# Request for Further Information - Engineering Response (South Dublin County Council Register Reference SDZ22A/0014)

Phase 3 Proposed Development at Aderrig, Adamstown, Co. Dublin

March 2023

**Waterman Moylan Consulting Engineers Limited**
Block S, Eastpoint Business Park, Alfie Byrne Road, Dublin D03 H3F4
www.waterman-moylan.ie

| | |
|---|---|
| **Client Name:** | Quintain Developments Ireland LTD |
| **Document Reference:** | 22-023r.008 |
| **Project Number:** | 22-023 |

## Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015)

| Issue | Date | Prepared by | Checked by | Approved by |
|---|---|---|---|---|
| 1st | March 23 | J. Burger | I. Worrell | I. Worrell |

**Comments**

## Disclaimer

This report has been prepared by Waterman Moylan, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the Client.

We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report is confidential to the Client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

# Content



## Figures



## Appendices

# 1. Introduction

South Dublin County Council has requested **Further Information** (RFI) in relation to the **Planning Application** under register reference **SDZ22A/0014** for the Phase 3 residential development at Aderrig, located within the Adamstown Strategic Development Zone (ASDZ).

Waterman Moylan attended an RFI response meeting, including the Roads Department within South Dublin County Council on the 14th of February 2023. The outcome of this meeting assisted Waterman Moylan with formulating responses to this request for Further Information.

Separate correspondence relating to the requested bus stops on Celbridge Link Road by the NTA has been held between Waterman Moylan, Goodrock Project Management, Quintain Developments Ireland, the NTA and SDCC Roads Department. The finalized bus stop design submitted in this RFI response concludes all requested amendments to the design and related RSA findings. The design will be issued to the NTA in conjunction with the submission of this RFI response.

Of the requested bus stop design to the north of Aderrig phase 3, the preferred location of the northbound bus stop straddles two separate land ownerships and therefore does not comprise part of this RFI response. Celbridge Link Road will ultimately be taken in charge and therefore the final design of the northbound bus stop can be undertaken by the relevant authority for statutory undertaking. The indicative location of which can be seen on Waterman-Moylan Drawing No. 22-023- SK099 – Masterplan.

This report sets out the Civil Engineering responses which are required from Waterman Moylan. This submission should be read in conjunction with the submission of Thornton O'Connor Town Planning, Burke-Kennedy Doyle Architects & Doyle and O'Troithigh Landscape Architect.

The Further Information items which are addressed in this report are as follows:

- Item 3a
- Item 3b
- Item 3c
- Item 3e
- Item 3f
- Item 3g
- Item 8

## 2. Response to Engineering Conditions

### 2.1 Item 3a

*The applicant is requested to submit a revised layout showing perpendicular parking only being provided on one side of the street at any point. The applicant should also demonstrate a minimum distance of 6m behind each perpendicular parking space.*

**Response:**

Relevant changes to the overall internal road layout and design are shown on Burke-Kennedy Doyle Architects' layout drawings (Site Block Plan Sheet 1 of 2 and Site Block Plan Sheet 2 of 2 drawings (Nos. 6259A-P-010 and 6259A-P-011). Supplementary information for the final design of the internal roads layout can be seen in Waterman-Moylan Drawings, as listed below:

- 22-023-T100 - Proposed General Arrangement
- 22-023-T115 - Proposed Visibility Splays
- 22-023-T110 - Proposed Road Markings & Signage
- 22-023-T113 - Proposed Fire Tender Autotrack Analysis
- 22-023-T114 - Proposed Refuse Truck Autotrack Analysis

### 2.2 Item 3b

*The applicant is requested to submit a revised layout not less than 1:200 scale showing the cross sections of the roads confirming the layouts as described in the SDZ planning scheme.*

**Response:**

Revised layouts of the internal roads confirming the layouts as described in the SDZ planning scheme have been provided. For detailed layouts of the site, refer to Burke-Kennedy Doyle Architects' layout drawings, Site Block Plan Sheet 1 of 2 and Site Block Plan Sheet 2 of 2 drawings (Nos. 6259A-P-010 and 6259A-P-011, which have been prepared at a scale of 1:200 and Street Sections (No. 6259A-P-030) which has been prepared at a scale of 1:100. For detailed road cross-sections refer to Waterman- Moylan Drawings, as listed below:

- 22-023- T122 - Typical Road Cross Sections

### 2.3 Item 3c

*The applicant is requested to demonstrate that the omission of a 2nd northbound vehicular connection from Adamstown Way would not result in the significant traffic queuing at the junction of Road 5 and Adamstown Way.*

**Response:**

A junction modelling exercise has been conducted by Waterman-Moylan to assess the impact of the omission of a 2nd northbound vehicular connection from Adamstown Way and whether this would result in significant traffic queuing at the junction of Road 5 and Adamstown Way.

To be conservative, for this peak hour analysis, 60% of all generated trips were assumed to arrive and leave the development via Road 5 (to/from the north) and 40% via Road 8 (to/from the south). 1 trip in and 1 trip out has been allowed for from the Electrical Transformer Station (to the West accessed via Adamstown Way) – Reg. Ref. SD 06A/0497. Refer to Appendix A – Traffic Impact

Assessment for Road 5 – Adamstown Way Junction.

The modelling results indicate that the junction will operate within the capacity for the opening year 2026 during both AM and PM peak hours, with a maximum RFC of 0.8 on Arm A.

Refer to Appendix A for the results from the Junction modelling exercise.

## 2.4 Item 3e

*The applicant should provide clarification on how and where pedestrians and cyclists will cross the Celbridge Link Road.*

**Response:**

It is proposed that, in addition to the signalized crossing at the junction of Adamstown Way and Celbridge Link Road, there will be a toucan crossing to the north of the Aderrig Phase 3 development, where pedestrians and cyclists will cross the Celbridge Link Road, refer to Figure 1.

The design of the toucan crossing has been discussed with the NTA and SDCC Roads Department and all comments implemented into the design. A road safety audit has been undertaken for the proposed bus stop and toucan crossing on Celbridge Link Road and the items raised have been satisfactorily addressed. A copy of this road safety audit is included as part of this further information response, refer to Appendix B.

