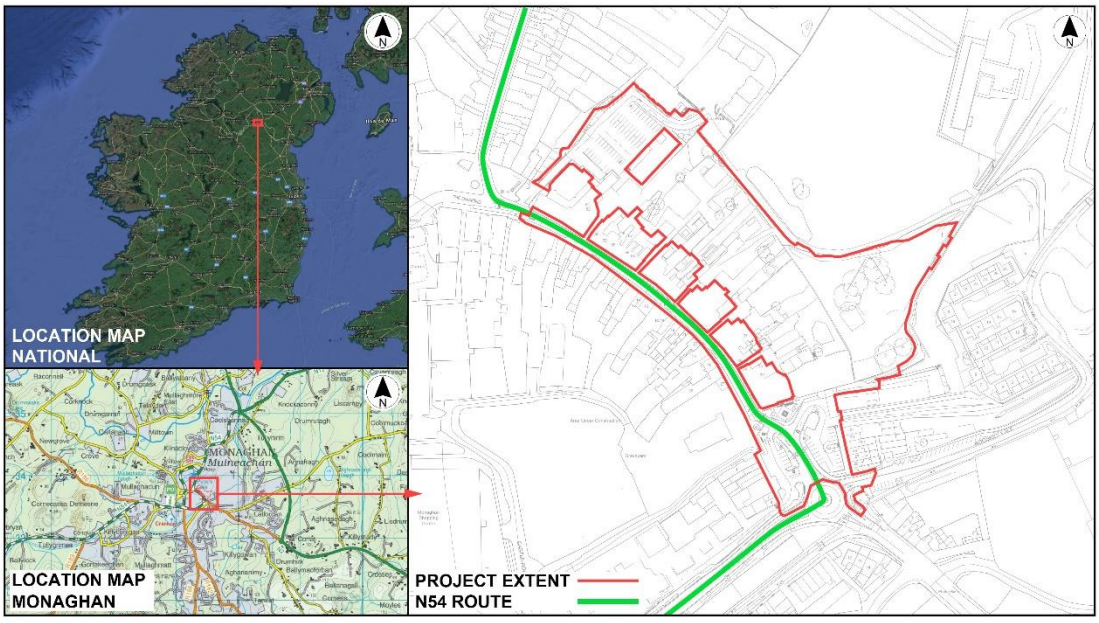
Note; Where referenced in this report, "scheme" and "Scheme Design" shall be assumed to reference the element(s) of the Dublin St North Regeneration Project that relate to the N54 National Secondary Route.

The Drawings provided in the Appendices to this report refer to the scheme design along N54 – Dublin St and Old Cross Square. Drawings for the wider Dublin St North Regeneration Project are provided with the planning application, submitted to An Bord Pleanála in April 2025.

Traffic movement through Dublin St is one-way, heading north to south (towards Old Cross Square). Traffic movement through Old Cross Square is in two-direction (ie from Dublin St to the north, and from Broad Road Roundabout to the south) to accommodate access to business and private residences on the Square from

The design at Dublin St includes the widening of existing footpaths and reallocation of parking spaces, and the consequential reduction in carriageway width to 3.1m.

A site location map is provided below.



2 Collision History

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.

3 Scheme/Safety Objectives

The primary objectives of the Urban Renewal Scheme design are identified below;

- To provide improved pedestrian footpaths at Dublin St through widening existing footpaths
- Relocation of some car parking spaces to Russell Row Car Park
- Ensure existing vehicle movement through Dublin St and Old Cross Square are not impacted by the scheme design proposals.
- To improve the safety standards and reduce collision risks by developing a design to contemporary standards including improving and standardising junction designs and pedestrian crossing points.
- To improve facilities for vulnerable road users.

4 Existing Conditions

4.1 Speed

The posted speed limit at this section of the N54 is 50km/hr.

A traffic survey to identify the 85th percentile speed has not been carried out.

4.2 Traffic Volumes

Peak hour traffic flows on N54 at Dublin St are recorded at 394 vehicles (8am to 9am) and 538 vehicles (6pm to 5pm). Recorded AADT traffic volumes are not available. HGV vehicle movements are approximately 1-2% of total traffic volumes.

This information has been taken from the traffic surveys carried out in 2022 for the Dublin St South Regeneration Project, which has received planning approval from An Bord Pleanála in December 2024. Dublin St South Regeneration Project is immediately adjacent to the Dublin St North Regeneration Project, and the N54 at Dublin St forms a boundary for both projects.

It is noted that a Traffic Statement has been prepared for the Dublin St North Regeneration Project and is provided in the Appendices of this report. A summary of the Traffic Statement is provided in Section 6.6 of this report.

4.3 Horizontal Alignment

There is no alteration to the existing horizontal alignment of the N54 carriageway, therefore this section is not applicable.

4.4 Vertical Alignment

There is no alteration to the existing vertical alignment of the N54 carriageway, therefore this section is not applicable.

4.5 Cross Section Crossfall & Superelevation

4.5.1 Cross Section

The existing cross section of the N54 varies. Carriageway width varies between 4.5m wide, down to a minimum of 3.0m wide, not including vehicle parking bays.

4.5.2 Crossfall

The existing crossfalls on the N54 on Dublin Street are mostly flat and rely on carriageway longitudinal falls for drainage.

In Old Cross Square the N54 cross is in superelevation, typically 2.5%, and is in accordance with the prevailing design standards.

4.5.3 Superelevation

As section 4.5.2 above.

4.6 Junctions & Accesses

There are currently no minor road junctions in this section of the N54.

There are vehicular Access Junctions to commercial Units 1-4 and residential Houses 25-31 Old Cross Square, and an Access Junction to Houses 1-8 Old Cross Square along this section of the N54. There are also a number of existing private accesses located along Dublin St. These accesses junctions and private accesses are to be rationalised and maintained in the proposed design.

The N54 connects with Broad Road roundabout at the southern end of the Square. Broad Road is also part of the N54 Route. The junction of Dublin St / Old Cross Square onto Broad Road roundabout will be upgraded as part of the scheme design.

There is also a proposed public realm ‘plaza’, referred to as ‘Gavin Duffy Place’, accessing on to Dublin St between Nr 7 to 12 Dublin St as part of the Dublin St South Regeneration Project. This project has received planning approval in December 2024. The scheme design has been developed to complement the Dublin St South design proposals.

4.7 Facilities for Vulnerable Road Users

There is an existing footpath on Dublin St which varies in width from 1.2m to 1.9m (NE side) and from 1.3m to 1.9m (SW side). The footpath width is considered to be substandard and does not offer a comfortable cross section to pedestrians, or those with impaired mobility.

At Old Cross Square a footpath is provided on the eastern edge of the carriageway, and also along the building line on the western side of the Square, adjacent to a car park.

As such, it is a key objective of the scheme design to improve conditions for pedestrians, as described in Section 6.7 of this report.

4.8 Active Travel Facilities

There is no dedicated cycle infrastructure along this section of N54.

The Ulster Canal Greenway is located at the opposite side of Slí Ógie Uí Dhufaigh which connects with Old Cross Square roundabout.

4.9 Visibility & Sightlines

Existing forward visibility along Dublin St and Old Cross Square is in line with existing standards.

Sightlines from private accesses will not be impacted by the scheme design.

5 Environmental, Archaeological and Other Constraints

The following sections describe the Environmental, Ecological and Archaeological evaluations that have been carried out for the Dublin St North Regeneration Project. The scheme design on N54 (Dublin St and Old Cross Square) has been assessed as part of these evaluations.

5.1 Appropriate Assessment

An Appropriate Assessment Screening has been carried out by Layde Consulting to assess potential impacts on the Lough Neagh and Lough Beg SPA from the proposed development. It was considered that mitigation was required to remove potential impacts on the European Designations and A Natura Impact Statement (NIS) was prepared. The NIS concludes that with the proposed mitigation measures, there will be no adverse effects on the designated sites.

An application for development for the Dublin St North Regeneration Project will be submitted to An Bord Pleanála, which will include the Appropriate Assessment/NIS and mitigation measures will be outlined within the Construction Environmental Management Plan (CEMP).

5.2 Ecological Assessment

The submission to ABP will also include an Environmental Impact Assessment Report (EIAr). Chapter 9 of the EIAR evaluates the impacts of biodiversity, particularly protected species and habitats from the proposed development.

The site is not within or near any protected ecological areas, and surveys found no evidence of protected mammals. Invasive plant species were identified and will be managed. With proper mitigation—such as pollution controls and avoiding sensitive periods for wildlife—impacts on biodiversity are expected to be minimal. Overall, the development poses low ecological risk.

The proposed scheme will have no direct impacts on any Special Protection Areas or Special Areas of Conservation identified in the Local Authority Development Plan.

5.3 Other Environmental Surveys

To support the EIAr prepared for the Project, a range of Environmental Surveys have been carried out. These are detailed within the technical chapters of the EIAr at Chapters 6 through 14 and assess and mitigate potential impacts in relation to noise and vibration, soils and geology, hydrology, biodiversity, material assets, air quality and emissions, population and human health as well as cultural and architectural heritage and the visual impact from the proposals.

The EIAr concludes that no significant environmental impacts will occur either in isolation or cumulatively with other planned or committed projects in the area as a result of the development of the Dublin St North Regeneration Project.

5.4 Archaeological Constraints

An Archaeological Assessment is contained within Chapter 13 (Cultural and Architectural Heritage) of the submitted EIAr. The assessment confirms that the proposals respect the area's cultural and architectural heritage, including upstanding archaeological features such as Protected Structures and National Monuments. The regeneration will

enhance the character of the Architectural Conservation Area and benefit heritage settings overall. The Conservation Architect supports the development, noting that it will have a lasting positive impact on the site's cultural heritage.

If any subsurface features are identified during construction, preservation by record measures will be adopted with findings adding to the existing knowledge base of the historic development of Monaghan town.

6 Proposed Design

6.1 General

At Dublin St, the proposed design will provide;

- Minimum 1.8m wide footpaths on each side of the street. New kerbs and footpath resurfacing will be provided in natural stone kerbing / paving material.
- Consistent 3.1m wide carriageway width
- 2.1m wide parallel car parking bays provided where space is available. Three DDA spaces and a loading bay are also provided.
- Two Raised Table Crossing Points

At Old Cross Square, the proposed design will provide;

- 8.0m wide carriageway.
- Associated kerb realignments, with minimum footpath width of 1.8m
- One Raised Table Crossing Point
- One new junction onto the proposed Russell Row.
- Two existing junctions upgraded to DMURS design standards.
- Kerb alignments to the existing junction on to Broad Road roundabout, designed to DMURS design standards.

6.2 Land Acquisition

Land acquisition will not be required for the scheme design relevant to the N54 National Route.

However, land acquisition will be required for the wider Dublin St North Regeneration Project, and a range of accommodation works will be provided for impacted landowners.

6.3 Horizontal Alignment

The scheme design shows only very minor, localised adjustments to the horizontal alignment of N54 through Dublin St and Old Cross Square. These are provided to accommodate the revised cross section on the street as described in Section 6.5.1 below.

As such, it can be considered the current horizontal alignment is not impacted.

Drawing DSN-MCA-ZZ-XX-DR-CE-1714 showing Swept Path Analysis for an articulated lorry is provided in Appendices to this report. This drawings demonstrates that the largest vehicle currently using this section of the N54 will not be impacted due to the proposed design changes.

6.4 Vertical Alignment

The scheme design shows only very minor, localised adjustments to the vertical alignment of N54 through Dublin St and Old Cross Square. These are provided to ensure the cross-section falls tie in with existing boundaries, and are provided in accordance with the design standards.

As such, it can be considered the current vertical alignment is not impacted.

6.5 Cross Section Crossfall & Superelevation.

6.5.1 Cross Section

There are two proposed cross sections at Dublin St, one with in-line parking bays provided, and one without parking bays provided. The cross section design is in accordance with DMURS. Typical cross section schematic diagrams are provided below.

Figure 6.1 – Dublin St Cross Section – with parking bays

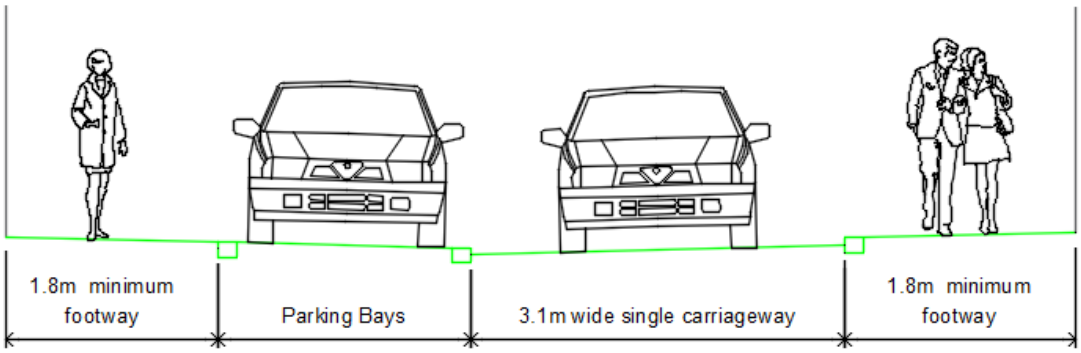


Figure 6.2 – Dublin St Cross Section – without parking bays

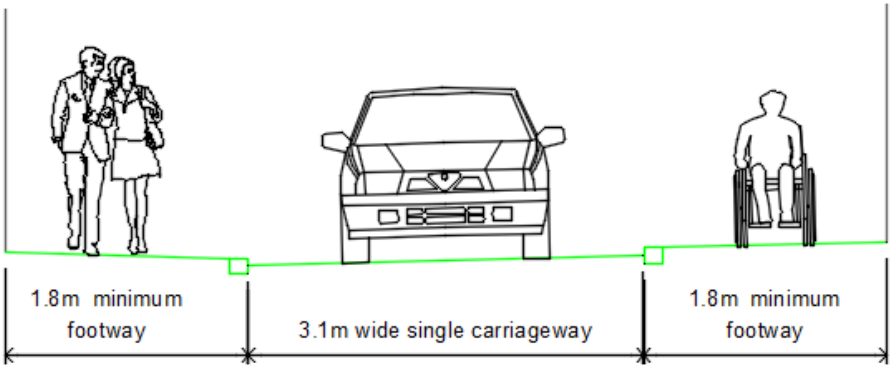
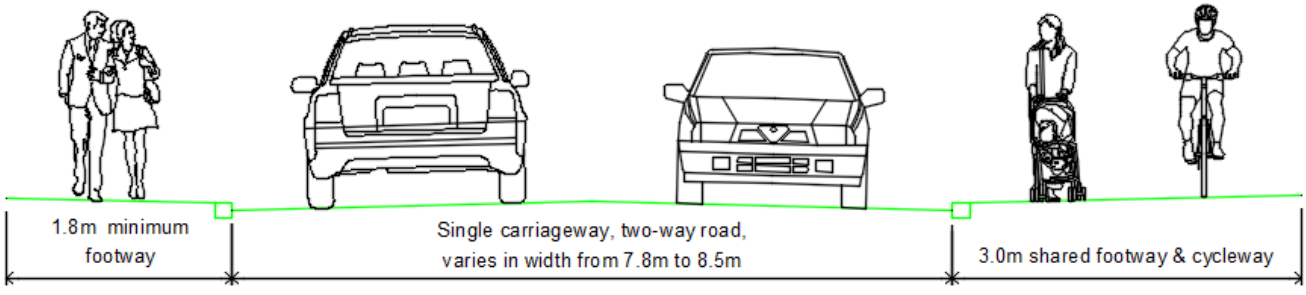


Figure 6.3 – Old Cross Square Cross Section



On Dublin St, granite kerbs are provided to delineate the footpath from the carriageway. Kerbs heights are typically 60mm, except at Broad Road Roundabout where the kerb height proposed is 125mm. These dimensions are in accordance with DMURS.

On Dublin Street a short section of 3m wide Shared Cycle path on the footway is proposed from the new junction with Russell Row to the Old Cross Square roundabout along the east side of the carriageway, and on to Slí Ógie Uí Dhufaigh. This is designed in accordance with *The Cycle Design Manual 2023*.

6.5.2 Crossfall

A normal camber of 2.5% will be provided along Dublin St and Old Cross Square on all straight sections.

6.5.3 Superelevation

Superelevation of 2.5% will be applied at all horizontal curves, as per the minimum radii noted in *DMURS 'Advice Note 3 – Geometry' Table 2*.

6.6 Traffic Analysis – Proposed Scheme Design

A Detailed Traffic Statement was prepared for the Dublin St North Regeneration Project to assess the traffic impacts of the scheme – including the provision of nine additional car parking spaces at Russell Row. These spaces can be accessed via either the Diamond Centre Car Park or Old Cross Square / Broad Road roundabout.

The Traffic Statement considers the traffic impacts arising from the Development Plots created at Russell Row which are part of the Dublin St North Regeneration Plan.

The Traffic Statement concludes;

- "the proposed development in traffic terms will have a minimal impact on the surrounding road network as it involves a redirection of existing traffic and a modest additional 9 car parking spaces within the subject area."
- "it is considered the traffic impact of the proposed is negligible to slight on the receiving environment."

It is noted that any future developments enabled by the creation of the proposed development plots at Russell Row will be subject to a separate planning process and detailed traffic assessments, if required under the planning process, will be carried out at that time.

The full Traffic Statement for the Dublin St North Regeneration Project is provided in the Appendices of this report. This report has also been submitted to ABP as part of the planning application for the project.

6.7 Facilities for Vulnerable Road Users

As noted in Section 4.7, it is a key objective to improve facilities for vulnerable road users, including all pedestrians and those with impaired mobility. The scheme design provides widened footpaths at Dublin St, where footpaths are widened to a minimum of 1.8m wide. The footpath will not be reduced below its existing width in any location.

The footpath at Old Cross Square is widened to a consistent 4.0m as far as the junction with Russell Row. Beyond the crossing point, the design is a 3.0m wide 'shared surface' design, accommodating both pedestrians and cyclists. The design is in accordance with *The Cycle Design Manual 2023*.

Throughout the URS, all crossing points and associated tactile pavings and dropped kerbs are proposed to be upgraded and have been designed in accordance with *DMURS* & *Guidance on the use of Tactile Paving Surfaces 2019*.

6.8 Active Travel Proposals

Active Travel infrastructure is provided at Old Cross Square in the form of a shared pedestrian/ cycle path. This path connects with the Ulster Canal Greenway via a proposed uncontrolled crossing point on Slí Ógie Uí Dhufaigh. The crossing points are designed in accordance with *The Cycle Design Manual 2023*.

6.9 Junctions

There are four junction designs provided in the scheme design. These are summarised as follows;

1. The Dublin St North Regeneration Project includes the construction of a new urban street, currently known as Russell Row. Russell Row will form a new junction connection with the N54 at Old Cross Square, upgrading an existing access junction.

2. Upgrade of existing junction between N54 and Broad Road roundabout

3. Upgrade of existing junction between N54 and car parking area to the west of Old Cross Square (adjacent to Broad Road Roundabout)
   This junction is currently two-way. The upgrade provides for one-way entrance only. This will reduce vehicular conflict movements.

4. Upgrade of existing junction between N54 and car parking area to the west of Old Cross Square (adjacent to Dublin St)
   This junction is currently two-way. The upgrade provides for one-way exit only. This will reduce vehicular conflict movements.

Each junction is designed in accordance with *DMURS* and *DMURS Advice Note 3 - Geometry*.

The design standards, including road geometry, road markings and signage applied at each of these four junctions are provided below;

Existing N54 Speed limit	50 kph
Design Speeds	N54 = 50 kph Russell Row = 30 kph Shopping Node (west of Old Cross square) = 30 kph
Lane Width	N54 (Dublin Street) = 3.1m N54 (old Cross Square) = 3.8m Russell Row = 3.0m Shopping Node = 6.0m (due to parking requirements)
Junction Radii	3.0m (DMURS Figure 4.43)
Visibility Splays	N54 & Russell Row; X= 2.4m; Y (north) = 45m Y (south) = to the tangent N54 & Broad Road Roundabout; X=2.4 Y=23 N54 & Old Cross Sq Shopping Node (N - exit); X= 2.4m; Y= 45.0m N54 & Old Cross Sq Shopping Node (S - entrance); X= 2.4m; Y= 23.0m (ref - DMURS – Advice Note 3 – Geometry Table 1). All visibility splays are in accordance with standard.
Road Markings	Traffic Signs Manual, Chapters 2, & 4-7
Signage	Traffic Signs Manual, Chapters 2, & 4-7

6.10 Visibility and Sightlines

Visibility splay sightlines provided at each of the four junctions on to N54 are described in Section 6.9 above.

Forward Sight Distances along the N54 remains at 45m in line with *DMURS, 'Advice Note 3 - Geometric Design' 2019* for a design speed of 50kph.

Stopping sight distance on the N54 on approach to the Broad Road Roundabout is 45m, in line with *DMURS 'Advice Note 3 - Geometric Design' 2019* for a 50kph design speed.

The Stopping Sight Distance at the N54 / Russell Row junction is 23m, inline with *DMURS 'Advice Note 3 - Geometric Design' 2019* for a design speed of 30kph.

Sightlines at private accesses on Dublin St are not impacted by the design and will remain unaltered by the scheme design.

6.11 Drainage

There is no change to the area contributing to the existing N54 drainage network, and therefore there is no increase to the discharge to the drainage network resulting from the scheme design.

A detailed drainage has not been provided. Alterations to the drainage network will consist of relocation of existing gullies to tie in with the realigned carriageway. Drainage drawings are provided in the appendices to this report.

All cross sections provided are in accordance with the design standards (reference). Flat spots and resultant drainage issues are not anticipated due to the detailed change to the road crossfalls.

6.12 Pavement

The existing road surface is a Stone Mastic Asphalt surface course. The surface course will be planed off, and the new formation level (for improved crossfalls) will be created using an Asphalt Concrete regulating material. The new surface course will be a Stone Mastic Asphalt laid by spreader.

6.13 Safety Barrier Risk Assessment and Provision

There are no existing safety barriers on this section of N54 and none are proposed in the scheme design.

6.14 Traffic Signs and Road Markings

Traffic signs and road markings have been designed in accordance with the Traffic Signs Manual and The Cycle design Manual. There is no provision for directional signs for the extents of the proposed scheme.

6.15 Accommodation Works

While accommodation works are required for the Dublin St North Regeneration Project, they are not required as part of the scheme design described in this report.

6.16 Lighting

The design includes for upgrades to existing lighting columns, heads and lanterns to contemporary design standards.

Lighting columns will be provided at the locations of existing lighting columns, except in locations at Old Square Square where kerb realignments will require relocation of column positions to agreed locations to the rear of the adjacent footpath.

6.17 Departures from Standard

There are no Departures from Standard or Relaxations required in this scheme design.

7 Road Safety Audit

A Stage 2 Road Safety Audit was carried out in December 2024 and is included in the appendices to this report.

A Stage 2 Road Safety Audit was deemed appropriate as the level of detail provided at this stage is sufficient and it is not anticipated that the tender drawings will include additional design elements other that those that may arise from the Statutory Processes. If those changes are substantial, then a revised audit will be undertaken.

Of the 19 problems identified, four are located on or adjacent to the N54 and are therefore relevant to this report.

These are summarised below. The problems identified have subsequently been addressed as the design was completed.

Problem	Issue	Recommendation	Location
Problem No.16:	Incomplete Raised Table	Additional detailing and design to be provided **Recommendation accepted and incorporated to be design.**	At proposed upgraded junction onto Old Cross Square (ref junction 3, Section 6.8)
Problem No.18:	Termination of Shared Surface at Crossings	Appropriate corduroy hazard warning paving required **Recommendation accepted and incorporated to be design.**	At Proposed New Junction – Russell Row > Old Cross Square (ref junction 1, Section 6.8)
Problem No.19:	Right Turn at Filling Station	Swept path analysis to be carried out **Recommendation accepted and incorporated to be design.**	At proposed upgraded junction onto Old Cross Square (ref junction 4, Section 6.8)
Problem No.20:	Colour at Locations Other than Crossings	Provide appropriate colour contrast **Recommendation accepted and incorporated to be design.**	At proposed upgraded junction onto Old Cross Square (ref junction 4, Section 6.8)

The final audit report has been uploaded to the RSAAS.

A Stage 1 Quality Audit was prepared in September. Design development since the Quality Audit was prepared has addressed each of the issues raised in the audit. The Quality Audit is appended to the Road Safety Audit in Appendix B of this report.

8 Total Scheme Budget

The Dublin St North Regeneration Scheme is funded by the Urban Regeneration Development Fund (URDF) and a detailed cost estimate for the project as a whole has been prepared in accordance with URDF requirements.

This cost estimate is not provided with this report.

The current cost estimate for the scheme design as it relates to the proposed works on Dublin St and Old Cross Square amount to approximately €751,500.

9 Project Appraisal Balance Sheet

N/A. The Dublin St North Regeneration Scheme is funded by the Urban Regeneration Development Fund (URDF) and is not subject to the TII project appraisal procedures..

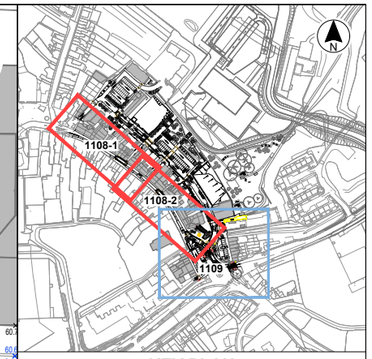
.

Appendix A – Design Drawings

DSN-MCA-ZZ-XX-DR-CE-1108	TII Civil Layout and Levels-P01
DSN-MCA-ZZ-XX-DR-CE-1109	TII Civil Layout and Levels-P01
DSN-MCA-ZZ-XX-DR-CE-1508	TII Proposed White Lining & Road Signs_P01
DSN-MCA-ZZ-XX-DR-CE-1509	TII Proposed White Lining & Road Signs_P01
DSN-MCA-ZZ-XX-DR-CE-1511	Proposed Road Visibility_P03
DSN-MCA-ZZ-XX-DR-CE-1711-1714	Proposed Vehicle Tracking-P02
DSN-MCA-ZZ-XX-DR-CE-1801	Proposed Longsections Dublin Street-P01

PLAN 1
SCALE 1:200

PLAN 2
SCALE 1:200



KEY PLAN
SCALE 1:4000

Notes:

1. All dimensions in metres unless otherwise noted
2. All levels are in meters and referenced to Ordnance Datum
3. All tactile pavings to be compliant with *'Guidance on the use of Tactile Paving Surfaces, 2021'*
4. This drawing should be read in conjunction with all other Civil, Landscape Architect, Architects and M&E drawings

*for kerb types see drawings DSN-MCA-ZZ-XX-DR-CE-1401 to -1404

Legend:

- Kerbs (various)*
- Existing wall - retained
- Buff blister tactile paving
- Red blister tactile paving
- Guidance tactile paving along kerbs
- Hazard corduroy paving
- Cycle corduroy paving
- Traffic cushion
- Existing monument location
- New monument location
- Earthworks
- Proposed Dimensions (m) (4.2m)
- Proposed Radius (m) (R5.0m)
- Proposed level (mAOD) (59.365)
- Proposed Gradient (1:40)
- Existing level - to be maintained (mAOD) (58.952)
- Finished Floor level - to be maintained (mAOD) (59.039 FFL)

Rev	Date	Description	App
P01	09.04.25	First Issue for planning	DSA

Project Manager, Civil & Structural Engineers
McAdam ENHANCING LOCAL COMMUNITIES
1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ
T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects
open optimised environments
Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL
T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

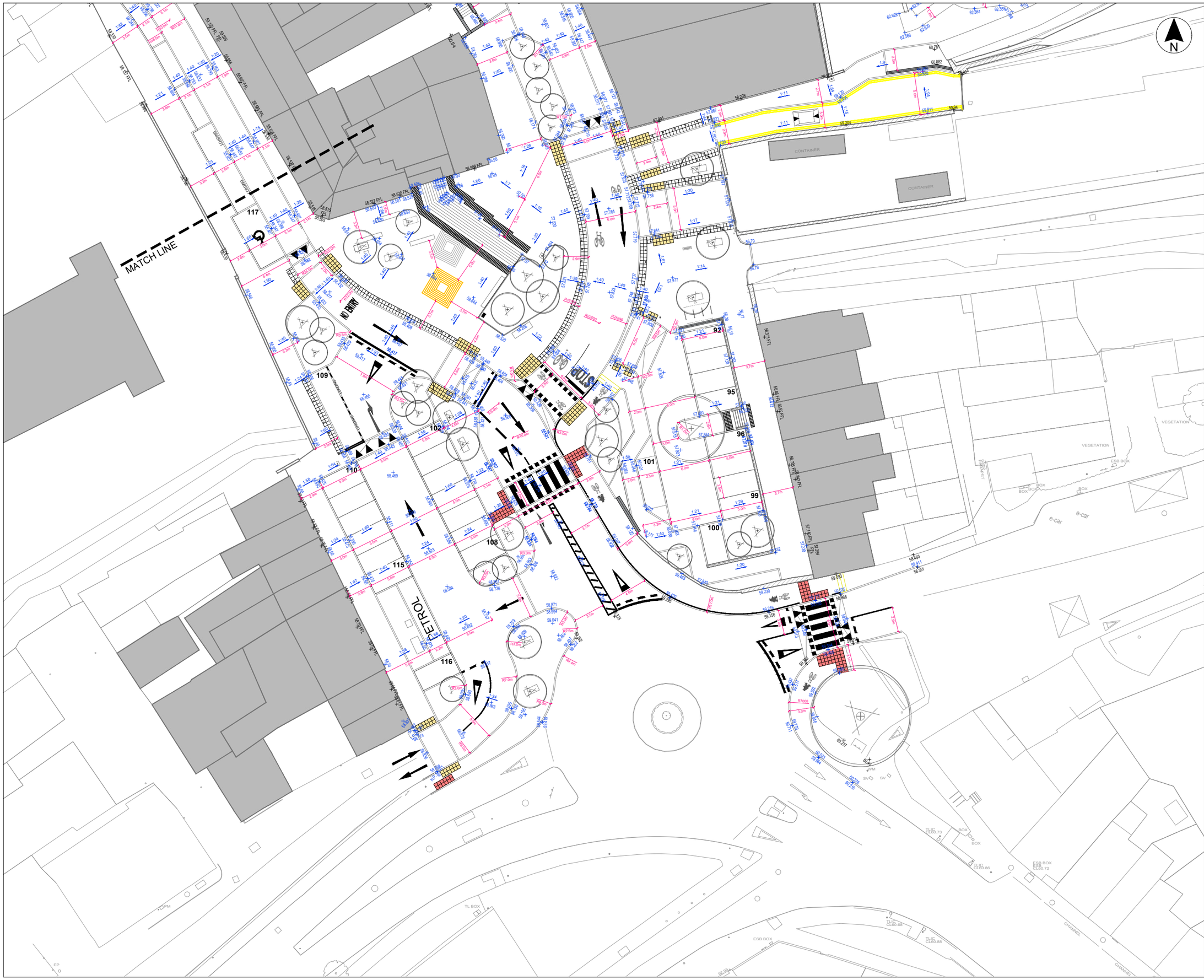
Client
Comhairle Contae Mhuineacháin
Monaghan County Council

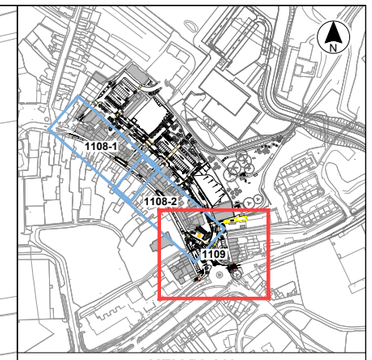
Project Status	STAGE 3 - PLANNING
Project	NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT
Drawing	PROPOSED TII LAYOUT AND LEVELS SHEET 1 (Dublin Road)
Scale	1:200 @ A1

Drawn	DSA	Checked	KOS	Approved	KOS
Date	04.02.25	Date	04.02.25	Date	04.02.25

Project	- Organisation	- Zone	- Level	- Type	- Role	- Number	- Revision
DSN	- MCA	- ZZ	- XX	- DR	- CE	- 1108	- P01

Project Number	Status code & Description	
E2442	S2	For Information





KEY PLAN
SCALE 1:4000

Notes:

1. All dimensions in metres unless otherwise noted
2. All levels are in meters and referenced to Ordnance Datum
3. All tactile pavings to be compliant with *'Guidance on the use of Tactile Paving Surfaces, 2021'*
4. This drawing should be read in conjunction with all other Civil, Landscape Architect, Architects and M&E drawings

*for kerb types see drawings DSN-MCA-ZZ-XX-DR-CE-1401 to -1404

Legend:

- Kerbs (various)*
- Existing wall - retained
- Buff blister tactile paving
- Red blister tactile paving
- Guidance tactile paving along kerbs
- Hazard corduroy paving
- Cycle corduroy paving
- Traffic cushion
- Existing monument location
- New monument location
- Earthworks
- Proposed Dimensions (m)
- Proposed Radius (m)
- Proposed level (mAOD)
- Proposed Gradient
- Existing level - to be maintained (mAOD)
- Finished Floor level - to be maintained (mAOD)

Rev	Date	Description	App
P01	09.04.25	First Issue for planning	DSA

Project Manager, Civil & Structural Engineers
McAdam ENHANCING LOCAL COMMUNITIES
1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ
T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects
open optimised environments
Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL
T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client: Comhairle Contae Mhuineacháin Monaghan County Council

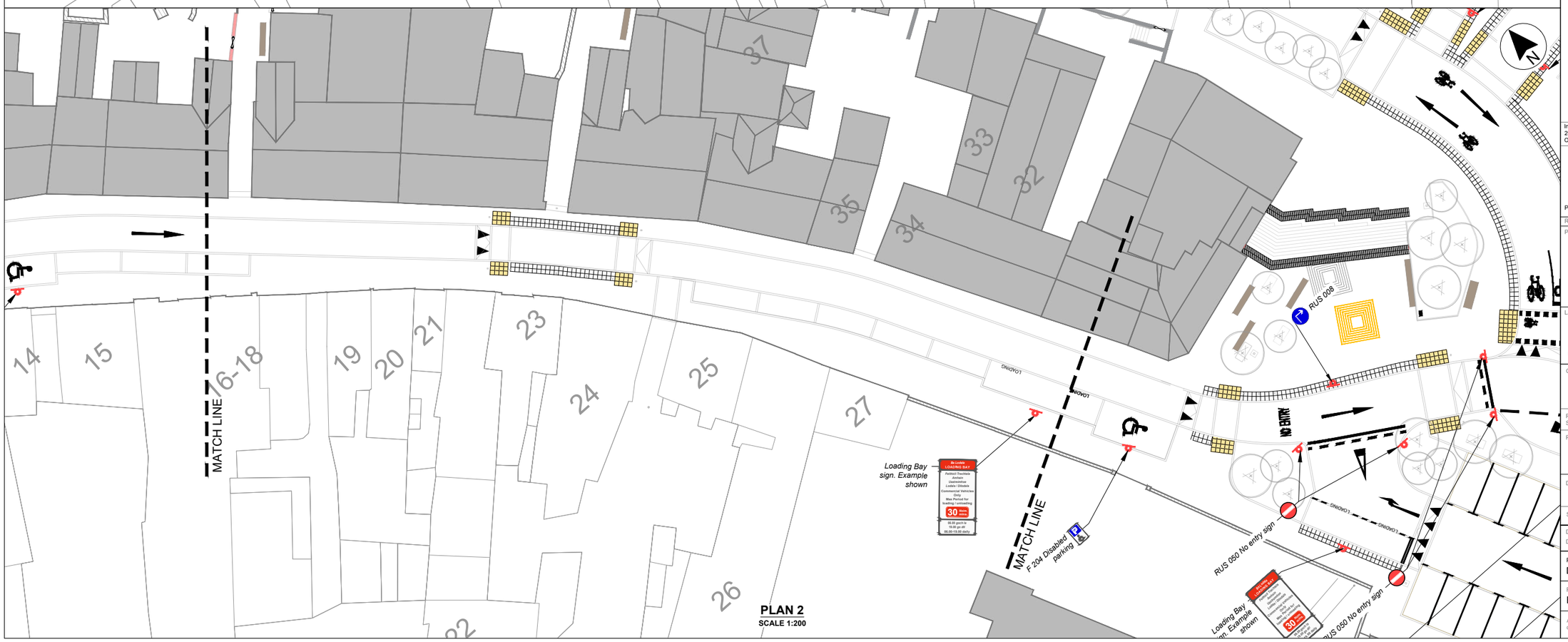
Project Status	STAGE 3 - PLANNING
Project	NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT
Drawing	PROPOSED TII LAYOUT AND LEVELS SHEET 2 (Old Cross Square)
Scale	1:200 @ A1

Drawn	DSA	Checked	KOS	Approved	KOS
Date	04.02.25	Date	04.02.25	Date	04.02.25

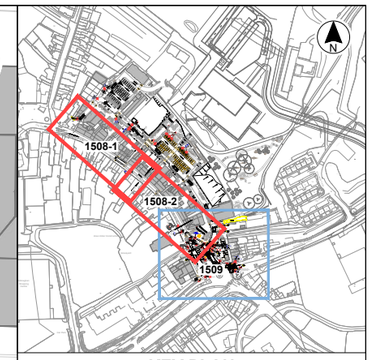
Project	- Organisation	- Zone	- Level	- Type	- Role	- Number	- Revision
DSN	- MCA	- ZZ	- XX	- DR	- CE	- 1109	- P01

Project Number	Status code & Description
E2442	S2 For Information

PLAN 1
SCALE 1:200



PLAN 2
SCALE 1:200



KEY PLAN
SCALE 1:4000

LEGEND

- Blister Tactile Paving (buff - uncontrolled)
- Blister tactile paving (red - controlled)
- Cycle corduroy paving (buff coloured)
- Guidance path tactile paving (grey coloured)
- Traffic sign
- Belisha beacon
- M116 (TSM Ch. 7)
- M117 (TSM Ch. 7)
- M118 (TSM Ch. 7)
- M119 (TSM Ch. 7)
- Elephant's Feet (CDM 2023)
- RRM 018 (TSM Ch. 7)
- RRM 019 (TSM Ch. 7)
- RRM 007 (TSM Ch. 7)
- M115 (TSM Ch. 7)
- M114 (TSM Ch. 7)
- M106 (TSM Ch. 7)
- RRM030 (TSM Ch. 7)
- M106 (TSM Ch. 7)
- RRM034 (TSM Ch. 7)
- RRM015 (TSM Ch. 7)

Rev	Date	Description	App
P01	09.04.25	First Issue for planning	DSA

Project Manager, Civil & Structural Engineers
McAdam
ENHANCING LOCAL COMMUNITIES
1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ
T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects
open optimised environments
Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL
T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client
Comhairle Contae Mhuineacháin
Monaghan County Council

Project Status	STAGE 3 - PLANNING
Project	NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT
Drawing	PROPOSED TII WHITELINING & ROAD SIGNS SHEET 1 (Dublin Road)
Scale	1:200 @ A1

Drawn	DSA	Checked	KOS	Approved	KOS
Date	04.02.25	Date	04.02.25	Date	04.02.25

Project	Organisation	Zone	Level	Type	Role	Number	Revision
DSN	MCA	ZZ	XX	DR	CE	1508	P01

Project Number	Status code & Description	
E2442	S2	For Information

MATCH LINE

MATCH LINE

Loading Bay sign. Example shown

F 204 Disabled parking

RUS 008

RUS 042

RUS 042

RUS 050 No entry sign

Loading Bay sign. Example shown

RUS 050 No entry sign

Zebra Crossing RPC 001 with 2no. Belisha beacons

W 140a

Stop line RRM 017

RUS 058 shared space

RUS 058 and supp. sign P 010

RUS 027 stop sign

W 140a

RUS 058 and supp. sign P 010

RUS 058 shared space

RUS 026 yield sign

W 140a

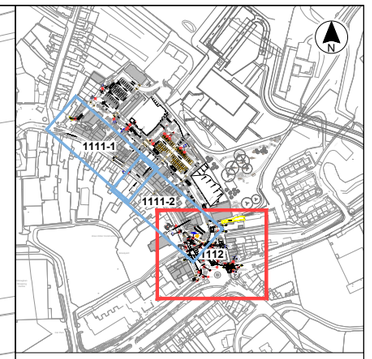
W 140a

RUS 050 No entry sign

Zebra Crossing RPC 001 with 2no. Belisha beacons. Raised table to allow for cycle and pedestrian crossing

RUS 058 shared space

RUS 026 yield sign



KEY PLAN
SCALE 1:4000

LEGEND

- Blister Tactile Paving (buff - uncontrolled)
- Blister tactile paving (red - controlled)
- Cycle corduroy paving (buff coloured)
- Guidance path tactile paving (grey coloured)
- Traffic sign
- Belisha beacon
- M116 (TSM Ch. 7)
- M117 (TSM Ch. 7)
- M118 (TSM Ch. 7)
- M119 (TSM Ch. 7)
- Elephant's Feet (CDM 2023)
- RRM 018 (TSM Ch. 7)
- RRM 019 (TSM Ch. 7)
- RRM 007 (TSM Ch. 7)
- M115 (TSM Ch. 7)
- M114 (TSM Ch. 7)
- M106 (TSM Ch. 7)
- RRM030 (TSM Ch. 7)
- M106 (TSM Ch. 7)
- RRM034 (TSM Ch. 7)
- RRM015 (TSM Ch. 7)

Rev	Date	Description	App
P01	09.04.25	First Issue for planning	DSA

Project Manager, Civil & Structural Engineers
McAdam ENHANCING LOCAL COMMUNITIES
1c Montgomery House, 478 Castlereagh Road, Belfast, BT5 6BQ
T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects
open optimised environments
Optomised Environments Ltd, Quartermile two, 2 Lister Square, Edinburgh, EH3 9GL
T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