Refer to Waterman-Moylan Drawing Number:

- 22-023- T111 - Proposed Toucan Crossing & Bus Stop

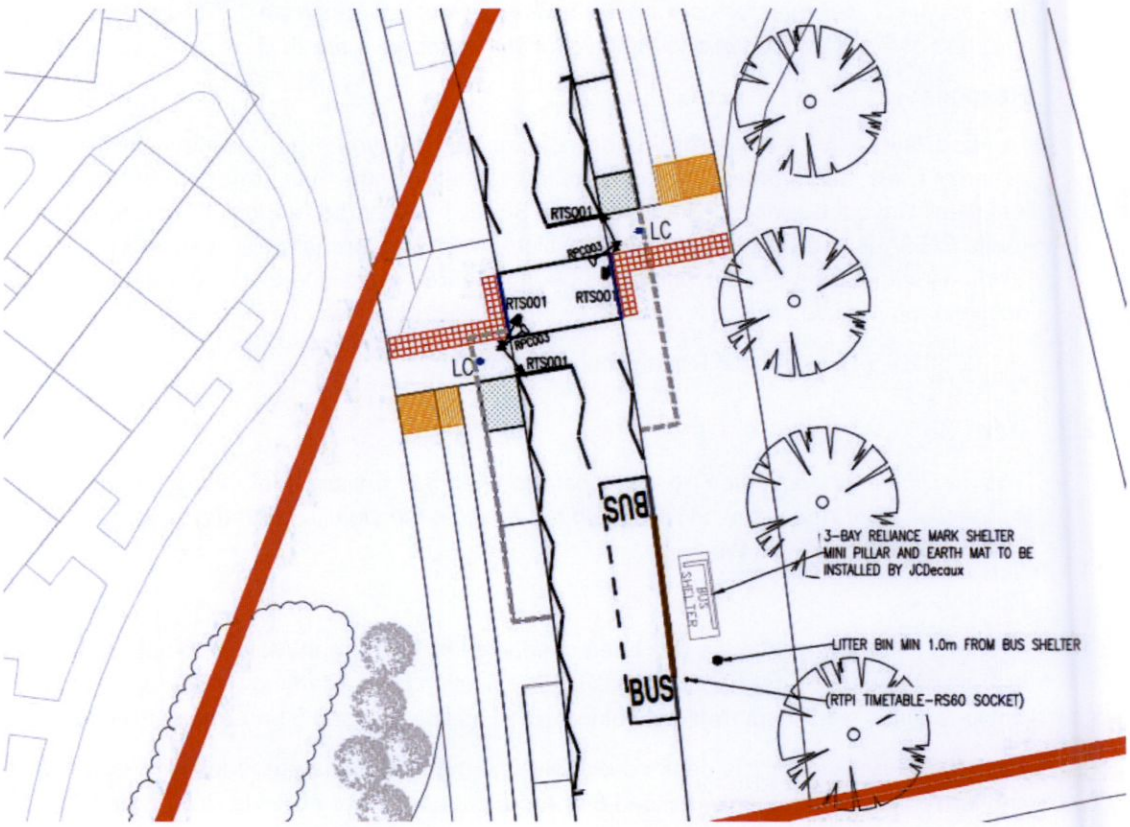



Figure 1: Proposed toucan crossing

## 2.5 Item 3f

*The applicant shall submit a revised Stage 1 Road Safety Audit.*

**Response:**

A revised Road Safety Audit (RSA) has been completed by Traffico, refer to Appendix B. All items raised by Traffico have been responded to with just reasoning and or amendment of the proposed layout.

Relevant changes to the overall road layout and design are as shown on Burke-Kennedy Doyle Architects' layout drawings.

Refer to Waterman- Moylan Drawings, as listed below, for the proposed road arrangements;

- 22-023-T110 - Proposed Road Markings & Signage
- 22-023-T113 - Proposed Fire Tender Autotrack Analysis
- 22-023-T114 - Proposed Refuse Truck Autotrack Analysis

Noted that all Waterman-Moylan Drawings presented in this further response include the required amendments from the revised Stage 1 RSA.

## 2.6 Item 3g

*The applicant should supply the additional bus stops on the Celbridge Link Road as requested by the NTA.*

**Response:**

The National Transport Authority (NTA) requested a preliminary design for an additional bus stop on the Celbridge Road C2 bus route adjacent to the proposed Aderrig Phase 3 development in Adamstown. The proposed design features a single bus stop on the southbound lane adjacent to the proposed toucan crossing, which provides pedestrians and cyclists safe passage across the Celbridge Link Road. Following consultation with Goodrock Project Management, the NTA and Waterman-Moylan on the proposed bus stop locations, it was determined that the preferred location of the northbound bus stop would straddle two separate land ownerships and therefore be excluded from this application. Celbridge Link Road will ultimately be taken in charge therefore the final design of the northbound bus stop can be undertaken by the relevant authority for statutory undertaking. The indicative location of which can be seen on Waterman-Moylan Drawing No. 22-023- SK099 – Masterplan.

The design criteria specified by the NTA has also been applied to the bus stops to the bus south of the Aderrig phase 3 site, which was previously proposed under the Adamstown Boulevard planning application (reference number SDZ22A/0007). The indicative southern bus stop locations are to be agreed upon with the SDCC and NTA via Condition No. 10 of the Boulevard Planning Application (Reg. Ref. SDZ22A/0007) (refer to Drawing number 22-023-T112 for indicative locations).

An RSA has been undertaken on the bus stop design on Celbridge Link Road and the items raised have been satisfactorily addressed.

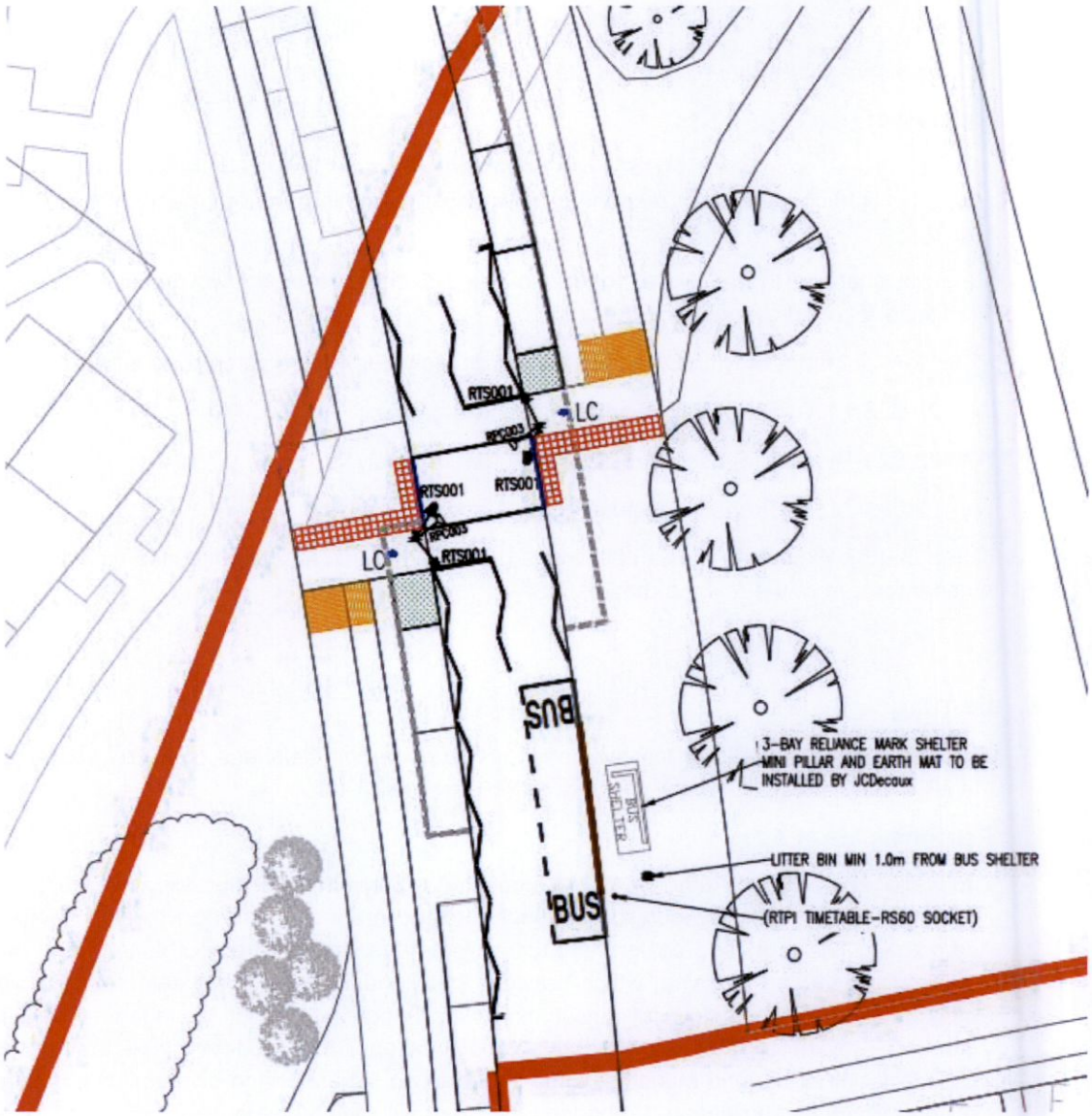



Figure 2: Proposed northern toucan crossing and Celbridge Link Road Bus stop

The final submission of the NTA bus stop design is included as part of this further information response. Refer to Waterman-Moylan Drawings, for details of same;

- 22-023- T111 - Proposed Toucan Crossing & Bus Stop
- 22-023- T112 - Proposed Uncontrolled Crossing & Bus Stops
- 22-023- SK099 – Masterplan

## 2.7 Item 8

*The applicant is requested to provide additional SuDS proposals that include permeable paving and further bio-retention tree pits within the requested additional street trees required to comply with the planning scheme.*

**Response:**

Further Bio-retention tree pits have been provided within the requested additional street trees to comply with the planning scheme. Refer to Doyle and O'Troithigh Landscape Architect layout and Bio-retention tree pits detail.

As noted in the Site Investigation reports completed by Ground Investigation Irelands for the existing development surrounding the Aderrig Phase 3 site, "the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate". The site's soil conditions are not suitable for surface water permeability, due to this, permeable paving and filter drains have not been proposed for development. There are no developments within Adamstown that have permeable paving due to the soil conditions.

The final proposed SUDS measures include;

- Water butts in each unit's back garden – 200ℓ capacity each,
- Roadside swales within open green space areas throughout the site, where possible, and
- Bio-retention tree pits – to be connected to the main surface water network with the streets

# APPENDICES

# A. Junction Modelling Results

# Junctions 9

## PICADY 9 - Priority Intersection Module



**Filename:** FI - Site Access Junction_Adamstown Way_Road 5_Road 8.j9
**Path:** M:\Projects\22\22-023 Aderrig Phase 3\Design\Civil\Traffic
**Report generation date:** 16/01/2023 14:54:37

---



### Summary of junction performance

| | AM | | | | | PM | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Set ID | Queue (PCU) | Delay (s) | RFC | LOS | Set ID | Queue (PCU) | Delay (s) | RFC | LOS |
| | Adamstown Way / Road 5 / Road 8 - 2026 Opening Year | | | | | | | | | |
| Stream B-ACD | D1 | 0.1 | 7.97 | 0.06 | A | D2 | 0.0 | 7.80 | 0.03 | A |
| Stream A-BCD | | 0.0 | 6.17 | 0.02 | A | | 0.1 | 6.39 | 0.08 | A |
| Stream D-ABC | | 0.1 | 6.07 | 0.07 | A | | 0.0 | 5.86 | 0.04 | A |
| Stream C-ABD | | 0.0 | 0.00 | 0.00 | A | | 0.0 | 0.00 | 0.00 | A |

*Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.*

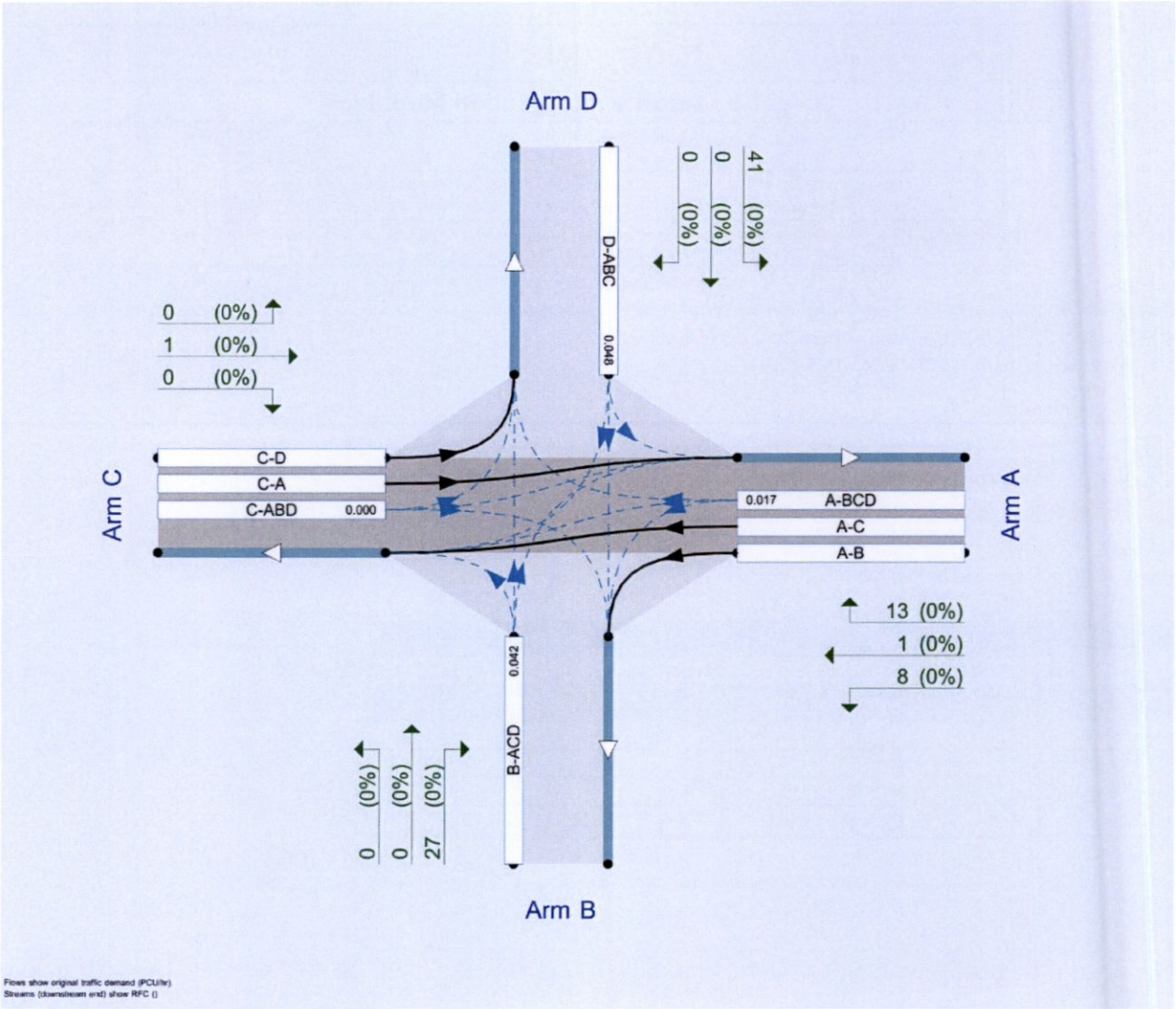
### File summary

#### File Description

| | |
|---|---|
| Title | |
| Location | |
| Site number | |
| Date | 16/01/2023 |
| Version | |
| Status | (new file) |
| Identifier | |
| Client | |
| Jobnumber | |
| Enumerator | DOMAIN\Traffic |
| 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 |




*The junction diagram reflects the last run of Junctions.*

## Analysis Options

| Vehicle length (m) | Calculate Queue Percentiles | Calculate detailed queueing delay | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|---|---|
| 5.75 | | | | 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 |
|---|---|---|---|---|---|---|---|
| D1 | 2026 Opening Year | AM | ONE HOUR | 08:00 | 09:30 | 15 | ✓ |
| D2 | 2026 Opening Year | PM | ONE HOUR | 17:00 | 18:30 | 15 | ✓ |

## Analysis Set Details

| ID | Name | Include in report | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|---|---|---|---|---|
| A1 | Adamstown Way / Road 5 / Road 8 | ✓ | 100.000 | 100.000 |

# Adamstown Way / Road 5 / Road 8 - 2026 Opening Year, AM

### Data Errors and Warnings

*No errors or warnings*

## Junction Network

### Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|---|
| 1 | untitled | Crossroads | Two-way | | 6.06 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Arms

### Arms

| Arm | Name | Description | Arm type |
|---|---|---|---|
| A | untitled | | Major |
| B | untitled | | Minor |
| C | untitled | | Major |
| D | untitled | | Minor |

### Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|---|---|---|---|---|---|---|
| A | 6.00 | | | 30.0 | ✓ | 0.00 |
| C | 6.00 | | | 100.0 | ✓ | 0.00 |

*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 | 23 | 23 |
| D | One lane | 3.00 | 23 | 23 |

### Slope / Intercept / Capacity

#### Priority Intersection Slopes and Intercepts

| Stream | Intercept (PCU/hr) | Slope for A-B | Slope for A-C | Slope for A-D | Slope for B-A | Slope for B-C | Slope for B-D | Slope for C-A | Slope for C-B | Slope for C-D | Slope for D-A | Slope for D-B | Slope for D-C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-D | 591 | - | - | - | - | - | - | 0.229 | 0.327 | 0.229 | - | - | - |
| B-A | 496 | 0.090 | 0.229 | 0.229 | - | - | - | 0.144 | 0.326 | - | 0.229 | 0.229 | 0.114 |
| B-C | 638 | 0.098 | 0.247 | - | - | - | - | - | - | - | - | - | - |
| B-D, nearside lane | 496 | 0.090 | 0.229 | 0.229 | - | - | - | 0.144 | 0.326 | 0.144 | - | - | - |
| B-D, offside lane | 496 | 0.090 | 0.229 | 0.229 | - | - | - | 0.144 | 0.326 | 0.144 | - | - | - |
| C-B | 632 | 0.245 | 0.245 | 0.350 | - | - | - | - | - | - | - | - | - |
| D-A | 638 | - | - | - | - | - | - | 0.247 | - | 0.098 | - | - | - |
| D-B, nearside lane | 496 | 0.144 | 0.144 | 0.326 | - | - | - | 0.229 | 0.229 | 0.090 | - | - | - |
| D-B, offside lane | 496 | 0.144 | 0.144 | 0.326 | - | - | - | 0.229 | 0.229 | 0.090 | - | - | - |
| D-C | 496 | - | 0.144 | 0.326 | 0.114 | 0.229 | 0.229 | 0.229 | 0.229 | 0.090 | - | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*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 | 2026 Opening Year | AM | ONE HOUR | 08:00 | 09:30 | 15 | ✓ |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|---|---|
| ✓ | ✓ | HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Profile type | Use O-D data | Average Demand (PCU/hr) | Scaling Factor (%) |
|---|---|---|---|---|---|
| A | | ONE HOUR | ✓ | 22 | 100.000 |
| B | | ONE HOUR | ✓ | 27 | 100.000 |
| C | | ONE HOUR | ✓ | 1 | 100.000 |
| D | | ONE HOUR | ✓ | 41 | 100.000 |