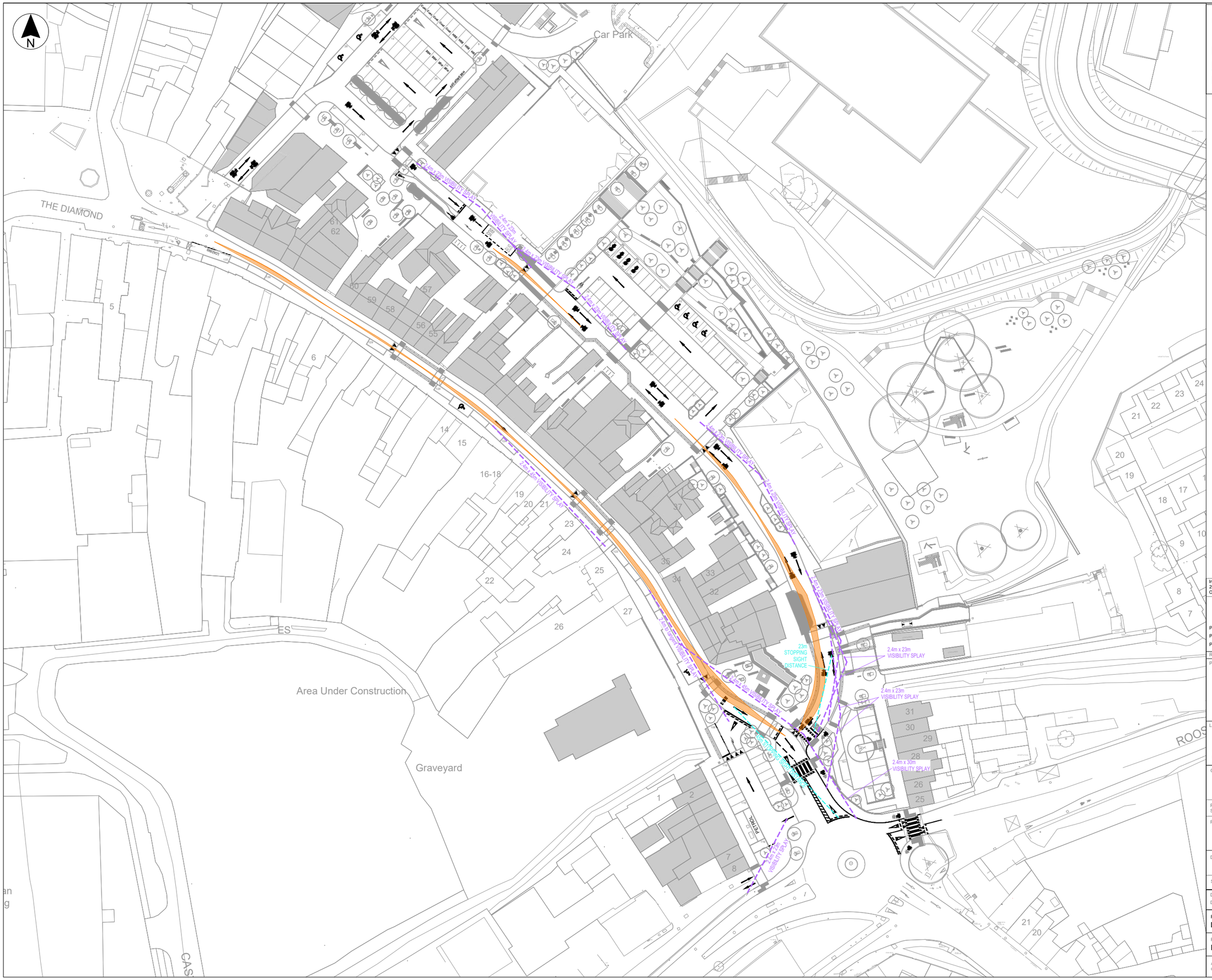
Client: Comhairle Contae Mhuineacháin, Monaghan County Council

Project Status	STAGE 3 - PLANNING
Project	NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT
Drawing	PROPOSED TII WHITELINING & ROAD SIGNS SHEET 2 (Old Cross Square)
Scale	1:200 @ A1

Drawn	DSA	Checked	KOS	Approved	KOS
Date	04.02.25	Date	04.02.25	Date	04.02.25

Project	Organisation	Zone	Level	Type	Role	Number	Revision
DSN	MCA	ZZ	XX	DR	CE	1509	P01

Project Number	Status code & Description	
E2442	S2	For Information



LEGEND

- Site Boundary
- Visibility Splay
- Stopping Sight Distance
- Forward Sight Visibility

DESIGN STANDARDS - DUBLIN STREET *(DMURS)*

Design Speed = 50km/hr

Stopping Sight Distance = 45m
Visibility Splay X = 2.4m
Y = 45m

Forward Sight Distance @ 50km/h = 45m

DESIGN STANDARDS - RUSSELL ROW & JUNCTION *(DMURS)*

Design Speed = 30km/hr

Stopping Sight Distance = 23m
Visibility Splay X = 2.4m
Y = 23m

Forward Sight Distance @ 30km/h = 23m

DESIGN STANDARDS - ACCESSES ON TO RUSSELL ROW & OLD CROSS SQUARE SHOPPING AREA *(DMURS)*

Design Speed = 30km/hr

Visibility Splay X = 2.4m
Y = 23m

Rev	Date	Description	App
P03	08.04.25	Changes for planning issue	DSA
P02	10.02.25	Updated for client review	DSA
P01	04.02.25	First Issue for client review	IA

Project Manager, Civil & Structural Engineers
McAdam
ENHANCING LOCAL COMMUNITIES
1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ
T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects
open optimised environments
Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL
T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client
Comhairle Contae Mhuineacháin
Monaghan County Council

Project Status: STAGE 3 - PLANNING

Project: NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT

Drawing: ROAD VISIBILITY PLAN

Scale: 1:500 @ A1

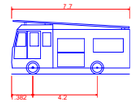
Drawn	Checked	Approved
IA	DSA	KO'S
04.02.25	04.02.25	04.02.25

Project - Organisation - Zone - Level - Type - Role - Number - Revision
DBRN - MCA - ZZ - XX - DR - CE - 1511 - P03

Project Number: E2442
Status code & Description: S2 For Information

LEGEND

- Vehicle footprint
- Path of wheels
- Path of Chassis inc overhangs



Dennis Sabre Fire Tender (LWB)	
Overall Length	7.700m
Overall Width	2.430m
Overall Body Height	3.512m
Min Body Ground Clearance	0.397m
Track Width	2.380m
Lock to lock time	5.00s
Kerb to Kerb Turning Radius	7.400m

Rev	Date	Description	App
P02	08.04.25	Changes for planning issue	DSA
P01	04.02.25	First Issue for client review	IA

Project Manager, Civil & Structural Engineers

McAdam
ENHANCING LOCAL COMMUNITIES

1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ

T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects

open
optimised environments

Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL

T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client

Comhairle Contae Mhuineacháin
Monaghan County Council

Project Status	STAGE 3 - PLANNING
Project	NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT
Drawing	PROPOSED VEHICLE TRACKING FIRE TENDER
Scale	1:500 @ A1

Drawn	Checked	Approved
IA	DSA	KO'S
Date 04.02.25	Date 04.02.25	Date 04.02.25

Project - Organisation - Zone - Level - Type - Role - Number - Revision
DBRN - MCA - ZZ - XX - DR - CE - 1711 - P02

Project Number: E2442

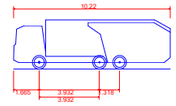
Status code & Description: S2 For Information

LEGEND

Vehicle footprint

Path of wheels

Path of Chassis inc overhangs



Phoenix 2-20W (with Elite 2 6x2 RS chassis)	
Overall Length	10.220m
Overall Width	2.530m
Overall Body Height	3.211m
Min Body Ground Clearance	0.416m
Track Width	2.530m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	6.800m

Rev	Date	Description	App
P02	08.04.25	Changes for planning issue	DSA
P01	04.02.25	First Issue for client review	IA

Project Manager, Civil & Structural Engineers

McAdam
ENHANCING LOCAL COMMUNITIES

1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ

T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects

open
optimised environments

Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL

T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client

Comhairle Contae Mhuineacháin
Monaghan County Council

Project Status	STAGE 3 - PLANNING
Project	NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT
Drawing	PROPOSED VEHICLE TRACKING REFUSE VEHICLE
Scale	1:500 @ A1

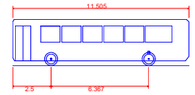
Drawn	IA	Checked	DSA	Approved	KO'S
Date	04.02.25	Date	04.02.25	Date	04.02.25

Project	- Organisation	- Zone	- Level	- Type	- Role	- Number	- Revision
DBRN	- MCA	- ZZ	- XX	- DR	- CE	- 1712	- P02

Project Number	Status code & Description	
E2442	S2	For Information

LEGEND

- Vehicle footprint
- Path of wheels
- Path of Chassis inc overhangs



Single Deck City Bus	
Overall Length	11.505m
Overall Width	2.445m
Overall Body Height	3.000m
Min Body Ground Clearance	0.309m
Track Width	2.425m
Lock to lock time	1.00s
Kerb to Kerb Turning Radius	10.250m

Rev	Date	Description	App
P02	08.04.25	Changes for planning issue	DSA
P01	04.02.25	First Issue for client review	IA

Project Manager, Civil & Structural Engineers

McAdam
ENHANCING LOCAL COMMUNITIES

1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ

T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects

open
optimised environments

Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL

T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client

Comhairle Contae Mhuineacháin
Monaghan County Council

Project Status	STAGE 3 - PLANNING
Project	NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT
Drawing	PROPOSED VEHICLE TRACKING BUS
Scale	1:500 @ A1

Drawn	IA	Checked	DSA	Approved	KO'S
Date	04.02.25	Date	04.02.25	Date	04.02.25

Project	Organisation	Zone	Level	Type	Role	Number	Revision
DBRN	MCA	ZZ	XX	DR	CE	1713	P02

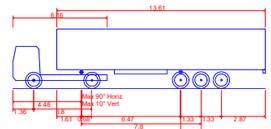
Project Number	Status code & Description	
E2442	S2	For Information

LEGEND

Vehicle footprint

Path of wheels

Path of Chassis inc overhangs



FTA Design Articulated Vehicle (2016)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.600m

Rev	Date	Description	App
P02	08.04.25	Changes for planning issue	DSA
P01	04.02.25	First Issue for client review	IA

Project Manager, Civil & Structural Engineers

McAdam
ENHANCING LOCAL COMMUNITIES

1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ

T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects

open
optimised environments

Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL

T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client

Comhairle Contae Mhuineacháin
Monaghan County Council

Project Status: STAGE 3 - PLANNING

Project: NORTH DUBLIN ROAD & BACK-LANDS REGENERATION PROJECT

Drawing: PROPOSED VEHICLE TRACKING ARTICULATED LORRY

Scale: 1:500 @ A1

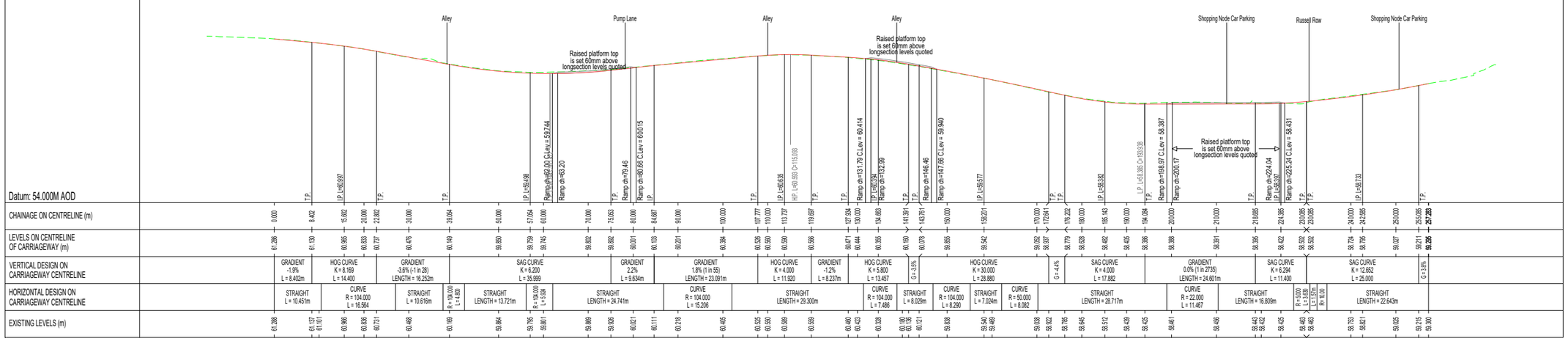
Drawn	IA	Checked	DSA	Approved	KO'S
Date	04.02.25	Date	04.02.25	Date	04.02.25

Project - Organisation - Zone - Level - Type - Role - Number - Revision
DBRN - MCA - ZZ - XX - DR - CE - 1713 - P02

Project Number: E2442

Status code & Description: S2 For Information

CHAINAGE PLAN
SCALE: 1:500



LONGSECTION
HORIZONTAL SCALE 1:500, VERTICAL SCALE 1:100

Rev	Date	Description	App
P01	04.02.25	First Issue for planning	IA

Project Manager, Civil & Structural Engineers
McAdam ENHANCING LOCAL COMMUNITIES
1c Montgomery House
478 Castlereagh Road
Belfast, BT5 6BQ
T: 028 9040 2000
E: admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Landscape Architects
open optimised environments
Optomised Environments Ltd
Quartermile two, 2 Lister Square
Edinburgh, EH3 9GL
T 0131 221 5920
www.op-en.co.uk | info@op-en.co.uk

Client: Comhairle Contae Mhuineacháin, Monaghan County Council

Project Status: STAGE 3 - PLANNING

Project: NORTH DUBLIN STREET & BACK-LANDS REGENERATION PROJECT

Drawing: PROPOSED LONGSECTIONS DUBLIN STREET

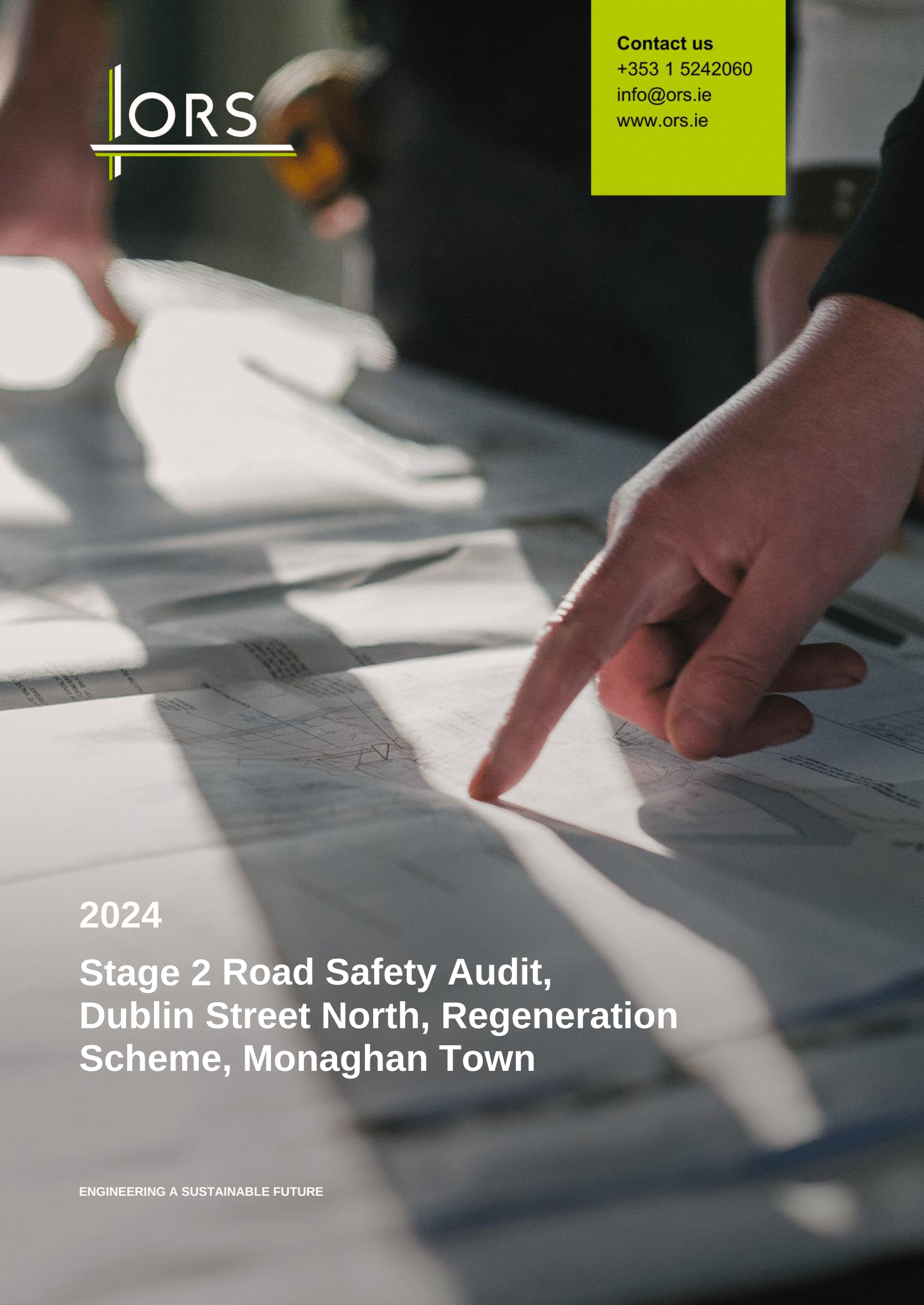
Scale: AS SHOWN @ A1

Drawn	Checked	Approved
IA	DSA	KOS
Date 04.02.25	Date 04.02.25	Date 04.02.25

Project - Organisation - Zone - Level - Type - Role - Number - Revision
DSN - MCA - ZZ - XX - DR - CE - 1801 - P01

Project Number: E2442
Status code & Description: S2 For Information

Appendix B –Road Safety Audit & Quality Audit



Contact us
+353 1 5242060
info@ors.ie
www.ors.ie

2024

Stage 2 Road Safety Audit, Dublin Street North, Regeneration Scheme, Monaghan Town

ENGINEERING A SUSTAINABLE FUTURE

Stage 2 Road Safety Audit,
Dublin Street North, Regeneration Scheme, Monaghan Town

Document Control Sheet

Client:	Monaghan County Council
Document No:	241701-ORS-XX-XX-RP-TR-13g-001_S2_RSA

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	**S2**	**MG**	**AP**	**DMC**	**20/01/2025**
P02	**S2**	**MG**	**AP**	**DMC**	**28/01/2025**
P03	**S2**	**MG**	**MG**	**DMC**	**14/04/2025**

ORS

Table of Contents

1 Introduction

This report documents the findings of a Stage 2 Road Safety Audit (RSA) conducted with respect to a Dublin Street North Regeneration Scheme, Monaghan Town. The initial Stage 1/2 Road Safety Audit was completed by the CST Group on the 19th of June 2024.

The audit team conducted the site visit for this Road Safety Audit on Wednesday the 18th of December 2024. The audit was conducted in the offices of ORS on the 20th of December 2024.

The audit team comprised of the following people:

Audit Team Leader:
David McCormack BEng (Hons), Dip Eng., CEng, MIEI

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

Audit Team Member:
Mark Gallagher AEng, MIEI

During the site visit the weather was damp and overcast. The road surface was wet, and the traffic levels were noted to be low across the audit period.

The audit team reviewed the following documents and drawings provided by the Design Team.

(1) Stage 1/2 Road Safety Audit – CST Group
(2) DBL-OPE-00-XX-DR-L-90160 Rev 02 General Arrangement Key Plan
(3) DBL-OPE-00-XX-DR-L-901301 Rev 04 General Arrangement Sheet 1
(4) DBL-OPE-00-XX-DR-L-901302 Rev 04 General Arrangement Sheet 2
(5) DBL-OPE-00-XX-DR-L-901303 Rev 04 General Arrangement Sheet 3
(6) DBL-OPE-00-XX-DR-L-901304 Rev 04 General Arrangement Sheet 4
(7) DBL-OPE-00-XX-DR-L-901501 Rev - Tree Root Protection Areas Sheet 3
(8) DBL-OPE-ZZ-XX-DR-L-902101 Rev 01 Details Surfacing
(9) DBL-OPE-ZZ-XX-DR-L-902102 Rev 01 Details Surfacing
(10) DBL-OPE-ZZ-XX-DR-L-902103 Rev 01 Details Surfacing
(11) DBL-OPE-ZZ-XX-DR-L-902104 Rev - Details Surfacing
(12) DBL-OPE-ZZ-XX-DR-L-902105 Rev - Details Surfacing
(13) DBL-OPE-ZZ-XX-DR-L-902201 Rev – Details Soft Landscaping Planting 01
(14) DBL-OPE-ZZ-XX-DR-L-902202 Rev – Details Soft Landscaping Planting 01
(15) DBL-OPE-00-XX-DR-L-901204 Rev 02 Illustrative Sections
(16) DBL-OPE-00-XX-DR-L-901205 Rev 01 Illustrative Sections.

Documents/Information not supplied:

- Collision Data
- Speed & Traffic Surveys
- Departures from Standards

- Visibility Splay Analysis.
- Public Lighting Layout.
- Swept Path Analysis.
- Road Markings and Signage Details
- Drainage Information.
- Kerbing Details.

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 the Design Team.

2 Description of Proposed Development

ORS have been commissioned by Open Optimised Environments on behalf of Monaghan County Council to conduct a Stage 2 Road Safety Audit for a proposed development that includes public realm improvements to Dublin Street, Old Cross Square and Diamond Centre Car Park, Monaghan Town.

The proposed development includes:

- Public realm improvements to Dublin Street. These improvements will include footpath widening / narrowed carriageway, introduction of tabletops to facilitate priority pedestrian movement across the street, and use of high-quality materials to set the standard for the new regeneration plan area north and south.
- A new street (Russell Row) is proposed to be implemented to the rear of the existing buildings on Dublin Street. The intention is to create the ambience of a mews lane and pedestrian priority through the implementation of a shared surface.
- Public realm enhancements are proposed to the Old Cross Square. These include the implementation of new street furniture, paving, planting etc and the realignment of roads/ traffic movement etc.
- The proposed development aims to improve the pedestrian environment and public realm of the Diamond Centre Car Park through the realignment / delineation of car parking, pedestrian areas, and introduction of landscaping features to enhance visual amenity and pedestrian movement.

The site is currently a built-up area in the centre of Monaghan town. The site consists of an existing road, park and car park. The site can be accessed by Glaslough Street to the North and the East of the site can be accessed by the Old Cross roundabout to the South.

Please refer to **Figure 2.1** below for the location plan of the proposed scheme.

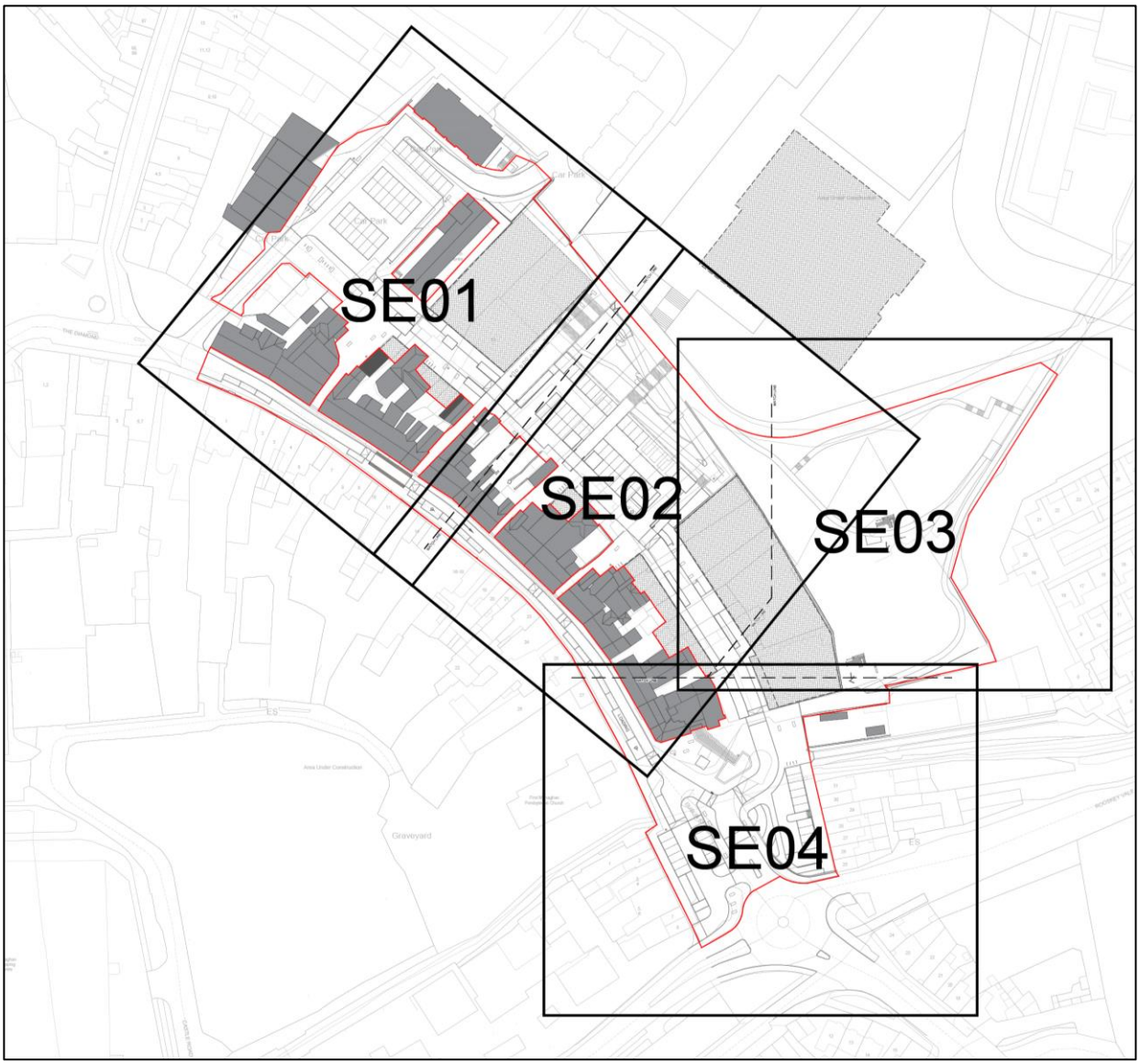


Figure 2.1: Site Location Plan (Source: Open Optimised Environments Ltd)

3 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.

3.1 Collision History

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.

3.2 Potential Problems Identified

Problem No.01: Cyclist Warning Signage and Road Markings (DBL-OPE-00-XX-DR-L-901301-Rev 04)

Location: Location Identified

The audit team note from the drawings provided that there is no cycle road markings or signage out to the junction with Dublin Street North to demonstrate that this is a shared surface with cyclists. The audit team has concerns that vehicles entering the site from Dublin Street North may not be aware of the change of road environment and may not change their driving habits to cater for the shared usage which could lead to collisions with cyclists.

Recommendation:

The design team should provide appropriate road markings and signage to alert vehicles entering this area that they will be sharing the carriageway with cyclists traveling in both directions.

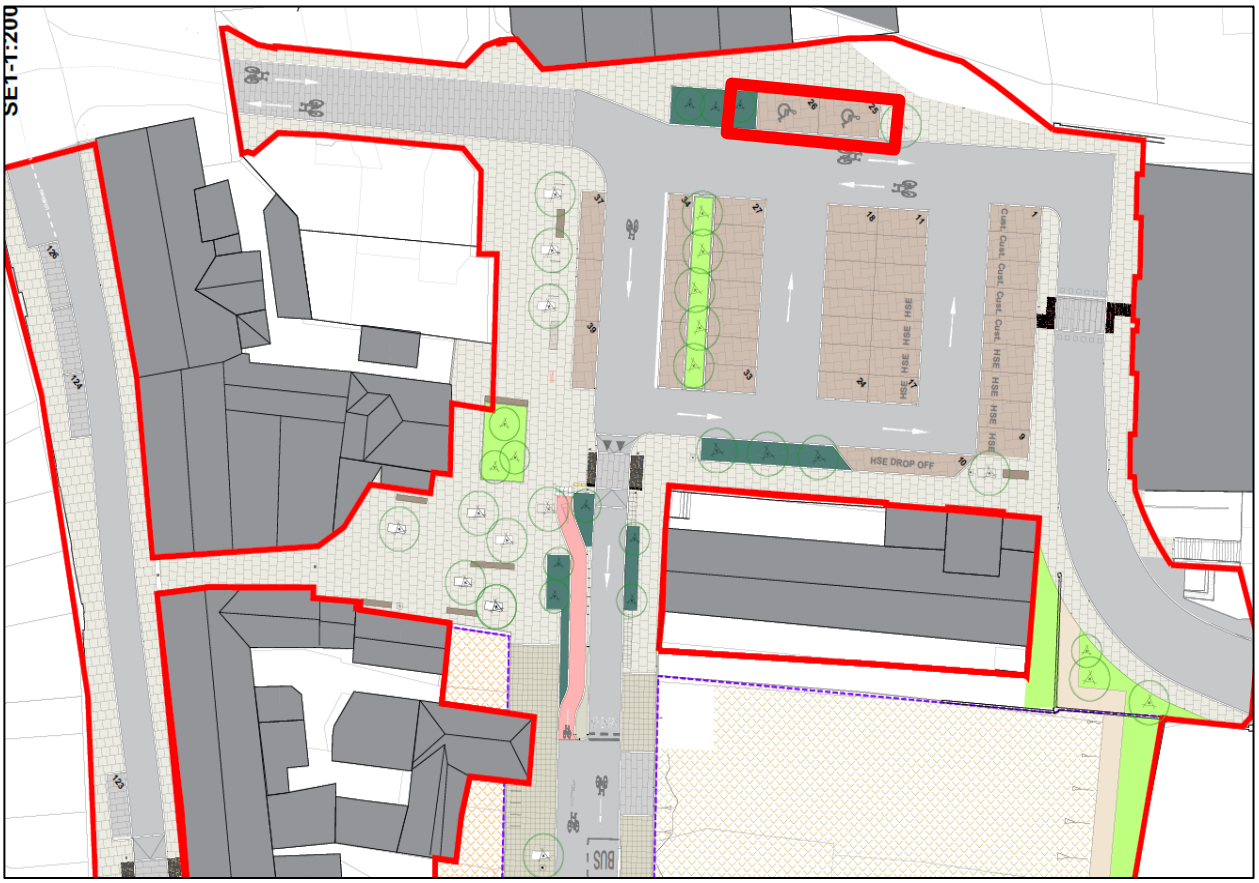
Problem No.02: Road Markings within Car Park (DBL-OPE-00-XX-DR-L-901301-901302-Rev 04)
Location: Location Identified
The audit team note from the drawings provided while there is direction of travel road markings for vehicles, no YIELD, STOP or No Entry Road markings or signage are detailed to give clear instructions to motorists of the priority of junctions and how the car park is to be used. The audit team has concern's that vehicles may enter parking isles against the flow of traffic and that vehicles exiting the spaces may not expect vehicles traveling in this direction which could lead to side swipe type collisions or reversing excessive distances to exit leading to potential collisions with cyclists.

Recommendation:
The design team should ensure that road markings and signage are provided for within the carpark area to control and direct motorists.

Problem No.03: Restricted Car Parking Spaces (DBL-OPE-00-XX-DR-L-901301-901302-901304 Rev 04)
Location: Various Locations
The audit team note from the drawing's provided that the parking spaces identified appear to be limited in space for entry and exiting. The audit team note that this could increase the risk of potential conflicts among vehicles or vehicle conflicts with cyclists or pedestrians as users may have to reverse onto the pedestrian footpath to exit the spaces.

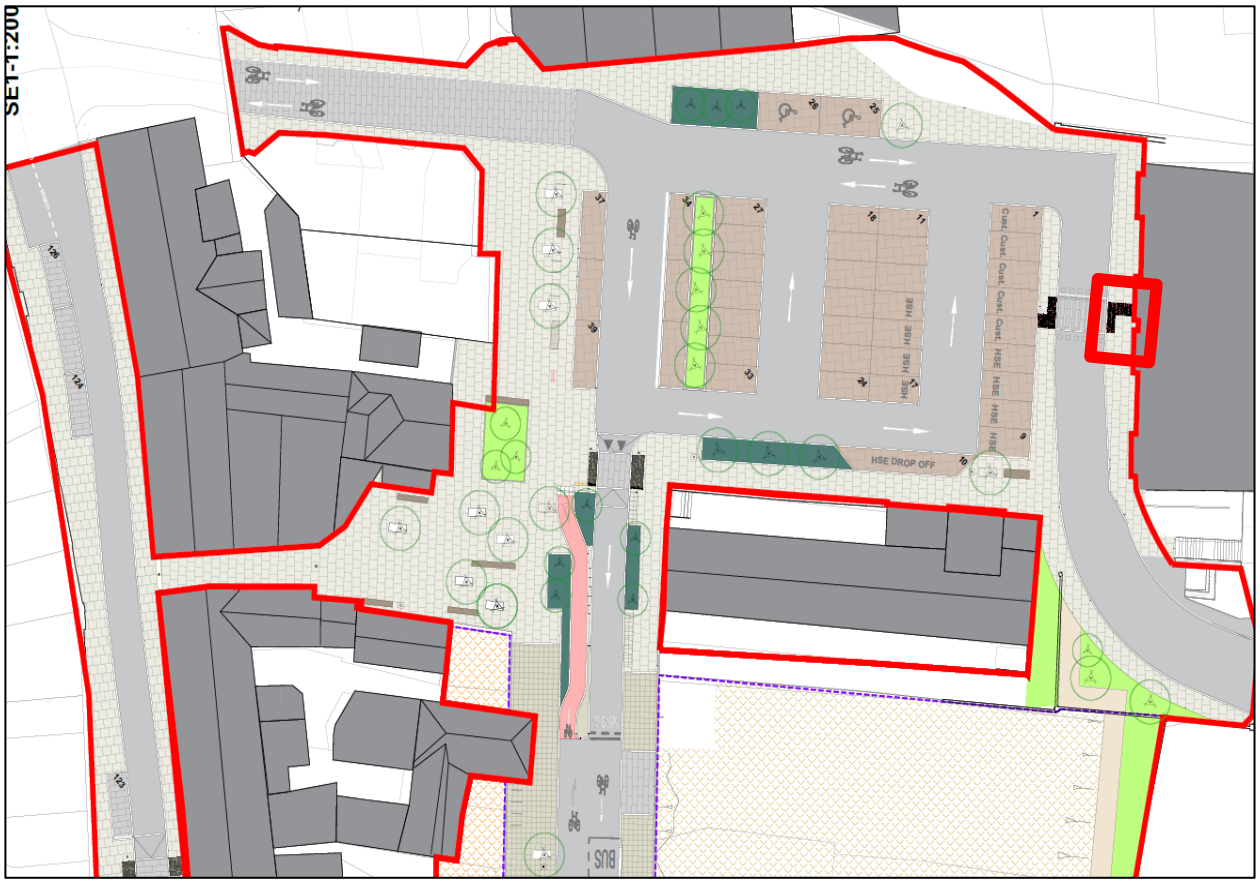
Recommendation:
The designers should ensure that vehicles can safely enter and exit these parking spaces.

Problem No.04: Disabled Parking Spaces Width (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that there is two disabled parking spaces provided. It is not clear from the drawings provided that the spaces are the appropriate width to facilitate safe entry and exit from vehicles for mobility impaired users and that the appropriate dropped kerbing to access the footpath is provided. The audit team is concerned that if the spaces are not the appropriate width that mobility impaired users of the spaces will not have the required space to safely enter and exit their vehicles. The users of the spaces may also have to travel excessive distances to a dropped kerb which may lead to mobility impaired users trying to access footpath at the closest location at a full height kerb leading to slips trips and falls.



Recommendation:
The design team should provide appropriate space for the parallel accessible parking spaces to facilitate safe entry and exit to vehicles using the spaces and the appropriate dropped kerbing.

Problem No.05: Proposed Controlled Crossing (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawings that there is a proposed controlled crossing at the location identified. It appears from the site visit that the crossing location is at the door of one of the retail units. There may be limited space in front of the unit to provide a level access, tactile paving for the controlled crossing and the beacon for the crossing which could lead to the footpath width being reduced below the minimum forcing pedestrians onto the carriageway.



Recommendation:
The design team should locate the proposed crossing at a more suitable location to facilitate a consistent footpath width and maintaining the level access in front of the retail unit.

Problem No.06: Termination of Proposed Footpaths (DBL-OPE-00-XX-DR-L-901301-Rev 04)

Location: Location Identified

The audit team note from the drawings that the proposed footway works do not appear to connect into any existing pedestrian infrastructure within the area. Lack of an appropriate tie-in to an existing footpath or termination could lead to pedestrian confusion, slips, trips or collisions with vehicles on the carriageway.

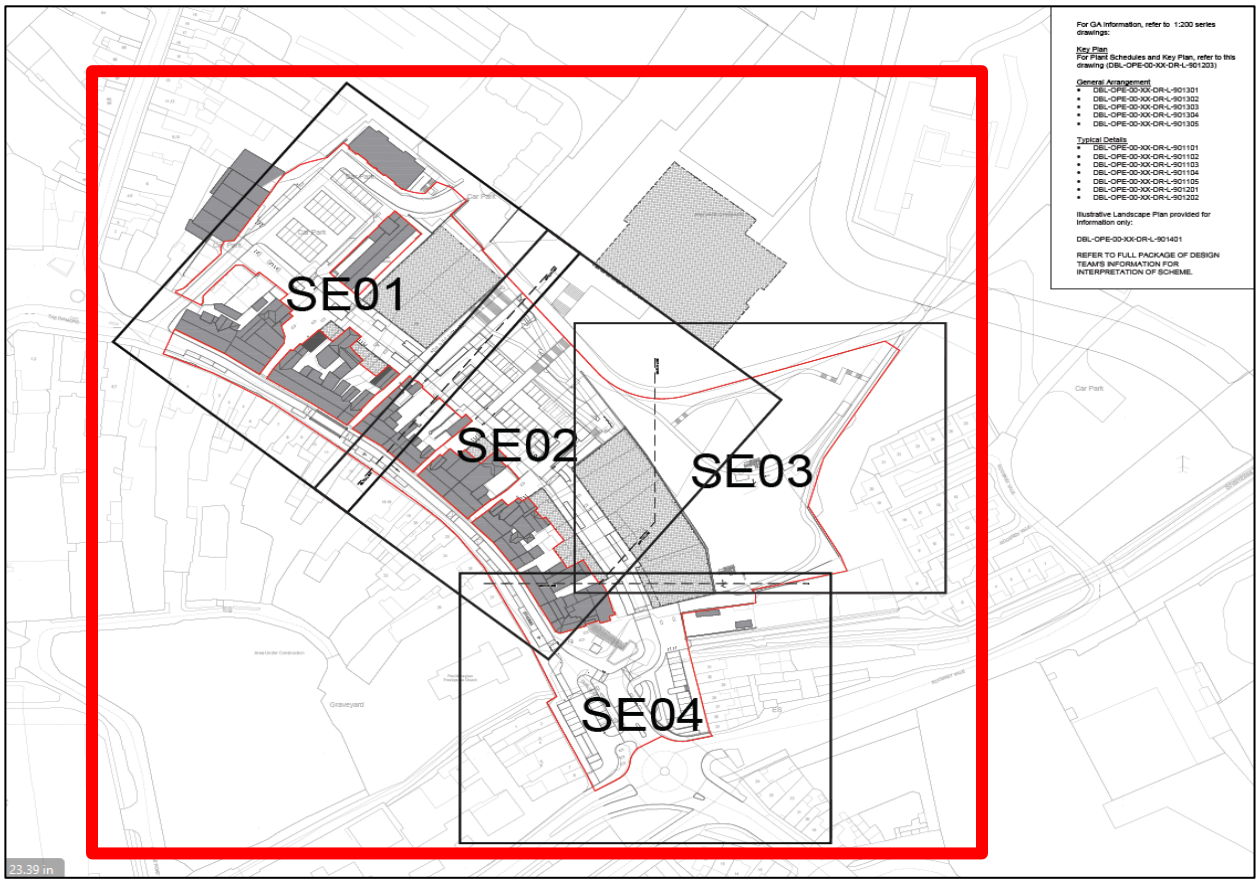
Recommendation:

The design team should provide provision for appropriate termination of the proposed footpath along with any tactile paving and signage.

Problem No.07: Termination of Cycle track (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawings that the proposed dedicated cycle track terminates at the location identified. It is unclear if the appropriate tramline tactile paving and signage are being provided to alert cyclists of the termination of the cycle track. Lack of appropriate signage and tactile paving could lead to cyclists entering the dedicated pedestrian area and this could lead to collisions between cyclists and pedestrians.

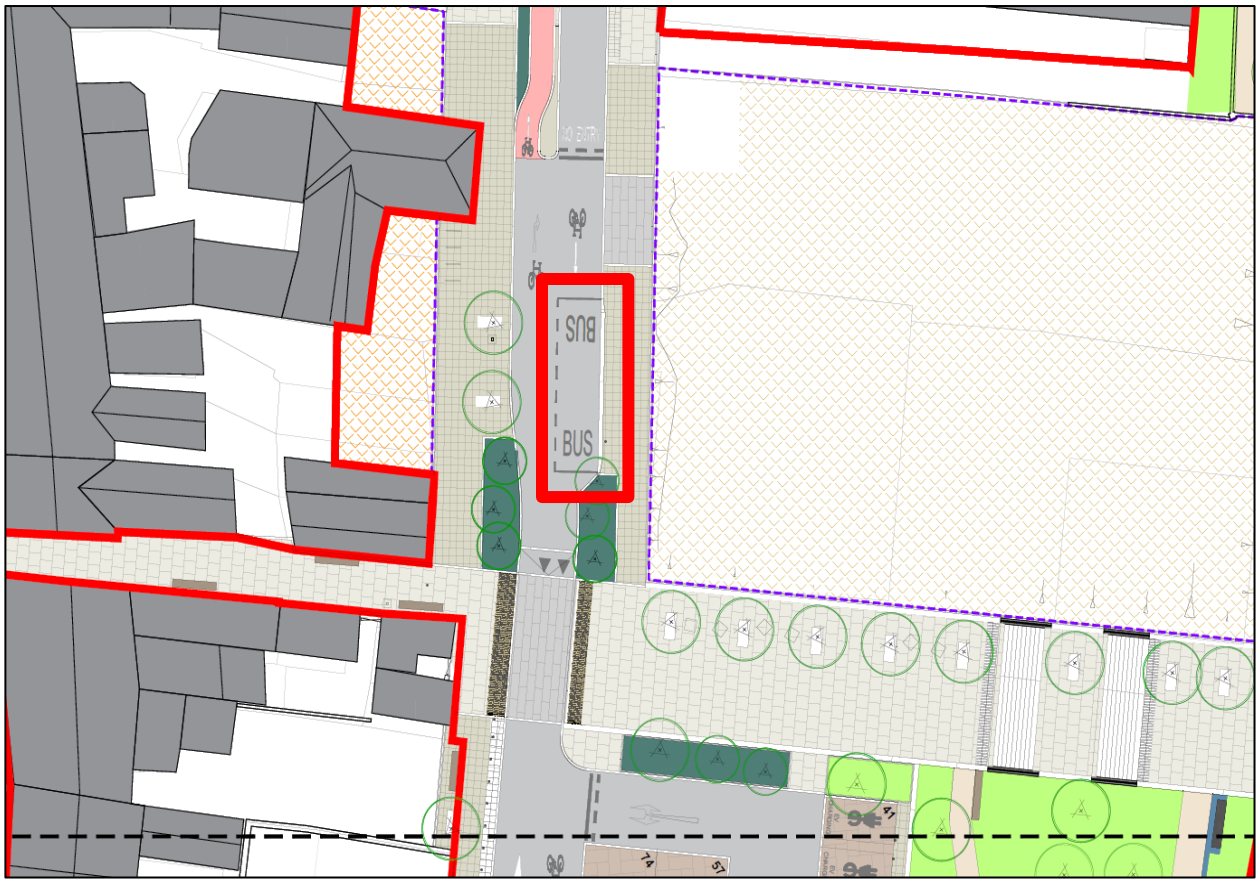
Recommendation:
The design team should provide for appropriate termination tactile paving and signage on the cycle track.

Problem No.08: Swept Path Analysis (DBL-OPE-00-XX-DR-L-901301-04-Rev 04)
Location: Throughout Scheme
The audit team note from the drawings provided that there is no swept path analysis for service vehicles or buses that must enter the scheme. It is unclear if there is sufficient space to facilitate larger vehicles especially those that must access daily. Lack of swept path analysis for the scheme could lead to instances where vehicles mount footpaths and cycle tracks which could lead to collisions with pedestrians and cyclists.



Recommendation:
The design team should provide swept path analysis for the scheme detailing how service vehicles and buses can safely enter and exit the scheme.

Problem No.09: Bus Stop (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawings provided at the location identified. It is unclear from the drawings provided if hazard warning tactile paving, kassel kerbs and the bus stop pole are being provided. The audit team has concerns that visually impaired users may not identify the edge of the bus stop if the appropriate hazard warning tactile paving is not provided, and mobility impaired users may have a higher step up or down from a bus if Kassel kerbs are not provided. This could lead to slips, trips and falls.