# Origin-Destination Data

### Demand (PCU/hr)

| | | To | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| From | A | 0 | 8 | 1 | 13 |
| | B | 27 | 0 | 0 | 0 |
| | C | 1 | 0 | 0 | 0 |
| | D | 41 | 0 | 0 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| From | A | 1 | 0 | 0 | 0 |
| | B | 0 | 0 | 0 | 0 |
| | C | 0 | 0 | 0 | 0 |
| | D | 0 | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (PCU) | Max LOS | Average Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|---|---|---|---|---|---|---|
| B-ACD | 0.06 | 7.97 | 0.1 | A | 25 | 37 |
| A-BCD | 0.02 | 6.17 | 0.0 | A | 12 | 18 |
| A-B | | | | | 7 | 11 |
| A-C | | | | | 0.90 | 1 |
| D-ABC | 0.07 | 6.07 | 0.1 | A | 38 | 56 |
| C-ABD | 0.00 | 0.00 | 0.0 | A | 0 | 0 |
| C-D | | | | | 0 | 0 |
| C-A | | | | | 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-ACD | 20 | 5 | 486 | 0.042 | 20 | 0.0 | 0.0 | 7.720 | A |
| A-BCD | 10 | 2 | 596 | 0.017 | 10 | 0.0 | 0.0 | 6.142 | A |
| A-B | 6 | 1 | | | 6 | | | | |
| A-C | 0.74 | 0.19 | | | 0.74 | | | | |
| D-ABC | 31 | 8 | 638 | 0.048 | 31 | 0.0 | 0.1 | 5.922 | A |
| C-ABD | 0 | 0 | 627 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 24 | 6 | 484 | 0.050 | 24 | 0.0 | 0.1 | 7.824 | A |
| A-BCD | 12 | 3 | 597 | 0.020 | 12 | 0.0 | 0.0 | 6.153 | A |
| A-B | 7 | 2 | | | 7 | | | | |
| A-C | 0.88 | 0.22 | | | 0.88 | | | | |
| D-ABC | 37 | 9 | 638 | 0.058 | 37 | 0.1 | 0.1 | 5.983 | A |
| C-ABD | 0 | 0 | 626 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 30 | 7 | 482 | 0.062 | 30 | 0.1 | 0.1 | 7.964 | A |
| A-BCD | 15 | 4 | 598 | 0.024 | 15 | 0.0 | 0.0 | 6.169 | A |
| A-B | 9 | 2 | | | 9 | | | | |
| A-C | 1 | 0.27 | | | 1 | | | | |
| D-ABC | 45 | 11 | 638 | 0.071 | 45 | 0.1 | 0.1 | 6.067 | A |
| C-ABD | 0 | 0 | 624 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 30 | 7 | 482 | 0.062 | 30 | 0.1 | 0.1 | 7.966 | A |
| A-BCD | 15 | 4 | 598 | 0.024 | 15 | 0.0 | 0.0 | 6.172 | A |
| A-B | 9 | 2 | | | 9 | | | | |
| A-C | 1 | 0.27 | | | 1 | | | | |
| D-ABC | 45 | 11 | 638 | 0.071 | 45 | 0.1 | 0.1 | 6.067 | A |
| C-ABD | 0 | 0 | 624 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 24 | 6 | 484 | 0.050 | 24 | 0.1 | 0.1 | 7.826 | A |
| A-BCD | 12 | 3 | 597 | 0.020 | 12 | 0.0 | 0.0 | 6.156 | A |
| A-B | 7 | 2 | | | 7 | | | | |
| A-C | 0.88 | 0.22 | | | 0.88 | | | | |
| D-ABC | 37 | 9 | 638 | 0.058 | 37 | 0.1 | 0.1 | 5.984 | A |
| C-ABD | 0 | 0 | 626 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 20 | 5 | 486 | 0.042 | 20 | 0.1 | 0.0 | 7.727 | A |
| A-BCD | 10 | 2 | 596 | 0.017 | 10 | 0.0 | 0.0 | 6.143 | A |
| A-B | 6 | 1 | | | 6 | | | | |
| A-C | 0.74 | 0.19 | | | 0.74 | | | | |
| D-ABC | 31 | 8 | 638 | 0.048 | 31 | 0.1 | 0.1 | 5.927 | A |
| C-ABD | 0 | 0 | 627 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 0 | 0 | | | 0 | | | | |

# Adamstown Way / Road 5 / Road 8 - 2026 Opening Year, PM

### Data Errors and Warnings

*No errors or warnings*

## Junction Network

### Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|---|
| 1 | untitled | Crossroads | Two-way | | 4.83 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## 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 |
|---|---|---|---|---|---|---|---|
| D2 | 2026 Opening Year | PM | ONE HOUR | 17:00 | 18:30 | 15 | ✓ |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|---|---|
| ✓ | ✓ | HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Profile type | Use O-D data | Average Demand (PCU/hr) | Scaling Factor (%) |
|---|---|---|---|---|---|
| A | | ONE HOUR | ✓ | 73 | 100.000 |
| B | | ONE HOUR | ✓ | 14 | 100.000 |
| C | | ONE HOUR | ✓ | 1 | 100.000 |
| D | | ONE HOUR | ✓ | 22 | 100.000 |

## Origin-Destination Data

**Demand (PCU/hr)**

| | | To | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| From | A | 0 | 29 | 1 | 43 |
| | B | 14 | 0 | 0 | 0 |
| | C | 1 | 0 | 0 | 0 |
| | D | 22 | 0 | 0 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| From | A | 1 | 0 | 0 | 0 |
| | B | 0 | 0 | 0 | 0 |
| | C | 0 | 0 | 0 | 0 |
| | D | 0 | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (PCU) | Max LOS | Average Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|---|---|---|---|---|---|---|
| B-ACD | 0.03 | 7.80 | 0.0 | A | 13 | 19 |
| A-BCD | 0.08 | 6.39 | 0.1 | A | 41 | 62 |
| A-B | | | | | 25 | 37 |
| A-C | | | | | 0.85 | 1 |
| D-ABC | 0.04 | 5.86 | 0.0 | A | 20 | 30 |
| C-ABD | 0.00 | 0.00 | 0.0 | A | 0 | 0 |
| C-D | | | | | 0 | 0 |
| C-A | | | | | 0 | 0 |

## Main Results for each time segment

### 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-ACD | 11 | 3 | 483 | 0.022 | 10 | 0.0 | 0.0 | 7.618 | A |
| A-BCD | 34 | 8 | 607 | 0.055 | 33 | 0.0 | 0.1 | 6.278 | A |
| A-B | 21 | 5 | | | 21 | | | | |
| A-C | 0.71 | 0.18 | | | 0.71 | | | | |
| D-ABC | 17 | 4 | 638 | 0.026 | 16 | 0.0 | 0.0 | 5.788 | A |
| C-ABD | 0 | 0 | 615 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 13 | 3 | 480 | 0.026 | 13 | 0.0 | 0.0 | 7.695 | A |
| A-BCD | 40 | 10 | 609 | 0.066 | 40 | 0.1 | 0.1 | 6.326 | A |
| A-B | 24 | 6 | | | 24 | | | | |
| A-C | 0.84 | 0.21 | | | 0.84 | | | | |
| D-ABC | 20 | 5 | 638 | 0.031 | 20 | 0.0 | 0.0 | 5.818 | A |
| C-ABD | 0 | 0 | 612 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 15 | 4 | 477 | 0.032 | 15 | 0.0 | 0.0 | 7.802 | A |
| A-BCD | 50 | 13 | 614 | 0.082 | 50 | 0.1 | 0.1 | 6.388 | A |
| A-B | 29 | 7 | | | 29 | | | | |
| A-C | 1 | 0.25 | | | 1 | | | | |
| D-ABC | 24 | 6 | 638 | 0.038 | 24 | 0.0 | 0.0 | 5.860 | A |
| C-ABD | 0 | 0 | 607 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 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-ACD | 15 | 4 | 477 | 0.032 | 15 | 0.0 | 0.0 | 7.803 | A |
| A-BCD | 50 | 13 | 614 | 0.082 | 50 | 0.1 | 0.1 | 6.391 | A |
| A-B | 29 | 7 | | | 29 | | | | |
| A-C | 1 | 0.25 | | | 1 | | | | |
| D-ABC | 24 | 6 | 638 | 0.038 | 24 | 0.0 | 0.0 | 5.860 | A |
| C-ABD | 0 | 0 | 607 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 0 | 0 | | | 0 | | | | |