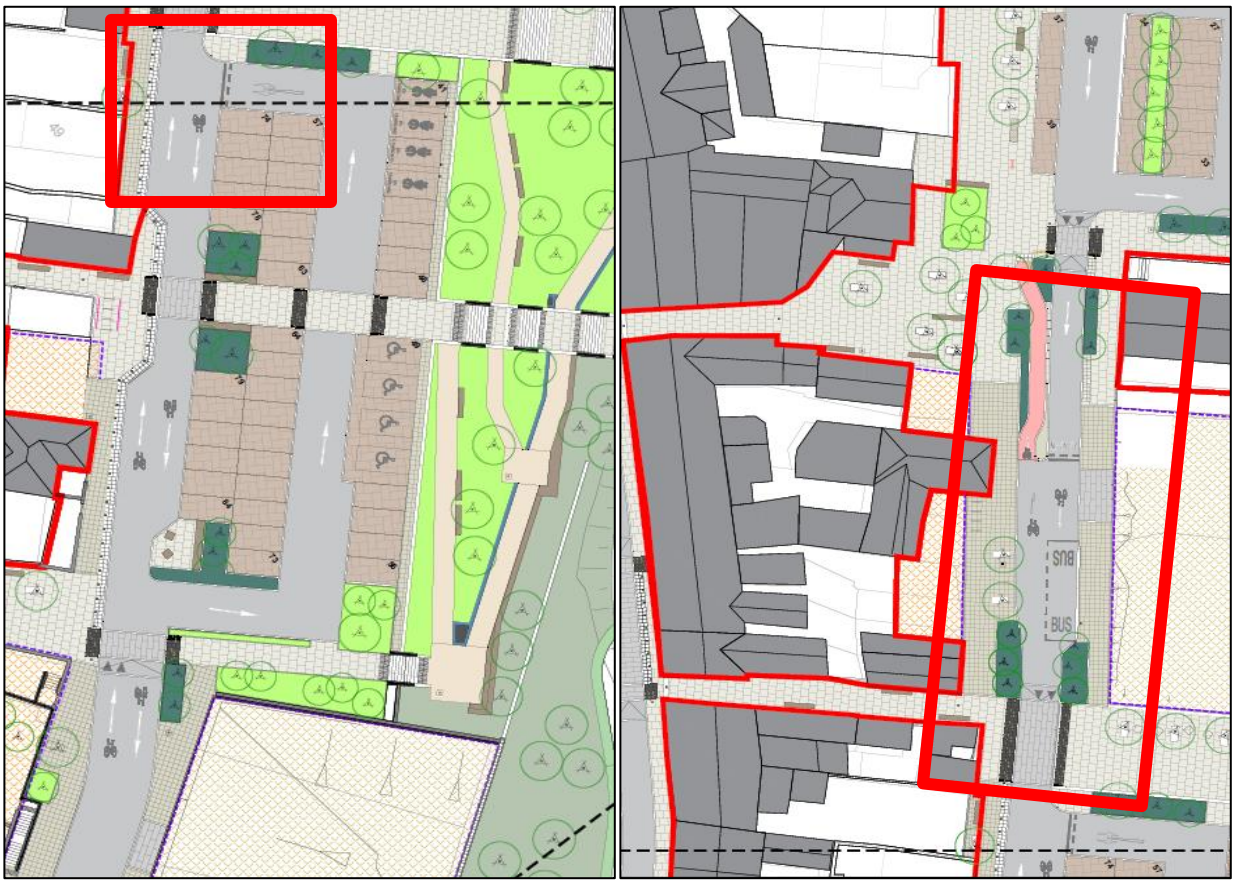


Recommendation:
The design team should ensure that the bus stop is provided with the appropriate hazard warning tactile paving, Kassel kerbs and the location of the bus stop pole is not in the line of the footpath.

Problem No.10: Conflicting Road Markings (DBL-OPE-00-XX-DR-L-901301-901302-Rev 04)

Location: Locations Identified

The audit team note from the drawings provided that there appears to be conflicting road markings. Approaching from the north appears to be a one-way system whereas the road markings in the southern car park indicates that two-way travel is possible. The audit team has concerns that these conflicting road markings could lead to motorists misunderstanding the layout and direction of travel around the car park which could lead to driver confusion which could lead to collisions.



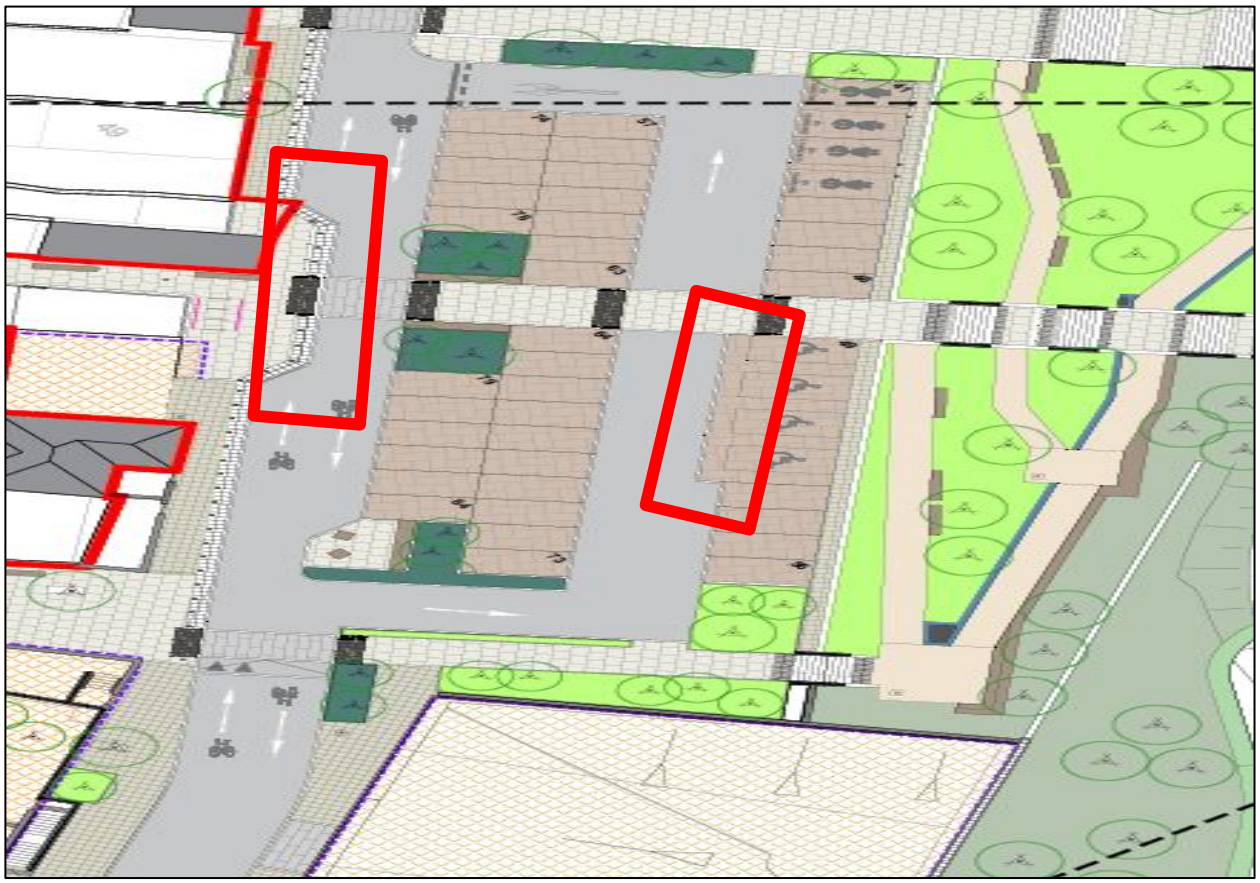
Recommendation:

The design team should provide clear road markings and signage around the car park and provide any No-Entry Road markings and signage where necessary.

Problem No.11: No Turning Area (DBL-OPE-00-XX-DR-L-901302-Rev 04)
Location: Location Identified
The audit team note from the drawings provided that vehicles exiting the spaces identified may find it difficult to exit the space and be orientated the incorrect way for the one-way system. The audit team is concerned that vehicles exiting these spaces may have to reverse an excessive distance to exit the space and be orientated correctly. This could lead to instances whereby a vehicle exiting the space could be reversing into on-coming traffic.

Recommendation:
The design team should ensure that vehicles have the appropriate turning space and can exit the spaces and be orientated in the correct direction to exit in forward gear.

Problem No.12: Sudden Road Narrowing (DBL-OPE-00-XX-DR-L-901302-Rev 04)
Location: Location Identified
The audit team note from the drawings provided that the driving isle suddenly narrows. The audit team is concerned that this sudden narrowing could lead to abrupt manoeuvres from motorists. This could lead to instances whereby a vehicle collides with a narrowing to the west or wheelchair users exiting their vehicles to the east.



Recommendation:
The design team should ensure that the appropriate signage and road markings are provided to alert motorists to the upcoming narrowing.

Problem No.13: Footpath Gradients (DBL-OPE-00-XX-DR-L-901302-901303 Rev 04)
Location: Location Identified
The audit team note from the drawings provided that there are no levels or gradients provided on the proposed footpaths or steps. It is unclear from the drawings provided if the footpaths are considered ramps or gently sloping. The lack of gradients and levels could result in inappropriately positioned intermediate landings, with a lack of rest areas leading to slips, trips or falls.

Recommendation:
The design team should provide details of the gradients and levels for the proposed footpath and ensure that no gradient is too steep or an individual ramp flight too long.

Problem No.14: Hazard Tactile Paving (DBL-OPE-00-XX-DR-L-901302-901303 Rev 04)
Location: Location Identified
The audit team note from the drawings provided that it is unclear if hazard tactile paving is being provided at the top, intermediate and bottom of the flights of steps. Visually impaired users may not comprehend that they are at the top or bottom of the flight of steps. Additionally, a visually impaired user may enter the intermediate landing where the path crosses not being aware of the hazard each side.

Recommendation:
The design team should provide hazard warning tactile paving at the top, bottom and intermediate landings including where the paths cross the flight of stairs.

Problem No.15: Inappropriately Located Landscaping (DBL-OPE-00-XX-DR-L-901301-Rev 04)

Location: Location Identified

The audit team note from the drawings provided there is landscaping provided in the line of travel of the external stairs. Visually Impaired and Mobility Impaired users especially will have to adjust the path at which they navigate the stairs to manoeuvre around the trees. Additionally, this reduces the space to the handrails on splitting the flights and could lead to slips and trips.

Recommendation:

The design team should position landscaping to not impeded the line of travel for the external steps especially where the central handrail extends out past the line of the steps.

Problem No.16: Incomplete Raised Table (DBL-OPE-00-XX-DR-L-901302-901304 Rev 04)
Location: Location Identified
The audit team note from the drawings provided there is an incomplete raised table shown at the location identified. It is unclear if the whole area is to be raised in the car park. The audit team has concerns that if it is intended to be raised that vehicles could mount footpaths/shared surfaces causing collisions with vulnerable road users.

Recommendation:
The design team should detail the extents of the raised area or if it is intended to be a raised table for a crossing. Also, any ramped area should not obstruct the driving isle around the car park.

Problem No.17: Car Parking Spaces at Junction (DBL-OPE-00-XX-DR-L-901304-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that the parking spaces identified appear to be difficult to exit safely. The audit team has concerns that this may lead to instances where vehicles reverse out of the spaces across the raised table and onto the main road to exit and be orientated in the incorrect direction. The audit team has concerns that this will lead to unsafe driver behaviour and cause vehicle to vehicle collisions or collisions with pedestrians on the crossing.

Recommendation:
The designers should remove the parking spaces identified to prevent unsafe driver behaviour.

Problem No.18: Termination of Shared Surface at Crossings (DBL-OPE-00-XX-DR-L-901304-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that the appropriate corduroy hazard warning paving is not provided. The audit team has concerns that this may lead to instances where cyclists travel through controlled crossings and cycle on the footpaths leading to collisions with pedestrians on the footpath or vehicles at uncontrolled crossings.

Recommendation:
The designers should provide the appropriate corduroy hazard warning paving at the termination of the shared surface and at the controlled crossing zone.

Problem No.19: Right Turn at Filling Station (DBL-OPE-00-XX-DR-L-901304-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that vehicles exiting the filling station can only turn right. It is unclear if HGV's and vehicles exiting the filling station can make this right turn without mounting the footpath on the northern side of the road. The audit team has concerns that this could lead to vehicles mounting the footpath causing collisions with pedestrians. It could also lead to vehicles reversing back into the filling station to achieve a better angle to make the turn.

Recommendation:
The designers should provide a swept path analysis detailing HGV's and Cars exiting the filling station and turning right.

Problem No.20: Colour at Locations Other than Crossings (DBL-OPE-00-XX-DR-L-901303-Rev 04)
Location: Location Identified
The audit team note from the drawings provided that the paving in the location identified is called up as Granite Aggregate Precast Paving Units which is unlikely to be a good colour contrast between path and any hazards i.e. the external steps. Some visually impaired users rely on the colour contrast in materials to determine the location of hazards and the edge of the threads in steps. Some visually impaired users may fail to note any warning paving on the ramp and steps.

Recommendation:
The designers should provide materials that achieves a good colour contrast and that the edge of the threads contrast to the rest of the step.

3.3 General Problems Identified

Problem No.21: Signage and Markings
Location: Throughout Scheme
The audit team noted that there is no road and cycle signage, regulatory signage or incomplete road and cycle markings on the drawings provided. Signage and markings aid in, informing road users of the direction of travel and the presence of vulnerable road users and ramps. The lack of adequate signage and markings in this case may result in conflicts of vehicles with vulnerable users and vehicles with other vehicles.

Recommendation:
The design team should ensure that road and cycle signage and markings are provided in line with DMURS and the applicable Traffic Signs Manual.

Problem No.22: Vehicle Swept Path Analysis
Location: Throughout Scheme
The audit team has observed that no vehicle swept path analysis has been conducted based on the provided drawings. To ensure the road layout is optimally designed for emergency and service vehicles, it is crucial to undertake a thorough swept path analysis using appropriate design vehicles. This analysis will confirm that the road configuration allows for safe turning movements without encroaching on pedestrian areas or mounting kerbs, thereby minimising potential conflicts between vehicles and pedestrians. Additionally, the swept path analysis should encompass all relevant vehicle turning movements, ensuring that vehicles can manoeuvre smoothly within the property.

Recommendation:
The design team should analyse vehicle swept paths on the scheme with industry standard software to assess vehicle wheel paths during turning movements to confirm the suitability of the road and internal driveway layout for intended vehicle purposes.

Problem No.23: Public Lighting
Location: Throughout Scheme
The audit team note from the drawings provided that no public lighting was detailed for the development. Areas in low light conditions may result in slips, trips and falls on pedestrian paths. Drivers may not be able to see pedestrians in the internal road network and at pedestrian crossings which has the potential to lead to pedestrian – vehicle collisions resulting in, injuries to pedestrians.

Recommendation:
The design team should ensure that details and locations of all public lighting columns are provided for in the development and that the positioning does not cause any obstruction or hazard to vulnerable road users and that lighting is distributed uniformly throughout the development.

Problem No.24: Drainage
Location: Internal Site Layout
The audit team note from the drawings provided, that there is no provision for drainage channels/ gully positions for the proposed stormwater network at ramps throughout the proposed development. 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 details and locations of all drainage gullies etc are provided for across the site and positioned strategically to avoid the risk of ponding across the site and in particular at any proposed pedestrian crossing points of at any proposed ramps within the scheme.

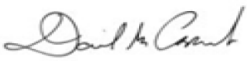
Problem No.25: Materials – Slip Resistance
Location: Throughout the Scheme
The audit team note from the drawings provided that the slip resistance of the proposed surfacing materials is not noted. Some of the natural stone products may become polished and create a slip hazard.

Recommendation:
The design team should ensure that materials have an appropriate slip resistance and Polished Stone Value (PSV) used within the development.

4 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 conducted 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 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: David McCormack: BEng (Hons), Dip Eng., CEng, MIEI
ORS

Signed: 

Date: 13th January 2025

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

Signed: 

Date: 13th January 2025

Audit Team Member: Mark Gallagher, MIEI
ORS

Signed: 

Date: 13th January 2025

Appendix A – Inspected Documents

The audit team reviewed the following documents and drawings provided by the Design Team:

(1) Stage 1/2 Road Safety Audit – CST Group
(2) DBL-OPE-00-XX-DR-L-90160 Rev 02 General Arrangement Key Plan
(3) DBL-OPE-00-XX-DR-L-901301 Rev 04 General Arrangement Sheet 1
(4) DBL-OPE-00-XX-DR-L-901302 Rev 04 General Arrangement Sheet 2
(5) DBL-OPE-00-XX-DR-L-901303 Rev 04 General Arrangement Sheet 3
(6) DBL-OPE-00-XX-DR-L-901304 Rev 04 General Arrangement Sheet 4
(7) DBL-OPE-00-XX-DR-L-901501 Rev - Tree Root Protection Areas Sheet 3
(8) DBL-OPE-ZZ-XX-DR-L-902101 Rev 01 Details Surfacing
(9) DBL-OPE-ZZ-XX-DR-L-902102 Rev 01 Details Surfacing
(10) DBL-OPE-ZZ-XX-DR-L-902103 Rev 01 Details Surfacing
(11) DBL-OPE-ZZ-XX-DR-L-902104 Rev - Details Surfacing
(12) DBL-OPE-ZZ-XX-DR-L-902105 Rev - Details Surfacing
(13) DBL-OPE-ZZ-XX-DR-L-902201 Rev – Details Soft Landscaping Planting 01
(14) DBL-OPE-ZZ-XX-DR-L-902202 Rev – Details Soft Landscaping Planting 01
(15) DBL-OPE-00-XX-DR-L-901204 Rev 02 Illustrative Sections
(16) DBL-OPE-00-XX-DR-L-901205 Rev 01 Illustrative Sections

Appendix B – Designer Response Form

Job: 241701 – Dublin Street North Regeneration Scheme, Monaghan Town
Stage of Audit: Stage 2
Date Audit Completed: 06th January 2025

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**	**NO**	Bus stop guidance from the NTA notes Kassel kerbs, and a strip of both a red & grey concrete pavers to denote the bus bay edge of footway. These will all be included in our design.	Yes
P10	**YES**	**YES**		
P11	**YES**	**YES**		
P12	**NO**	**NO**	The Design Team (DT) accepts the issue at the accessible parking bays and will adjust our design accordingly. With regard to the carriageway narrowing, the DT has provided a well defined footway edge treatment including kerbing, guidance tactile paving and bollards to denote the footway	Yes

			edge. Providing road markings to denote traffic priority would go against DMURS principles of self-regulating streets, and has been deliberately omitted in order to help reduce traffic speeds	
P13	**YES**	**YES**		
P14	**YES**	**YES**		
P15	**YES**	**YES**	Tree locations will be reviewed prior to technical design / construction	
P16	**YES**	**YES**		
P17	**YES**	**YES**	Car Parking arrangement at this location will be reviewed prior to technical design / construction	
P18	**YES**	**YES**		
P19	**YES**	**YES**		
P20	**YES**	**YES**		
P21	**YES**	**YES**		
P22	**YES**	**YES**		
P23	**YES**	**YES**		
P24	**YES**	**YES**		
P25	**YES**	**YES**		

Signed:…… ……. Designer Date:…09/04/2025…

D. Anderson, Senior Civil Engineer, McAdam Design

Signed:……Audit Team Leader Date:…14th April 2025

Signed:…… Employer Date:14th April 2025

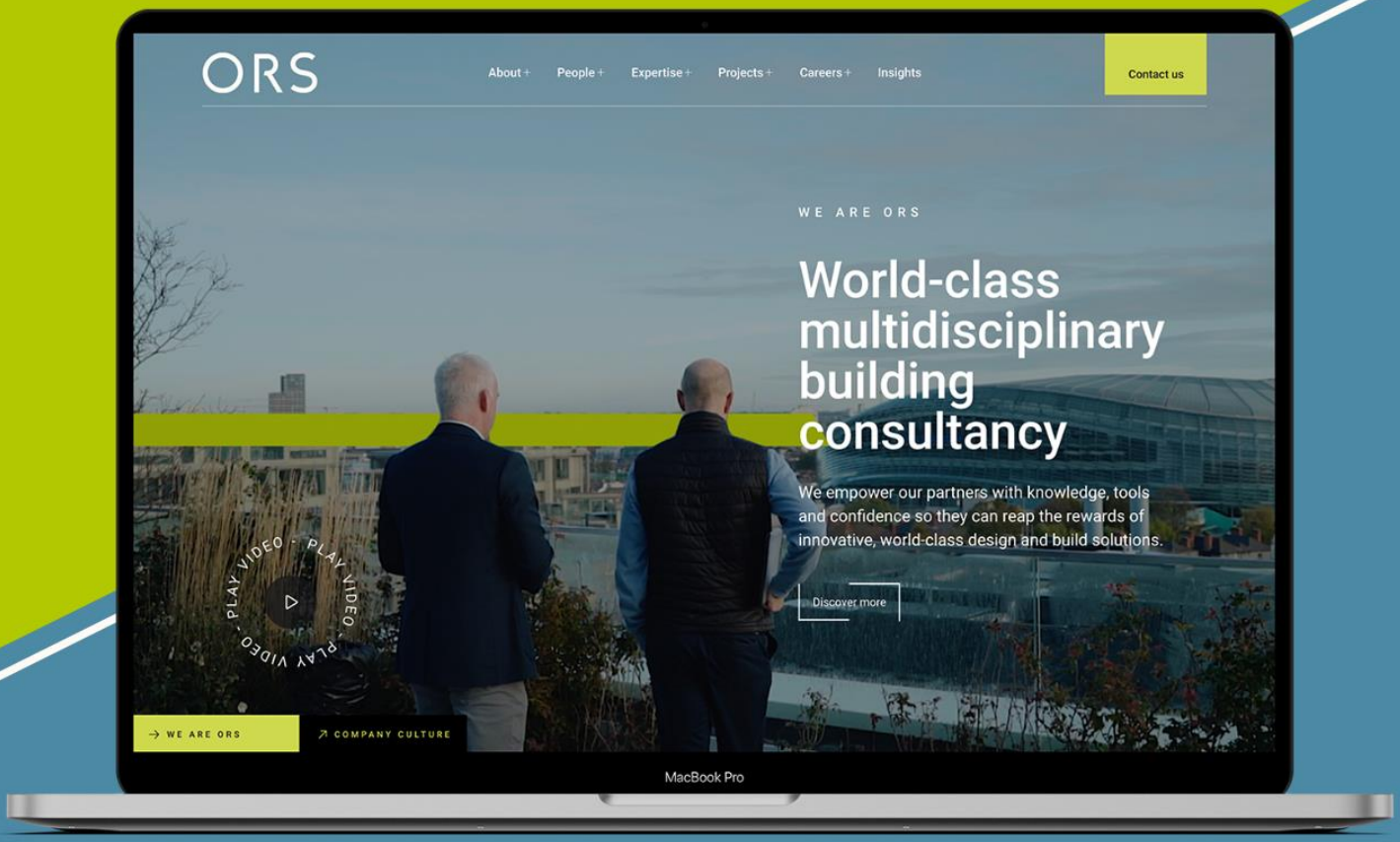
SEE Monaghan County Council

ORS | Multidisciplinary Building Consultancy

Best Workplaces™ Great Place To Work. IRELAND 2023

Access more information on our services and expertise by visiting our brand-new website.

Click here



Find Us Nationwide, on LinkedIn or on Youtube

Block A,
Marlinstown Business Park,
Mullingar, Co. Westmeath,
Ireland, N91 W5NN

Suite: G04, Iconic Offices,
Harmony Row,
Dublin 2, Co. Dublin,
Ireland, D02 H270

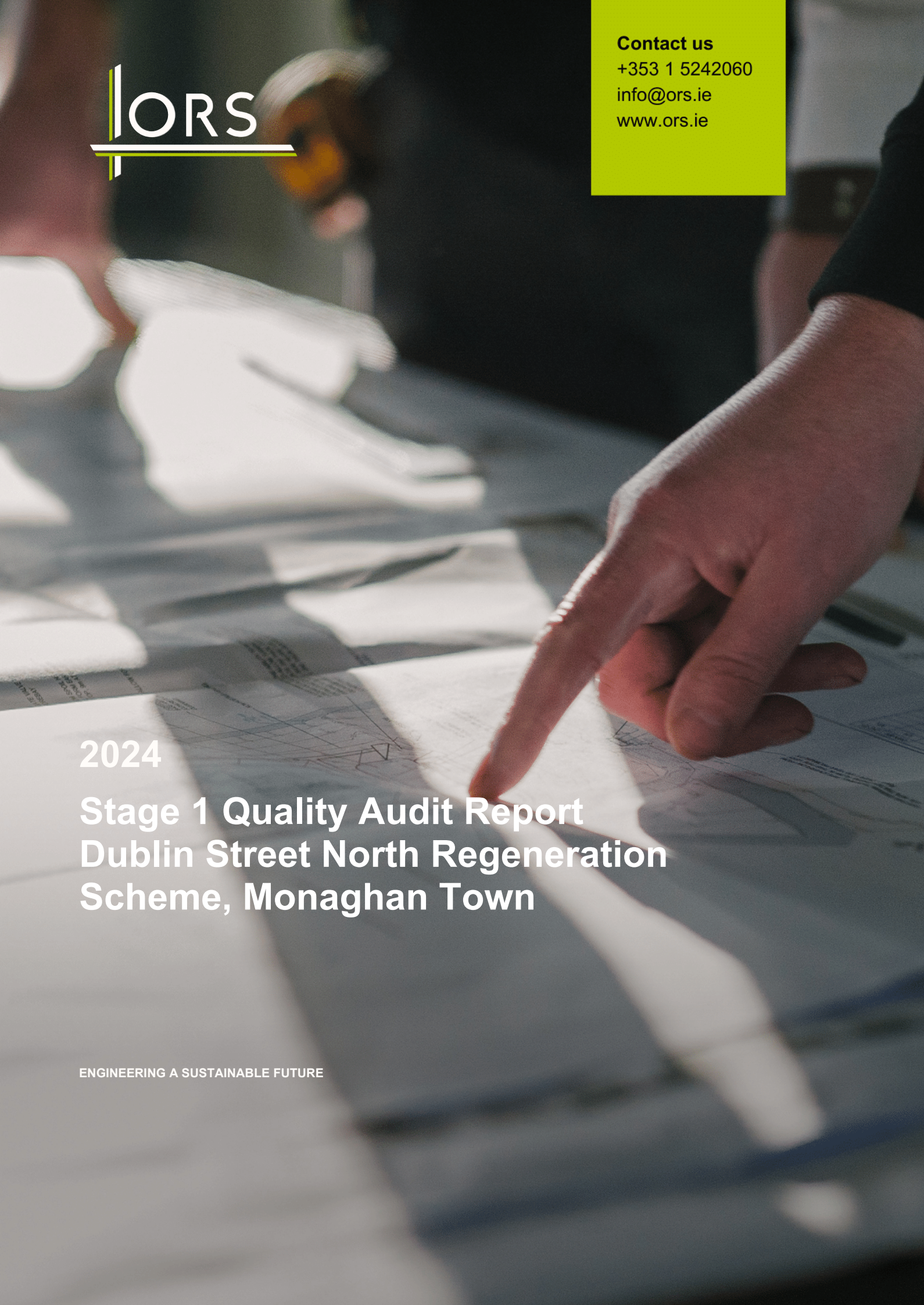
Level One, Block B,
Galway Technology Park,
Parkmore, Co. Galway,
Ireland, H91 A2WD

Office 2, Donegal Town,
Enterprise Centre, Lurganboy,
Donegal Town, Co. Donegal,
Ireland, F94 KT35

Office 4, Spencer House,
High Road, Letterkenny,
Co. Donegal,
Ireland, F92 PX8N

NSQ2,
Navigation Square,
Albert Quay, Cork
Ireland, T12 W351

Dublin St North Regeneration Scheme
Stage 1 Quality Audit



Contact us
+353 1 5242060
info@ors.ie
www.ors.ie

2024

Stage 1 Quality Audit Report Dublin Street North Regeneration Scheme, Monaghan Town

ENGINEERING A SUSTAINABLE FUTURE

Stage 1 Quality Audit Report
Dublin Street North Regeneration Scheme, Monaghan Town

Document Control Sheet

Client:	Monaghan County Council
Document No:	241701-ORS-XX-XX-RP-TR-13g-001

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	S2	EP	AK	MG	03/09/2024

Table of Contents

1 Introduction

This report documents the findings of a Stage 1 Quality Audit (QA) carried out on behalf of Monaghan County Council. The proposed development generally includes public realm improvements to Dublin Street, Old Cross Square and Diamond Centre Car Park, Monaghan Town.

The Quality 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 by Open Optimised Environments ltd:

(1) 124154 Stage 1_2 RSA Report Rev R0 for Review
(2) DBL-OPE-00-XX-DR-L-901201
(3) DBL-OPE-00-XX-DR-L-901301
(4) DBL-OPE-00-XX-DR-L-901302
(5) DBL-OPE-00-XX-DR-L-901303
(6) DBL-OPE-00-XX-DR-L-901304
(7) DBL-OPE-00-XX-DR-L-901401

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 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 Open Optimised Environments on behalf of Monaghan County Council to conduct a DMURS Quality Audit for a proposed development that includes public realm improvements to Dublin Street, Old Cross Square and Diamond Centre Car Park, Monaghan Town.

The proposed development includes:

- Public realm improvements to Dublin Street. These improvements will include footpath widening / narrowed carriageway, introduction of tabletops to facilitate priority pedestrian movement across the street, and use of high-quality materials to set the standard for the new regeneration plan area north and south.
- A new street (Russell Row) is proposed to be implemented to the rear of the existing buildings on Dublin Street. The intention is to create the ambience of a mews lane and pedestrian priority through the implementation of a shared surface.
- Public realm enhancements are proposed to the Old Cross Square. These include the implementation of new street furniture, paving, planting etc and the realignment of roads/ traffic movement etc.
- The proposed development aims to improve the pedestrian environment and public realm of the Diamond Centre Car Park through the realignment / delineation of car parking, pedestrian areas, and introduction of landscaping features to enhance visual amenity and pedestrian movement.

The site is currently a built-up area in the centre of Monaghan town. The site consists of an existing road, park and car park.

The site can be accessed by Glaslough ~Street to the North and the East of the site can be accessed by the Old Cross roundabout to the South.

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 Open Optimised Environments ltd.

Figure 2.2: Site Layout (Source: Open Optimised Environments Ltd)

2.2 Existing Road Network

As previously noted, the vehicular access proposed to the site is via the Old Cross roundabout to the South and Glaslough street to the North of the application site. Dublin street features walking paths on both sides of the one-way road, where there are streetlights and dropped kerbs to allow access in between buildings and through gateways. The current features of the existing road network are as shown in **Figure 2.3** and **Figure 2.4**.

Figure 2.3: Pedestrian facilities along Dublin St. (Source: Google Earth)

Figure 2.4: Existing Dublin Street paved path (Source: Google Maps)

Old Cross is a Roundabout to the South of the application site off which vehicular traffic is proposed to access the application site and its car parking area. Old Cross roundabout has four main exits with the northern most exit being the most relevant to the proposed site. Streetlights are present in the vicinity of the application site, as shown in **Figure 2.5** and **Figure 2.6**.

Figure 2.5: Overview of Old Cross Roundabout (Source: Google Earth)

Figure 2.6: Old Cross Roundabout from the site frontage (Source: Google Maps)

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 unit entrances with parking area and open spaces. 3.2.1 – The development creates a permeable network for pedestrians restricting private vehicles. 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.	Designers should ensure that all the proposed street layout should be appropriately designed with according to DMURS standards.	
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 footpaths at open spaces. 3.3.3 –	Design team should clearly demonstrate how vulnerable users e.g. Wheelchair users will be able to the buildings from the disabled car park.	

		The development creates a permeable network for pedestrians with restrictions on the movement of private vehicles and pedestrian links along the southwestern boundary as well as the main access.	6 pedestrian access points are present on the Dublin Street with 2 vehicular access points on both northwest and south of the proposed property.	
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 shared with cyclists. 3.4.1 – The development has created a network with restrictions on the movement of private vehicles. 3.4.1 – The site provides through vehicular accessibility to the development by road from the southern boundary via a roundabout.	Separate cyclist tracks have not been provided on the scheme. Cyclists will be required to share the road with vehicles, dismount and reach their destination through the provided footpaths. Additional cyclist access should be explored.	
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 an internal street that provides access to the internal car parking areas and the buildings. 3.2.2 – The development comprises an appealing living place enriched with valuable green attributes. 3.4.1 – The development has created a network with restrictions on the movement of private vehicles through the use of short driving distance, frequent junctions & raised tables	The design should incorporate a range of additional traffic calming measures aimed at reducing vehicle speeds throughout the development.	

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 –No Speed limit on the internal road is indicated on the drawing. 3.2.3 – Higher levels of cyclist movement are not catered for. 4.1.1 – The design provides traffic calming measures such as regular speed bumps at pedestrian crossing which could result in lower speeds through the development.	Speed limits should be mentioned on the drawings to be 30km/hr. The design should incorporate additional speed control measures to limit speed through the development.	
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 landscaping besides pedestrian/cyclist connection and car parking and building access along the vehicular carriageway. 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.	Signage and road markings should clearly be indicated on the drawings. The type and location of tree planting proposed should be such that they do not obscure visibility splays from junctions, pedestrian crossings and parking bays.	
A suitable range of design standards / measures have been	4.4.1 - Carriageway Widths 4.4.4 – Forward Visibility 4.4.5 – Visibility Splays	4.4.1 – The proposed internal carriageway will be approximately 5 to 6m wide. 4.4.4 – Forward visibility has been	Designers should ensure that all the proposed vehicular access/egress points should be appropriately	

applied that are consistent with the applied design speeds.	4.4.6 – Alignment and curvature 4.4.7 – Horizontal and Vertical Deflections Advice Note 1 – Transitions and Gateways	reduced through the provision of on-street parking and changes in horizontal alignments along the access road. 4.4.6 – The development features changes in horizontal curvature which promotes lower speeds. 4.4.7 Vertical deflections are not proposed in the design.	designed with according to DMURS standards. Visibility splays should be illustrated at the site access junction as well as at all the internal junctions of the site in accordance with DMURS.	

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 and, and the provision of separated pedestrian access increases 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.	Designers should prioritise sufficient lighting in all the pedestrianised areas throughout the development. This measure is essential to enhance safety and create a sense of security for users. Designers should ensure that tree canopies over time should not obstruct any lighting.	
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 – 4 No. Pedestrian crossing is provided in the development within the car park towards the building. 4.3.3 – Corner radii of 3 to 4.5m seems to be achievable. 4.4.3 – Junction design at the site vehicular access and internal junctions appears appropriate, however there are no visibility splay drawings provided for at the junctions . 4.4.7 – Vertical deflections are provided but are minimal.	Designers should ensure that all the proposed vehicular access/egress points should be appropriately designed with according to DMURS standards. Corner Radii should be appropriately mentioned in the drawings.	
Footpaths are continuous and wide enough to cater for the anticipated	3.2.1 – Movement Function. 3.2.3 – Place Context. 4.2.5 – Street Furniture	3.2.1 – The development maximises the number of walkable routes to the south and east of the development.	Footpath width should be illustrated on the drawings.	

number of pedestrian movements.	4.3.1 – Footways, Verges and Strips 4.3.2 – Pedestrian Crossings	3.2.3 – The development comprises an appealing living place with green attributes. 4.3.2 – The development comprises crossing point for vulnerable users at the northern end of the scheme. 4.3.2 – Dropped kerb pedestrian crossings are provided throughout the site, at strategic locations. 4.3.1 – Footways appear to be appropriate throughout the development which is compliant with DMURS. Mostly segregated from vehicle carriageways and through the provision of on-street parking.		
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 4.2.5 – Street Furniture 4.3.2 – Pedestrian Crossings 4.3.4 – Pedestrianised and Shared Surfaces	4.3.4 – Accessible parking spaces are proposed throughout the site. Mobility impaired users will navigate into the building as accessible parking is at the same level on as shared surface. However, as Mobility impaired users might also share the surface with other vehicular traffic, measures to allow mobility impaired users to navigate safely into the building is unclear.	Segregated or marked pedestrian surface should be considered near every accessible parking space in the car park area. This will enable mobility-impaired users to safely access the building without conflicting with vehicular traffic.	
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 vehicles. 4.3.5 Appropriate Cycle parking is provided outside the building	Appropriate dismount signage for cyclists to be installed throughout pedestrianised areas to reduce possibility of conflicts.	

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 – Adequate number of attractive walkable routes are provided to connect users from the car park to the main infrastructure. 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 a sense of place. 4.2.7 – Planting is proposed to create a softer landscape.		
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	3.2.1 – Street furniture provided does not restrict pedestrian movements. 3.2.3 – The selection of street furniture is suitable for the context. 4.3.1 – Streetlight columns are not proposed along footpaths.	Streetlight columns should be proposed at the rear of footpaths.	
The use of signage and line marking has been minimised.	3.2.1 – Movement Function 3.2.3 – Place Context 4.2.4 –	4.2.4 – Details of signage are provided, and signage is kept to the minimum required.	Design team should ensure that the signage is provided	

	Signage and Line Marking		according to DMURS standards.	
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 – Adequate number of walkable routes are provided to the south of the development as well to the north connecting to main entry and exit point with the rest of location. 3.2.1 – Materials and finishes have been carefully chosen to facilitate movement by providing visual distinctions between surfaces. 3.2.3, 4.2.6 – Materials and finishes have been used to define crossing points and parking spaces. 4.3.2 – Different surface textures and materials at pedestrian crossings act as traffic calming and indicate the crossing location to drivers. 4.4.2 – Carriageway surfaces have been defined by colour differences to make drivers aware of changes in priority.	Design team should ensure that the walking route towards the north and car park is designed according to DMURS standards.	

5 Additional Audits

5.1 Accessibility and Walkability Audit

The proposed site will be accessed off Dublin Street to the south of the site which connects to a roundabout and another access north of the site which leads to the car park. This will be the 2 vehicular entrances to the site.

There are multiple access points for pedestrians to access the site from the west of the proposed location which connects to Dublin Street. These entry points can also be used by cyclists as a shared pedestrian and cyclist access.

The site is well accessible via footpaths that connects the site to several local amenities like shopping centre, restaurants and pubs.

5.1.1 Public Transport Network

The proposed development is well served by the bus M3 which connects Mullan Village and Latlorcan. The bus stop is present at the entrance and the frequency of the buses every 2 hours on a weekday from 9am to 5pm.

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

Table 5.1 – Bus Services Available near the Development (Source: TFI)

Route No.	Bus Operator	Origin	Destination	Weekday Services
M3	TFI Local Link	Mullan Village	Latlorcan	Every 2 hours

5.2 Cycle Audit

Currently there is no cycle infrastructure in place in the surrounding area. Cyclists are expected to share the public road network with motorists. The proposed development does not include a segregated vehicle and cycle track.

External designated bicycle parking is provided in two locations outlined below.

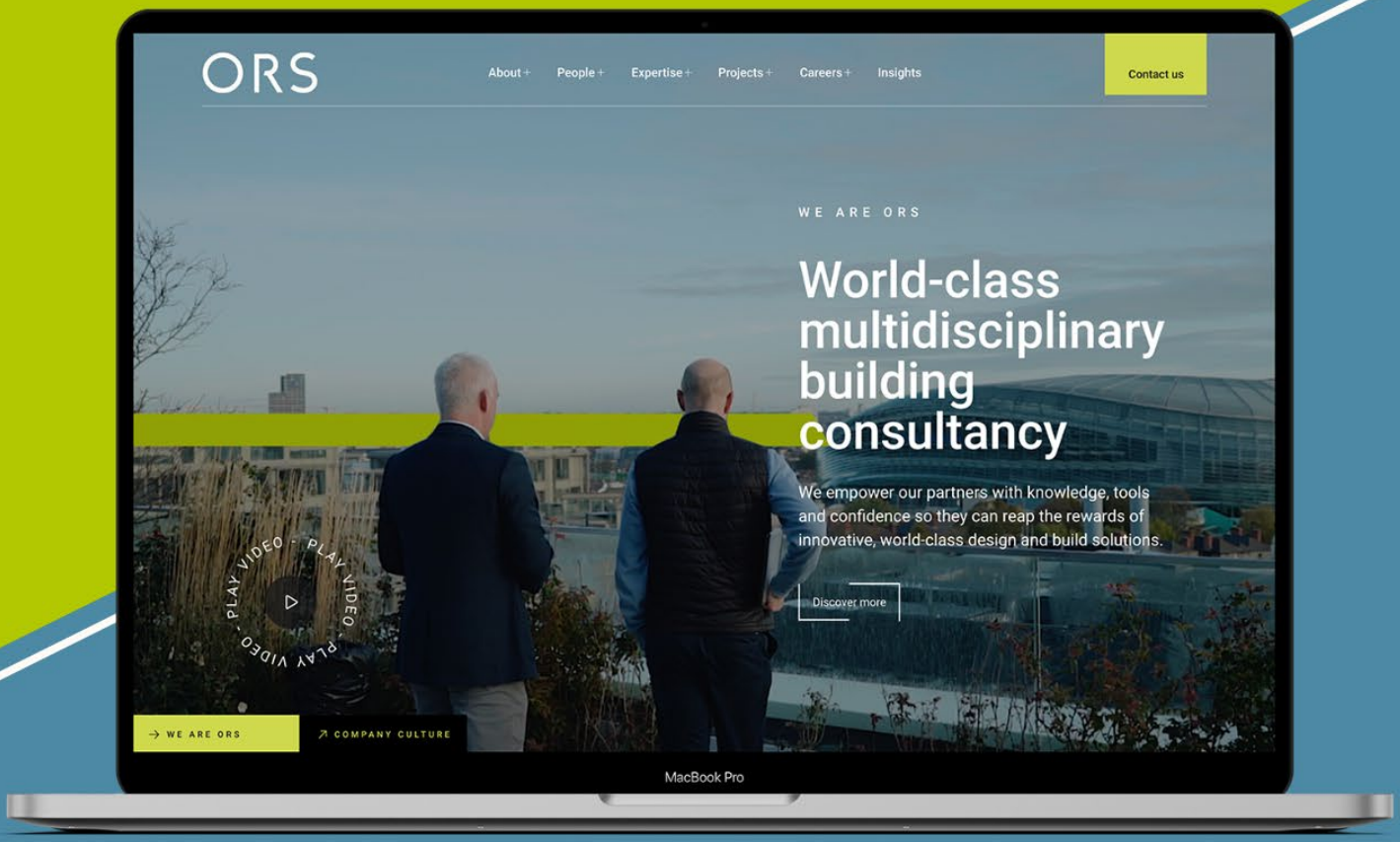
Figure 5.2: Location of bicycle stands (Source: Open Optimized Environments)

ORS | Multidisciplinary Building Consultancy

Best Workplaces™ Great Place To Work. IRELAND 2023

Access more information on our services and expertise by visiting our brand-new website.

Click here



Find Us Nationwide, on LinkedIn or on Youtube

Block A,
Marlinstown Business Park,
Mullingar, Co. Westmeath,
Ireland, N91 W5NN

Suite: G04, Iconic Offices,
Harmony Row,
Dublin 2, Co. Dublin,
Ireland, D02 H270

Level One, Block B,
Galway Technology Park,
Parkmore, Co. Galway,
Ireland, H91 A2WD

Office 2, Donegal Town,
Enterprise Centre, Lurganboy,
Donegal Town, Co. Donegal,
Ireland, F94 KT35

Office 4, Spencer House,
High Road, Letterkenny,
Co. Donegal,
Ireland, F92 PX8N

NSQ2,
Navigation Square,
Albert Quay, Cork
Ireland, T12 W351

McAdam
ENHANCING LOCAL COMMUNITIES

NORTH DUBLIN ROAD & BACKLANDS REGENERATION PROJECT

QUALITY AUDIT – DESIGNER'S RESPONSE FORM

E2442

ISSUE P01

APRIL 2025

PREPARED BY	CHECKED BY	APPROVED BY	ISSUE	DATE
DSA	KOS	KOS	P01	10/04/25

Table 1 – Quality Audit - Connectivity

Key Issues	Audit Suggestion	Design Team Response
Strategic routes/major desire lines been identified and are clearly incorporated into the design.	Designers should ensure that all the proposed street layout should be appropriately designed with according to DMURS standards.	The design is in compliance with the latest version of DMURS (2019), including the latest supplementary Advice Notes.
Multiple points of access are provided to the site/place, in particular for sustainable modes.	Design team should clearly demonstrate how vulnerable users e.g. Wheelchair users will be able to the buildings from the disabled car park. 6 pedestrian access points are present on the Dublin Street with 2 vehicular access points on both northwest and south of the proposed property.	The development is designed to maximise accessibility throughout. In some locations, such as existing alleyways, gradients are limited to due to existing site constraints. A small number of access points on Russell Row are step access only due to the interface with the existing topography. However these are secondary access points, and primary access is via Dublin Street.
Accessibility throughout the site is maximised for pedestrians and cyclists, ensuring route choice.	Separate cyclist tracks have not been provided on the scheme. Cyclists will be required to share the road with vehicles, dismount and reach their destination through the provided footpaths. Additional cyclist access should be explored.	Russell Row has been designed in line with DMURS & the Cycle Design Manual (CDM) to be a Mixed Traffic route. Due to the expected low traffic levels this allows vehicles & cyclists to share the same road space. To improve the road environment for cyclists build-outs designed to slow traffic have been amended to be tapered in accordance with the CDM. A short north-bound dedicated cycle lane is provided due a short stretch of south-bound one-way carriageway. The development has been designed to link with existing cycle routes at Old Cross Square, linking to the Ulster Canal Greenway, and to the proposed cycle routes in the Roosky Lands project.
Through movements by private vehicles on local streets are discouraged by an appropriate level of traffic calming measures.	The design should incorporate a range of additional traffic calming measures aimed at reducing vehicle speeds throughout the development.	Multiple traffic calming measures have been included in line with DMURS, such as; - implementation of the principle of self regulating streets by the provision of

		- Multiple build-outs requiring traffic to give way; - elimination of give way road markings to reduce driver's sense of traffic priority - through traffic only permitted south-bound to reduce the potential of the route being used as a rat run - reduced kerb height, including multiple raised tables See drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104

Table 2 - Quality Audit - Self-Regulating Street Environment

Key Issues	Audit Suggestion	Design Team Response
A suitable range of design speeds have been applied with regard to context and function.	Speed limits should be mentioned on the drawings to be 30km/hr. The design should incorporate additional speed control measures to limit speed through the development.	Design speed added to the project drawings Speed limiting measures provided in line with DMURS' principle of self-regulating streets See drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104
The street environment will facilitate the creation of a traffic calmed environment via the use of 'softer' or passive measures.	Signage and road markings should clearly be indicated on the drawings. The type and location of tree planting proposed should be such that they do not obscure visibility splays from junctions, pedestrian crossings and parking bays.	Design drawings clearly show the proposed road markings and road signage in line with the Traffic Signs Manual, and visibility splays in line with DMURS. See drawings DSN-MCA-ZZ-XX-DR-CE-1501 to -1504 & DSN-MCA-ZZ-XX-DR-CE-1511
A suitable range of design standards/measures have been applied that are consistent with the applied design speeds.	Designers should ensure that all the proposed vehicular access/egress points should be appropriately designed with according to DMURS standards. Visibility splays should be illustrated at the site access junction as well as at all the internal junctions of the site in accordance with DMURS.	All vehicular access & egress points have been designed in accordance with DMURS, including the latest supplementary Advice Notes. All visibility splays have been shown on drawing DSN-MCA-ZZ-XX-DR-CE-1511

Table 3 - Quality Audit - Pedestrian and Cycling Environment

Key Issues	Audit Suggestion	Design Team Response
The built environment contributes to the creation of a safe and comfortable pedestrian environment.	Designers should prioritise sufficient lighting in all the pedestrianised areas throughout the development. This measure is essential to enhance safety and create a sense of security for users. Designers should ensure that tree canopies over time should not obstruct any lighting.	The lighting in the development has generally been designed in line with BS 5489-1 & EN 13201. Lighting on roads, and specifically at controlled & uncontrolled road crossings, has been designed in line with TII design standard DN-LHT-03038 Design of Road Lighting for the National Road Network. See drawing 22268-DLW-XX-XX-DR-E-00100
Junctions been designed to ensure the needs of pedestrians and cyclists are prioritised.	Designers should ensure that all the proposed vehicular access/egress points should be appropriately designed with according to DMURS standards. Corner Radii should be appropriately mentioned in the drawings.	All vehicular access & egress points have been designed in accordance with DMURS, including the latest supplementary Advice Notes. All kerb radii have been dimensioned on drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104
Footpaths are continuous and wide enough to cater for the anticipated number of pedestrian movements.	Footpath width should be illustrated on the drawings.	All footpath and footway widths have been dimensioned on drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104
The particular needs of visually and mobility impaired users been identified and incorporated in the design.	Segregated or marked pedestrian surface should be considered near every accessible parking space in the car park area. This will enable mobility-impaired users to safely access the building without conflicting with vehicular traffic.	All disabled parking bays have immediate level access to a dedicated pedestrian footway.
Cycling facilities will cater for cyclists of all ages and abilities.	Appropriate dismount signage for cyclists to be installed throughout pedestrianised areas to reduce possibility of conflicts.	The Cycle Design Manual 2023 notes that requirements for cyclists to dismount are not inclusive. It also notes that where a persistent problem is found that cannot be solved through other design features or enforcement then it can be considered. As such the Design Team will keep this recommendation under review through Detailed Design.

Table 4 - Quality Audit - Visual Quality

Key Issues	Audit Suggestion	Design Team Response
The landscape plan responds to the street hierarchy and the value of the place.	*no suggestion provided	*no response required
Street furniture is orderly placed.	Streetlight columns should be proposed at the rear of footpaths.	Streetlight columns are located at the rear of footways, and the edge of off-line footpaths. See drawing 22268-DLW-XX-XX-DR-E-00100
The use of signage and line marking has been minimised.	Design team should ensure that the signage is provided according to DMURS standards.	Signage and road markings have been provided in accordance with DMURS, and the Traffic Signs Manual, and minimised where feasible in line with the DMURS principle of self-regulating streets. See drawings DSN-MCA-ZZ-XX-DR-CE-1501 to -1504
Materials and finishes used throughout the scheme have been selected from a limited palette and respond to the value of the place	Design team should ensure that the walking route towards the north and car park is designed according to DMURS standards.	All new footways are design in accordance with DMURS, including the latest supplementary Advice Notes.

Cycle Audit

Audit Issue	Design Team Response
Currently there is no cycle infrastructure in place in the surrounding area. Cyclists are expected to share the public road network with motorists. The proposed development does not include a segregated vehicle and cycle track. External designated bicycle parking is provided in two locations outlined below.	Russell Row has been designed in line with DMURS & the Cycle Design Manual (CDM) 2023 to be a Mixed Traffic route. Due to the expected low traffic levels this allows vehicles & cyclists to share the same road space. To improve the road environment for cyclists build-outs designed to slow traffic have been amended to be tapered in accordance with the CDM. A short north-bound dedicated cycle lane is provided due a short stretch of south-bound one-way carriageway. The development has been designed to link with existing cycle routes at Old Cross Square, linking to the Ulster Canal Greenway, and to the proposed cycle routes in the Roosky Lands project.

BELFAST
478 Castlereagh Road
Belfast
BT5 6BQ
Northern Ireland

T +44 (0) 28 9040 2000

admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk

Appendix C – Traffic Statement

HoyDorman

McAdam
ENHANCING LOCAL COMMUNITIES

MONAGHAN COUNTY COUNCIL

Dublin Street North Regeneration

Traffic Statement

April 2025

HoyDorman

Document Information and History

Project:	Dublin Street North Regeneration
Client:	McAdam Design
Hoy Dorman Job Number:	2022023
Project Director:	Martin Hoy
Author:	Martin Hoy, BEng ‘Hons’, CEng, FIEI, FICE, FCIHT

Version	Date	Description / Revision	Created by:	Verified by:	Approved by:
0	03/04/2025	Transport Assessment	MH	KD	MH

Table of Contents

List of Figures

List of Tables

1 Executive Summary

The Proposed Scheme

The proposed scheme includes the development of a Russell Row link road to the northeast of Dublin Street, which will feature a 48-space car park and public open space. As part of the plan, enhancements to Dublin Street will reduce the current allocation of 25 car parking spaces to 17 relocating these spaces to the proposed Russell Row Car Park

The Diamond Car Park will also undergo enhancements, with the number of parking spaces reduced from 66 to 43, alongside the introduction of a one-way access link road connecting to Russell Row.

Similarly, Old Cross Square will see its parking spaces reduced from 34 to 26 (spaces will be reallocated to Russell Row), with a proposed two-way access road linking Dublin Street to Russell Row.

The reallocation of parking includes an additional nine spaces overall within the subject area with total existing parking of 125 spaces within the subject area increasing to 134. Please refer to Figure 1.

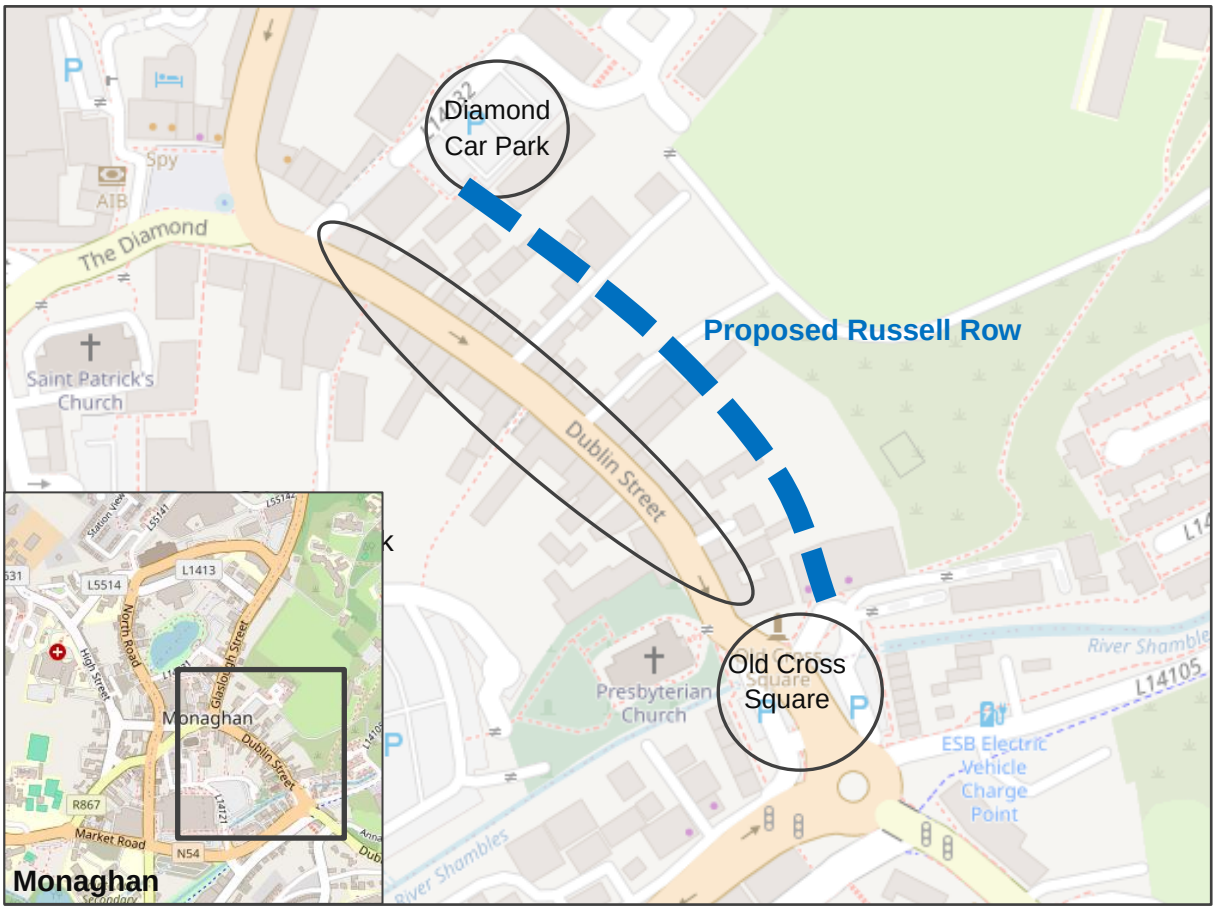


Figure 1: Proposed Russell Row Development and Key Areas

Impact on Surrounding Road Network

While this Traffic Statement (TS) considers the introduction of Russell Row across all modes of transport in terms of vehicle impact the assessment is based on the introduction of ten additional parking spaces only. Therefore, the traffic impact within the study area if extremely low. Furthermore, within the Flow Diagrams (Appendix A) the percentage increase seems high due to the current traffic levels being so low.

Future Russell Row Development Plots 1 & 2

While this application assesses the introduction of Russell Row and the proposed 48 car parking spaces; Russell Row also opens lands for two additional development plots 'Plot 1, 2A and 2B', please refer to Figure 2 which indicates Dublin Street North Regeneration Masterplan.

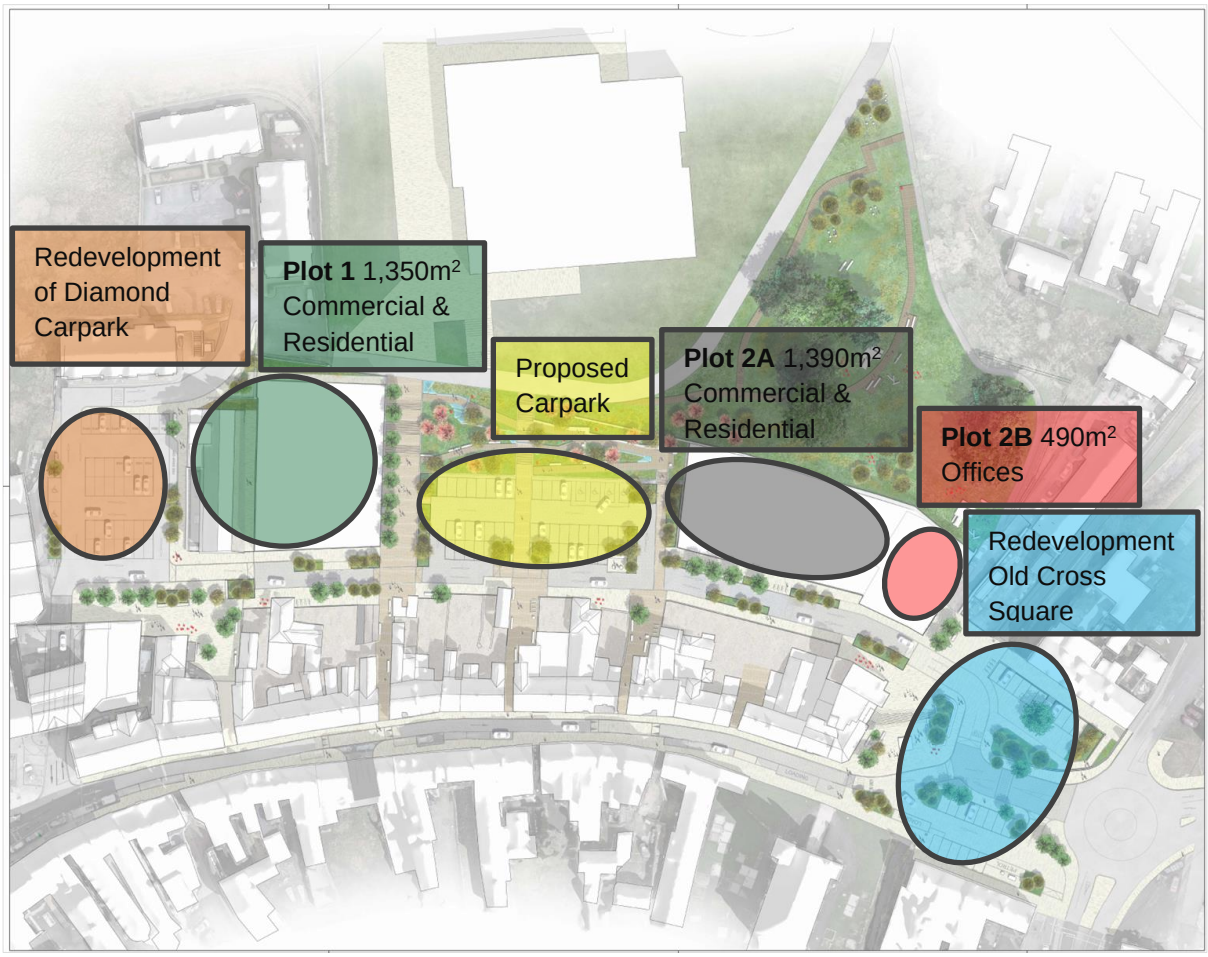


Figure 2: Dublin Street North Regeneration Masterplan

Each of the two development plots will be subject to a TS at them of their respective planning applications. However, consideration has been given to the traffic impact of the plots within this study.

Committed Development

In terms of committed development, the recently approved Civic Offices, and the proposed Aldi traffic generation has been added to the baseline traffic surveys as it is assumed they will be in operational in advance this Dublin Street North proposal.

High level consideration has also considered within this study in relation to the wider Roosky Lands development and recognition that at some point the Dublin Street Roundabout will require works to accommodate the wider development proposals traffic within the area. However, as will be demonstrated within this study this application as a negatable impact on the roundabout.

Non-Motorised Modes of Travel

There are multiple approaches to the proposed development which is well served by public transport.

The project is aligning with the CycleConnects initiative led by the National Transport Authority, Monaghan Town, including areas like Dublin Street, The Diamond, and Old Cross Square, will see significant upgrades to cycling infrastructure. The CycleConnects proposals aim to create a safer, more accessible network for cyclists, supporting sustainable travel across Ireland.

The design includes provision of dropped kerbs, tactile paving, no greater than 5% gradient within the site footways, accessible parking spaces and level access buildings thus ensuring barrier-free access for individuals with mobility impairments.

To ensure the ease of navigation along internal pedestrian routes tactile guidance has been incorporated.

Verifying compliance with relevant accessibility standards and guidelines, such as the European Standard EN 301549 and the Irish National Disability Authority (NDA) guidelines, to ensure that transportation infrastructure meets minimum accessibility requirements.

Non-motorised users are considered in further detail within Chapter 4 Receiving Environment.

Conclusion

In conclusion the proposed development in traffic terms will have a negatable impact as it involves a slight increase in terms of traffic and re-direction of existing traffic rather than being a significant traffic generator. The proposed development will provide significant benefit enabling access to future development lands using non-motorised modes which will all be assessed within their own right within this study.

2 Introduction

McAdam Design have commissioned Hoy Dorman (HD) to prepare a Traffic Assessment (TA) on behalf of Monaghan County Council (MCC) for the proposed development of lands situated to the northeast of Dublin Street. A full description of the proposed development is contained within the planning package. A key aspect of the proposed development in providing Russell Row is the proposed two-way access from Old Cross Square to all parts of the development and one-way (south-east) from the Diamond Carpark to Russell Row.

Area of Influence

The study area has been defined and described within the wider planning application package and EIAR and identified in Figure 3 below.

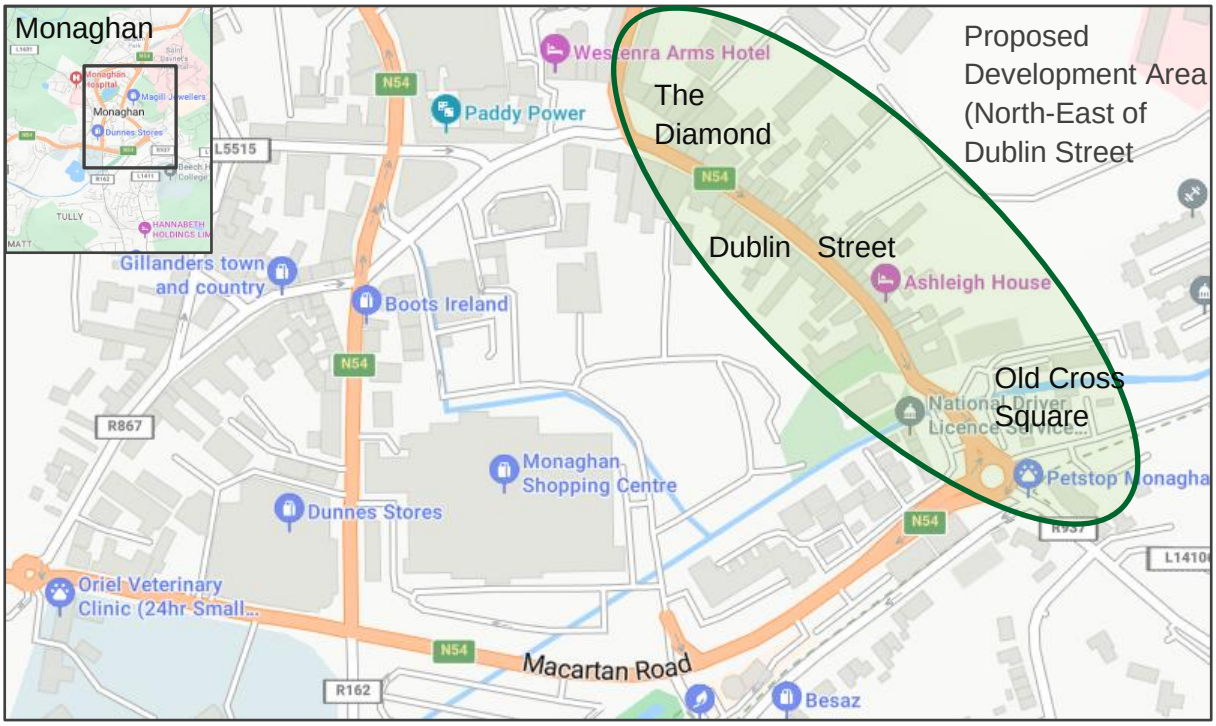


Figure 3: Proposed Project Location Plan

Scope

The scope of this TS is to evaluate the current transport environment to determine the potential transport impacts of the proposed development against the baseline conditions within the area. The assessment primarily considers the parking and open space elements of the scheme. While other aspects of the scheme will be developed separately (and subject to their own TS process) later, this scope will consider the cumulative impact of the land uses based on the available information within the surrounding road network.

3 Methodology

Our approach to the study aligns with both national and local policies and guidance frameworks. The methodology follows best practices, incorporating current standards and emerging recommendations. This approach is supported by key publications advocating this type of analysis, including:

- 'Guidelines for Traffic and Transport Assessments' by Transport Infrastructure Ireland
- 'Traffic Management Guidelines' by the Dublin Transportation Office & Department of the Environment and Local Government (May 2003)
- Monaghan County Development Plan 2019-2025

The methodology consists of various interconnected stages, outlined as follows:

Site Surveys / Audit
A site audit was conducted to consider the existing road network conditions and local infrastructure characteristics. This included evaluating the site's accessibility in terms of walking, cycling, and public transport. An inventory of the local road network was also created during this phase.

Baseline Traffic & Peak Hours
Baseline traffic was obtained from another planning application currently either approved or within planning process namely MCC Civic Offices, and Dublin Street South application. The traffic surveys were undertaken in 2022 with spot checks observed in 2023 at the Diamond and Dublin Street Roundabout to ensure no notable change in baseline traffic conditions. Peak hours for the surrounding road network were 08:00 - 09:00 and 16:45 – 17:45. This data formed the foundation for further analysis.

Development & Cumulative Traffic Generation
As part of the proposed scheme it is proposed to relocate parking spaces within the following areas.

	Existing	**Proposed**
Dublin Street	25	17
Old Cross Square	34	26
NEW – Russell Row	0	48
The Diamond	66	43
Totals	**125**	**134**

Table 1: Re-Distribution of Parking within the Study Area

As the above table indicates, within the development area there will be a negligible increase in traffic generation associated with the 9 additional spaces provided. The Diamond carpark use was surveyed in 2023 and the ratios of that scale of carpark used to determine traffic generate in relation to the additional 9 spaces.

In terms of cumulative impact traffic generation, the following were considered.

- Russell Row additional development plots
- The Civil Office development (benefits from recent planning)
- Dublin Street South (planning application lodged).

Assessment Years & Trip Distribution

Assuming an opening year of 2030 and assessment years of 2035 and 2040 traffic generation within the assessment years will look at Dublin Street Roundabout in terms of cumulative impact. In terms of traffic distribution relating to the proposed parking at Russel Row, the 9 additional spaces within the area will be considered a minor re-distribution of traffic with the associated re-distribution of spaces within the study area. An assumption of 50% / 50% was made in relation of traffic approaching Russell Row to the proposed 48 new car parking spaces.

Network Impact

The specific impact of the proposed development on the local road network was analysed to identify which junctions required further assessment in accordance with Transport Infrastructure Ireland (TII) guidelines.

Network Assessment

Based on the findings from the previous stages, an operational assessment of the local road network was performed primarily in relation to the high-level assessment of cumulative impact. This structured approach ensures a comprehensive understanding of the proposed development's impact on local traffic and transport infrastructure.

4 Receiving Environment

This chapter provides an overview of the existing transport environment surrounding Dublin Street, The Diamond, The Diamond Car Park, and Old Cross Square in Monaghan Town focusing on road characteristics, parking provisions, active travel facilities, public transport services, and road conditions. Figure 4 indicates the main areas regarding receiving environment.

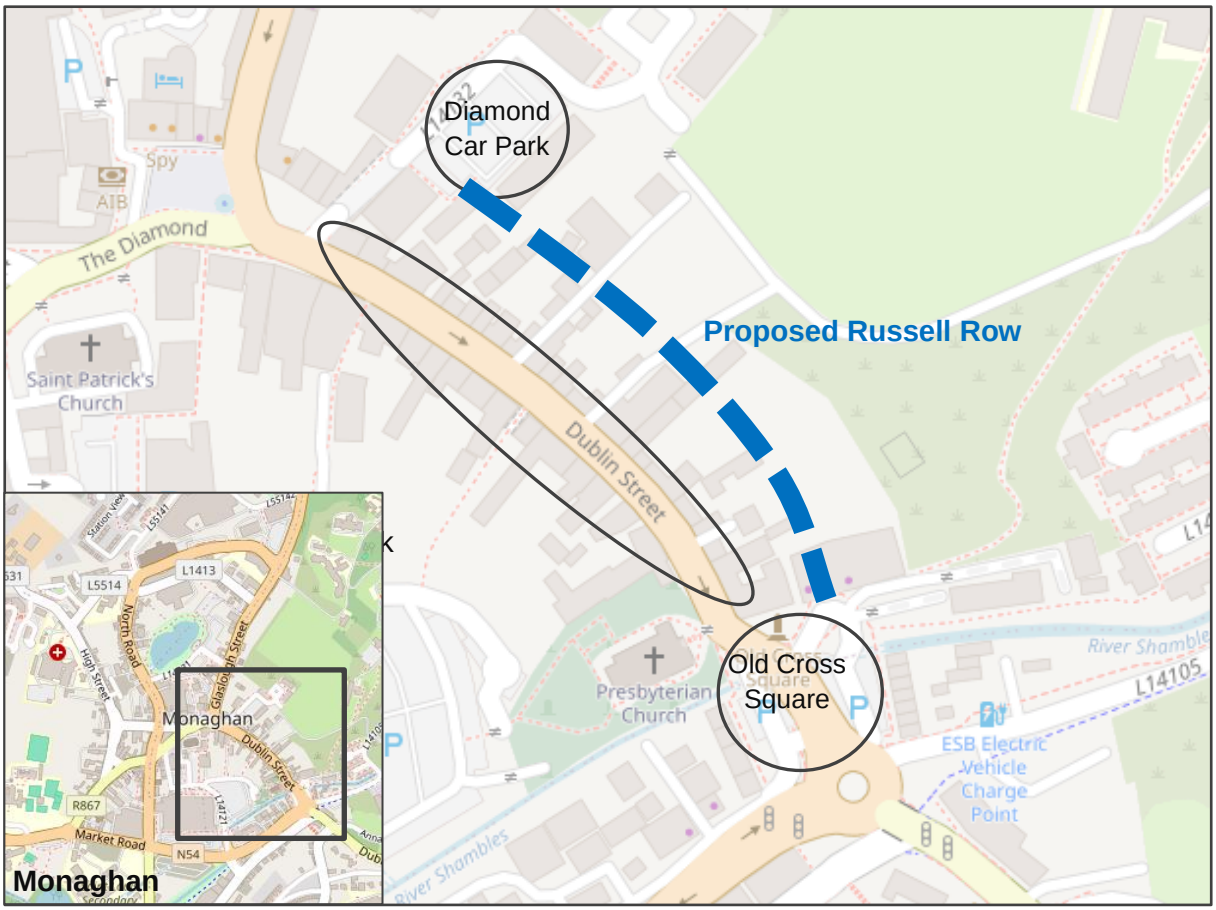


Figure 4: Proposed Russell Row Development and Key Areas

Dublin Street

Dublin Street is a primary route connecting Monaghan Town to major national roads (N54 and N2). The road surface condition is fair but shows signs of wear due to frequent vehicular use particularly from commercial traffic. The street width is narrow with limited space for on-street parking, there are no dedicated cycle lanes which restricts active travel options. The footpaths are well-maintained but narrow occasionally leading to overcrowding during peak pedestrian traffic periods.

The Diamond Junction

The Diamond is the central square and traffic hub of Monaghan Town. The road surface around The Diamond is generally in good condition, the current layout can lead to congestion during peak hours due to high pedestrian and vehicular activity.

Due to the nature of an old town layout the area has reduced dedicated cycling infrastructure

and while pedestrian crossings are well-placed the narrow road layout can create bottlenecks. Traffic management systems, including the signalised crossings, help to mitigate traffic congestion during peak periods.

The Diamond Car Park

The Diamond Car Park is a small surface-level facility with clearly marked parking bays, including disabled access spaces. The car park surface is in reasonable condition and is accessible from surrounding roads, the car park is underutilised given its off-street parking solution, it plays a key role in alleviating on-street parking pressures in The Diamond / Dublin Street and surrounding areas.

The Diamond provides parking for the staff of the National Learning Network, staff arrived in the morning between 08:30 and 09:00, they left at staggered times from 15:00 however, all vehicles associated with the building had vacated the carpark by 17:15.

There were 4 vehicles which did not leave the carpark throughout both survey days, two of which had Garda notices on them for abandonment. Between 17:30 and 18:30 it was noted that 6 vehicles were parked and the drivers and passengers walked up to the apartment buildings. Although the carpark officially has 66 parking spaces it was noted that 5 vehicles parked in front of the Chinese Take Away unit (these were counted within the survey) and a drop off in front of the old cinema was also parked in. This was not from lack of available spaces.

During the daytime there was a high turnover of vehicles associated with shoppers, the evening there was a high turnover of people using the carpark to collect take away food from various outlets.

Old Cross Square

Old Cross Square provides on-street parking for local businesses and residents. The road surface condition is adequate but shows signs of aging in sections with minor cracking and uneven patches that will benefit from the proposed scheme. The Square's layout supports moderate traffic flows, though parking demand can result in congestion during peak hours. Pedestrian access is well-supported with footpaths however, cycling infrastructure remains absent but with plans in place to address this.

This carpark had a high turnover throughout the day associated with the convenience store. It was observed that at 10am there was a yoga class in one of the buildings next to the convince store, the carpark only had 1 available space for the next, hour however no additional double parking was noted during this time. The vehicles associated with the yoga class were quickly replaced with more shoppers and taxis that were waiting for calls.

Public Transport Services

Monaghan Town is primarily served by bus transport, with services connecting the town to nearby urban centres, including Dublin, Cavan, and Enniskillen. Key bus routes and stops relevant to Dublin Street, The Diamond, and Old Cross Square include:

- Bus Éireann Route 32 Dublin to Letterkenny: The service runs circa every 2 hours during peak times and offers the same service on weekends.

Monaghan (Bus Station)	ARR.	08:10	10:40	12:40	14:55	16:40	18:40	20:40	22:40	00:40
	DEP.	08:25	10:55	12:55	15:10	16:55	18:55	20:55	22:55	00:55

Monaghan (Bus Station)	07:30 P	07:45 P	12:00 P	14:10 P	18:00 P
Monaghan (Opp Co. Council Offices)	07:34	07:48	12:05	14:15	18:05

- Bus Éireann Route 162 Monaghan to Dundalk via Castleblayney: This service runs once a day departing Monaghan Bus Station at 07:30 and arriving back at 18:30 on weekdays only.

- Bus Éireann Route 175 Monaghan to Cavan: Timetables vary depending on the day, but there are typically 5 services per day.

- Bus Éireann Route 70 Monaghan to Drogheda via Ardee: This route operates seven times per day on weekdays, with reduced services on weekends.

Monaghan (Bus Station)	06:00 P	08:00 P	10:10 P	12:10 P	14:10 P	16:10 P	18:15 P

Timetables and frequency are subject to change based on the season and local demand however, these routes provide frequent and reliable service within and beyond Monaghan Town, supporting both local commuters and longer-distance travel.

TFI Local Link Routes provide the following services for Monaghan:

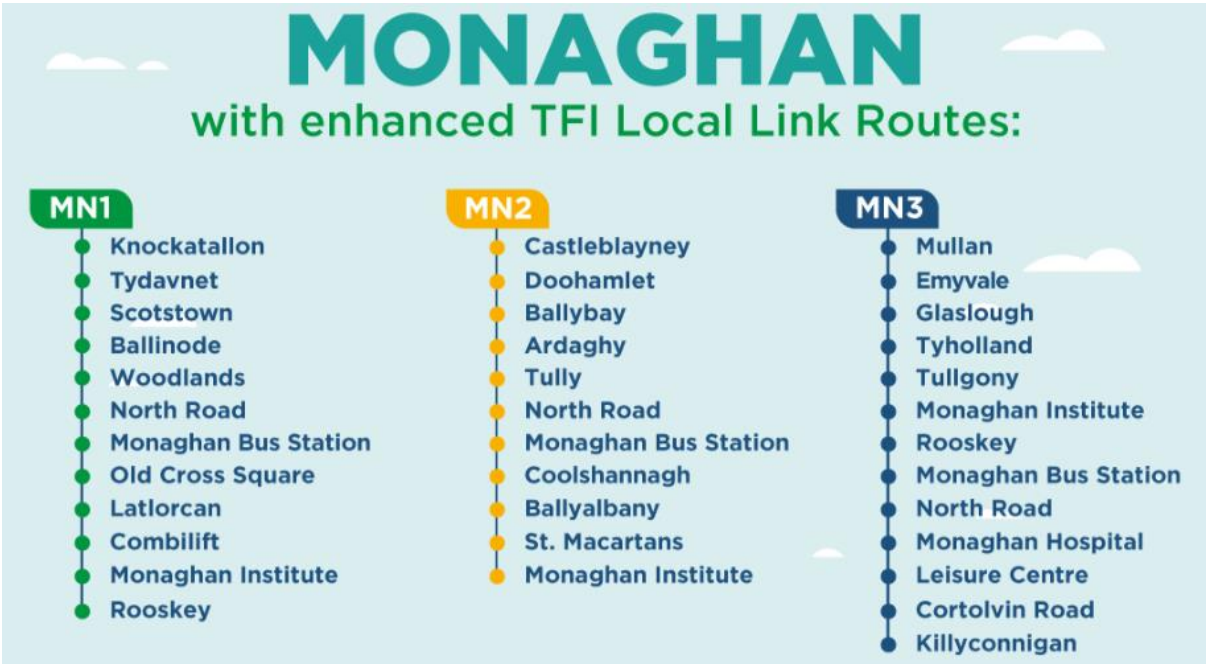


Figure 5 6: TFI Local Link Bus Routes

All 3 routes provide connectivity to Monaghan Bus Station to facilitate onward travel and provide connectivity to regional bus services.

Route MN1 to Tydavnet, with up to six daily return services Monday to Friday, and an additional evening service on Fridays. On Saturdays, the route will operate up to six daily return services, while Sundays will offer five daily return services. The enhanced MN1 route will offer improved connectivity for the communities of Knockatallon, Tydavnet, Scotstown and Ballinode with Monaghan Town also stopping at Woodlands, Dawson Street, North Road, Old

Cross Square, Cathedral, Latlorcan, Combilift, Monaghan Institute and Rooskey.

Route MN2 providing up to five daily return services Monday to Friday from Castleblayney with an additional evening service on Friday, up to six daily return services on Saturday and five daily return services on Sunday. The enhanced MN2 route will improve connectivity to the communities of Ardaghy Ballybay and Doohamlet to key areas in Monaghan Town, including Tully, The Glen, Old Cross Square, Coolshannagh, Ballyalbany, St. Macartan's and Monaghan Institute.

Route MN3 operates five daily return services from Monday to Friday, including an evening service on Fridays and Saturdays. Saturday services will offer up to six daily return trips, while Sundays will feature four daily return services. The enhanced MN3 route introduces new stops at the Leisure Centre, Cortolvin Road, and Killyconigan, enhancing connectivity to Dawson Street, North Road, Monaghan Hospital Rooskey, Tullygony and the communities of Tyholland, Glaslough, Emyvale, and Mullan.

Cycling - Active Travel Proposals for Monaghan (CycleConnects)

As part of the CycleConnects initiative led by the National Transport Authority, Monaghan Town, including areas like Dublin Street, The Diamond, and Old Cross Square, will see significant upgrades to cycling infrastructure. The CycleConnects proposals aim to create a safer, more accessible network for cyclists, supporting sustainable travel across Ireland.

Planned Cycle Routes Around Dublin Street and The Diamond (Separate Schemes)

The proposed project is aligning with the CycleConnects proposals which include a comprehensive cycling network across Monaghan Town, integrating both urban and inter-urban routes. For Dublin Street, the plan outlines a connected cycle route that links Monaghan's central areas, including The Diamond and Old Cross Square, to the broader county network. This will provide safer and more convenient routes for cyclists moving through town. Key proposals for Monaghan include:

- Urban Cycle Network: Dedicated cycle lanes along major roads, including Dublin Street, to enhance cyclist safety and encourage cycling as an alternative to car travel.

- Link to Greenways: Improved connections between urban cycle routes and existing greenways (off-road paths). While not directly passing through Dublin Street, the Monaghan Greenway will provide accessible leisure cycling options near the town.

- Pedestrian and Cyclist Enhancements: Shared spaces with enhanced pedestrian crossings, particularly around The Diamond and Old Cross Square, to improve safety for both pedestrians and cyclists in these busy areas.

Iso – Distance Mapping

Iso-distance maps are a specialised type of spatial representation used to visualise areas that share equal distance from a specific point of interest. Unlike traditional maps that focus on geographic distance, iso-distance maps prioritize the accessibility of locations based on the distance required to reach them, considering factors such as cycleways, footpaths, transportation modes and road networks.

These maps consist of contours or bands that indicate zones of equal distance radiating from a central point. Each contour represents the number of kilometres travelled. This allows users to see the spatial relationship between a location and its surroundings in terms of accessibility rather than raw distance.

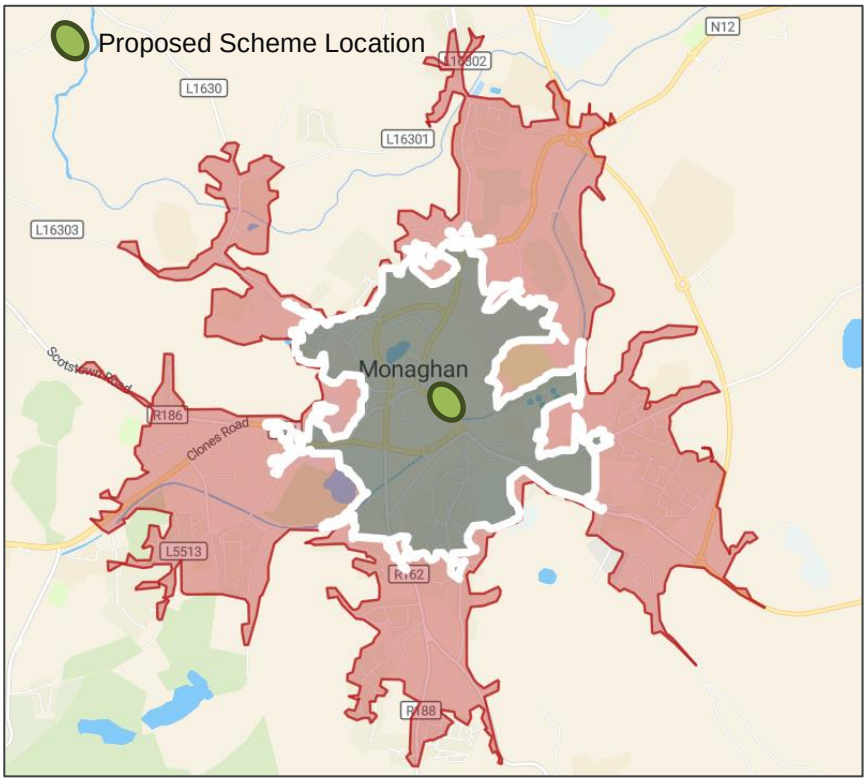


Figure 7: Walking Iso Distances 1km & 2km Combined.

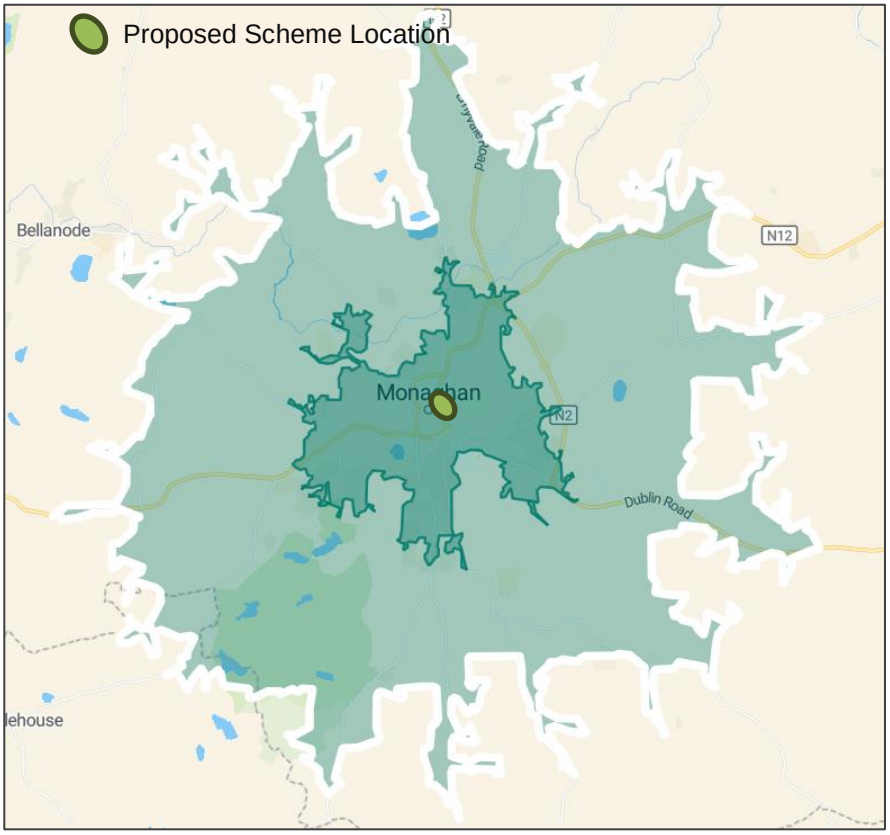


Figure 8: Cycling Iso Distances 2km & 5km Combined.