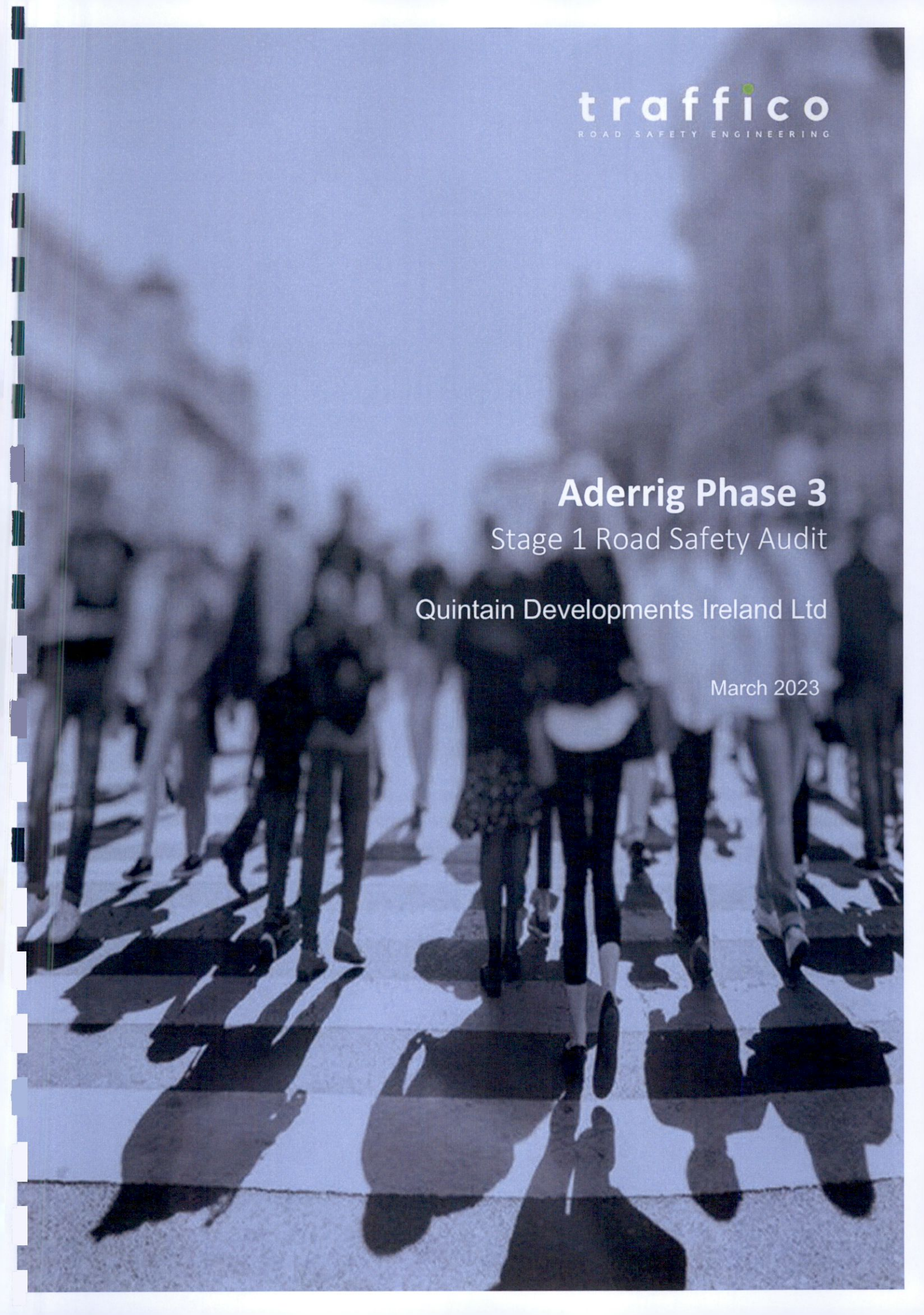
**18:00 - 18:15**

| 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-ACD | 13 | 3 | 480 | 0.026 | 13 | 0.0 | 0.0 | 7.698 | A |
| A-BCD | 40 | 10 | 609 | 0.066 | 41 | 0.1 | 0.1 | 6.330 | A |
| A-B | 24 | 6 | | | 24 | | | | |
| A-C | 0.84 | 0.21 | | | 0.84 | | | | |
| D-ABC | 20 | 5 | 638 | 0.031 | 20 | 0.0 | 0.0 | 5.819 | A |
| C-ABD | 0 | 0 | 612 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 0 | 0 | | | 0 | | | | |

**18:15 - 18:30**

| 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-ACD | 11 | 3 | 483 | 0.022 | 11 | 0.0 | 0.0 | 7.620 | A |
| A-BCD | 34 | 8 | 607 | 0.055 | 34 | 0.1 | 0.1 | 6.284 | A |
| A-B | 21 | 5 | | | 21 | | | | |
| A-C | 0.71 | 0.18 | | | 0.71 | | | | |
| D-ABC | 17 | 4 | 638 | 0.026 | 17 | 0.0 | 0.0 | 5.788 | A |
| C-ABD | 0 | 0 | 615 | 0.000 | 0 | 0.0 | 0.0 | 0.000 | A |
| C-D | 0 | 0 | | | 0 | | | | |
| C-A | 0 | 0 | | | 0 | | | | |

## B. Response to revised Stage 1 RSA



traffico
ROAD SAFETY ENGINEERING

# Aderrig Phase 3

## Stage 1 Road Safety Audit

Quintain Developments Ireland Ltd

March 2023

traffico

# Aderrig Phase 3

# Stage 1 Road Safety Audit

## March 2023

### Notice

This document and its contents have been prepared and are intended solely for Quintain Developments Ireland Ltd's information and use in relation to the Aderrig Phase 3.

Traffico assumes no responsibility to any other party in respect of or arising out of or in connection with this document and / or its contents.

### Document History

| JOB NUMBER: 220080 | | | DOCUMENT REF: 220080RPT003_RSA1_Rev_2 | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| 2 | Final Issue | MD | MD | JW | MD | 22 Mar 2023 |
| 1 | Final Issue | MD | MD | JW | MD | 10 Mar 2023 |
| 0 | Draft Issue | MD | MD | JW | MD | 07 Mar 2023 |
| Revision | Purpose Description | Originated | Checked | Reviewed | Authorised | Date |

# Contents

## Section — Page



### List of Tables



### List of Figures



## Appendices

# 1. Introduction

## 1.1 Report Context

This report describes the findings of a Stage 1 Road Safety Audit associated with the proposed Aderrig Phase 3.

The Audit has been completed by Traffico Ltd. on behalf of Quintain Developments Ireland Ltd.

## 1.2 Details of Site Inspection

| Date | Daylight / Darkness | Weather & Road Conditions |
|---|---|---|
| Thursday 2nd March 2023 | Daylight | Cloudy with damp roads. |

**Table 1.1 – Site Inspection Details**

## 1.3 The Road Safety Audit Team

The members of the Road Safety Audit Team have been listed following:

| Status | Name / Qualifications | TII Auditor Reference No: |
|---|---|---|
| Audit Team Leader (ATL) | **Martin Deegan**<br>BEng(Hons) MSc CEng MIEI | MD101312 |
| Audit Team Member (ATM) | **Jason Walsh**<br>BEng (Hons) PCert (RSA) CEng MIEI | JW3362499 |
| Audit Trainee (AT) | - | - |

**Table 1.2 – Audit Team Details**

## 1.4 Design Drawings Examined as Part of the Audit Process

The following drawing(s) were examined as part of the Road Safety Audit (RSA) process:

| Reference No. | Drawing / Document Title | Revision |
|---|---|---|
| T010 | Extent of Works | A |
| T100 | Proposed General Arrangement | B |
| T110 | Proposed Road Markings & Signage | A |
| T111 | Proposed Fire Tender Autotrack Analysis | - |
| T112 | Proposed Refuse Truck Autotrack Analysis | - |
| T113 | Proposed Visibility Splays | - |

**Table 1.3 – Designers Drawing List**

## 1.5 Road Safety Audit Compliance

### Procedure and Scope

This Road Safety Audit has been carried out in accordance with the procedures and scope set out in TII publication number GE-STY-01024 - Road Safety Audit.