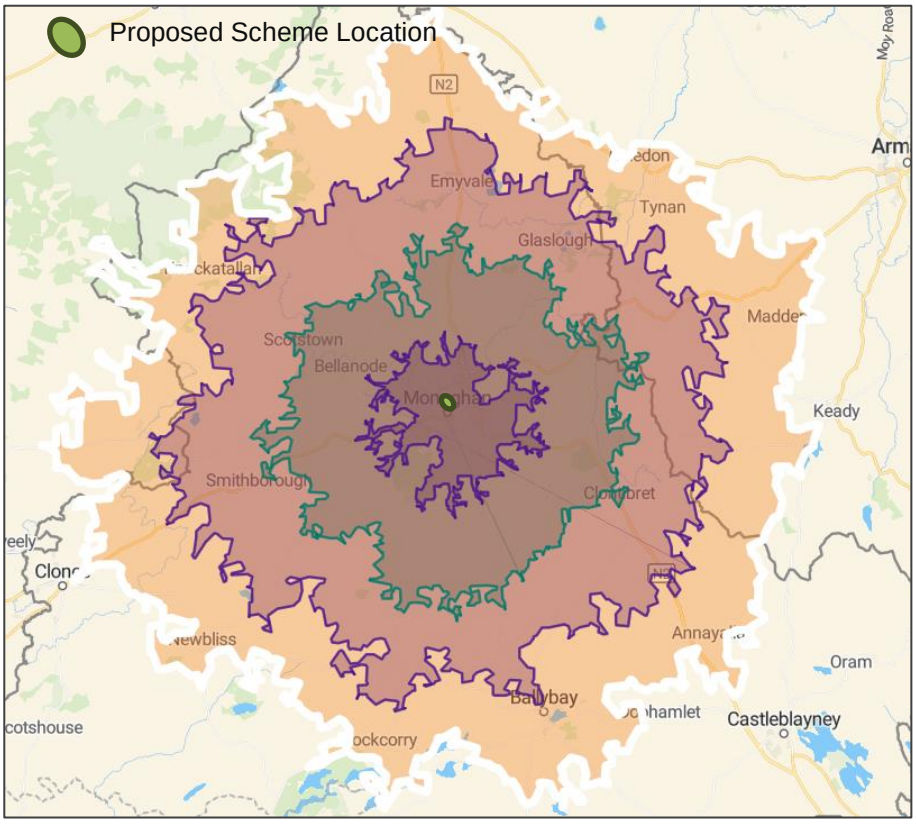


Figure 9: Driving Combined 5km, 10km, 15km & 20km Iso Distances.

5 Proposed Development

Please refer to project description within main planning application package, in terms of traffic impact the following elements are relevant.

The proposed scheme includes the development of a Russell Row link road to the northeast of Dublin Street, which will feature a 48-space car park and public open space. As part of the plan, enhancements to Dublin Street will reduce the current allocation of 25 car parking spaces to 17.

The Diamond Car Park will also undergo enhancements, with the number of parking spaces reduced from 66 to 43, alongside the introduction of a one-way access link road connecting to Russell Row.

Similarly, Old Cross Square will see its parking spaces reduced from 34 to 26, with a proposed two-way access road linking Dublin Street to Russell Row.

The reallocation of parking includes an additional 9 spaces overall within the subject area with total existing parking o 125 spaces within the subject area increasing to 134.

	Existing	**Proposed**
Dublin Street	25	17
Old Cross Square	34	26
NEW – Russell Row	0	48
The Diamond	66	43
Totals	**125**	**134**

Table 2: Parking Numbers

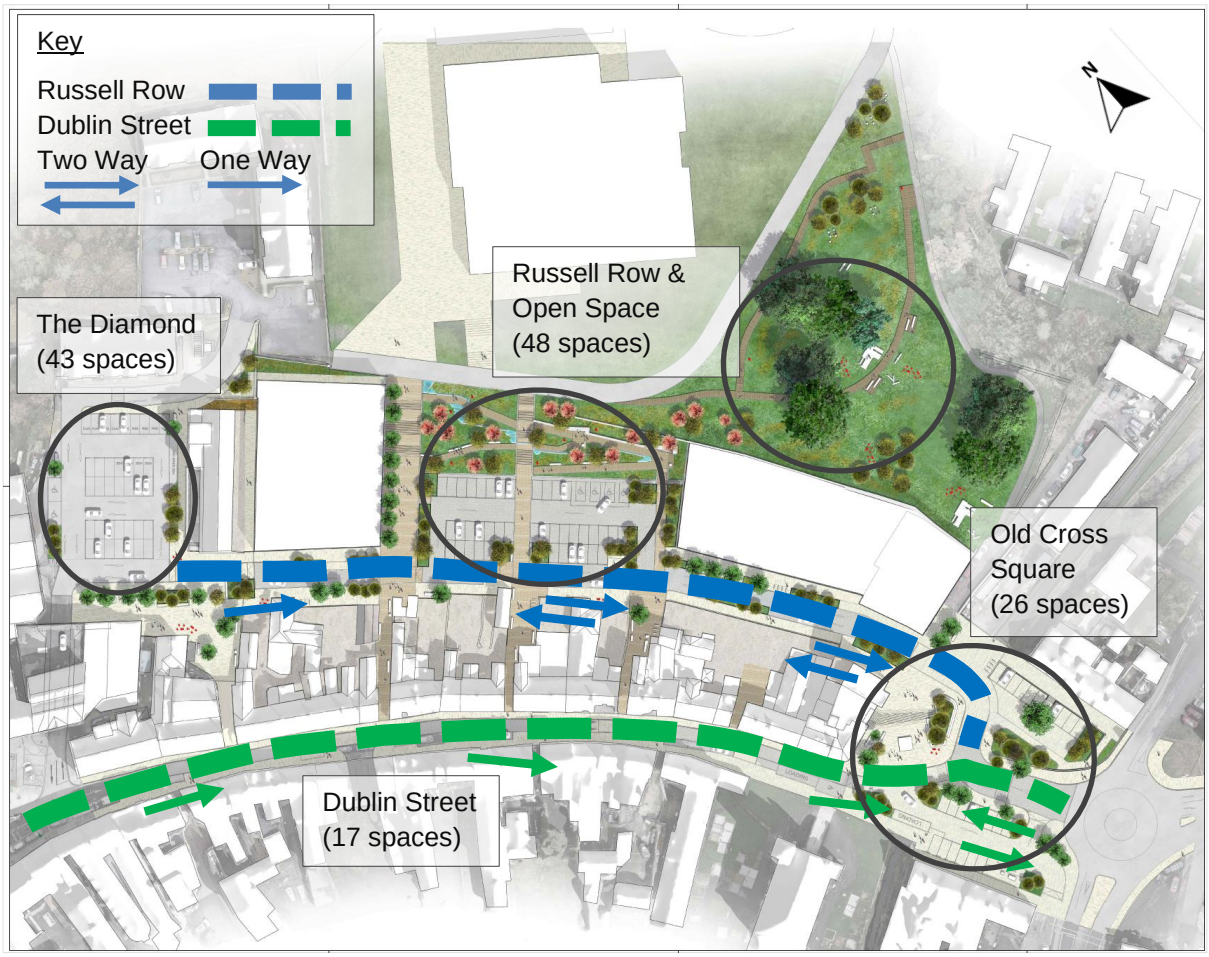


Figure 10: Parking Elements of The Proposed Scheme

6 Trip Generation & Distribution

Assessment Years and Growth Rates

In line with TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2016), design years of 2035 and 2040 have been used in this assessment to represent a 5-year and 10-year design horizon for studying any identified impacts of the development on the existing surrounding roads network.

- 2022 - Base Year (Survey Year).
- 2030 - Opening Year (With / Without Development).
- 2035 - Opening Year + 5 Year Forecast (With / Without Development).
- 2040 - Opening Year + 10 Year Forecast (With / Without Development).

Central growth rates were applied to the base network traffic flows to allow for a reflective analysis of the future year scenarios. This will account for general traffic growth within the area, which will increase the amount of traffic on the base network.

National Roads Authority Growth Rates were obtained from the Project Appraisal Guidelines – Unit 5.3 'Traffic Forecasting' http://www.nra.ie/policy-publications/.

	From Year	To Year	Growth Rate	Factor %	Notes
G1	2022	2030	1.09579	9.58	Opening Year
G2	2022	2035	1.12178	12.18	+ 5 Years
G3	2022	2040	1.14839	14.84	+ 10 Years

Table 3: Growth Rates

The baseline traffic growth factors predicted by TII do not consider any national targets as per the 2023 Climate Action Plan to reduce vehicular kilometres on our roads by 20% However, for a robust assessment no reduction to the above TII forecast traffic growth factors has been applied.

Traffic Generation

Traffic generation has been generated using the surveys of the existing carparking within The Diamond car park. The numbers of vehicles parked were then factored down to generate a daily expected parking profile for the proposed 48 space Russel Row carpark.

It is expected 1 vehicle will be generated in the AM peak and 6 vehicles in the PM peak on a typical day. Details of the proposed traffic generation are contained in Appendix A.

Traffic Distribution

Given the extremely low levels of traffic generated by the proposed development i.e. 9 additional parking spaces the traffic distribution to the existing road network has been assumed 50% / 50% split from the North and South respectively. However, in terms of impact on the receiving environment all vehicles could arrive from a single direction is insignificant as traffic generation is so low.

7 Network Assessment

Figure 10 illustrates the network junctions which were considered as part of this study with the referencing carried out throughout the document, flow diagrams, modelling etc.

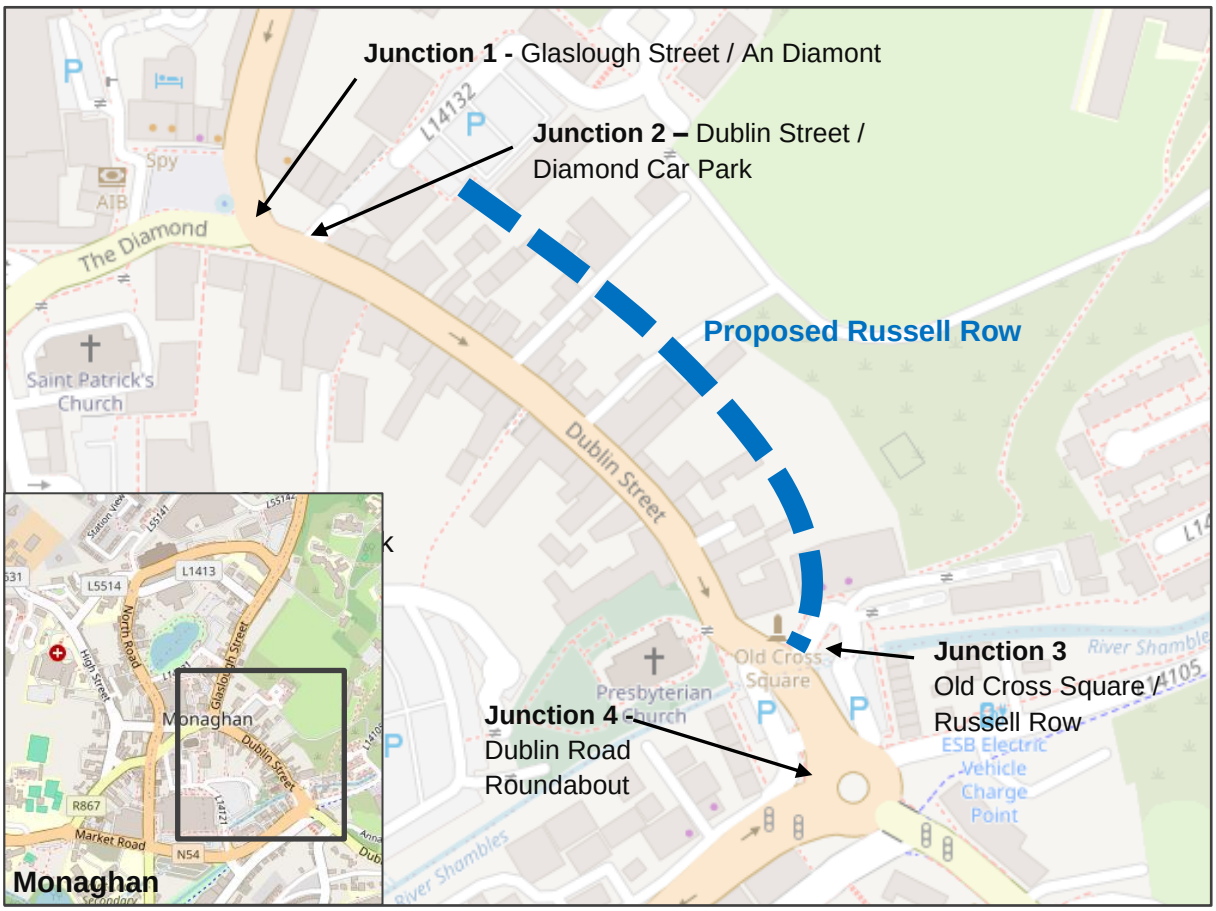


Figure 11: Network Junctions References

Impact on Surrounding Road Network

An impact is considered significant if the development-generated traffic exceeds 10% on normal networks or 5% on congested networks. Regardless of percentage impacts given the existing traffic on the existing junction at Old Cross Square the PM impact on arm B of junction 3 indicates a 40% increase. However, the percentage increase seems high due to the current traffic levels being so low i.e. existing traffic on arm B of junction 3 = 11 vehicles at opening year rising to 18 post construction and operational phase.

Please refer to Table 4 which is extracted from the flow diagrams contained in Appendix A. Junction 3 (Old Cross Square / Russell Row) was the only junction modelled as part of this proposed application. The impact on other junctions was negligible.

		JUNCTIONS IMPACT												
		JUNCTION 1			JUNCTION 2			JUNCTION 3			JUNCTION 4			
Junction Arm Reference		A	B	C	A	B	C	A	B	C	A	B	C	D
FD_001 = 2022 Base Year	AM	606	580	394	395	28	375	375	14	381	399	27	1264	972
	PM	694	666	538	576	126	506	506	11	511	548	30	1256	898
)02 = Committed Development - Civil Offices, ALDI, Dublin Street South	AM	8	8	16	16	0	16	16	0	16	16	72	43	31
	PM	1	1	2	2	0	2	2	0	2	2	62	134	110
FD_003 = 2030 Opening Year Factored from 2022	AM	664	636	432	433	31	411	411	14	417	437	22	1377	1065
	PM	760	730	590	631	138	554	554	11	559	600	28	1372	984
FD_004 = Development Flows (Car Park)	AM	3	3	5	1	1	0	0	1	1	16	0	6	10
	PM	3	3	5	2	2	0	0	7	7	17	0	10	7
Combined Opening Year Flows - 2030 + Committed + Development	AM	675	646	453	450	32	427	427	15	434	469	94	1426	1106
	PM	764	733	597	635	140	556	556	18	569	619	90	1516	1101
% Impact of Dev Flows on Opening Year Base - 2030	AM	0.4%	0.4%	1.1%	0.2%	3.2%	0.0%	0.0%	7.7%	0.3%	3.4%	0.0%	0.4%	0.9%
	PM	0.3%	0.3%	0.8%	0.3%	1.4%	0.0%	0.0%	40.4%	1.3%	2.7%	0.0%	0.7%	0.6%

Table 4: Network Percentage Impact

Traffic Modelling

Although its appears obvious the impact of such a low volume of generated traffic will have in terms of modelling the precentage impact did exide 10% and therefore Junction 3 was modelled using PICADY software with the results contained in Figure

	AM									PM							
	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Base Year 2022																		
Stream B-AC	D1	0.0	0.5	7.13	0.01	A	0.11	A	392 %	D10	0.0	~1	0.00	0.00	A	0.00	A	900 %
Stream C-B		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	~1	0.00	0.00	A			[]
Opening Year 2030																		
Stream B-AC	D2	0.0	0.5	7.28	0.01	A	0.11	A	349 %	D11	0.0	~1	0.00	0.00	A	0.00	A	900 %
Stream C-B		0.0	~1	0.00	0.00	A			[Stream B-AC]		0.0	~1	0.00	0.00	A			[]
Development Traffic																		
Stream B-AC	D3	0.0	~1	0.00	0.00	A	0.00	F	900 %	D12	0.0	~1	0.00	0.00	A	0.00	F	900 %
Stream C-B		0.0	~1	0.00	0.00	A			[]		0.0	~1	0.00	0.00	A			[]
Opening Year 2030 + Dev Flows																		
Stream B-AC	D4	0.0	0.5	7.28	0.01	A	0.21	A	348 %	D13	0.0	0.5	7.92	0.02	A	0.22	A	231 %
Stream C-B		0.0	0.5	7.33	0.01	A			[Stream B-AC]		0.0	0.5	7.98	0.02	A			[Stream B-AC]
+ 5 years - Assessment year 2035 + Dev Flows																		
Stream B-AC	D5	0.0	0.5	7.32	0.02	A	0.21	A	337 %	**D14**	**0.0**	**0.5**	**7.38**	**0.02**	**A**	**0.31**	**A**	**322 %**
Stream C-B		0.0	0.5	7.37	0.01	A			[Stream B-AC]		**0.0**	**0.5**	**7.40**	**0.02**	**A**			**[Stream B-AC]**
+ 10 years - Assessment year 2040 + Dev Flows																		
Stream B-AC	D6	0.0	0.5	7.36	0.02	A	0.21	A	327 %	D15	0.0	0.5	8.05	0.02	A	0.22	A	216 %
Stream C-B		0.0	0.5	7.41	0.01	A			[Stream B-AC]		0.0	0.5	8.10	0.02	A			[Stream B-AC]

Table 5: Modelling Results for Junction 3

The results of the modelling demonstrate that the proposed development has no impact. Detailed modelling outputs are contained in Appendix B. As can be seen within the modelling results the additional traffic will have marginal impact on the junction in terms of capacity. There remains significant capacity at the junction.

Mitigation Strategy

The new proposed junction of Russell Row and Dublin Street will be designed to an appropriate standard to facilitate all users. Given the negligible increase in traffic the mitigation is the junction design itself.

8 Cumulative Impacts / Committed Development

Future Development Plots 1 & 2 on Russel Row

To ensure a robust assessment as a form of sensitivity the traffic generation from Plot 1, 2A and 2B as outlined in Figure 8 have also been taken into consideration.

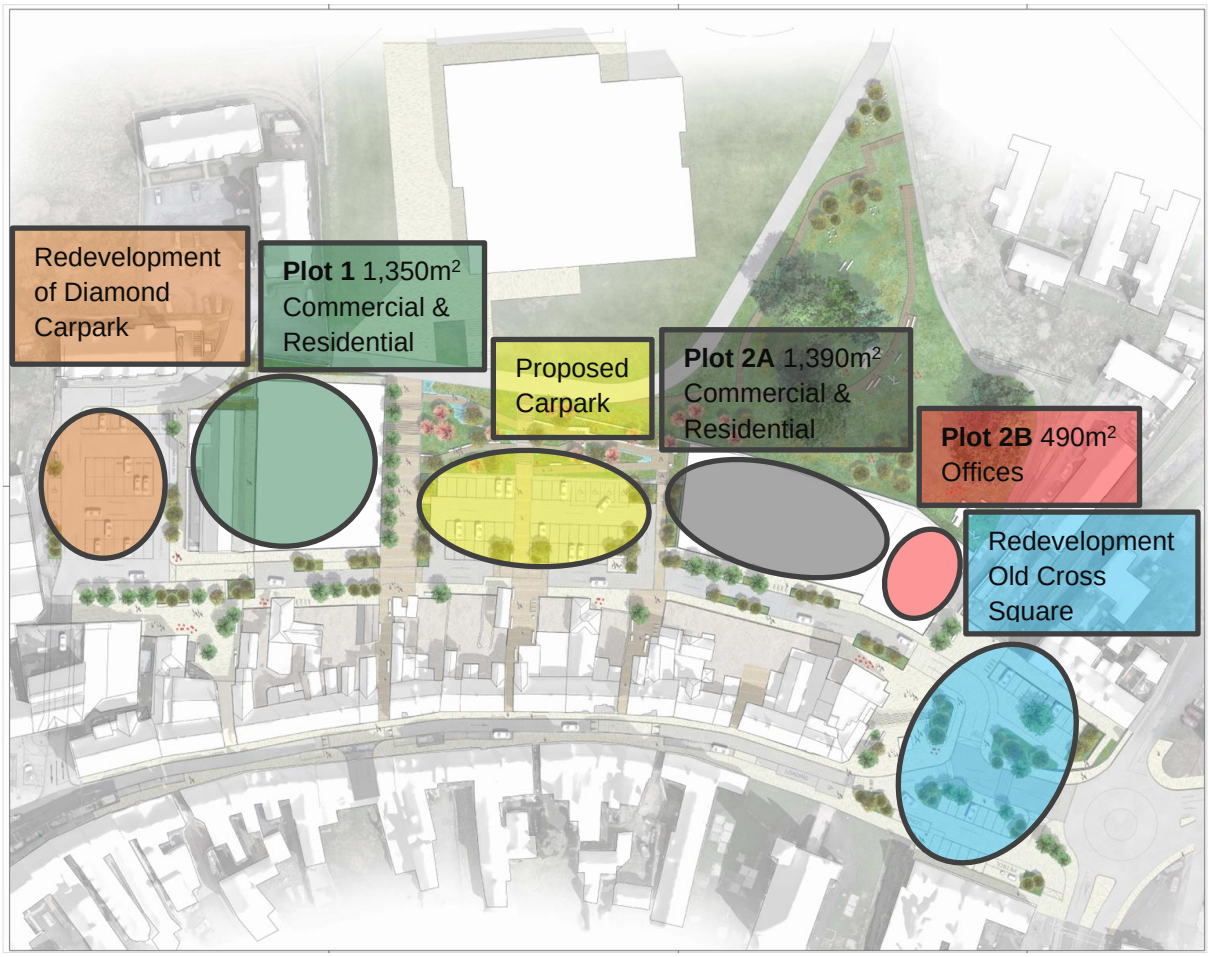


Figure 1213: 14Dublin Street North Regeneration Masterplan

Traffic generation for the above plots were calculated as follows:

Dublin Street North						AM			PM		
Location	Land Use	Total	TRICS Unit	Units (no.) / Area (sqm)		ARRIVAL	DEPARTURE	TOTAL	ARRIVAL	DEPARTURE	TOTAL
1	Residential	1665	Per Unit	No. Units	20	2	6	8	7	4	11
	Retail - Local Shops	311			311	3	2	5	3	4	7
2A	Residential	2475	Per Unit	No. Units	31	4	9	13	11	6	18
	Retail - Local Shops	273			273	2	2	4	3	3	6
2B	Retail - Local Shops	490			490	4	3	7	5	6	12
Total						**15**	**23**	**38**	**30**	**24**	**54**
Retail trips discounted by 70% to account for local walk in and dual purpose trips											

Table 6: Traffic Generation for Additional Plots

The now approved Civic Centre has been taken into consideration as committed development.

Civic Centre						AM			PM		
Location	Land Use	Total	TRICS Unit	Units (no.) / Area (sqm)		ARRIVAL	DEPARTURE	TOTAL	ARRIVAL	DEPARTURE	TOTAL
1	Civic Offices	5601	per 100 sqm		5601	64	7	71	4	57	61
Retail trips discounted by 70% to account for local walk in and dual purpose trips											

Table 7: Traffic Generation for Civic Centre

The above traffic generation was added to the flow diagrams to give an overall percentage impact of the potential three development plots and of the approved Civic Centre. Please refer to Appendix A for flow diagrams.

		JUNCTIONS IMPACT											
		JUNCTION 1			JUNCTION 2			JUNCTION 3			JUNCTION 4		
Junction Arm Reference		A	B	C	A	B	C	A	B	C	A	B	C	D
FD_005 = Development Plots	AM	4	4	7	7	7	0	0	23	23	23	0	19	4
	PM	6	6	11	11	11	0	0	35	35	35	0	28	7
Combined Opening Year Flows - 2030 + Committed + Development	AM	675	646	453	450	32	427	427	15	434	469	94	1417	1097
	PM	764	733	597	635	140	556	556	18	569	619	90	1424	1009
% Impact of Dev Flows on Opening Year Base - 2030	AM	0.6%	0.6%	1.7%	1.7%	23.7%	0.0%	0.0%	150%	5.2%	4.8%	0.4%	1.3%	0.3%
	PM	0.7%	0.8%	1.9%	1.8%	8.1%	0.0%	0.0%	191%	6.2%	5.7%	0.1%	2.0%	0.7%

Table 8: Percentage Impact of Potential Additional Plots & Approved Civic Centre

As demonstrated in Table 8 junctions 2, 3 and 4 have arms that are above 5% however it should be noted that these individual plots will be subject to their own Transport Assessments at time of respective planning applications.

The modelling software was rerun to include the committed development and the potential additional development plots.

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2022 Base					2022 Base				
A - Macartan Road	D1	2.8	26.02	0.74	D	D1	3.0	21.05	0.76	C
B - Old Cross Square (N)		2.6	25.02	0.72	D		6.4	46.07	0.88	E
C - Slí Ógie Uí Dhufaigh		0.0	16.02	0.04	C		0.2	26.02	0.15	D
D - Old Cross Square (S)		8.8	50.05	0.91	F		10.0	89.07	0.95	F
	2030 - Opening Year					2030 - Opening Year				
A - Macartan Road	D2	3.7	31.62	0.80	D	D2	3.1	21.18	0.76	C
B - Old Cross Square (N)		4.1	36.27	0.81	E		7.9	55.42	0.91	F
C - Slí Ógie Uí Dhufaigh		0.1	17.12	0.05	C		0.2	26.59	0.15	D
D - Old Cross Square (S)		21.0	102.59	1.01	F		30.6	211.00	1.09	F
	2035 - Ass Year + 5					2035 - Ass Year + 5				
A - Macartan Road	D3	4.1	34.35	0.81	D	D3	3.8	24.75	0.80	C
B - Old Cross Square (N)		4.7	40.96	0.84	E		14.8	94.71	0.99	F
C - Slí Ógie Uí Dhufaigh		0.1	17.43	0.05	C		0.2	28.85	0.17	D
D - Old Cross Square (S)		26.8	124.28	1.03	F		44.7	332.89	1.15	F
	2040 - Ass Year + 10					2040 - Ass Year + 10				
A - Macartan Road	D4	4.5	37.54	0.83	E	D4	4.7	29.70	0.83	D
B - Old Cross Square (N)		5.5	46.89	0.86	E		26.2	149.88	1.05	F
C - Slí Ógie Uí Dhufaigh		0.1	17.75	0.05	C		0.2	30.32	0.19	D
D - Old Cross Square (S)		33.8	149.57	1.06	F		58.7	457.48	1.20	F
	Committed Development					Committed Development				
A - Macartan Road	D5	0.1	7.36	0.06	A	D5	0.0	0.00	0.00	A
B - Old Cross Square (N)		0.0	5.70	0.03	A		0.0	0.00	0.00	A
C - Slí Ógie Uí Dhufaigh		0.0	9.73	0.02	A		0.2	13.86	0.19	B
D - Old Cross Square (S)		0.0	5.28	0.05	A		0.0	0.00	0.00	A
	Development Flows					Development Flows				
A - Macartan Road	D6	0.0	6.96	0.01	A	D6	0.0	0.00	0.00	A
B - Old Cross Square (N)		0.0	5.84	0.01	A		0.0	4.76	0.02	A
C - Slí Ógie Uí Dhufaigh		0.0	0.00	0.00	A		0.0	0.00	0.00	A
D - Old Cross Square (S)		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	Development Plots					Development Plots				
A - Macartan Road	D7	0.0	0.00	0.00	A	D7	**0.0**	**0.00**	**0.00**	**A**
B - Old Cross Square (N)		0.0	5.81	0.02	A		**0.0**	**4.81**	**0.03**	**A**
C - Slí Ógie Uí Dhufaigh		0.0	0.00	0.00	A		**0.0**	**0.00**	**0.00**	**A**
D - Old Cross Square (S)		0.0	5.23	0.01	A		**0.0**	**8.39**	**0.02**	**A**
	Combined Opening Year 2030 (Base+Committed Dev)					Combined Opening Year 2030 (Base+Committed Dev)				
A - Macartan Road	D8	5.2	42.81	0.85	E	D8	3.1	21.39	0.77	C
B - Old Cross Square (N)		5.7	49.78	0.87	E		8.2	57.52	0.92	F
C - Slí Ógie Uí Dhufaigh		0.1	17.71	0.08	C		1.1	48.90	0.54	E
D - Old Cross Square (S)		32.6	145.21	1.05	F		32.6	226.32	1.10	F
	Combined Opening Year 2030 + Development Floes					Combined Opening Year 2030 + Development Flows				
A - Macartan Road	D9	5.7	46.24	0.86	E	D9	3.2	21.55	0.77	C
B - Old Cross Square (N)		6.3	54.06	0.88	F		10.0	67.86	0.94	F
C - Slí Ógie Uí Dhufaigh		0.1	17.81	0.08	C		1.1	50.08	0.55	F
D - Old Cross Square (S)		33.8	149.62	1.06	F		34.7	245.78	1.11	F
	Combined Opening Year 2030 + Dev Flows + Dev Plots					Combined Opening Year 2030 + Dev Flows + Dev Plots				
A - Macartan Road	D10	**5.8**	**47.44**	**0.87**	E	D10	3.3	22.08	0.77	C
B - Old Cross Square (N)		**8.0**	**65.59**	**0.92**	F		14.9	93.47	0.99	F
C - Slí Ógie Uí Dhufaigh		**0.1**	**18.04**	**0.09**	C		1.2	52.02	0.56	F
D - Old Cross Square (S)		**36.9**	**160.89**	**1.07**	F		38.3	278.42	1.12	F

Table 9: Modelling Outputs Committed Development

As demonstrated in Table 9 the development plots have no material change on the 2030 factored modelling+ however, Junction 4 requires redevelopment without the proposed scheme. There is sufficient residual capacity at Junction 3.

South Dublin Street & Backlands - *New Aldi Store Development*

Two planned development schemes have been incorporated into this traffic assessment, as outlined below:

South Dublin Street & Backlands Regeneration Project (ABP Ref. JA18.314501):

- This project focuses on a significant urban renewal initiative in Monaghan town centre, involving the demolition of existing buildings, the creation of a new street and civic space (Charles Gavan Duffy Place), and enhancements to the public realm along South Dublin Street. Planned improvements include updated paving, lighting, drainage, and other related infrastructure. Although the project does not introduce additional traffic to the network, it is predicted there will be a net reduction in traffic at the Old Cross Square Roundabout, with an estimated decrease of 30 vehicles during the AM peak and 67 vehicles in the PM peak hour.

New Aldi Store Development (Planning Reference 17453 / 22240, ABP Ref. PL18.301542):

- This proposal includes a new Aldi store west of the Old Cross Square junction.

Table 10 illustrates and comments on the wider cumulative impact of both committed development and future schemes. Traffic modelling has been undertaken in relation to this application in relation to the additional 9 parking spaces and for the development plots.

Phase	Development (s)	Development (s)	Opening Year	Assessment	Traffic Impact
1	Proposed Development i.e. addition of 9no car parking spaces	Dublin St North	2030 (Approx.)	Quantitative Assessment – Traffic modelling	Virtually no traffic impacts as the scheme only adds 10no car parking spaces. Junction 3 modelling demonstrates no issues relating to capacity at this junction. Refer to Section 7 Network Assessment of this study for results.
2	Cumulative 1 Committed Development	Dublin St North + Civic Offices + Aldi	2030 (Approx.)	Quantitative Assessment – Traffic Modelling	As above. Noted that Civic Offices and Aldi will increase 'saturation' at the roundabout, but both schemes are treated as committed developments and their traffic impacts have been assessed at planning stage in their own right. Furthermore, the traffic generation has been included within opening year traffic volumes for this scheme as respective schemes will be operational at time of opening this subject planning application.
3	Cumulative 2 Committed Development + Applications submitted but not yet determined.	Dublin St North + Civic Offices + Aldi + Dublin St South	2030 (Approx.)	Qualitative Assessment. DSS has negative traffic generation so we can say no impact on roundabout	No additional impact to above as the Dublin Street South proposal has a reduction of generated traffic on Dublin Street. However, traffic generated by the Dublin Street South scheme has been included within the opening year 2030 base flows as its assumed that scheme will be in place in advance of this application proposal.

Phase	Development (s)	Development (s)	Opening Year	Assessment	Traffic Impact
4a	Cumulative 3 As above + DSN Development Plots	Dublin St North + Civic Offices + Dublin St South + DSN Development Plots	Not known at this time	Quantitative Assessment – Traffic Modelling.	Dublin Street North Developments will be subject to their own traffic assessments as part of the planning stage. Furthermore, the generated traffic numbers are very low and will not have a significant impact on the surrounding road network.
4b	Cumulative 4 As above + DSS Plots + Roosky Masterplan lands	Dublin St North + Civic Offices + Dublin St South + DSN Development Plots + (Roosky Lands + DSS Development Plots)	Not known at this time	Qualitative Assessment	The wider Roosky Masterplan lands are not expected to have a significant impact on the Dublin Street North development. When the Roosky Masterplan is implemented modifications to the Dublin Street Roundabout would be required to cater for the additional future demand.

Table 1011: Wider Cumulative Impact of Committed Development

Considered Assessment of Dublin Street Roundabout

The current roundabout configuration is expected to remain suitable through the 2030 opening year and potentially until the 2035 future design year, provided the phasing schedule outlined in this report for the masterplan lands is followed. Beyond this period, the analysis of junction modelling results indicates that adjustments to the existing junction layout would be necessary to accommodate increased future demand.

While this study acknowledges the wider Roosky Masterplan will have an impact on the Dublin Street Roundabout, consideration of modifications should be considered as part of future planning applications.

9 Construction Phase

Impact Projection Methodology

The project will involve the use of heavy construction vehicles and machinery. Traffic management arrangements will be in place including a Traffic Management Plan to consider both onsite and offsite traffic related control measures. The Traffic Management plan will clearly outline the proposals for minimising the impact of his site traffic on the public, the project stakeholders and local property owners.

Monaghan County Council will ensure that any traffic management systems in place on the site access roads are included in the traffic management and safety plan particularly in relation to traffic movements at the entrance to the site. The plan will also comply with Cavan County Council and An Garda Síochána requirements. Temporary Road Signage will be placed as per current guidelines.

All works impacting on public roads surrounding the site should be conducted in compliance with all relevant statutory procedures.

The outline construction programme is set out below:

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1							
2		**DSN CONSTRUCTION PROGRAMME**	**690 days**	**Mon 06/01/2**	**Fri 27/08/27**		
3		**Site Clearance, Demolitions, Reduced Levels - Phase 1**	**60 days**	**Mon 06/01/25**	**Fri 28/03/25**		
4		Scrub, vegetation, loose materials	2 wks	Mon 06/01/2	Fri 17/01/25		General Construct
5		Above ground - Buildings Demolition, incl crushing & export (incl Haul Rd - OSC to Russell Row)	4 wks	Mon 20/01/25	Fri 14/02/25	4	McA to Quantify Plant
6		Below ground - foundations, incl crushing, concrete / rock breaking & export	2 wks	Mon 17/02/25	Fri 28/02/25	5	McA to Quantify Plant
7		Russell Row, Development Plots, Events Space, Tiered Garden - reduce levels	4 wks	Mon 03/03/25	Fri 28/03/25	6	McA to Quantify Plant
8		**Works Construction - Phase 1**	**340 days**	**Mon 31/03/2**	**Fri 17/07/26**		
9		Diamond Car Park, Russell Row, Development Plots, Events Space, Tiered Garden - construction works to subbase levels, incl utilities, drainage, kerbing &	42 wks	Mon 31/03/25	Fri 16/01/26	7	General Construction Plant
10		Reduced levels dig Russell Row>OSC & OSC, incl export of material off site	6 wks	Mon 19/01/26	Fri 27/02/26	9	McA to Quantify Plant
11		Russell Row>OSC & OSC - construction works to subbase levels, incl utilities, drainage, kerbing & boundary walls /	20 wks	Mon 02/03/26	Fri 17/07/26	10	General Construction Plant
12		**Works Construction - Phase 2**	**200 days**	**Mon 02/03/2**	**Fri 04/12/26**		
13		Diamond Car Park, Russell Row, Development Plots, Events Space, Tiered Garden - Surfacing, Landscaping, Paving,	30 wks	Mon 02/03/26	Fri 25/09/26	10	General Construction Plant
14		Russell Row>OSC & OSC - Surfacing, Landscaping, Paving, Street Furniture	20 wks	Mon 20/07/26	Fri 04/12/26	11	General Construction
15		**Works Construction - Phase 3**	**120 days**	**Mon 07/12/2**	**Fri 21/05/27**		
16		Dublin St - incl utilities, drainage, kerbing	17 wks	Mon 07/12/2	Fri 02/04/27	14	General Construct
17		Dublin St - Surfacing, Landscaping, Paving, Street Furniture	17 wks	Mon 25/01/27	Fri 21/05/27	16FS-10 wks	General Construction
18		**Works Construction - Phase 4**	**50 days**	**Mon 24/05/2**	**Fri 30/07/27**		
19		Community Garden	10 wks	Mon 24/05/2	Fri 30/07/27	17	General Construct
20		**Works Construction - Phase 5**	**20 days**	**Mon 02/08/2**	**Fri 27/08/27**		
21		Final Landscaping, Finishes, Snagging, Cleani	4 wks	Mon 02/08/2	Fri 27/08/27	19	General Construct
22		**Completion**	0 days	Fri 27/08/27	Fri 27/08/27	21	

Table 1112: Outline Construction Programme

Table 12 sets out the expected construction vehicle traffic generated by construction on an average day. The number of HGV movement has been informed by the CMP and construction period from the scheme programme. The average LGV and staff trips have been assumed. No discounts of vehicles have been applied to ensure a robust assessment.

Construction Period		**Average HGV's**		**Average Other Vehicles**		**Total Daily Constr. Traffic Trips**	
Months	Weeks	week	Day	LGV	Staff	One-way	Two-way
20	80	165	30	20	12	62	124

Table 12: Two Way Movements Construction Phase

Construction Hours

The hours of construction activity will be limited to avoid unsociable hours. Construction works shall be restricted to between 08:00hrs and 18:00hrs on weekdays and between 08:00hrs and 13:00hrs on Saturdays. There will be no works carried out on Sundays or Bank Holidays.

Under certain, limited, circumstances Works outside these hours may be required, e.g., large deliveries, removal of plant or materials off-site, or works which require specific weather conditions. In these circumstances, the required works and working hours will be agreed in advance with the Local Authority and will be subject to a specific Traffic Management Plan and RAMS.

Emergency works for safety and/or environmental protection may also be required to extend outside of normal hours in the event of an incident at the site.

The Construction & Environmental Management Plan (CEMP), which accompanies the application, along with the Construction Traffic Management Plan (CTMP) to be prepared by the appointed contractor prior to the commencement of construction, and the Resource and Waste Management Plan (RWMP), will include a range of control measures and management initiatives aimed at minimizing the impact of construction activities on the local road network.

The impact during the construction phase is expected to be short-term (limited to the duration of construction). It is anticipated that heavy goods vehicle (HGV) movements will not exceed 3no. vehicles per hour throughout the day during the busiest period of construction. Additionally, peak construction traffic arrivals and departures will occur outside of peak traffic hours, thereby avoiding any further delays on the road network during those times. The spread of HGV movements is expected to be evenly distributed throughout the day, reducing the likelihood of significant impact during peak periods. The highest volume of HGV traffic is anticipated during the site clearance, demolitions, and earthworks phase, which is anticipated to last approximately 4 months.

All construction traffic to enter via the proposed entrance to Russell Row at Old Cross Square. This will require the Contractor to carry out the required demolition works to create this access in the earliest phase of his construction programme. Security will be in place at all entry points, with sufficient off-road queuing areas to prevent construction vehicles from backing up onto the existing road network.

Construction traffic will generally consist of the following:

- Private vehicles owned and driven by site staff and management.
- Construction vehicles such as excavation equipment, dump trucks, and material delivery trucks, amounting to approximately 3 HGV movements per hour.
- On-site employees are expected to arrive before 08:00, avoiding the morning peak hour traffic, and depart after 18:00.

Based on similar projects, a development of this scale would require a maximum of 20 construction workers on-site at any given time. With an estimated 30% of staff driving individually, 60% carpooling (average of 2.5 people per vehicle), and 10% being dropped off, this equates to approximately 124 two-way trips at the beginning and end of the workday.

Where feasible, contractor staff will commute via shared vehicles, public transportation, or other alternative modes. If public transport is not a practical option for staff, the contractor may arrange off-site parking at a suitable location. Construction vehicles will not be allowed to park on public roads unless designated or authorized to do so.

Local Constraints Requiring Mitigation During Construction

Dublin Street and Old Cross Square will remain open as much as possible during construction, with priority given to opening the permanent realigned route. However, due to the constrained nature of the area, short-term diversions may be necessary to ensure safe separation between the public and construction activities. A CEMP will be provided which will include measures to ensure safety of all road users.

Pedestrian Routes: Informal pedestrian routes crossing the site will be maintained wherever possible, although short-term closures or diversions may be necessary to ensure safety.

Construction Mitigation

Working hours will be limited to avoid unsociable hours. Construction works shall be restricted to between 08:00hrs and 18:00hrs on weekdays and between 08:00hrs and 13:00hrs on Saturdays. There will be no works carried out on Sundays or Bank Holidays.

10 Road Safety

A Stage 2 Road Safety Audit has been carried out for the scheme and is provided within the planning package within the EIAr. Unfortunately, due to RSA reviewing their road traffic collision (RTC) data sharing policies and procedures record-level RTC data is currently unavailable.

11 Environmental Impact

There was a full environmental impact undertaken for this proposed development.

Local Severance

Local severance refers to the physical and psychological barriers created by transportation infrastructure, which disrupt communities, restrict access to amenities, and contribute to social exclusion. There will be no local severance associated with this planning application.

12 Access for People with Disabilities

The integration of accessibility measures for people with disabilities is a critical aspect of transportation infrastructure development in Ireland. This chapter outlines the guidelines set forth by the Transport Infrastructure Ireland (TII) regarding the assessment and enhancement of accessibility within the transportation network for individuals with disabilities.

Legal Framework and Policy Context

The TII guidelines on access for people with disabilities align with national legislation, including the Disability Act 2005 and the National Disability Inclusion Strategy. These laws mandate the provision of accessible transportation infrastructure to ensure equal opportunities for all citizens, regardless of their physical abilities.

Physical Accessibility: The design includes provision of dropped kerbs, tactile paving, no greater than 5% gradient within the site footways, accessible parking spaces and level access buildings thus ensuring barrier-free access for individuals with mobility impairments.

Wayfinding and Navigation: To ensure the ease of navigation along internal pedestrian routes tactile guidance has been incorporated.

Compliance with Standards: Verifying compliance with relevant accessibility standards and guidelines, such as the European Standard EN 301549 and the Irish National Disability Authority (NDA) guidelines, to ensure that transportation infrastructure meets minimum accessibility requirements.

13 Conclusion

Traffic Impact

In conclusion the proposed development in traffic terms will have a minimal impact on the surrounding road network as it involves a redirection of existing traffic and a modest additional 9 car parking spaces within the subject area.

The proposed development will provide significant benefit enabling access to future development lands which will all be assessed within their own right.

Non-Motorised Modes of Travel

There are multiple approaches to the proposed development which is well served by public transport.

The project is aligning with the CycleConnects initiative led by the National Transport Authority, Monaghan Town, including areas like Dublin Street, The Diamond, and Old Cross Square, will see significant upgrades to cycling infrastructure. The CycleConnects proposals aim to create a safer, more accessible network for cyclists, supporting sustainable travel across Ireland.

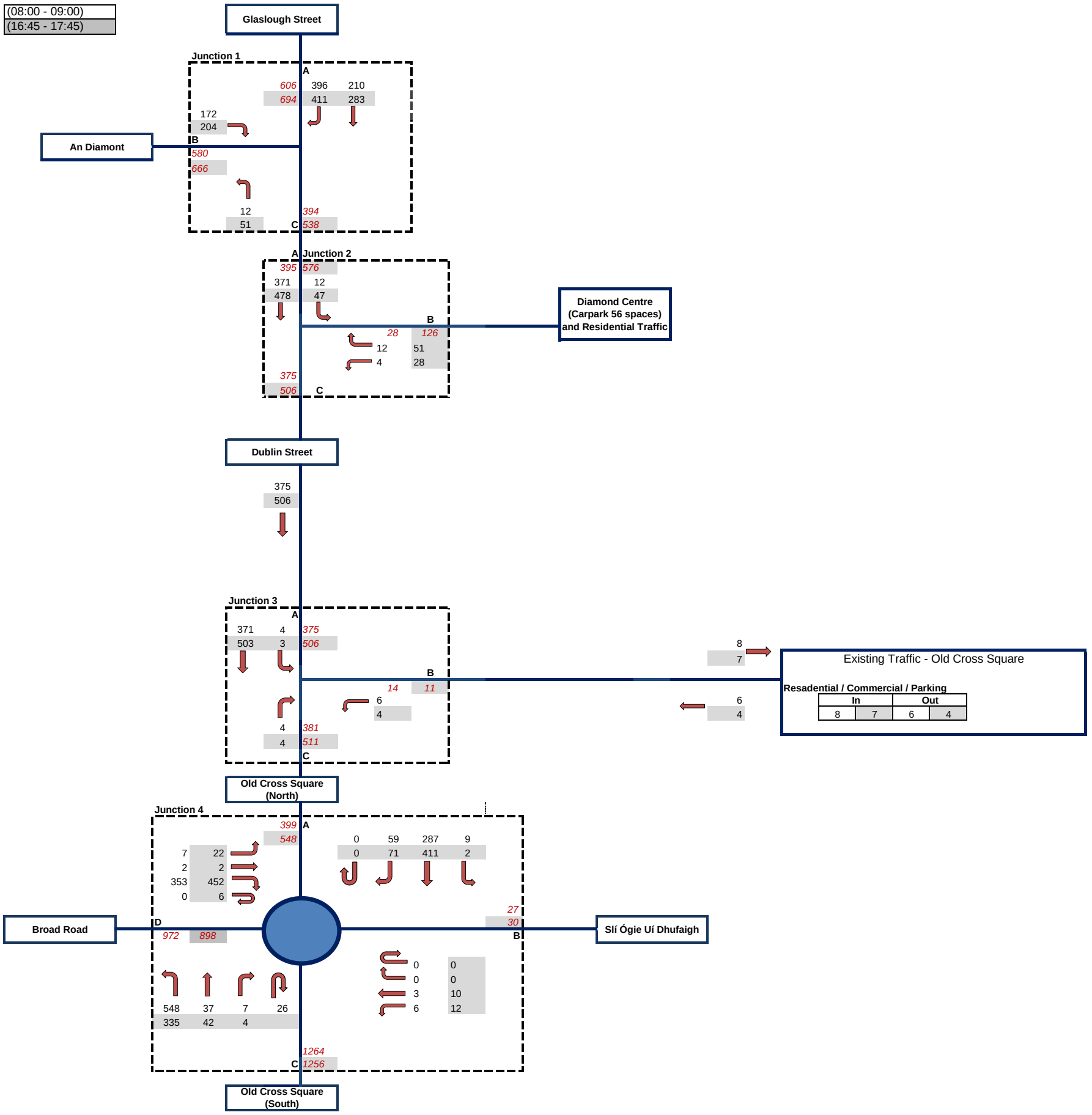
Overall Impact of the Proposed Development

Given the result of this study, it is considered the traffic impact of the proposed is negligible to slight on the receiving environment.

Appendix A – Flow Diagrams

HoyDorman

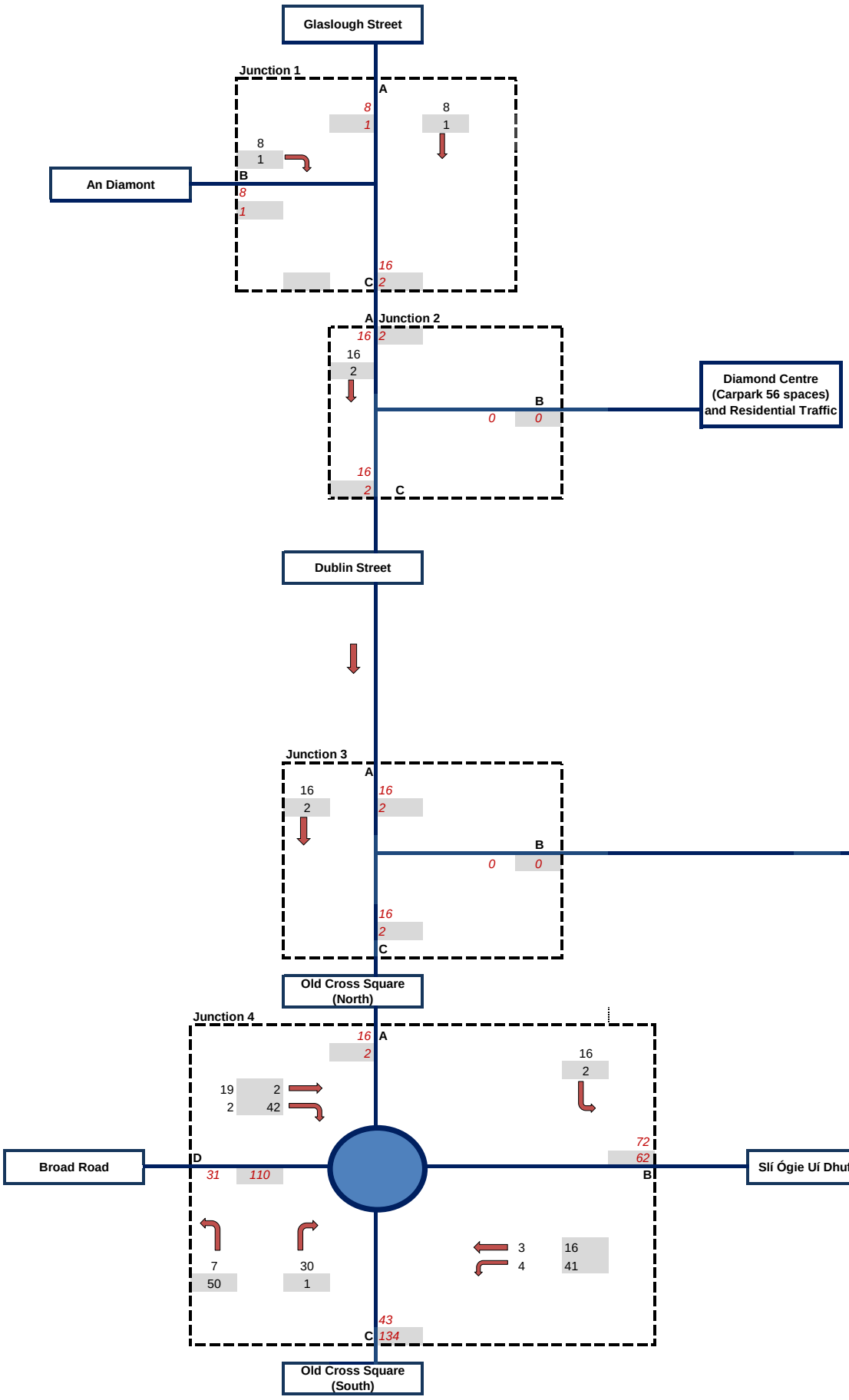
FD_001 = 2022 Base Year



		JUNCTIONS IMPACT												
		JUNCTION 1			JUNCTION 2			JUNCTION 3			JUNCTION 4			
Junction Arm Reference		**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**D**
FD_001 = 2022 Base Year	AM	606	580	394	395	28	375	375	14	381	399	27	1264	972
	PM	694	666	538	576	126	506	506	11	511	548	30	1256	898

HoyDorman

FD_002 = Committed Development - Civil Offices, ALDI, Dublin Street South



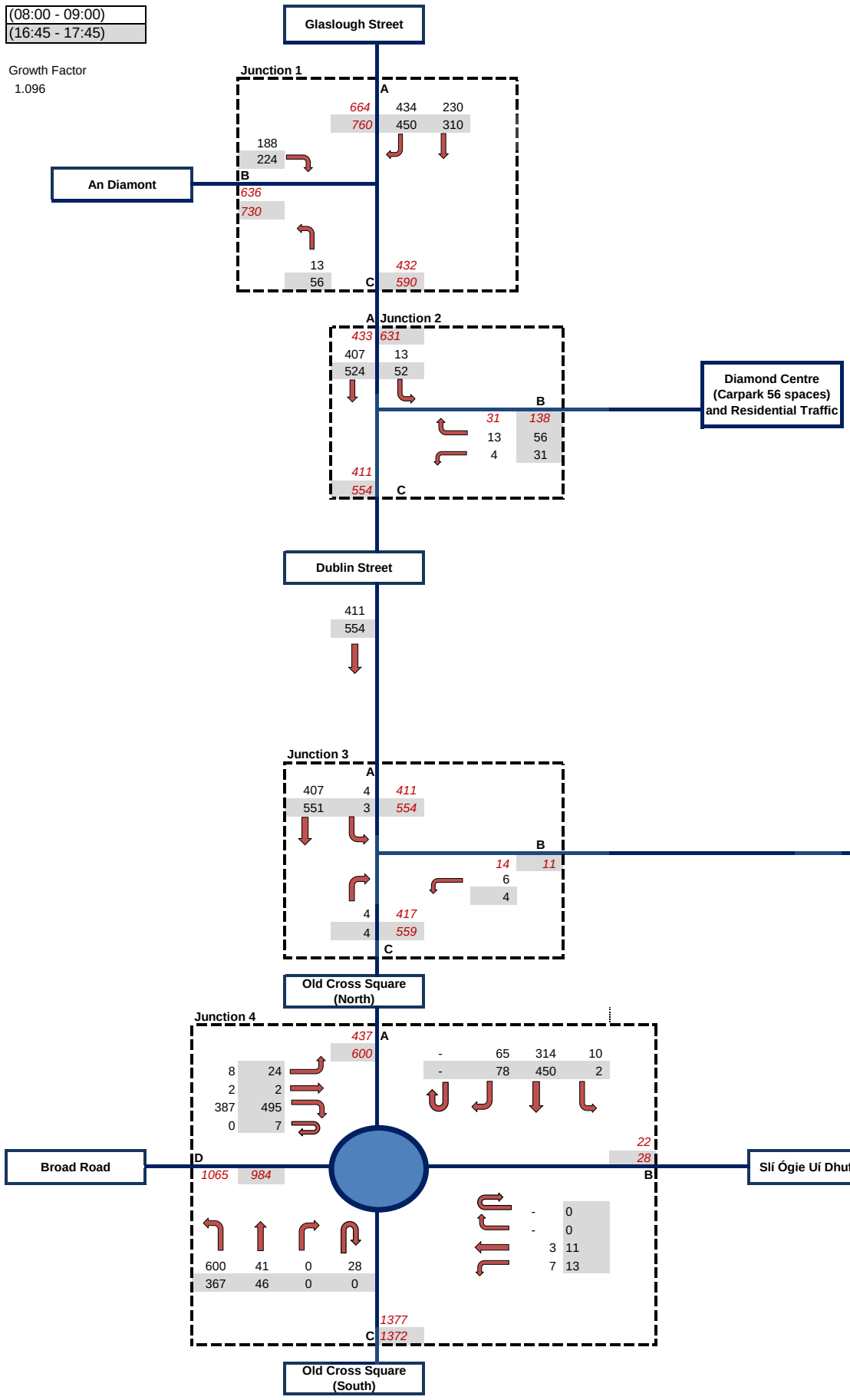
	JUNCTIONS IMPACT												
	JUNCTION 1			JUNCTION 2			JUNCTION 3			JUNCTION 4			
Junction Arm Reference	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**D**
AM	8	8	16	16	0	16	16	0	16	16	72	43	31
PM	1	1	2	2	0	2	2	0	2	2	62	134	110

HoyDorman

FD_003 = 2030 Opening Year Factored from 2022

(08:00 - 09:00)
(16:45 - 17:45)

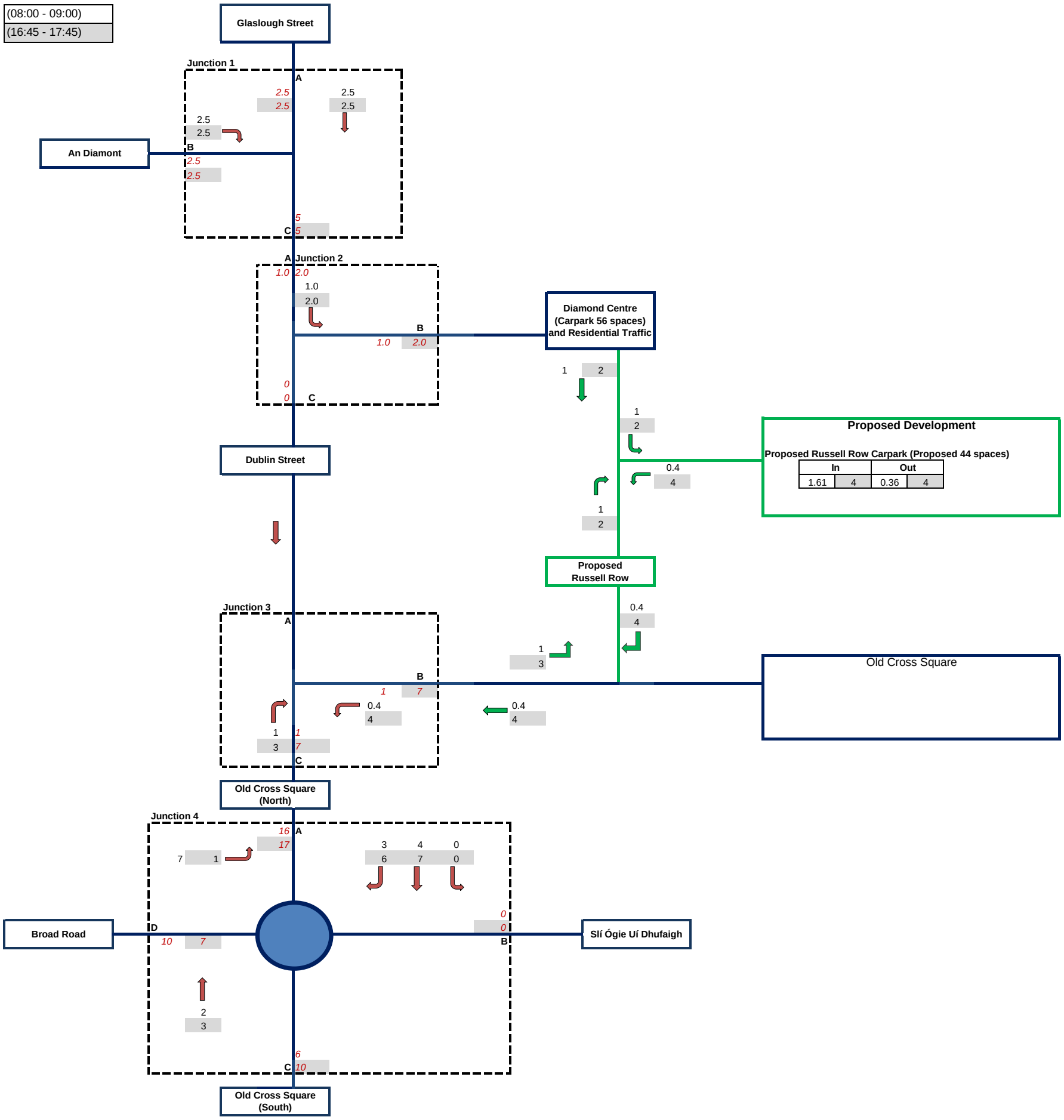
Growth Factor
1.096



		JUNCTIONS IMPACT												
		JUNCTION 1			JUNCTION 2			JUNCTION 3			JUNCTION 4			
Junction Arm Reference		**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**D**
FD_003 = 2030 Opening Year Factored from 2022	AM	664	636	432	433	31	411	411	14	417	437	22	1377	1065
	PM	760	730	590	631	138	554	554	11	559	600	28	1372	984

HoyDorman

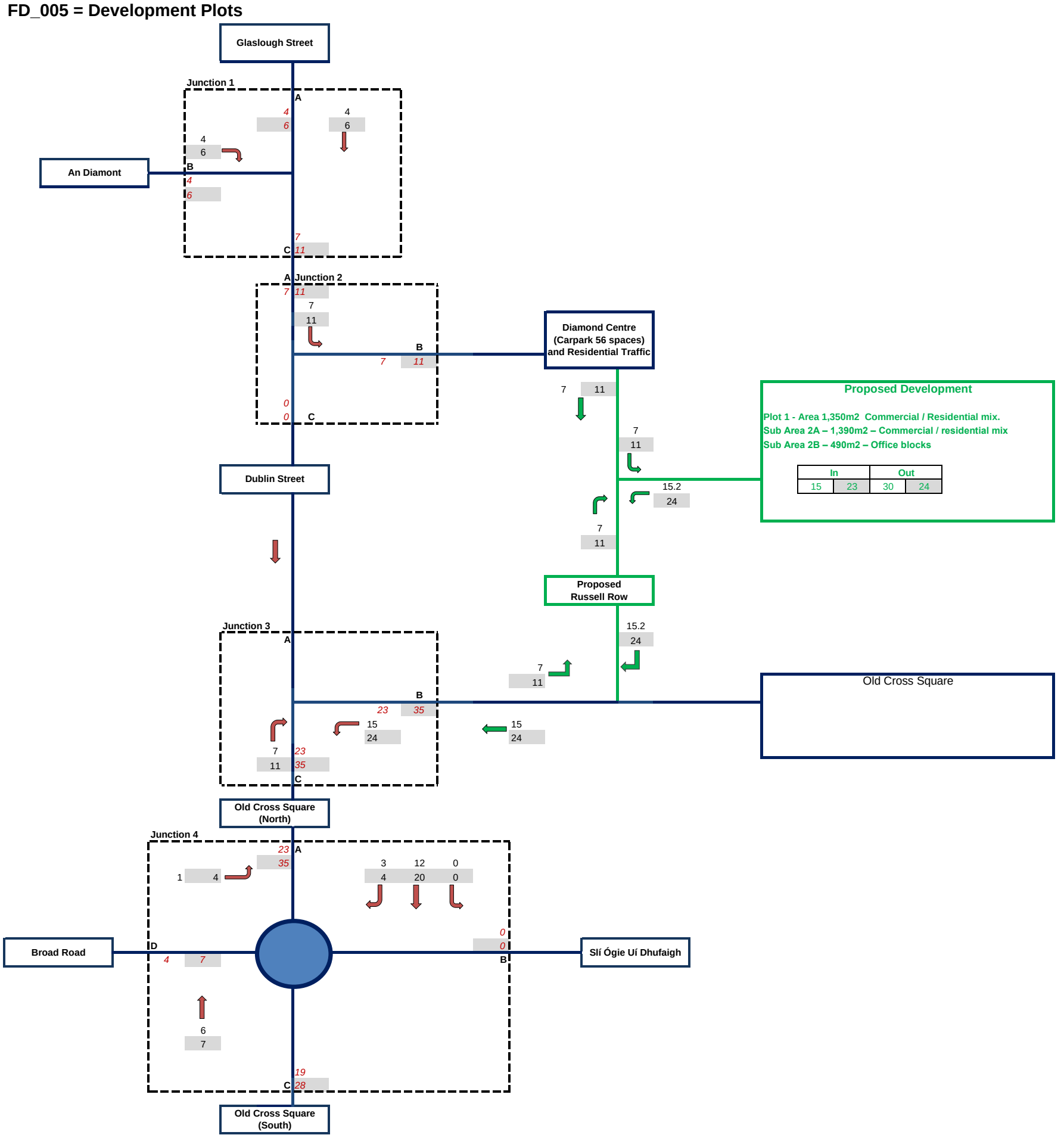
FD_004 = Development Flows (Car Park)



		JUNCTIONS IMPACT												
		JUNCTION 1			JUNCTION 2			JUNCTION 3			JUNCTION 4			
Junction Arm Reference		A	B	C	A	B	C	A	B	C	A	B	C	D
FD_001 = 2022 Base Year	AM	606	580	394	395	28	375	375	14	381	399	27	1264	972
	PM	694	666	538	576	126	506	506	11	511	548	30	1256	898
D_002 = Committed Development - Civil Offices, ALDI, Dublin Street South	AM	8	8	16	16	0	16	16	0	16	16	72	43	31
	PM	1	1	2	2	0	2	2	0	2	2	62	134	110
FD_003 = 2030 Opening Year Factored from 2022	AM	664	636	432	433	31	411	411	14	417	437	22	1377	1065
	PM	760	730	590	631	138	554	554	11	559	600	28	1372	984
FD_004 = Development Flows (Car Park)	AM	3	3	5	1	1	0	0	1	1	16	0	6	10
	PM	3	3	5	2	2	0	0	7	7	17	0	10	7
Combined Opening Year Flows - 2030 + Committed + Development	AM	675	646	453	450	32	427	427	15	434	469	94	1426	1106
	PM	764	733	597	635	140	556	556	18	569	619	90	1516	1101
% Impact of Dev Flows on Opening Year Base - 2030	AM	0.4%	0.4%	1.1%	0.2%	3.2%	0.0%	0.0%	7.7%	0.3%	3.4%	0.0%	0.4%	0.9%
	PM	0.3%	0.3%	0.8%	0.3%	1.4%	0.0%	0.0%	40.4%	1.3%	2.7%	0.0%	0.7%	0.6%

HoyDorman

FD_005 = Development Plots



		JUNCTIONS IMPACT												
		JUNCTION 1			JUNCTION 2			JUNCTION 3			JUNCTION 4			
Junction Arm Reference		A	B	C	A	B	C	A	B	C	A	B	C	D
FD_005 = Development Plots	AM	4	4	7	7	7	0	0	23	23	23	0	19	4
	PM	6	6	11	11	11	0	0	35	35	35	0	28	7
Combined Opening Year Flows - 2030 + Committed + Development	AM	675	646	453	450	32	427	427	15	434	469	94	1426	1106
	PM	764	733	597	635	140	556	556	18	569	619	90	1516	1101
% Impact of Dev Flows on Opening Year Base - 2030	AM	0.6%	0.6%	1.7%	1.7%	23.7%	0.0%	0.0%	150%	5.2%	4.8%	0.4%	1.3%	0.3%
	PM	0.7%	0.8%	1.9%	1.8%	8.1%	0.0%	0.0%	191%	6.2%	5.7%	0.1%	1.8%	0.7%

Appendix B – Junctions 10 Modelling

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.1.1.1905

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: 240923_Old_Cross_Square_Junction.j10
Path: C:\Users\MartinHoy\OneDrive - Hoy & Dorman Ltd\2. Hoy Dorman\Civils\2022023_Monaghan_Dublin_Street\2.0 Work\2.2 Traffic\Modelling
Report generation date: 09/04/2025 11:55:26

Summary of junction performance

	AM									PM								
	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Netwo Resid Capac
	Base Year 2022																	
Stream B-AC	D1	0.0	0.5	6.81	0.01	A	0.11	A	384 % [Stream B-AC]	D10	0.0	~1	0.00	0.00	A	0.00	A	900
Stream C-B		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			[]
	Opening Year 2030																	
Stream B-AC	D2	0.0	0.5	6.95	0.01	A	0.11	A	342 % [Stream B-AC]	D11	0.0	~1	0.00	0.00	A	0.00	A	900
Stream C-B		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			[]
	Development Traffic																	
Stream B-AC	D3	0.0	~1	0.00	0.00	A	0.00	F	900 % []	D12	0.0	~1	0.00	0.00	A	0.00	F	900
Stream C-B		0.0	~1	0.00	0.00	A					0.0	~1	0.00	0.00	A			[]
	Opening Year 2030 + Dev Flows																	
Stream B-AC	D4	0.0	0.5	6.96	0.01	A	0.21	A	338 % [Stream C-B]	D13	0.0	0.5	7.59	0.02	A	0.21	A	222
Stream C-B		0.0	0.5	7.37	0.01	A					0.0	0.5	8.05	0.02	A			[Strea C-B
	+ 5 years - Assessment year 2035 + Dev Flows																	
Stream B-AC	D5	0.0	0.5	7.00	0.01	A	0.21	A	327 % [Stream C-B]	D14	0.0	0.5	7.05	0.02	A	0.30	A	317
Stream C-B		0.0	0.5	7.42	0.01	A					0.0	0.5	7.45	0.02	A			[Strea B-AC
	+ 10 years - Assessment year 2040 + Dev Flows																	
Stream B-AC	D6	0.0	0.5	7.04	0.02	A	0.21	A	318 % [Stream C-B]	D15	0.0	0.5	7.72	0.02	A	0.21	A	208
Stream C-B		0.0	0.5	7.46	0.01	A					0.0	0.5	8.19	0.02	A			[Strea C-B

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	02/05/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	AzureAD\MartinHoy
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
5.75	✓				✓	Delay	0.85	36.00	20.00		

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D1	Base Year 2022	AM	ONE HOUR	08:00	09:30	15	✓		
D2	Opening Year 2030	AM	ONE HOUR	08:00	09:30	15	✓	Simple	D1*G1
D3	Development Traffic	AM	ONE HOUR	08:00	09:30	15	✓		
D4	Opening Year 2030 + Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓	Simple	D2+D3
D5	+ 5 years - Assessment year 2035 + Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓	Simple	(D1*G2)+D3
D6	+ 10 years - Assessment year 2040 + Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓	Simple	(D1*G3)+D3
D10	Base Year 2022	PM	ONE HOUR	16:45	18:15	15	✓		
D11	Opening Year 2030	PM	ONE HOUR	16:45	18:15	15	✓	Simple	D10*G1
D12	Development Traffic	PM	ONE HOUR	16:45	18:15	15	✓		
D13	Opening Year 2030 + Dev Flows	PM	ONE HOUR	16:45	18:15	15	✓	Simple	D11+D12
D14	+ 5 years - Assessment year 2035 + Dev Flows	PM	ONE HOUR	16:45	18:15	15	✓	Simple	(D1*G2)+D12
D15	+ 10 years - Assessment year 2040 + Dev Flows	PM	ONE HOUR	16:45	18:15	15	✓	Simple	(D10*G3) +D12

Growth Factors

ID	Description	Use TEMPRO	Growth Factor
G1	2022 - 2030 - Opening Year		1.0958
G2	2022 - 2035 +5years from opening year of 2030		1.1218
G3	2022 - 2040 +10years from opening year of 2030		1.1484

Growth factors are only active if a Demand Set references them in a Relationship.

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Base Year 2022, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.11	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	384	Stream B-AC	0.11	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	5.30			50.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	40	25

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	503	0.094	0.239	0.150	0.341
B-C	640	0.101	0.255	-	-
C-B	603	0.241	0.241	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base Year 2022	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	375	100.000
B		ONE HOUR	✓	6	100.000
C		ONE HOUR	✓	4	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	371
	B	0	0	6
	C	0	4	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.01	6.81	0.0	0.5	A	6	8
C-A						0	0
C-B	0.00	0.00	0.0	~1	A	0	0
A-B						4	6
A-C						340	511

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	568	0.008	4	0.0	0.0	6.387	A
C-A	0	0			0				
C-B	0	0	535	0.000	0	0.0	0.0	0.000	A
A-B	3	0.75			3				
A-C	279	70			279				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	554	0.010	5	0.0	0.0	6.559	A
C-A	0	0			0				
C-B	0	0	522	0.000	0	0.0	0.0	0.000	A
A-B	4	0.90			4				
A-C	334	83			334				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	7	2	535	0.012	7	0.0	0.0	6.813	A
C-A	0	0			0				
C-B	0	0	504	0.000	0	0.0	0.0	0.000	A
A-B	4	1			4				
A-C	408	102			408				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	7	2	535	0.012	7	0.0	0.0	6.813	A
C-A	0	0			0				
C-B	0	0	504	0.000	0	0.0	0.0	0.000	A
A-B	4	1			4				
A-C	408	102			408				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	554	0.010	5	0.0	0.0	6.559	A
C-A	0	0			0				
C-B	0	0	522	0.000	0	0.0	0.0	0.000	A
A-B	4	0.90			4				
A-C	334	83			334				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	568	0.008	5	0.0	0.0	6.387	A
C-A	0	0			0				
C-B	0	0	535	0.000	0	0.0	0.0	0.000	A
A-B	3	0.75			3				
A-C	279	70			279				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:15 - 09:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Opening Year 2030, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.11	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	342	Stream B-AC	0.11	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D2	Opening Year 2030	AM	ONE HOUR	08:00	09:30	15	✓	Simple	D1*G1

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	411	100.000
B		ONE HOUR	✓	7	100.000
C		ONE HOUR	✓	4	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	407
	B	0	0	7
	C	0	4	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.01	6.95	0.0	0.5	A	6	9
C-A						0	0
C-B	0.00	0.00	0.0	~1	A	0	0
A-B						4	6
A-C						373	560

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	561	0.009	5	0.0	0.0	6.471	A
C-A	0	0			0				
C-B	0	0	528	0.000	0	0.0	0.0	0.000	A
A-B	3	0.82			3				
A-C	306	77			306				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	1	546	0.011	6	0.0	0.0	6.665	A
C-A	0	0			0				
C-B	0	0	514	0.000	0	0.0	0.0	0.000	A
A-B	4	0.99			4				
A-C	365	91			365				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	7	2	525	0.014	7	0.0	0.0	6.953	A
C-A	0	0			0				
C-B	0	0	494	0.000	0	0.0	0.0	0.000	A
A-B	5	1			5				
A-C	448	112			448				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	7	2	525	0.014	7	0.0	0.0	6.953	A
C-A	0	0			0				
C-B	0	0	494	0.000	0	0.0	0.0	0.000	A
A-B	5	1			5				
A-C	448	112			448				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	1	546	0.011	6	0.0	0.0	6.665	A
C-A	0	0			0				
C-B	0	0	514	0.000	0	0.0	0.0	0.000	A
A-B	4	0.99			4				
A-C	365	91			365				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	561	0.009	5	0.0	0.0	6.471	A
C-A	0	0			0				
C-B	0	0	528	0.000	0	0.0	0.0	0.000	A
A-B	3	0.82			3				
A-C	306	77			306				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:15 - 09:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Development Traffic, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.00	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	900		0.00	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Development Traffic	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	0	100.000
B		ONE HOUR	✓	0.20	100.000
C		ONE HOUR	✓	1	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0.20
	C	0	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	~1	A	0	0
C-A						0	0
C-B	0.00	0.00	0.0	~1	A	0	0
A-B						0	0
A-C						0	0

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:00 - 09:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

09:15 - 09:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Opening Year 2030 + Dev Flows, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.21	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	338	Stream C-B	0.21	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D4	Opening Year 2030 + Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓	Simple	D2+D3

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	411	100.000
B		ONE HOUR	✓	7	100.000
C		ONE HOUR	✓	5	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	407
	B	0	0	7
	C	0	5	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.01	6.96	0.0	0.5	A	6	9
C-A						0	0
C-B	0.01	7.37	0.0	0.5	A	5	7
A-B						4	6
A-C						373	560

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	561	0.009	5	0.0	0.0	6.473	A
C-A	0	0			0				
C-B	4	1	528	0.008	4	0.0	0.0	6.864	A
A-B	3	0.82			3				
A-C	306	77			306				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	546	0.011	6	0.0	0.0	6.667	A
C-A	0	0			0				
C-B	5	1	514	0.009	5	0.0	0.0	7.069	A
A-B	4	0.99			4				
A-C	365	91			365				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	7	2	525	0.014	7	0.0	0.0	6.956	A
C-A	0	0			0				
C-B	6	1	494	0.012	6	0.0	0.0	7.374	A
A-B	5	1			5				
A-C	448	112			448				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	7	2	525	0.014	7	0.0	0.0	6.956	A
C-A	0	0			0				
C-B	6	1	494	0.012	6	0.0	0.0	7.374	A
A-B	5	1			5				
A-C	448	112			448				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	546	0.011	6	0.0	0.0	6.668	A
C-A	0	0			0				
C-B	5	1	514	0.009	5	0.0	0.0	7.072	A
A-B	4	0.99			4				
A-C	365	91			365				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	561	0.009	5	0.0	0.0	6.475	A
C-A	0	0			0				
C-B	4	1	528	0.008	4	0.0	0.0	6.867	A
A-B	3	0.82			3				
A-C	306	77			306				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C-B	0.01	0.01	0.25	0.45	0.48			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

09:00 - 09:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

09:15 - 09:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

+ 5 years - Assessment year 2035 + Dev Flows, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.21	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	327	Stream C-B	0.21	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D5	+ 5 years - Assessment year 2035 + Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓	Simple	(D1*G2)+D3

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	421	100.000
B		ONE HOUR	✓	7	100.000
C		ONE HOUR	✓	5	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	416
	B	0	0	7
	C	0	5	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.01	7.00	0.0	0.5	A	6	10
C-A						0	0
C-B	0.01	7.42	0.0	0.5	A	5	8
A-B						4	6
A-C						382	573

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	559	0.009	5	0.0	0.0	6.496	A
C-A	0	0			0				
C-B	4	1	527	0.008	4	0.0	0.0	6.888	A
A-B	3	0.84			3				
A-C	313	78			313				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	544	0.011	6	0.0	0.0	6.697	A
C-A	0	0			0				
C-B	5	1	512	0.010	5	0.0	0.0	7.100	A
A-B	4	1			4				
A-C	374	94			374				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	522	0.015	8	0.0	0.0	6.995	A
C-A	0	0			0				
C-B	6	2	491	0.012	6	0.0	0.0	7.415	A
A-B	5	1			5				
A-C	458	115			458				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	522	0.015	8	0.0	0.0	6.995	A
C-A	0	0			0				
C-B	6	2	491	0.012	6	0.0	0.0	7.415	A
A-B	5	1			5				
A-C	458	115			458				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	544	0.011	6	0.0	0.0	6.699	A
C-A	0	0			0				
C-B	5	1	512	0.010	5	0.0	0.0	7.103	A
A-B	4	1			4				
A-C	374	94			374				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	559	0.009	5	0.0	0.0	6.496	A
C-A	0	0			0				
C-B	4	1	527	0.008	4	0.0	0.0	6.891	A
A-B	3	0.84			3				
A-C	313	78			313				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C-B	0.01	0.01	0.25	0.45	0.48			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

09:00 - 09:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

09:15 - 09:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

+ 10 years - Assessment year 2040 + Dev Flows, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.21	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	318	Stream C-B	0.21	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D6	+ 10 years - Assessment year 2040 + Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓	Simple	(D1*G3)+D3

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	431	100.000
B		ONE HOUR	✓	7	100.000
C		ONE HOUR	✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	5	426
	B	0	0	7
	C	0	6	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.02	7.04	0.0	0.5	A	7	10
C-A						0	0
C-B	0.01	7.46	0.0	0.5	A	5	8
A-B						4	6
A-C						391	586

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	557	0.010	5	0.0	0.0	6.520	A
C-A	0	0			0				
C-B	4	1	525	0.008	4	0.0	0.0	6.913	A
A-B	3	0.86			3				
A-C	321	80			321				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	541	0.012	6	0.0	0.0	6.727	A
C-A	0	0			0				
C-B	5	1	510	0.010	5	0.0	0.0	7.132	A
A-B	4	1			4				
A-C	383	96			383				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	519	0.015	8	0.0	0.0	7.036	A
C-A	0	0			0				
C-B	6	2	489	0.013	6	0.0	0.0	7.458	A
A-B	5	1			5				
A-C	469	117			469				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	519	0.015	8	0.0	0.0	7.036	A
C-A	0	0			0				
C-B	6	2	489	0.013	6	0.0	0.0	7.458	A
A-B	5	1			5				
A-C	469	117			469				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	541	0.012	6	0.0	0.0	6.730	A
C-A	0	0			0				
C-B	5	1	510	0.010	5	0.0	0.0	7.135	A
A-B	4	1			4				
A-C	383	96			383				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	5	1	557	0.010	5	0.0	0.0	6.522	A
C-A	0	0			0				
C-B	4	1	525	0.008	4	0.0	0.0	6.916	A
A-B	3	0.86			3				
A-C	321	80			321				

Queue Variation Results for each time segment

08:00 - 08:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:15 - 08:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C-B	0.01	0.01	0.25	0.45	0.48			N/A	N/A

08:30 - 08:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

08:45 - 09:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

09:00 - 09:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

09:15 - 09:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

Base Year 2022, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.00	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	900		0.00	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	Base Year 2022	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	509	100.000
B		ONE HOUR	✓	4	100.000
C		ONE HOUR	✓	4	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	506
	B	0	0	4
	C	0	4	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	~1	A	0	0
C-A						0	0
C-B	0.00	0.00	0.0	~1	A	0	0
A-B						3	4
A-C						464	696

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	468	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	511	0.000	0	0.0	0.0	0.000	A
A-B	2	0.56			2				
A-C	381	95			381				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	450	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	493	0.000	0	0.0	0.0	0.000	A
A-B	3	0.67			3				
A-C	455	114			455				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	424	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	468	0.000	0	0.0	0.0	0.000	A
A-B	3	0.83			3				
A-C	557	139			557				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	424	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	468	0.000	0	0.0	0.0	0.000	A
A-B	3	0.83			3				
A-C	557	139			557				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	450	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	493	0.000	0	0.0	0.0	0.000	A
A-B	3	0.67			3				
A-C	455	114			455				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	468	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	511	0.000	0	0.0	0.0	0.000	A
A-B	2	0.56			2				
A-C	381	95			381				

Queue Variation Results for each time segment

16:45 - 17:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Opening Year 2030, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.00	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	900		0.00	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D11	Opening Year 2030	PM	ONE HOUR	16:45	18:15	15	✓	Simple	D10*G1

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	558	100.000
B		ONE HOUR	✓	4	100.000
C		ONE HOUR	✓	4	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	554
	B	0	0	4
	C	0	4	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	~1	A	0	0
C-A						0	0
C-B	0.00	0.00	0.0	~1	A	0	0
A-B						3	5
A-C						509	763

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	459	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	502	0.000	0	0.0	0.0	0.000	A
A-B	2	0.62			2				
A-C	417	104			417				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	439	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	482	0.000	0	0.0	0.0	0.000	A
A-B	3	0.74			3				
A-C	498	125			498				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	411	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	455	0.000	0	0.0	0.0	0.000	A
A-B	4	0.90			4				
A-C	610	153			610				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	411	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	455	0.000	0	0.0	0.0	0.000	A
A-B	4	0.90			4				
A-C	610	153			610				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	439	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	482	0.000	0	0.0	0.0	0.000	A
A-B	3	0.74			3				
A-C	498	125			498				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	459	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	502	0.000	0	0.0	0.0	0.000	A
A-B	2	0.62			2				
A-C	417	104			417				

Queue Variation Results for each time segment

16:45 - 17:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Development Traffic, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.00	F

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	900		0.00	F

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	Development Traffic	PM	ONE HOUR	16:45	18:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	0	100.000
B		ONE HOUR	✓	4	100.000
C		ONE HOUR	✓	3	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	0
	B	0	0	4
	C	0	3	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	~1	A	0	0
C-A						0	0
C-B	0.00	0.00	0.0	~1	A	0	0
A-B						0	0
A-C						0	0

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	563	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
C-B	0	0	603	0.000	0	0.0	0.0	0.000	A
A-B	0	0			0				
A-C	0	0			0				

Queue Variation Results for each time segment

16:45 - 17:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

18:00 - 18:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-B	0.00	0.00	0.00	0.00	0.00			N/A	N/A

Opening Year 2030 + Dev Flows, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.21	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	222	Stream C-B	0.21	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D13	Opening Year 2030 + Dev Flows	PM	ONE HOUR	16:45	18:15	15	✓	Simple	D11+D12

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	558	100.000
B		ONE HOUR	✓	8	100.000
C		ONE HOUR	✓	7	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	554
	B	0	0	8
	C	0	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.02	7.59	0.0	0.5	A	8	12
C-A						0	0
C-B	0.02	8.05	0.0	0.5	A	7	10
A-B						3	5
A-C						509	763

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	533	0.012	6	0.0	0.0	6.836	A
C-A	0	0			0				
C-B	6	1	502	0.011	6	0.0	0.0	7.253	A
A-B	2	0.62			2				
A-C	417	104			417				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	512	0.015	8	0.0	0.0	7.134	A
C-A	0	0			0				
C-B	7	2	482	0.014	7	0.0	0.0	7.568	A
A-B	3	0.74			3				
A-C	498	125			498				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	9	2	483	0.019	9	0.0	0.0	7.591	A
C-A	0	0			0				
C-B	8	2	455	0.018	8	0.0	0.0	8.054	A
A-B	4	0.90			4				
A-C	610	153			610				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	9	2	483	0.019	9	0.0	0.0	7.591	A
C-A	0	0			0				
C-B	8	2	455	0.018	8	0.0	0.0	8.054	A
A-B	4	0.90			4				
A-C	610	153			610				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	512	0.015	8	0.0	0.0	7.137	A
C-A	0	0			0				
C-B	7	2	482	0.014	7	0.0	0.0	7.569	A
A-B	3	0.74			3				
A-C	498	125			498				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	533	0.012	6	0.0	0.0	6.839	A
C-A	0	0			0				
C-B	6	1	502	0.011	6	0.0	0.0	7.256	A
A-B	2	0.62			2				
A-C	417	104			417				

Queue Variation Results for each time segment

16:45 - 17:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.01	0.25	0.45	0.48			N/A	N/A
C-B	0.01	0.01	0.25	0.45	0.48			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.02	0.00	0.00	0.02	0.02			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.02	0.00	0.00	0.02	0.02			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

18:00 - 18:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

+ 5 years - Assessment year 2035 + Dev Flows, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.30	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	317	Stream B-AC	0.30	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D14	+ 5 years - Assessment year 2035 + Dev Flows	PM	ONE HOUR	16:45	18:15	15	✓	Simple	(D1*G2)+D12

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	421	100.000
B		ONE HOUR	✓	11	100.000
C		ONE HOUR	✓	7	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	416
	B	0	0	11
	C	0	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.02	7.05	0.0	0.5	A	10	15
C-A						0	0
C-B	0.02	7.45	0.0	0.5	A	7	10
A-B						4	6
A-C						382	573