As part of the road safety audit process, the Audit Team have examined only those issues within the design which relate directly to road safety.

### Compliance with Design Standards

The road safety audit process is not a design check, therefore verification or compliance with design standards has not formed part of the audit process.

### Minimizing Risk of Collision Occurrence

All problems described in this report are considered by the Audit Team to require action in order to improve the safety of the scheme and minimise the risk of collision occurrence.

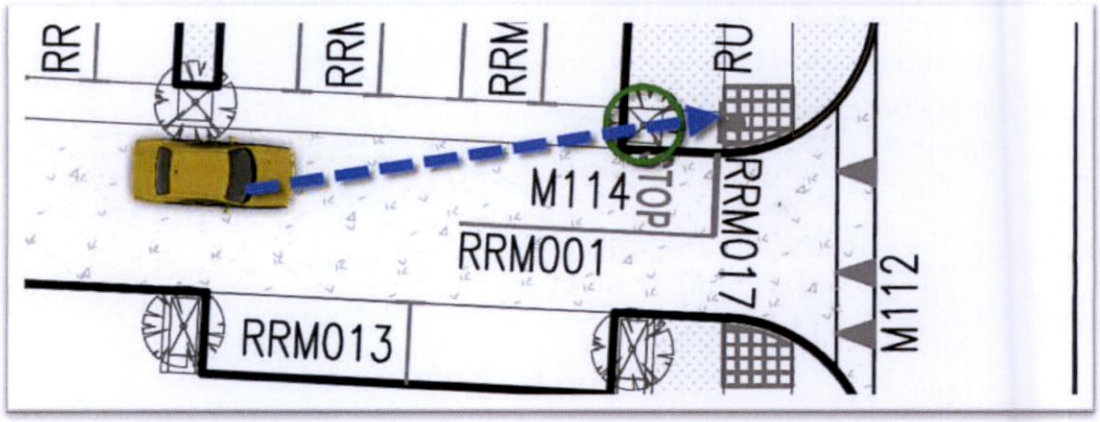
# 2. Road Safety Issues Identified

## 2.1 Problem: Trees Obscuring Road Signage

**Location:** **Priority Control Junctions on Internal Streets**

A tree obscuring a driver's forward visibility to the stop sign could increase the risk of late braking and conflicts with pedestrians attempting to cross the road.

**Figure 2.1 – Junction Where a Tree Could Obscure Forward Visibility to a Stop Sign**




**Recommendation**

Tree positions on all internal priority-controlled junctions should be checked to ensure that appropriate forward visibility is maintained to road signage (especially when the trees have reached maturity).

## 2.2 Problem: Trees Impacting on Traffic Signal Operation

**Location:** **Signal Controlled Pedestrian Crossing**

Drivers may not be able to see the traffic signal heads when the trees have reached full maturity. This could lead vehicles failing to stop at a red traffic signal resulting in conflict with pedestrians.

**Recommendation**

The location of the trees should be adjusted to ensure that drivers are afforded with appropriate forward visibility to the traffic signal heads.

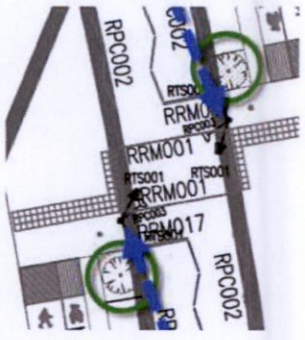



**Figure 2.2 – Trees Blocking Traffic Signal Heads**

# 3. Audit Team Statement

## 3.1 Certification & Purpose

We certify that we have examined the drawing(s) listed in Chapter 1 of this Report.

**Sole Purpose of the Road Safety Audit**

The Road Safety Audit has been carried out with the sole purpose of identifying any features of the design which could be removed or modified to improve the road safety aspects of the scheme.

## 3.2 Implementation of RSA Recommendations

The problems identified herein have been noted in the Report together with their associated recommendations for road safety improvements.

We (the Audit Team) propose that these recommendations should be studied with a view to implementation.

**Audit Team's Independence to the Design Process**

No member of the Audit Team has been otherwise involved with the design of the measures audited.

## 3.3 Road Safety Audit Team Sign-Off

**Martin Deegan**
Audit Team Leader
Road Safety Engineering Team
traffico

Signed: 

Date: 7th March 2023

**Jason Walsh**
Audit Team Member
Road Safety Engineering Team
traffico

Signed: 

Date: 7th March 2023

# 4. Designers Response

## 4.1 How the Designer Should Respond to the Road Safety Audit

The Designer should prepare an Audit Response for each of the recommendations using the Road Safety Audit Feedback Form attached in Appendix A.

When completed, this form should be signed by the Designer and returned to the Audit Team for consideration. See flow-chart following for further description.


**Figure 4.1 – Road Safety Audit Sign-Off and Completion Process**

## 4.2 Returning the Completed Feedback Form

The Designer should return the completed Road Safety Audit Feedback Form attached in Appendix A of this report to the following email address:

- Email address: martin@traffico.ie

The Audit Team will consider the Designer's response and reply indicating acceptance or otherwise of the Designers response to each recommendation.

### Triggering the Need for an Exception Report

Where the Designer and the Audit Team cannot agree on an appropriate means of addressing an underlying safety issue identified as part of the audit process, an Exception Report must be prepared by the Designer on each disputed item listed in the audit report.