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	559	0.014	8	0.0	0.0	6.530	A
C-A	0	0			0				
C-B	6	1	527	0.011	6	0.0	0.0	6.908	A
A-B	3	0.84			3				
A-C	313	78			313				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	2	544	0.018	10	0.0	0.0	6.739	A
C-A	0	0			0				
C-B	7	2	512	0.013	7	0.0	0.0	7.125	A
A-B	4	1			4				
A-C	374	94			374				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	3	522	0.023	12	0.0	0.0	7.053	A
C-A	0	0			0				
C-B	8	2	491	0.017	8	0.0	0.0	7.449	A
A-B	5	1			5				
A-C	458	115			458				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	3	522	0.023	12	0.0	0.0	7.053	A
C-A	0	0			0				
C-B	8	2	491	0.017	8	0.0	0.0	7.449	A
A-B	5	1			5				
A-C	458	115			458				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	2	544	0.018	10	0.0	0.0	6.743	A
C-A	0	0			0				
C-B	7	2	512	0.013	7	0.0	0.0	7.128	A
A-B	4	1			4				
A-C	374	94			374				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	559	0.014	8	0.0	0.0	6.532	A
C-A	0	0			0				
C-B	6	1	527	0.011	6	0.0	0.0	6.908	A
A-B	3	0.84			3				
A-C	313	78			313				

Queue Variation Results for each time segment

16:45 - 17:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C-B	0.01	0.01	0.25	0.45	0.48			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.02	0.00	0.00	0.02	0.02			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.02	0.00	0.00	0.02	0.02			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

18:00 - 18:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

+ 10 years - Assessment year 2040 + Dev Flows, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Demand Set Relationship	D4 - Opening Year 2030 + Dev Flows, AM	Demand Set relationships are chained. This may slow down the file.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Sc1-Full Two Way	T-Junction	Two-way	Two-way	Two-way		0.21	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	208	Stream C-B	0.21	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically	Relationship type	Relationship
D15	+ 10 years - Assessment year 2040 + Dev Flows	PM	ONE HOUR	16:45	18:15	15	✓	Simple	(D10*G3) +D12

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	585	100.000
B		ONE HOUR	✓	9	100.000
C		ONE HOUR	✓	8	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	581
	B	0	0	9
	C	0	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.02	7.72	0.0	0.5	A	8	12
C-A						0	0
C-B	0.02	8.19	0.0	0.5	A	7	10
A-B						3	5
A-C						533	800

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	528	0.012	6	0.0	0.0	6.906	A
C-A	0	0			0				
C-B	6	1	497	0.012	6	0.0	0.0	7.327	A
A-B	3	0.65			3				
A-C	437	109			437				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	506	0.015	8	0.0	0.0	7.224	A
C-A	0	0			0				
C-B	7	2	476	0.014	7	0.0	0.0	7.665	A
A-B	3	0.77			3				
A-C	522	131			522				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	9	2	476	0.020	9	0.0	0.0	7.717	A
C-A	0	0			0				
C-B	8	2	448	0.019	8	0.0	0.0	8.188	A
A-B	4	0.95			4				
A-C	640	160			640				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	9	2	476	0.020	9	0.0	0.0	7.717	A
C-A	0	0			0				
C-B	8	2	448	0.019	8	0.0	0.0	8.188	A
A-B	4	0.95			4				
A-C	640	160			640				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	2	506	0.015	8	0.0	0.0	7.228	A
C-A	0	0			0				
C-B	7	2	476	0.014	7	0.0	0.0	7.668	A
A-B	3	0.77			3				
A-C	522	131			522				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	2	528	0.012	6	0.0	0.0	6.909	A
C-A	0	0			0				
C-B	6	1	497	0.012	6	0.0	0.0	7.330	A
A-B	3	0.65			3				
A-C	437	109			437				

Queue Variation Results for each time segment

16:45 - 17:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:00 - 17:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C-B	0.01	0.01	0.25	0.45	0.48			N/A	N/A

17:15 - 17:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.02	0.00	0.00	0.02	0.02			N/A	N/A

17:30 - 17:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.02	0.00	0.00	0.02	0.02			N/A	N/A

17:45 - 18:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

18:00 - 18:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-B	0.01	0.00	0.00	0.01	0.01			N/A	N/A

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Ionad Ghnó Gheata na Páirce,
Stráid Gheata na Páirce
Baile Átha Cliath 8, Éire

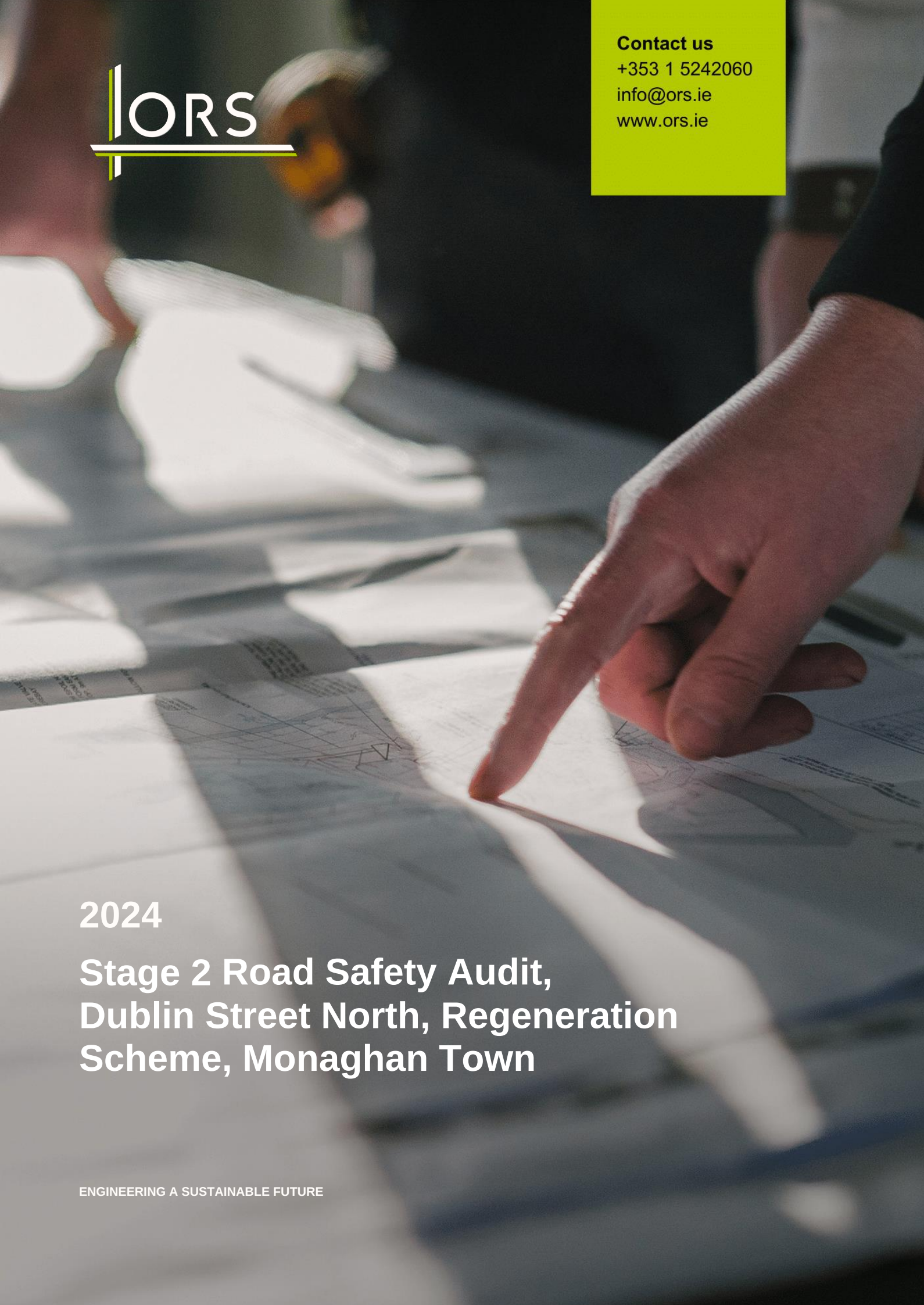
Parkgate Business Centre,
Parkgate Street,
Dublin 8, Ireland

www.tii.ie

info@tii.ie

+353 (01) 646 3600

+353 (01) 646 3601



Contact us
+353 1 5242060
info@ors.ie
www.ors.ie

2024

Stage 2 Road Safety Audit, Dublin Street North, Regeneration Scheme, Monaghan Town

ENGINEERING A SUSTAINABLE FUTURE

Stage 2 Road Safety Audit,
Dublin Street North, Regeneration Scheme, Monaghan Town

Document Control Sheet

Client:	Monaghan County Council
Document No:	241701-ORS-XX-XX-RP-TR-13g-001_S2_RSA

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	**S2**	**MG**	**AP**	**DMC**	**20/01/2025**
P02	**S2**	**MG**	**AP**	**DMC**	**28/01/2025**
P03	**S2**	**MG**	**MG**	**DMC**	**14/04/2025**

ORS

Table of Contents

1 Introduction

This report documents the findings of a Stage 2 Road Safety Audit (RSA) conducted with respect to a Dublin Street North Regeneration Scheme, Monaghan Town. The initial Stage 1/2 Road Safety Audit was completed by the CST Group on the 19th of June 2024.

The audit team conducted the site visit for this Road Safety Audit on Wednesday the 18th of December 2024. The audit was conducted in the offices of ORS on the 20th of December 2024.

The audit team comprised of the following people:

Audit Team Leader:
David McCormack BEng (Hons), Dip Eng., CEng, MIEI

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

Audit Team Member:
Mark Gallagher AEng, MIEI

During the site visit the weather was damp and overcast. The road surface was wet, and the traffic levels were noted to be low across the audit period.

The audit team reviewed the following documents and drawings provided by the Design Team.

(1) Stage 1/2 Road Safety Audit – CST Group
(2) DBL-OPE-00-XX-DR-L-90160 Rev 02 General Arrangement Key Plan
(3) DBL-OPE-00-XX-DR-L-901301 Rev 04 General Arrangement Sheet 1
(4) DBL-OPE-00-XX-DR-L-901302 Rev 04 General Arrangement Sheet 2
(5) DBL-OPE-00-XX-DR-L-901303 Rev 04 General Arrangement Sheet 3
(6) DBL-OPE-00-XX-DR-L-901304 Rev 04 General Arrangement Sheet 4
(7) DBL-OPE-00-XX-DR-L-901501 Rev - Tree Root Protection Areas Sheet 3
(8) DBL-OPE-ZZ-XX-DR-L-902101 Rev 01 Details Surfacing
(9) DBL-OPE-ZZ-XX-DR-L-902102 Rev 01 Details Surfacing
(10) DBL-OPE-ZZ-XX-DR-L-902103 Rev 01 Details Surfacing
(11) DBL-OPE-ZZ-XX-DR-L-902104 Rev - Details Surfacing
(12) DBL-OPE-ZZ-XX-DR-L-902105 Rev - Details Surfacing
(13) DBL-OPE-ZZ-XX-DR-L-902201 Rev – Details Soft Landscaping Planting 01
(14) DBL-OPE-ZZ-XX-DR-L-902202 Rev – Details Soft Landscaping Planting 01
(15) DBL-OPE-00-XX-DR-L-901204 Rev 02 Illustrative Sections
(16) DBL-OPE-00-XX-DR-L-901205 Rev 01 Illustrative Sections.

Documents/Information not supplied:

- Collision Data
- Speed & Traffic Surveys
- Departures from Standards

- Visibility Splay Analysis.
- Public Lighting Layout.
- Swept Path Analysis.
- Road Markings and Signage Details
- Drainage Information.
- Kerbing Details.

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 the Design Team.

2 Description of Proposed Development

ORS have been commissioned by Open Optimised Environments on behalf of Monaghan County Council to conduct a Stage 2 Road Safety Audit for a proposed development that includes public realm improvements to Dublin Street, Old Cross Square and Diamond Centre Car Park, Monaghan Town.

The proposed development includes:

- Public realm improvements to Dublin Street. These improvements will include footpath widening / narrowed carriageway, introduction of tabletops to facilitate priority pedestrian movement across the street, and use of high-quality materials to set the standard for the new regeneration plan area north and south.
- A new street (Russell Row) is proposed to be implemented to the rear of the existing buildings on Dublin Street. The intention is to create the ambience of a mews lane and pedestrian priority through the implementation of a shared surface.
- Public realm enhancements are proposed to the Old Cross Square. These include the implementation of new street furniture, paving, planting etc and the realignment of roads/ traffic movement etc.
- The proposed development aims to improve the pedestrian environment and public realm of the Diamond Centre Car Park through the realignment / delineation of car parking, pedestrian areas, and introduction of landscaping features to enhance visual amenity and pedestrian movement.

The site is currently a built-up area in the centre of Monaghan town. The site consists of an existing road, park and car park. The site can be accessed by Glaslough Street to the North and the East of the site can be accessed by the Old Cross roundabout to the South.

Please refer to **Figure 2.1** below for the location plan of the proposed scheme.

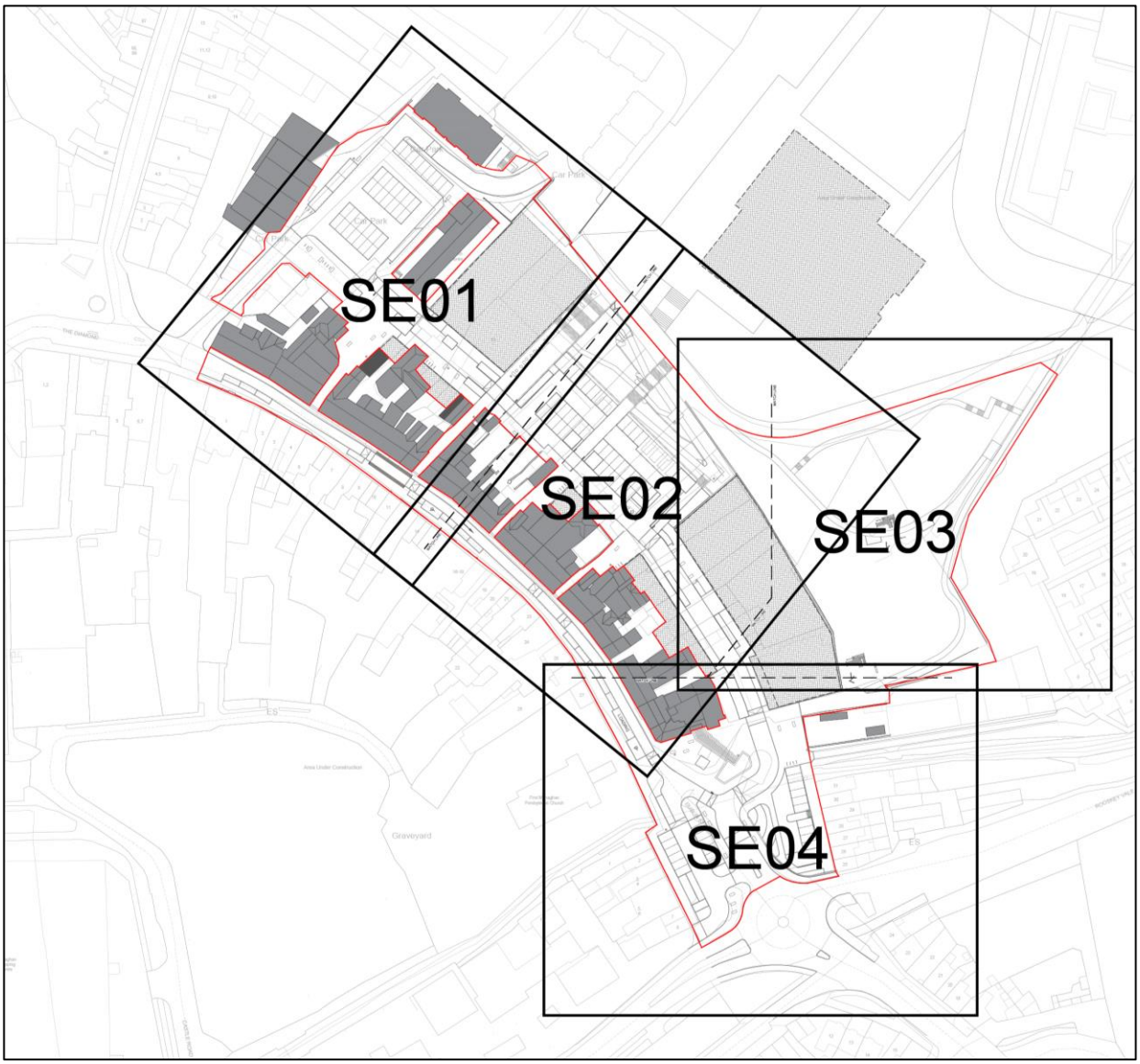


Figure 2.1: Site Location Plan (Source: Open Optimised Environments Ltd)

3 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.

3.1 Collision History

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.

3.2 Potential Problems Identified

Problem No.01: Cyclist Warning Signage and Road Markings (DBL-OPE-00-XX-DR-L-901301-Rev 04)

Location: Location Identified

The audit team note from the drawings provided that there is no cycle road markings or signage out to the junction with Dublin Street North to demonstrate that this is a shared surface with cyclists. The audit team has concerns that vehicles entering the site from Dublin Street North may not be aware of the change of road environment and may not change their driving habits to cater for the shared usage which could lead to collisions with cyclists.

Recommendation:

The design team should provide appropriate road markings and signage to alert vehicles entering this area that they will be sharing the carriageway with cyclists traveling in both directions.

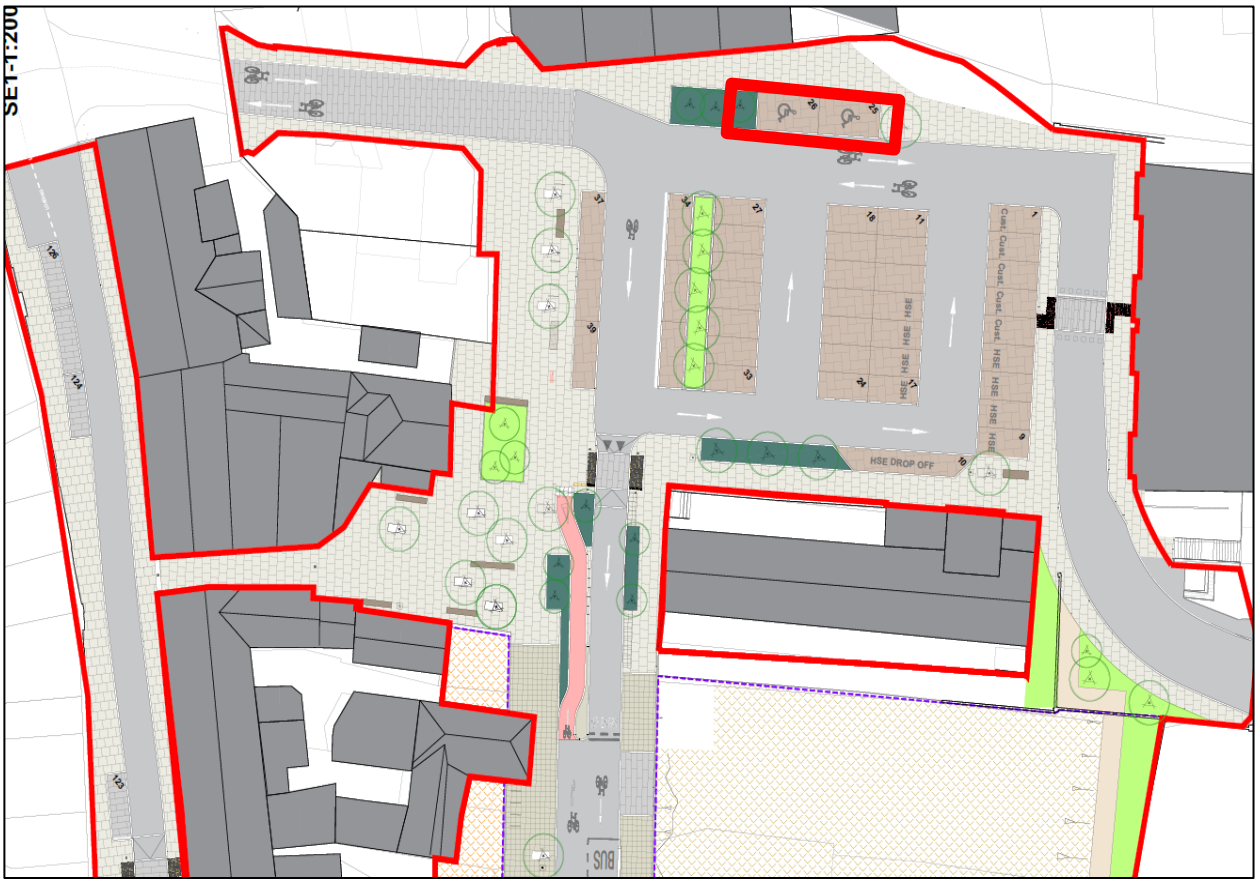
Problem No.02: Road Markings within Car Park (DBL-OPE-00-XX-DR-L-901301-901302-Rev 04)
Location: Location Identified
The audit team note from the drawings provided while there is direction of travel road markings for vehicles, no YIELD, STOP or No Entry Road markings or signage are detailed to give clear instructions to motorists of the priority of junctions and how the car park is to be used. The audit team has concern's that vehicles may enter parking isles against the flow of traffic and that vehicles exiting the spaces may not expect vehicles traveling in this direction which could lead to side swipe type collisions or reversing excessive distances to exit leading to potential collisions with cyclists.

Recommendation:
The design team should ensure that road markings and signage are provided for within the carpark area to control and direct motorists.

Problem No.03: Restricted Car Parking Spaces (DBL-OPE-00-XX-DR-L-901301-901302-901304 Rev 04)
Location: Various Locations
The audit team note from the drawing's provided that the parking spaces identified appear to be limited in space for entry and exiting. The audit team note that this could increase the risk of potential conflicts among vehicles or vehicle conflicts with cyclists or pedestrians as users may have to reverse onto the pedestrian footpath to exit the spaces.

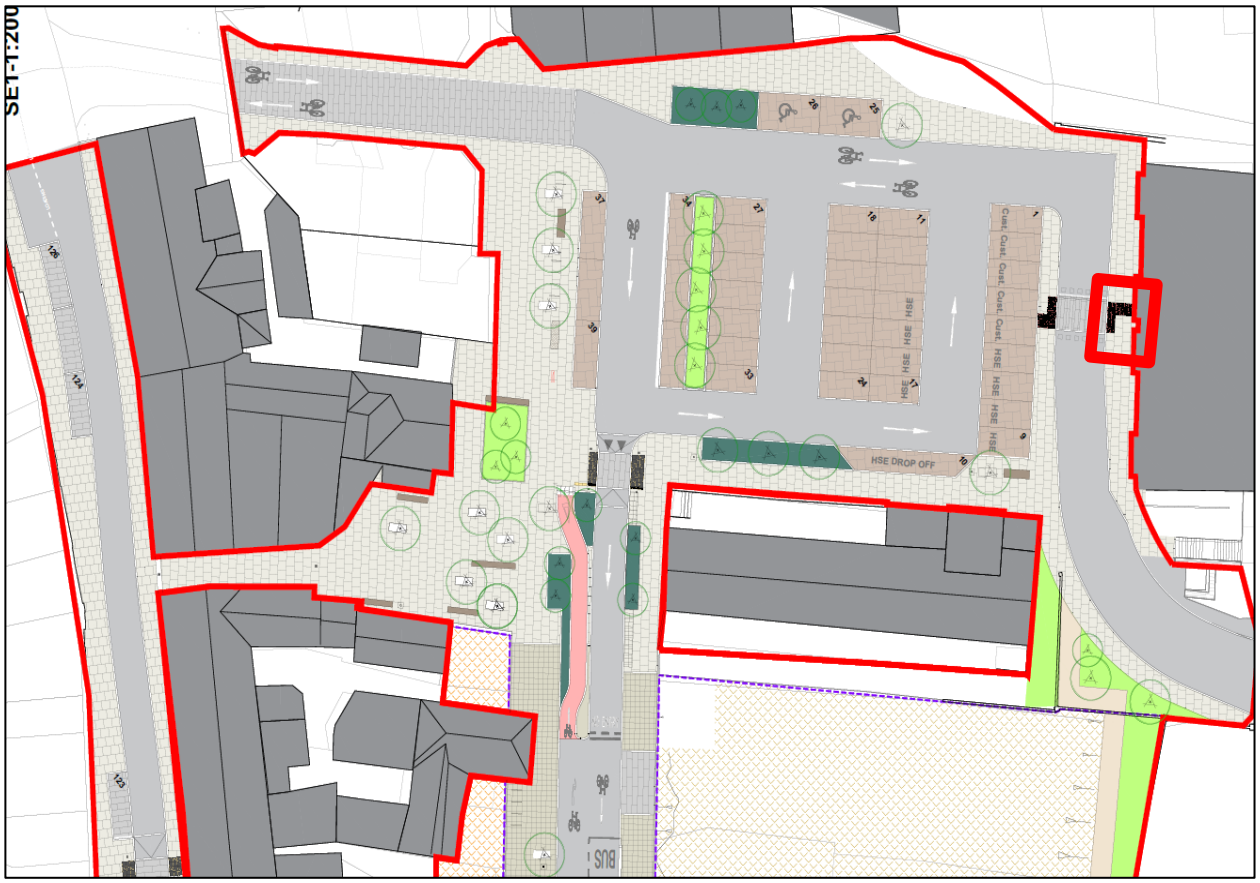
Recommendation:
The designers should ensure that vehicles can safely enter and exit these parking spaces.

Problem No.04: Disabled Parking Spaces Width (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that there is two disabled parking spaces provided. It is not clear from the drawings provided that the spaces are the appropriate width to facilitate safe entry and exit from vehicles for mobility impaired users and that the appropriate dropped kerbing to access the footpath is provided. The audit team is concerned that if the spaces are not the appropriate width that mobility impaired users of the spaces will not have the required space to safely enter and exit their vehicles. The users of the spaces may also have to travel excessive distances to a dropped kerb which may lead to mobility impaired users trying to access footpath at the closest location at a full height kerb leading to slips trips and falls.



Recommendation:
The design team should provide appropriate space for the parallel accessible parking spaces to facilitate safe entry and exit to vehicles using the spaces and the appropriate dropped kerbing.

Problem No.05: Proposed Controlled Crossing (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawings that there is a proposed controlled crossing at the location identified. It appears from the site visit that the crossing location is at the door of one of the retail units. There may be limited space in front of the unit to provide a level access, tactile paving for the controlled crossing and the beacon for the crossing which could lead to the footpath width being reduced below the minimum forcing pedestrians onto the carriageway.



Recommendation:
The design team should locate the proposed crossing at a more suitable location to facilitate a consistent footpath width and maintaining the level access in front of the retail unit.

Problem No.06: Termination of Proposed Footpaths (DBL-OPE-00-XX-DR-L-901301-Rev 04)

Location: Location Identified

The audit team note from the drawings that the proposed footway works do not appear to connect into any existing pedestrian infrastructure within the area. Lack of an appropriate tie-in to an existing footpath or termination could lead to pedestrian confusion, slips, trips or collisions with vehicles on the carriageway.

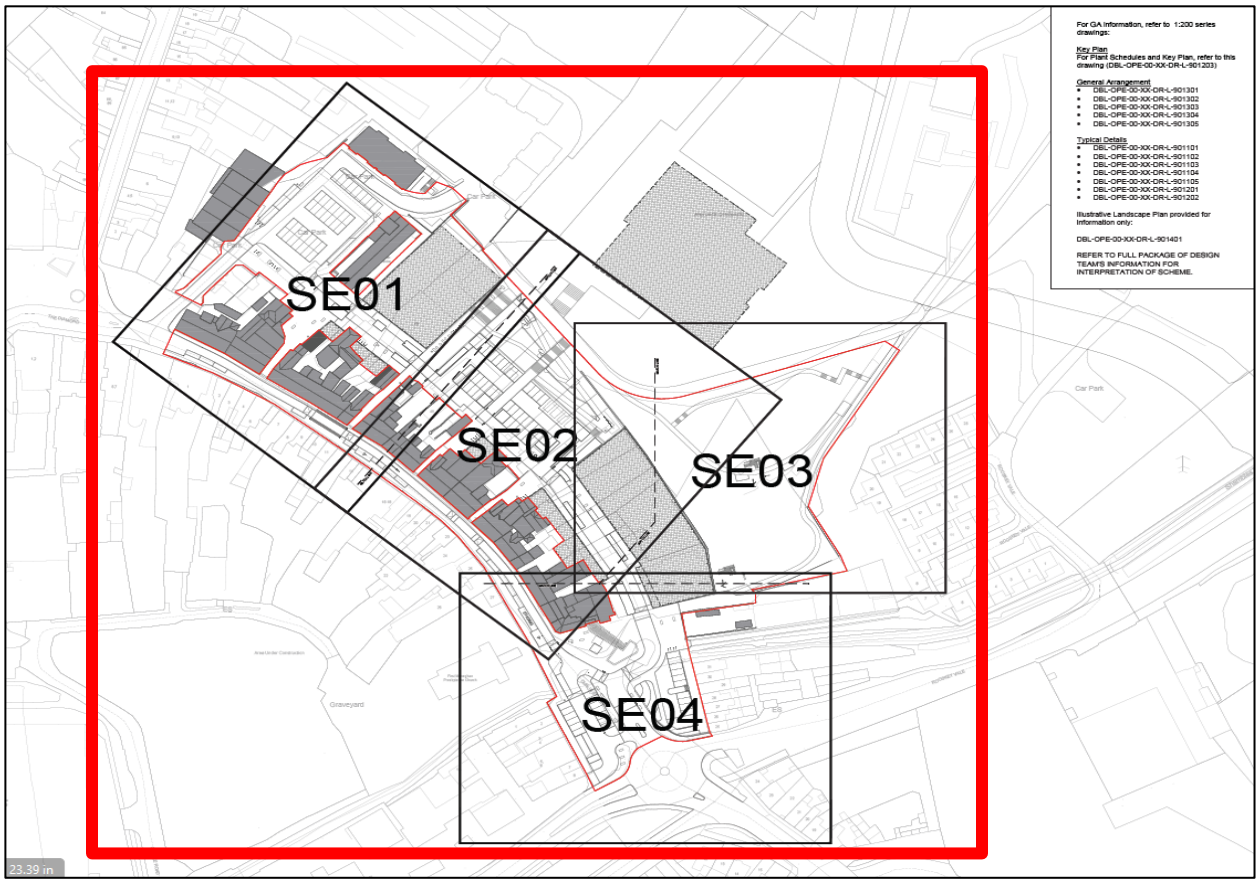
Recommendation:

The design team should provide provision for appropriate termination of the proposed footpath along with any tactile paving and signage.

Problem No.07: Termination of Cycle track (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawings that the proposed dedicated cycle track terminates at the location identified. It is unclear if the appropriate tramline tactile paving and signage are being provided to alert cyclists of the termination of the cycle track. Lack of appropriate signage and tactile paving could lead to cyclists entering the dedicated pedestrian area and this could lead to collisions between cyclists and pedestrians.

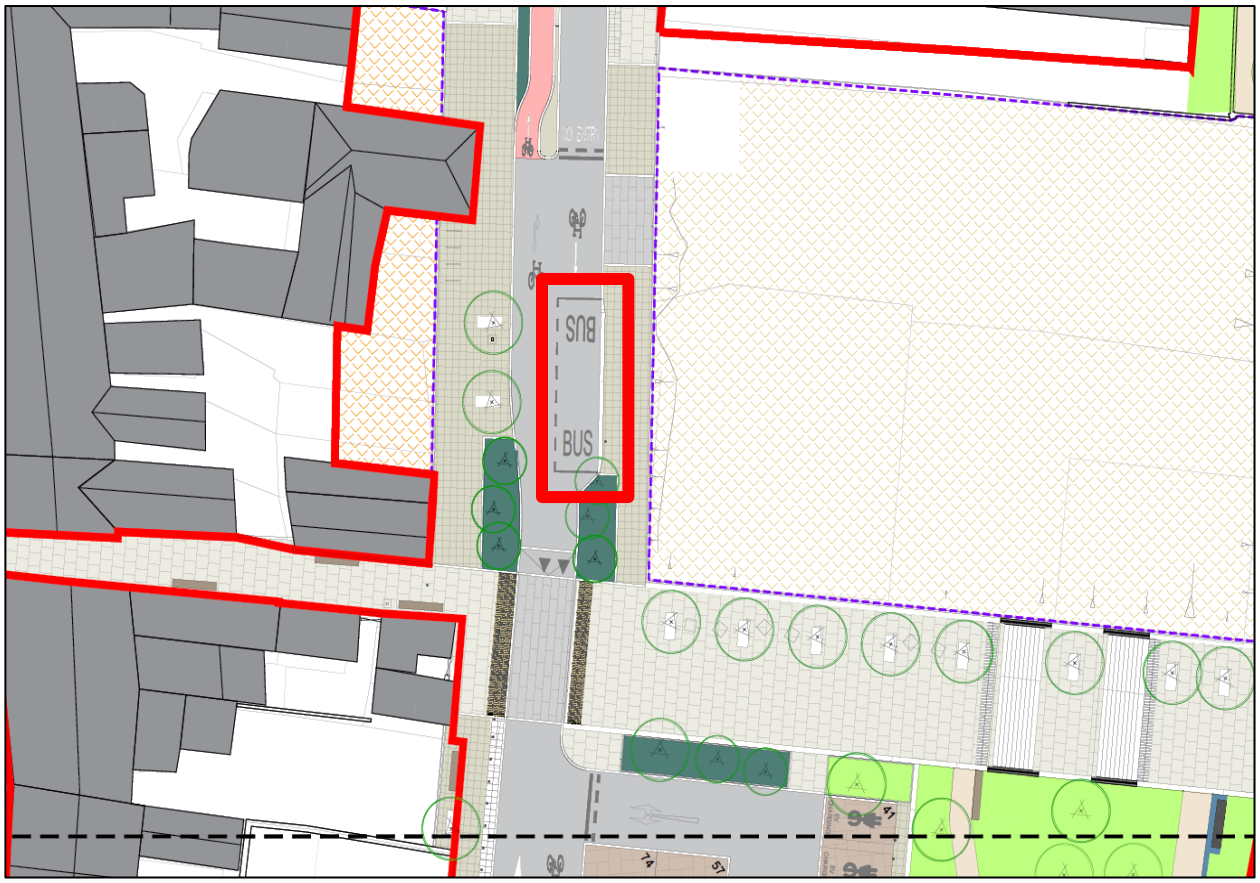
Recommendation:
The design team should provide for appropriate termination tactile paving and signage on the cycle track.

Problem No.08: Swept Path Analysis (DBL-OPE-00-XX-DR-L-901301-04-Rev 04)
Location: Throughout Scheme
The audit team note from the drawings provided that there is no swept path analysis for service vehicles or buses that must enter the scheme. It is unclear if there is sufficient space to facilitate larger vehicles especially those that must access daily. Lack of swept path analysis for the scheme could lead to instances where vehicles mount footpaths and cycle tracks which could lead to collisions with pedestrians and cyclists.



Recommendation:
The design team should provide swept path analysis for the scheme detailing how service vehicles and buses can safely enter and exit the scheme.

Problem No.09: Bus Stop (DBL-OPE-00-XX-DR-L-901301-Rev 04)
Location: Location Identified
The audit team note from the drawings provided at the location identified. It is unclear from the drawings provided if hazard warning tactile paving, kassel kerbs and the bus stop pole are being provided. The audit team has concerns that visually impaired users may not identify the edge of the bus stop if the appropriate hazard warning tactile paving is not provided, and mobility impaired users may have a higher step up or down from a bus if Kassel kerbs are not provided. This could lead to slips, trips and falls.

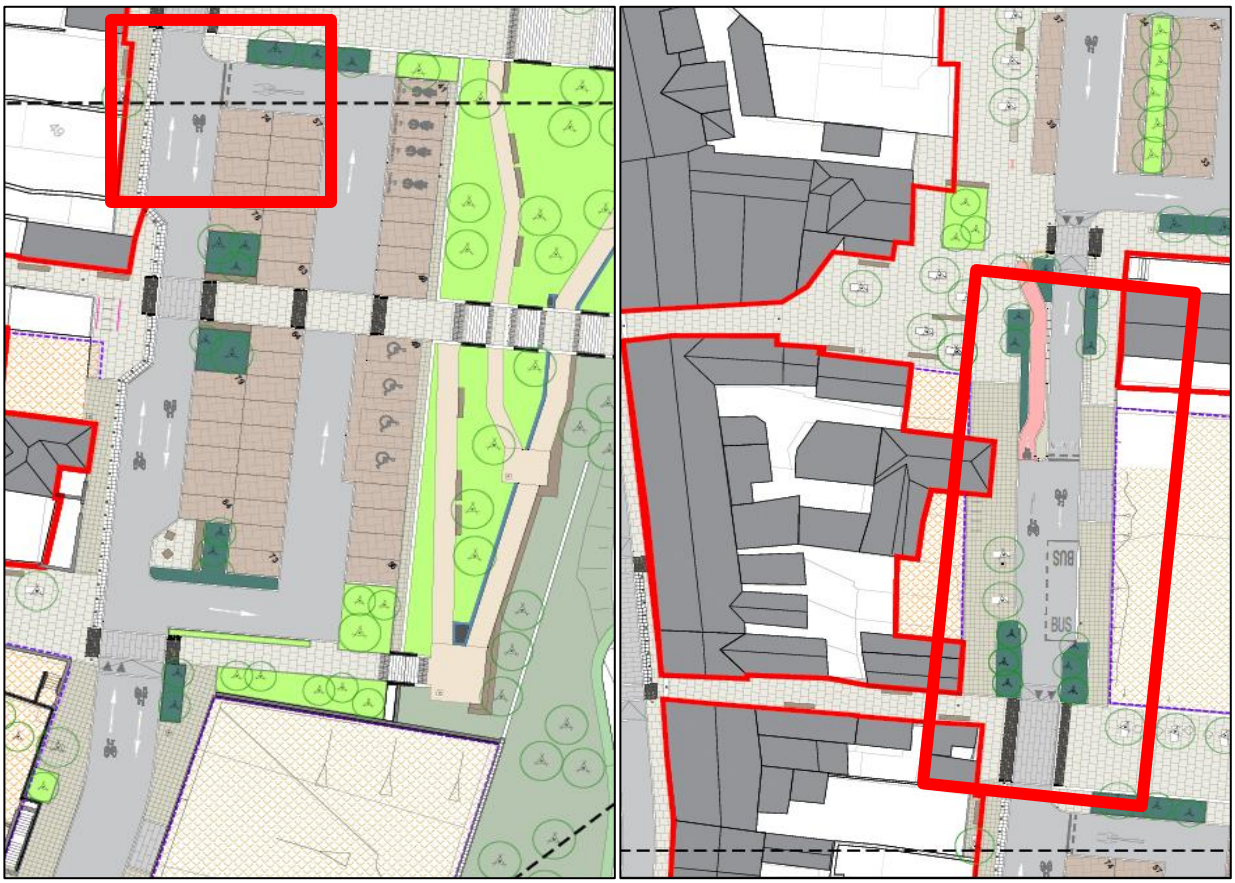


Recommendation:
The design team should ensure that the bus stop is provided with the appropriate hazard warning tactile paving, Kassel kerbs and the location of the bus stop pole is not in the line of the footpath.

Problem No.10: Conflicting Road Markings (DBL-OPE-00-XX-DR-L-901301-901302-Rev 04)

Location: Locations Identified

The audit team note from the drawings provided that there appears to be conflicting road markings. Approaching from the north appears to be a one-way system whereas the road markings in the southern car park indicates that two-way travel is possible. The audit team has concerns that these conflicting road markings could lead to motorists misunderstanding the layout and direction of travel around the car park which could lead to driver confusion which could lead to collisions.



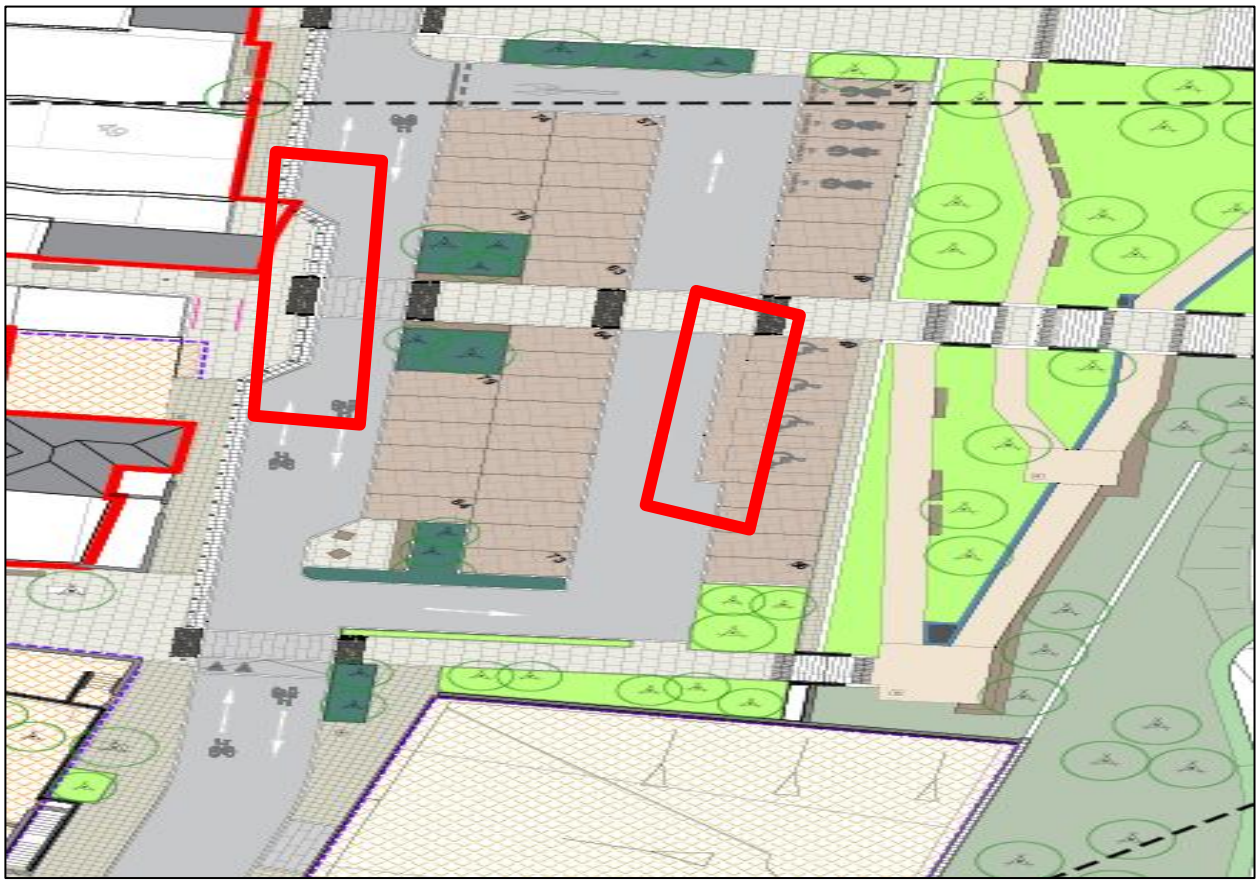
Recommendation:

The design team should provide clear road markings and signage around the car park and provide any No-Entry Road markings and signage where necessary.

Problem No.11: No Turning Area (DBL-OPE-00-XX-DR-L-901302-Rev 04)
Location: Location Identified
The audit team note from the drawings provided that vehicles exiting the spaces identified may find it difficult to exit the space and be orientated the incorrect way for the one-way system. The audit team is concerned that vehicles exiting these spaces may have to reverse an excessive distance to exit the space and be orientated correctly. This could lead to instances whereby a vehicle exiting the space could be reversing into on-coming traffic.

Recommendation:
The design team should ensure that vehicles have the appropriate turning space and can exit the spaces and be orientated in the correct direction to exit in forward gear.

Problem No.12: Sudden Road Narrowing (DBL-OPE-00-XX-DR-L-901302-Rev 04)
Location: Location Identified
The audit team note from the drawings provided that the driving isle suddenly narrows. The audit team is concerned that this sudden narrowing could lead to abrupt manoeuvres from motorists. This could lead to instances whereby a vehicle collides with a narrowing to the west or wheelchair users exiting their vehicles to the east.



Recommendation:
The design team should ensure that the appropriate signage and road markings are provided to alert motorists to the upcoming narrowing.

Problem No.13: Footpath Gradients (DBL-OPE-00-XX-DR-L-901302-901303 Rev 04)
Location: Location Identified
The audit team note from the drawings provided that there are no levels or gradients provided on the proposed footpaths or steps. It is unclear from the drawings provided if the footpaths are considered ramps or gently sloping. The lack of gradients and levels could result in inappropriately positioned intermediate landings, with a lack of rest areas leading to slips, trips or falls.

Recommendation:
The design team should provide details of the gradients and levels for the proposed footpath and ensure that no gradient is too steep or an individual ramp flight too long.

Problem No.14: Hazard Tactile Paving (DBL-OPE-00-XX-DR-L-901302-901303 Rev 04)
Location: Location Identified
The audit team note from the drawings provided that it is unclear if hazard tactile paving is being provided at the top, intermediate and bottom of the flights of steps. Visually impaired users may not comprehend that they are at the top or bottom of the flight of steps. Additionally, a visually impaired user may enter the intermediate landing where the path crosses not being aware of the hazard each side.

Recommendation:
The design team should provide hazard warning tactile paving at the top, bottom and intermediate landings including where the paths cross the flight of stairs.

Problem No.15: Inappropriately Located Landscaping (DBL-OPE-00-XX-DR-L-901301-Rev 04)

Location: Location Identified

The audit team note from the drawings provided there is landscaping provided in the line of travel of the external stairs. Visually Impaired and Mobility Impaired users especially will have to adjust the path at which they navigate the stairs to manoeuvre around the trees. Additionally, this reduces the space to the handrails on splitting the flights and could lead to slips and trips.

Recommendation:

The design team should position landscaping to not impeded the line of travel for the external steps especially where the central handrail extends out past the line of the steps.

Problem No.16: Incomplete Raised Table (DBL-OPE-00-XX-DR-L-901302-901304 Rev 04)
Location: Location Identified
The audit team note from the drawings provided there is an incomplete raised table shown at the location identified. It is unclear if the whole area is to be raised in the car park. The audit team has concerns that if it is intended to be raised that vehicles could mount footpaths/shared surfaces causing collisions with vulnerable road users.

Recommendation:
The design team should detail the extents of the raised area or if it is intended to be a raised table for a crossing. Also, any ramped area should not obstruct the driving isle around the car park.

Problem No.17: Car Parking Spaces at Junction (DBL-OPE-00-XX-DR-L-901304-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that the parking spaces identified appear to be difficult to exit safely. The audit team has concerns that this may lead to instances where vehicles reverse out of the spaces across the raised table and onto the main road to exit and be orientated in the incorrect direction. The audit team has concerns that this will lead to unsafe driver behaviour and cause vehicle to vehicle collisions or collisions with pedestrians on the crossing.

Recommendation:
The designers should remove the parking spaces identified to prevent unsafe driver behaviour.

Problem No.18: Termination of Shared Surface at Crossings (DBL-OPE-00-XX-DR-L-901304-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that the appropriate corduroy hazard warning paving is not provided. The audit team has concerns that this may lead to instances where cyclists travel through controlled crossings and cycle on the footpaths leading to collisions with pedestrians on the footpath or vehicles at uncontrolled crossings.

Recommendation:
The designers should provide the appropriate corduroy hazard warning paving at the termination of the shared surface and at the controlled crossing zone.

Problem No.19: Right Turn at Filling Station (DBL-OPE-00-XX-DR-L-901304-Rev 04)
Location: Location Identified
The audit team note from the drawing's provided that vehicles exiting the filling station can only turn right. It is unclear if HGV's and vehicles exiting the filling station can make this right turn without mounting the footpath on the northern side of the road. The audit team has concerns that this could lead to vehicles mounting the footpath causing collisions with pedestrians. It could also lead to vehicles reversing back into the filling station to achieve a better angle to make the turn.

Recommendation:
The designers should provide a swept path analysis detailing HGV's and Cars exiting the filling station and turning right.

Problem No.20: Colour at Locations Other than Crossings (DBL-OPE-00-XX-DR-L-901303-Rev 04)
Location: Location Identified
The audit team note from the drawings provided that the paving in the location identified is called up as Granite Aggregate Precast Paving Units which is unlikely to be a good colour contrast between path and any hazards i.e. the external steps. Some visually impaired users rely on the colour contrast in materials to determine the location of hazards and the edge of the threads in steps. Some visually impaired users may fail to note any warning paving on the ramp and steps.

Recommendation:
The designers should provide materials that achieves a good colour contrast and that the edge of the threads contrast to the rest of the step.

3.3 General Problems Identified

Problem No.21: Signage and Markings
Location: Throughout Scheme
The audit team noted that there is no road and cycle signage, regulatory signage or incomplete road and cycle markings on the drawings provided. Signage and markings aid in, informing road users of the direction of travel and the presence of vulnerable road users and ramps. The lack of adequate signage and markings in this case may result in conflicts of vehicles with vulnerable users and vehicles with other vehicles.

Recommendation:
The design team should ensure that road and cycle signage and markings are provided in line with DMURS and the applicable Traffic Signs Manual.

Problem No.22: Vehicle Swept Path Analysis
Location: Throughout Scheme
The audit team has observed that no vehicle swept path analysis has been conducted based on the provided drawings. To ensure the road layout is optimally designed for emergency and service vehicles, it is crucial to undertake a thorough swept path analysis using appropriate design vehicles. This analysis will confirm that the road configuration allows for safe turning movements without encroaching on pedestrian areas or mounting kerbs, thereby minimising potential conflicts between vehicles and pedestrians. Additionally, the swept path analysis should encompass all relevant vehicle turning movements, ensuring that vehicles can manoeuvre smoothly within the property.

Recommendation:
The design team should analyse vehicle swept paths on the scheme with industry standard software to assess vehicle wheel paths during turning movements to confirm the suitability of the road and internal driveway layout for intended vehicle purposes.

Problem No.23: Public Lighting
Location: Throughout Scheme
The audit team note from the drawings provided that no public lighting was detailed for the development. Areas in low light conditions may result in slips, trips and falls on pedestrian paths. Drivers may not be able to see pedestrians in the internal road network and at pedestrian crossings which has the potential to lead to pedestrian – vehicle collisions resulting in, injuries to pedestrians.

Recommendation:
The design team should ensure that details and locations of all public lighting columns are provided for in the development and that the positioning does not cause any obstruction or hazard to vulnerable road users and that lighting is distributed uniformly throughout the development.

Problem No.24: Drainage
Location: Internal Site Layout
The audit team note from the drawings provided, that there is no provision for drainage channels/ gully positions for the proposed stormwater network at ramps throughout the proposed development. 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 details and locations of all drainage gullies etc are provided for across the site and positioned strategically to avoid the risk of ponding across the site and in particular at any proposed pedestrian crossing points of at any proposed ramps within the scheme.

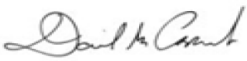
Problem No.25: Materials – Slip Resistance
Location: Throughout the Scheme
The audit team note from the drawings provided that the slip resistance of the proposed surfacing materials is not noted. Some of the natural stone products may become polished and create a slip hazard.

Recommendation:
The design team should ensure that materials have an appropriate slip resistance and Polished Stone Value (PSV) used within the development.

4 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 conducted 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 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: David McCormack: BEng (Hons), Dip Eng., CEng, MIEI
ORS

Signed: 

Date: 13th January 2025

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

Signed: 

Date: 13th January 2025

Audit Team Member: Mark Gallagher, MIEI
ORS

Signed: 

Date: 13th January 2025

Appendix A – Inspected Documents

The audit team reviewed the following documents and drawings provided by the Design Team:

(1) Stage 1/2 Road Safety Audit – CST Group
(2) DBL-OPE-00-XX-DR-L-90160 Rev 02 General Arrangement Key Plan
(3) DBL-OPE-00-XX-DR-L-901301 Rev 04 General Arrangement Sheet 1
(4) DBL-OPE-00-XX-DR-L-901302 Rev 04 General Arrangement Sheet 2
(5) DBL-OPE-00-XX-DR-L-901303 Rev 04 General Arrangement Sheet 3
(6) DBL-OPE-00-XX-DR-L-901304 Rev 04 General Arrangement Sheet 4
(7) DBL-OPE-00-XX-DR-L-901501 Rev - Tree Root Protection Areas Sheet 3
(8) DBL-OPE-ZZ-XX-DR-L-902101 Rev 01 Details Surfacing
(9) DBL-OPE-ZZ-XX-DR-L-902102 Rev 01 Details Surfacing
(10) DBL-OPE-ZZ-XX-DR-L-902103 Rev 01 Details Surfacing
(11) DBL-OPE-ZZ-XX-DR-L-902104 Rev - Details Surfacing
(12) DBL-OPE-ZZ-XX-DR-L-902105 Rev - Details Surfacing
(13) DBL-OPE-ZZ-XX-DR-L-902201 Rev – Details Soft Landscaping Planting 01
(14) DBL-OPE-ZZ-XX-DR-L-902202 Rev – Details Soft Landscaping Planting 01
(15) DBL-OPE-00-XX-DR-L-901204 Rev 02 Illustrative Sections
(16) DBL-OPE-00-XX-DR-L-901205 Rev 01 Illustrative Sections

Appendix B – Designer Response Form

Job: 241701 – Dublin Street North Regeneration Scheme, Monaghan Town
Stage of Audit: Stage 2
Date Audit Completed: 06th January 2025

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**	**NO**	Bus stop guidance from the NTA notes Kassel kerbs, and a strip of both a red & grey concrete pavers to denote the bus bay edge of footway. These will all be included in our design.	Yes
P10	**YES**	**YES**		
P11	**YES**	**YES**		
P12	**NO**	**NO**	The Design Team (DT) accepts the issue at the accessible parking bays and will adjust our design accordingly. With regard to the carriageway narrowing, the DT has provided a well defined footway edge treatment including kerbing, guidance tactile paving and bollards to denote the footway	Yes

			edge. Providing road markings to denote traffic priority would go against DMURS principles of self-regulating streets, and has been deliberately omitted in order to help reduce traffic speeds	
P13	**YES**	**YES**		
P14	**YES**	**YES**		
P15	**YES**	**YES**	Tree locations will be reviewed prior to technical design / construction	
P16	**YES**	**YES**		
P17	**YES**	**YES**	Car Parking arrangement at this location will be reviewed prior to technical design / construction	
P18	**YES**	**YES**		
P19	**YES**	**YES**		
P20	**YES**	**YES**		
P21	**YES**	**YES**		
P22	**YES**	**YES**		
P23	**YES**	**YES**		
P24	**YES**	**YES**		
P25	**YES**	**YES**		

Signed:…… ……. Designer Date:…09/04/2025…

D. Anderson, Senior Civil Engineer, McAdam Design

Signed:……Audit Team Leader Date:…14th April 2025

Signed:…… Employer Date:14th April 2025

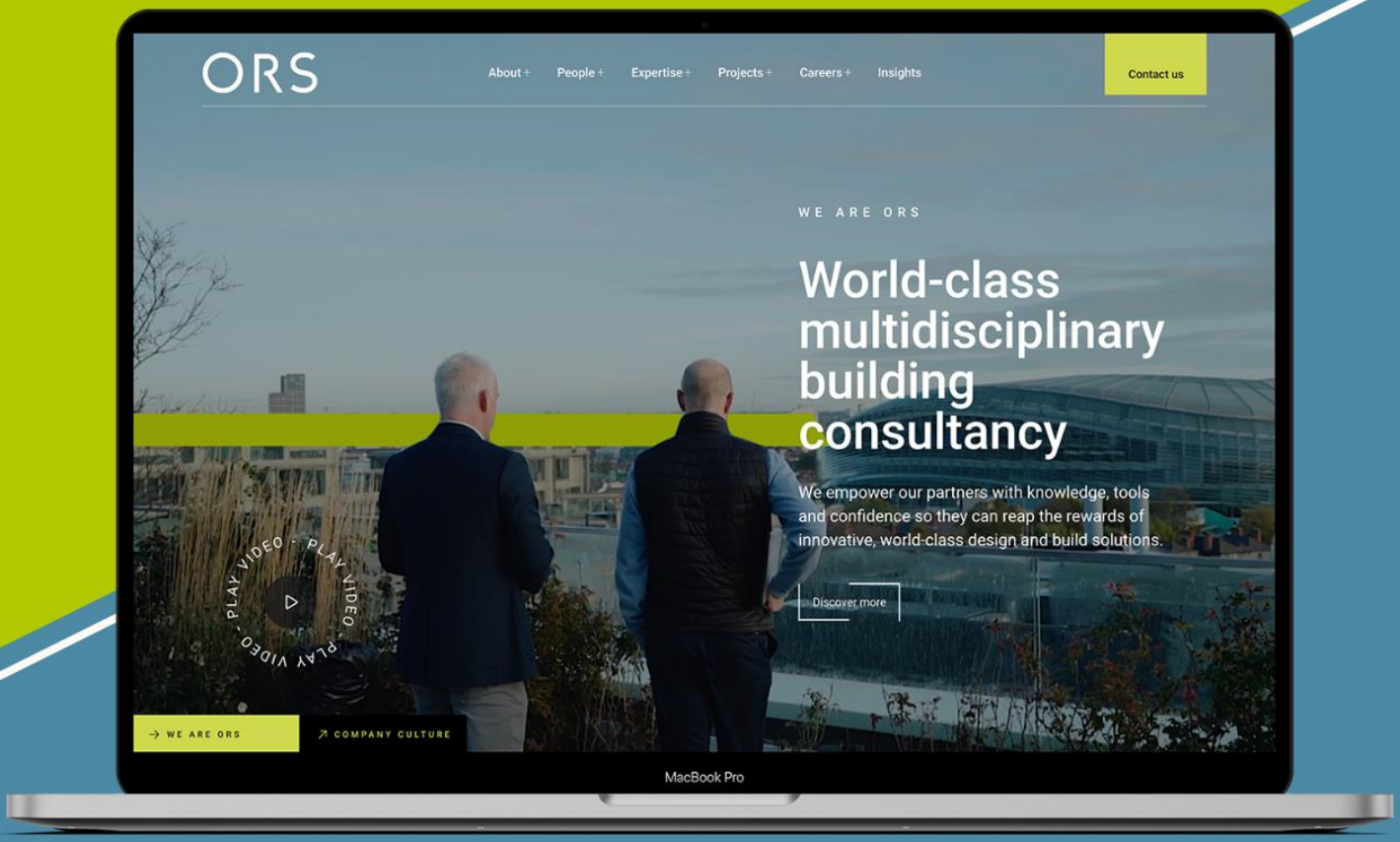
SEE Monaghan County Council

ORS | Multidisciplinary Building Consultancy

Best Workplaces™ Great Place To Work. IRELAND 2023

Access more information on our services and expertise by visiting our brand-new website.

Click here



Find Us Nationwide, on LinkedIn or on Youtube

Block A,
Marlinstown Business Park,
Mullingar, Co. Westmeath,
Ireland, N91 W5NN

Suite: G04, Iconic Offices,
Harmony Row,
Dublin 2, Co. Dublin,
Ireland, D02 H270

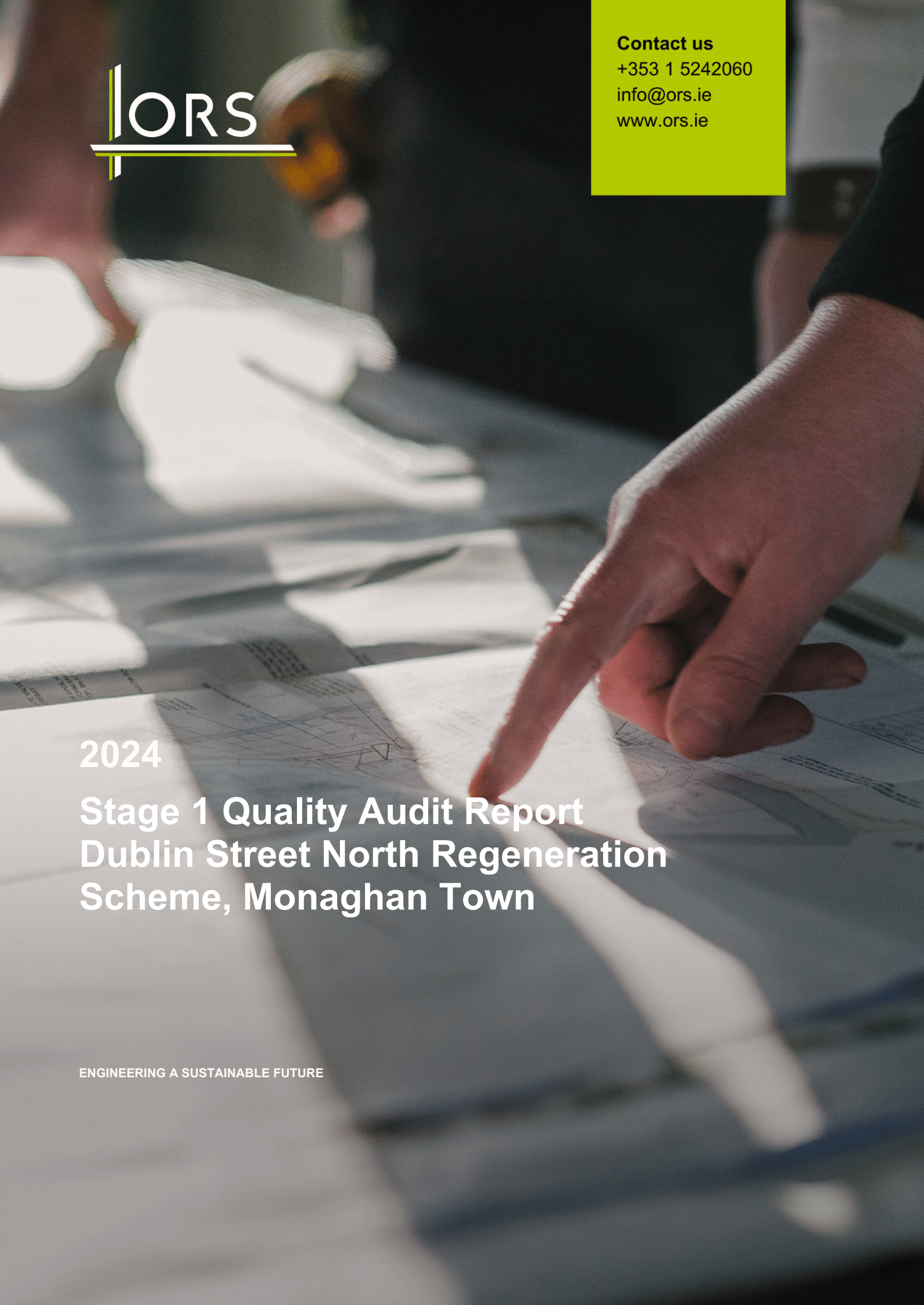
Level One, Block B,
Galway Technology Park,
Parkmore, Co. Galway,
Ireland, H91 A2WD

Office 2, Donegal Town,
Enterprise Centre, Lurganboy,
Donegal Town, Co. Donegal,
Ireland, F94 KT35

Office 4, Spencer House,
High Road, Letterkenny,
Co. Donegal,
Ireland, F92 PX8N

NSQ2,
Navigation Square,
Albert Quay, Cork
Ireland, T12 W351

Dublin St North Regeneration Scheme
Stage 1 Quality Audit



Contact us
+353 1 5242060
info@ors.ie
www.ors.ie

2024

Stage 1 Quality Audit Report Dublin Street North Regeneration Scheme, Monaghan Town

ENGINEERING A SUSTAINABLE FUTURE

Stage 1 Quality Audit Report
Dublin Street North Regeneration Scheme, Monaghan Town

Document Control Sheet

Client:	Monaghan County Council
Document No:	241701-ORS-XX-XX-RP-TR-13g-001

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	S2	EP	AK	MG	03/09/2024

Table of Contents

1 Introduction

This report documents the findings of a Stage 1 Quality Audit (QA) carried out on behalf of Monaghan County Council. The proposed development generally includes public realm improvements to Dublin Street, Old Cross Square and Diamond Centre Car Park, Monaghan Town.

The Quality 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 by Open Optimised Environments ltd:

(1) 124154 Stage 1_2 RSA Report Rev R0 for Review
(2) DBL-OPE-00-XX-DR-L-901201
(3) DBL-OPE-00-XX-DR-L-901301
(4) DBL-OPE-00-XX-DR-L-901302
(5) DBL-OPE-00-XX-DR-L-901303
(6) DBL-OPE-00-XX-DR-L-901304
(7) DBL-OPE-00-XX-DR-L-901401

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 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 Open Optimised Environments on behalf of Monaghan County Council to conduct a DMURS Quality Audit for a proposed development that includes public realm improvements to Dublin Street, Old Cross Square and Diamond Centre Car Park, Monaghan Town.

The proposed development includes:

- Public realm improvements to Dublin Street. These improvements will include footpath widening / narrowed carriageway, introduction of tabletops to facilitate priority pedestrian movement across the street, and use of high-quality materials to set the standard for the new regeneration plan area north and south.
- A new street (Russell Row) is proposed to be implemented to the rear of the existing buildings on Dublin Street. The intention is to create the ambience of a mews lane and pedestrian priority through the implementation of a shared surface.
- Public realm enhancements are proposed to the Old Cross Square. These include the implementation of new street furniture, paving, planting etc and the realignment of roads/ traffic movement etc.
- The proposed development aims to improve the pedestrian environment and public realm of the Diamond Centre Car Park through the realignment / delineation of car parking, pedestrian areas, and introduction of landscaping features to enhance visual amenity and pedestrian movement.

The site is currently a built-up area in the centre of Monaghan town. The site consists of an existing road, park and car park.

The site can be accessed by Glaslough ~Street to the North and the East of the site can be accessed by the Old Cross roundabout to the South.

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 Open Optimised Environments ltd.

Figure 2.2: Site Layout (Source: Open Optimised Environments Ltd)

2.2 Existing Road Network

As previously noted, the vehicular access proposed to the site is via the Old Cross roundabout to the South and Glaslough street to the North of the application site. Dublin street features walking paths on both sides of the one-way road, where there are streetlights and dropped kerbs to allow access in between buildings and through gateways. The current features of the existing road network are as shown in **Figure 2.3** and **Figure 2.4**.

Figure 2.3: Pedestrian facilities along Dublin St. (Source: Google Earth)

Figure 2.4: Existing Dublin Street paved path (Source: Google Maps)

Old Cross is a Roundabout to the South of the application site off which vehicular traffic is proposed to access the application site and its car parking area. Old Cross roundabout has four main exits with the northern most exit being the most relevant to the proposed site. Streetlights are present in the vicinity of the application site, as shown in **Figure 2.5** and **Figure 2.6**.

Figure 2.5: Overview of Old Cross Roundabout (Source: Google Earth)

Figure 2.6: Old Cross Roundabout from the site frontage (Source: Google Maps)

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 unit entrances with parking area and open spaces. 3.2.1 – The development creates a permeable network for pedestrians restricting private vehicles. 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.	Designers should ensure that all the proposed street layout should be appropriately designed with according to DMURS standards.	
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 footpaths at open spaces. 3.3.3 –	Design team should clearly demonstrate how vulnerable users e.g. Wheelchair users will be able to the buildings from the disabled car park.	

		The development creates a permeable network for pedestrians with restrictions on the movement of private vehicles and pedestrian links along the southwestern boundary as well as the main access.	6 pedestrian access points are present on the Dublin Street with 2 vehicular access points on both northwest and south of the proposed property.	
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 shared with cyclists. 3.4.1 – The development has created a network with restrictions on the movement of private vehicles. 3.4.1 – The site provides through vehicular accessibility to the development by road from the southern boundary via a roundabout.	Separate cyclist tracks have not been provided on the scheme. Cyclists will be required to share the road with vehicles, dismount and reach their destination through the provided footpaths. Additional cyclist access should be explored.	
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 an internal street that provides access to the internal car parking areas and the buildings. 3.2.2 – The development comprises an appealing living place enriched with valuable green attributes. 3.4.1 – The development has created a network with restrictions on the movement of private vehicles through the use of short driving distance, frequent junctions & raised tables	The design should incorporate a range of additional traffic calming measures aimed at reducing vehicle speeds throughout the development.	

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 –No Speed limit on the internal road is indicated on the drawing. 3.2.3 – Higher levels of cyclist movement are not catered for. 4.1.1 – The design provides traffic calming measures such as regular speed bumps at pedestrian crossing which could result in lower speeds through the development.	Speed limits should be mentioned on the drawings to be 30km/hr. The design should incorporate additional speed control measures to limit speed through the development.	
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 landscaping besides pedestrian/cyclist connection and car parking and building access along the vehicular carriageway. 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.	Signage and road markings should clearly be indicated on the drawings. The type and location of tree planting proposed should be such that they do not obscure visibility splays from junctions, pedestrian crossings and parking bays.	
A suitable range of design standards / measures have been	4.4.1 - Carriageway Widths 4.4.4 – Forward Visibility 4.4.5 – Visibility Splays	4.4.1 – The proposed internal carriageway will be approximately 5 to 6m wide. 4.4.4 – Forward visibility has been	Designers should ensure that all the proposed vehicular access/egress points should be appropriately	

applied that are consistent with the applied design speeds.	4.4.6 – Alignment and curvature 4.4.7 – Horizontal and Vertical Deflections Advice Note 1 – Transitions and Gateways	reduced through the provision of on-street parking and changes in horizontal alignments along the access road. 4.4.6 – The development features changes in horizontal curvature which promotes lower speeds. 4.4.7 Vertical deflections are not proposed in the design.	designed with according to DMURS standards. Visibility splays should be illustrated at the site access junction as well as at all the internal junctions of the site in accordance with DMURS.	

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 and, and the provision of separated pedestrian access increases 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.	Designers should prioritise sufficient lighting in all the pedestrianised areas throughout the development. This measure is essential to enhance safety and create a sense of security for users. Designers should ensure that tree canopies over time should not obstruct any lighting.	
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 – 4 No. Pedestrian crossing is provided in the development within the car park towards the building. 4.3.3 – Corner radii of 3 to 4.5m seems to be achievable. 4.4.3 – Junction design at the site vehicular access and internal junctions appears appropriate, however there are no visibility splay drawings provided for at the junctions . 4.4.7 – Vertical deflections are provided but are minimal.	Designers should ensure that all the proposed vehicular access/egress points should be appropriately designed with according to DMURS standards. Corner Radii should be appropriately mentioned in the drawings.	
Footpaths are continuous and wide enough to cater for the anticipated	3.2.1 – Movement Function. 3.2.3 – Place Context. 4.2.5 – Street Furniture	3.2.1 – The development maximises the number of walkable routes to the south and east of the development.	Footpath width should be illustrated on the drawings.	

number of pedestrian movements.	4.3.1 – Footways, Verges and Strips 4.3.2 – Pedestrian Crossings	3.2.3 – The development comprises an appealing living place with green attributes. 4.3.2 – The development comprises crossing point for vulnerable users at the northern end of the scheme. 4.3.2 – Dropped kerb pedestrian crossings are provided throughout the site, at strategic locations. 4.3.1 – Footways appear to be appropriate throughout the development which is compliant with DMURS. Mostly segregated from vehicle carriageways and through the provision of on-street parking.		
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 4.2.5 – Street Furniture 4.3.2 – Pedestrian Crossings 4.3.4 – Pedestrianised and Shared Surfaces	4.3.4 – Accessible parking spaces are proposed throughout the site. Mobility impaired users will navigate into the building as accessible parking is at the same level on as shared surface. However, as Mobility impaired users might also share the surface with other vehicular traffic, measures to allow mobility impaired users to navigate safely into the building is unclear.	Segregated or marked pedestrian surface should be considered near every accessible parking space in the car park area. This will enable mobility-impaired users to safely access the building without conflicting with vehicular traffic.	
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 vehicles. 4.3.5 Appropriate Cycle parking is provided outside the building	Appropriate dismount signage for cyclists to be installed throughout pedestrianised areas to reduce possibility of conflicts.	

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 – Adequate number of attractive walkable routes are provided to connect users from the car park to the main infrastructure. 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 a sense of place. 4.2.7 – Planting is proposed to create a softer landscape.		
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	3.2.1 – Street furniture provided does not restrict pedestrian movements. 3.2.3 – The selection of street furniture is suitable for the context. 4.3.1 – Streetlight columns are not proposed along footpaths.	Streetlight columns should be proposed at the rear of footpaths.	
The use of signage and line marking has been minimised.	3.2.1 – Movement Function 3.2.3 – Place Context 4.2.4 –	4.2.4 – Details of signage are provided, and signage is kept to the minimum required.	Design team should ensure that the signage is provided	

	Signage and Line Marking		according to DMURS standards.	
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 – Adequate number of walkable routes are provided to the south of the development as well to the north connecting to main entry and exit point with the rest of location. 3.2.1 – Materials and finishes have been carefully chosen to facilitate movement by providing visual distinctions between surfaces. 3.2.3, 4.2.6 – Materials and finishes have been used to define crossing points and parking spaces. 4.3.2 – Different surface textures and materials at pedestrian crossings act as traffic calming and indicate the crossing location to drivers. 4.4.2 – Carriageway surfaces have been defined by colour differences to make drivers aware of changes in priority.	Design team should ensure that the walking route towards the north and car park is designed according to DMURS standards.	

5 Additional Audits

5.1 Accessibility and Walkability Audit

The proposed site will be accessed off Dublin Street to the south of the site which connects to a roundabout and another access north of the site which leads to the car park. This will be the 2 vehicular entrances to the site.

There are multiple access points for pedestrians to access the site from the west of the proposed location which connects to Dublin Street. These entry points can also be used by cyclists as a shared pedestrian and cyclist access.

The site is well accessible via footpaths that connects the site to several local amenities like shopping centre, restaurants and pubs.

5.1.1 Public Transport Network

The proposed development is well served by the bus M3 which connects Mullan Village and Latlorcan. The bus stop is present at the entrance and the frequency of the buses every 2 hours on a weekday from 9am to 5pm.

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

Table 5.1 – Bus Services Available near the Development (Source: TFI)

Route No.	Bus Operator	Origin	Destination	Weekday Services
M3	TFI Local Link	Mullan Village	Latlorcan	Every 2 hours

5.2 Cycle Audit

Currently there is no cycle infrastructure in place in the surrounding area. Cyclists are expected to share the public road network with motorists. The proposed development does not include a segregated vehicle and cycle track.

External designated bicycle parking is provided in two locations outlined below.

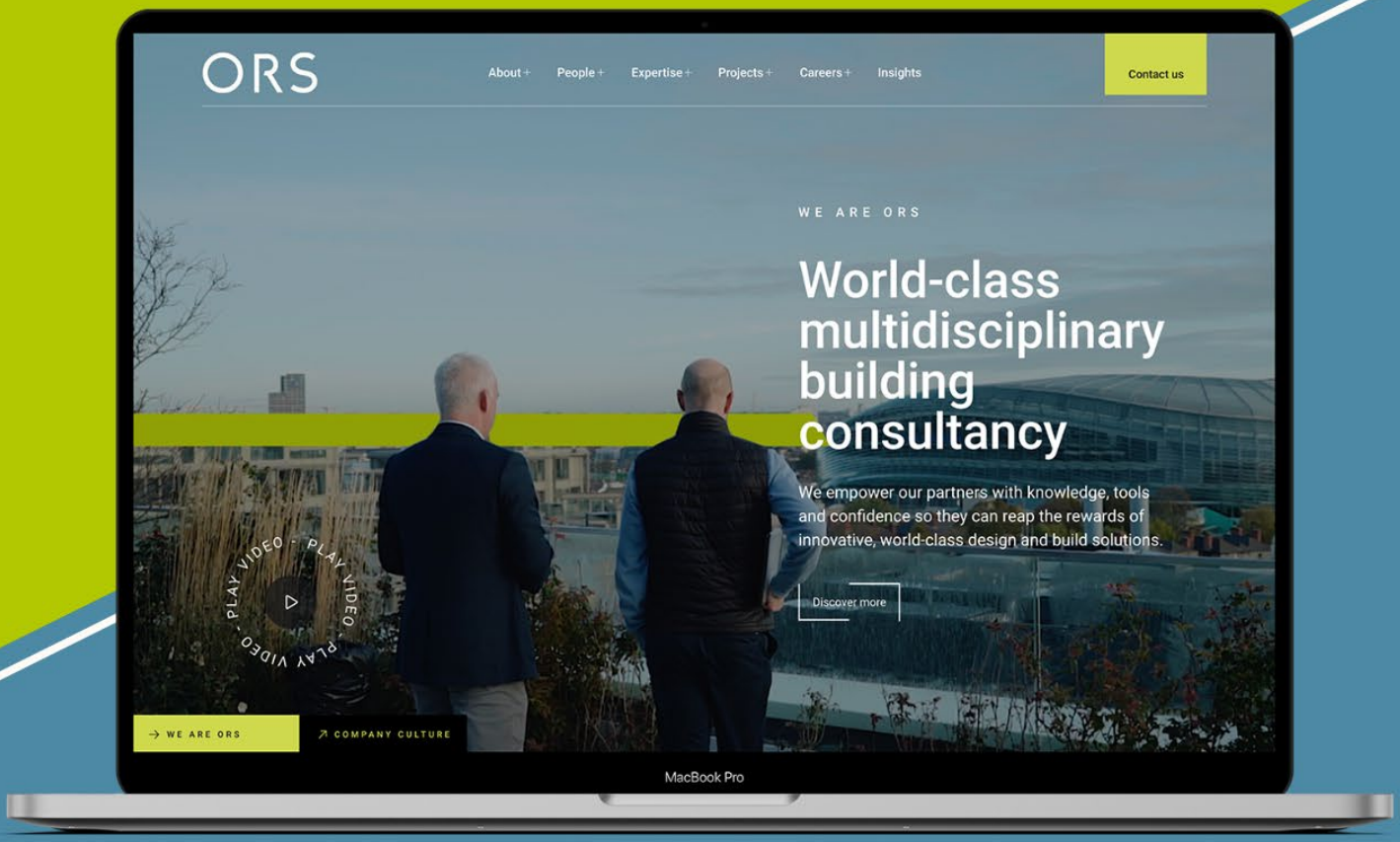
Figure 5.2: Location of bicycle stands (Source: Open Optimized Environments)

ORS | Multidisciplinary Building Consultancy

Best Workplaces™ Great Place To Work. IRELAND 2023

Access more information on our services and expertise by visiting our brand-new website.

Click here



Find Us Nationwide, on LinkedIn or on Youtube

Block A,
Marlinstown Business Park,
Mullingar, Co. Westmeath,
Ireland, N91 W5NN

Suite: G04, Iconic Offices,
Harmony Row,
Dublin 2, Co. Dublin,
Ireland, D02 H270

Level One, Block B,
Galway Technology Park,
Parkmore, Co. Galway,
Ireland, H91 A2WD

Office 2, Donegal Town,
Enterprise Centre, Lurganboy,
Donegal Town, Co. Donegal,
Ireland, F94 KT35

Office 4, Spencer House,
High Road, Letterkenny,
Co. Donegal,
Ireland, F92 PX8N

NSQ2,
Navigation Square,
Albert Quay, Cork
Ireland, T12 W351

Dublin St North Regeneration Scheme
Stage 1 Quality Audit

Designer Responses

McAdam
ENHANCING LOCAL COMMUNITIES

NORTH DUBLIN ROAD & BACKLANDS REGENERATION PROJECT

QUALITY AUDIT – DESIGNER'S RESPONSE FORM

E2442

ISSUE P01

APRIL 2025

PREPARED BY	CHECKED BY	APPROVED BY	ISSUE	DATE
DSA	KOS	KOS	P01	10/04/25

Table 1 – Quality Audit - Connectivity

Key Issues	Audit Suggestion	Design Team Response
Strategic routes/major desire lines been identified and are clearly incorporated into the design.	Designers should ensure that all the proposed street layout should be appropriately designed with according to DMURS standards.	The design is in compliance with the latest version of DMURS (2019), including the latest supplementary Advice Notes.
Multiple points of access are provided to the site/place, in particular for sustainable modes.	Design team should clearly demonstrate how vulnerable users e.g. Wheelchair users will be able to the buildings from the disabled car park. 6 pedestrian access points are present on the Dublin Street with 2 vehicular access points on both northwest and south of the proposed property.	The development is designed to maximise accessibility throughout. In some locations, such as existing alleyways, gradients are limited to due to existing site constraints. A small number of access points on Russell Row are step access only due to the interface with the existing topography. However these are secondary access points, and primary access is via Dublin Street.
Accessibility throughout the site is maximised for pedestrians and cyclists, ensuring route choice.	Separate cyclist tracks have not been provided on the scheme. Cyclists will be required to share the road with vehicles, dismount and reach their destination through the provided footpaths. Additional cyclist access should be explored.	Russell Row has been designed in line with DMURS & the Cycle Design Manual (CDM) to be a Mixed Traffic route. Due to the expected low traffic levels this allows vehicles & cyclists to share the same road space. To improve the road environment for cyclists build-outs designed to slow traffic have been amended to be tapered in accordance with the CDM. A short north-bound dedicated cycle lane is provided due a short stretch of south-bound one-way carriageway. The development has been designed to link with existing cycle routes at Old Cross Square, linking to the Ulster Canal Greenway, and to the proposed cycle routes in the Roosky Lands project.
Through movements by private vehicles on local streets are discouraged by an appropriate level of traffic calming measures.	The design should incorporate a range of additional traffic calming measures aimed at reducing vehicle speeds throughout the development.	Multiple traffic calming measures have been included in line with DMURS, such as; - implementation of the principle of self regulating streets by the provision of

		- Multiple build-outs requiring traffic to give way; - elimination of give way road markings to reduce driver's sense of traffic priority - through traffic only permitted south-bound to reduce the potential of the route being used as a rat run - reduced kerb height, including multiple raised tables See drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104

Table 2 - Quality Audit - Self-Regulating Street Environment

Key Issues	Audit Suggestion	Design Team Response
A suitable range of design speeds have been applied with regard to context and function.	Speed limits should be mentioned on the drawings to be 30km/hr. The design should incorporate additional speed control measures to limit speed through the development.	Design speed added to the project drawings Speed limiting measures provided in line with DMURS' principle of self-regulating streets See drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104
The street environment will facilitate the creation of a traffic calmed environment via the use of 'softer' or passive measures.	Signage and road markings should clearly be indicated on the drawings. The type and location of tree planting proposed should be such that they do not obscure visibility splays from junctions, pedestrian crossings and parking bays.	Design drawings clearly show the proposed road markings and road signage in line with the Traffic Signs Manual, and visibility splays in line with DMURS. See drawings DSN-MCA-ZZ-XX-DR-CE-1501 to -1504 & DSN-MCA-ZZ-XX-DR-CE-1511
A suitable range of design standards/measures have been applied that are consistent with the applied design speeds.	Designers should ensure that all the proposed vehicular access/egress points should be appropriately designed with according to DMURS standards. Visibility splays should be illustrated at the site access junction as well as at all the internal junctions of the site in accordance with DMURS.	All vehicular access & egress points have been designed in accordance with DMURS, including the latest supplementary Advice Notes. All visibility splays have been shown on drawing DSN-MCA-ZZ-XX-DR-CE-1511

Table 3 - Quality Audit - Pedestrian and Cycling Environment

Key Issues	Audit Suggestion	Design Team Response
The built environment contributes to the creation of a safe and comfortable pedestrian environment.	Designers should prioritise sufficient lighting in all the pedestrianised areas throughout the development. This measure is essential to enhance safety and create a sense of security for users. Designers should ensure that tree canopies over time should not obstruct any lighting.	The lighting in the development has generally been designed in line with BS 5489-1 & EN 13201. Lighting on roads, and specifically at controlled & uncontrolled road crossings, has been designed in line with TII design standard DN-LHT-03038 Design of Road Lighting for the National Road Network. See drawing 22268-DLW-XX-XX-DR-E-00100
Junctions been designed to ensure the needs of pedestrians and cyclists are prioritised.	Designers should ensure that all the proposed vehicular access/egress points should be appropriately designed with according to DMURS standards. Corner Radii should be appropriately mentioned in the drawings.	All vehicular access & egress points have been designed in accordance with DMURS, including the latest supplementary Advice Notes. All kerb radii have been dimensioned on drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104
Footpaths are continuous and wide enough to cater for the anticipated number of pedestrian movements.	Footpath width should be illustrated on the drawings.	All footpath and footway widths have been dimensioned on drawings DSN-MCA-ZZ-XX-DR-CE-1101 to -1104
The particular needs of visually and mobility impaired users been identified and incorporated in the design.	Segregated or marked pedestrian surface should be considered near every accessible parking space in the car park area. This will enable mobility-impaired users to safely access the building without conflicting with vehicular traffic.	All disabled parking bays have immediate level access to a dedicated pedestrian footway.
Cycling facilities will cater for cyclists of all ages and abilities.	Appropriate dismount signage for cyclists to be installed throughout pedestrianised areas to reduce possibility of conflicts.	The Cycle Design Manual 2023 notes that requirements for cyclists to dismount are not inclusive. It also notes that where a persistent problem is found that cannot be solved through other design features or enforcement then it can be considered. As such the Design Team will keep this recommendation under review through Detailed Design.

Table 4 - Quality Audit - Visual Quality

Key Issues	Audit Suggestion	Design Team Response
The landscape plan responds to the street hierarchy and the value of the place.	*no suggestion provided	*no response required
Street furniture is orderly placed.	Streetlight columns should be proposed at the rear of footpaths.	Streetlight columns are located at the rear of footways, and the edge of off-line footpaths. See drawing 22268-DLW-XX-XX-DR-E-00100
The use of signage and line marking has been minimised.	Design team should ensure that the signage is provided according to DMURS standards.	Signage and road markings have been provided in accordance with DMURS, and the Traffic Signs Manual, and minimised where feasible in line with the DMURS principle of self-regulating streets. See drawings DSN-MCA-ZZ-XX-DR-CE-1501 to -1504
Materials and finishes used throughout the scheme have been selected from a limited palette and respond to the value of the place	Design team should ensure that the walking route towards the north and car park is designed according to DMURS standards.	All new footways are design in accordance with DMURS, including the latest supplementary Advice Notes.

Cycle Audit

Audit Issue	Design Team Response
Currently there is no cycle infrastructure in place in the surrounding area. Cyclists are expected to share the public road network with motorists. The proposed development does not include a segregated vehicle and cycle track. External designated bicycle parking is provided in two locations outlined below.	Russell Row has been designed in line with DMURS & the Cycle Design Manual (CDM) 2023 to be a Mixed Traffic route. Due to the expected low traffic levels this allows vehicles & cyclists to share the same road space. To improve the road environment for cyclists build-outs designed to slow traffic have been amended to be tapered in accordance with the CDM. A short north-bound dedicated cycle lane is provided due a short stretch of south-bound one-way carriageway. The development has been designed to link with existing cycle routes at Old Cross Square, linking to the Ulster Canal Greenway, and to the proposed cycle routes in the Roosky Lands project.

BELFAST
478 Castlereagh Road
Belfast
BT5 6BQ
Northern Ireland

T +44 (0) 28 9040 2000

admin@mcadamdesign.co.uk
www.mcadamdesign.co.uk