# Appendix A

## A.1 Road Safety Audit Feedback Form

# Road Safety Audit Feedback Form

**Scheme:** Aderrig Phase 3

**Audit Stage:** Stage 1 Road Safety Audit | **Audit Date:** 7th March 2023

| Problem Reference (Section 2) | Designer Response Section | | | Audit Team Response Section |
|---|---|---|---|---|
| | Problem Accepted ( yes / no ) | Recommended Measure Accepted ( yes / no ) | Alternative Measures or Comments | Alternative Measures Accepted ( yes / no ) |
| 2.1 | YES | YES | Tree positions on all internal priority-controlled junctions have been checked to ensure that appropriate forward visibility is maintained to road signage. Tree pits which impede forward visibility have been removed from the design. | Noted with thanks. |
| 2.2 | YES | YES | We propose that the two trees in query are to be grassed landscape areas instead of trees. This will provide a clear line of sight throughout the length of bus stops and toucan crossing, ensuring that drivers are afforded with appropriate forward visibility to the traffic signal heads. | Noted with thanks. |

**The Designer should complete the Designer Response Section above, then fill out the designer details below and return the completed form to the Road Safety Audit Team for consideration and signing.*

| | | | | | |
|---|---|---|---|---|---|
| Designer's Name: | J. Burger - For Waterman Moylan | Designer's Signature: | | Date: | 08/03/2023 |
| Employer's Name: | S. Corrigan - Quintain | Employer's Signature: | Simon Corrigan | Date: | 08/03/2023 |
| Audit Team's Name: | M. Deegan | Audit Team's Signature: | | Date: | 08/03/2023 |


traffico
e: hello@traffico.ie
w: www.traffico.ie

traffico
ROAD SAFETY ENGINEERING

# Aderrig Phase 3 - Controlled Pedestrian Crossing & Bus Stops

## Stage 1 Road Safety Audit

Quintain Developments Ireland Ltd

March 2023

traffico

# Aderrig Phase 3 - Controlled Pedestrian Crossing & Bus Stops

# Stage 1 Road Safety Audit

## March 2023

### Notice

This document and its contents have been prepared and are intended solely for Quintain Developments Ireland Ltd's information and use in relation to the Aderrig Phase 3 - Controlled Pedestrian Crossing & Bus Stops.

Traffico assumes no responsibility to any other party in respect of or arising out of or in connection with this document and / or its contents.

### Document History

| JOB NUMBER: 220080 | | | DOCUMENT REF: 220080RPT002_RSA1_Rev_2 | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1 | Final Issue | MD | MD | JW | MD | 8 Mar 2023 |
| 1 | Final Issue | MD | MD | JW | MD | 8 Mar 2023 |
| 0 | Draft Issue | MD | MD | JW | MD | 07 Mar 2023 |
| Revision | Purpose Description | Originated | Checked | Reviewed | Authorised | Date |

# Contents

## Section — Page



### List of Tables



### List of Figures



## Appendices

# 1. Introduction

## 1.1 Report Context

This report describes the findings of a Stage 1 Road Safety Audit associated with the proposed Aderrig Phase 3 - Controlled Pedestrian Crossing & Bus Stops.

The Audit has been completed by Traffico Ltd. on behalf of Quintain Developments Ireland Ltd.

## 1.2 Details of Site Inspection

| Date | Daylight / Darkness | Weather & Road Conditions |
|---|---|---|
| Thursday 2nd March 2023 | Daylight | Cloudy with damp roads. |

**Table 1.1 – Site Inspection Details**

## 1.3 The Road Safety Audit Team

The members of the Road Safety Audit Team have been listed following:

| Status | Name / Qualifications | TII Auditor Reference No: |
|---|---|---|
| Audit Team Leader (ATL) | **Martin Deegan**<br>BEng(Hons) MSc CEng MIEI | MD101312 |
| Audit Team Member (ATM) | **Jason Walsh**<br>BEng (Hons) PCert (RSA) CEng MIEI | JW3362499 |
| Audit Trainee (AT) | - | - |

**Table 1.2 – Audit Team Details**

## 1.4 Design Drawings Examined as Part of the Audit Process

The following drawing(s) were examined as part of the Road Safety Audit (RSA) process:

| Reference No. | Drawing / Document Title | Revision |
|---|---|---|
| T111 | Proposed Controlled Pedestrian Crossing and Bus Stops General Arrangement | C |

**Table 1.3 – Designers Drawing List**

## 1.5 Road Safety Audit Compliance

### Procedure and Scope

This Road Safety Audit has been carried out in accordance with the procedures and scope set out in TII publication number GE-STY-01024 - Road Safety Audit.

As part of the road safety audit process, the Audit Team have examined only those issues within the design which relate directly to road safety.

### Compliance with Design Standards

The road safety audit process is not a design check, therefore verification or compliance with design standards has not formed part of the audit process.

### Minimizing Risk of Collision Occurrence

All problems described in this report are considered by the Audit Team to require action in order to improve the safety of the scheme and minimise the risk of collision occurrence.

# 2. Road Safety Issues Identified

## 2.1 Problem: Trees Impacting on Traffic Signal Operation

**Location: Signal Controlled Pedestrian Crossing**

Drivers may not be able to see the traffic signal heads when the trees have reached full maturity. This could result in vehicles failing to stop at a red traffic signal, leading to conflict with pedestrians.

**Figure 2.1 – Trees Blocking Traffic Signal Heads**

### Recommendation

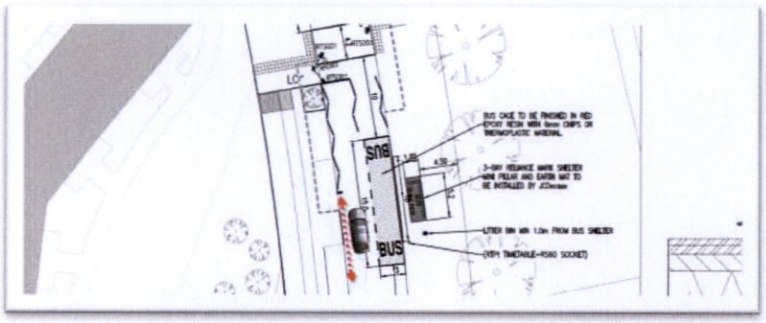
The location of the trees should be adjusted locally to ensure that drivers are afforded with appropriate forward visibility to the traffic signal heads.

## 2.2 Problem: Extents of Crossing Controlled Area

**Location: Approaches to Signalised Pedestrian Crossing**

Terminating the approach zig-zag markings at the location proposed could indicate that it is safe for drivers to stop adjacent to the bus stop, within the crossing's controlled zone. This could increase the risk of pedestrian conflict and lead to delays and driver frustration.

**Figure 2.2 – Extension of Approach Zig Zag Markings**




### Recommendation

The approach zig-zag road markings (and terminal lines) should be extended past the limits of the adjacent bus stop to indicate to drivers that it is not safe for them to stop within the crossing's controlled zone.

# 3. Audit Team Statement

## 3.1 Certification & Purpose

We certify that we have examined the drawing(s) listed in Chapter 1 of this Report.

**Sole Purpose of the Road Safety Audit**

The Road Safety Audit has been carried out with the sole purpose of identifying any features of the design which could be removed or modified to improve the road safety aspects of the scheme.

## 3.2 Implementation of RSA Recommendations

The problems identified herein have been noted in the Report together with their associated recommendations for road safety improvements.

We (the Audit Team) propose that these recommendations should be studied with a view to implementation.

**Audit Team's Independence to the Design Process**

No member of the Audit Team has been otherwise involved with the design of the measures audited.

## 3.3 Road Safety Audit Team Sign-Off

**Martin Deegan**
Audit Team Leader
Road Safety Engineering Team
traffico

Signed: 

Date: 7th March 2023

**Jason Walsh**
Audit Team Member
Road Safety Engineering Team
traffico

Signed: 

Date: 7th March 2023

# 4. Designers Response

## 4.1 How the Designer Should Respond to the Road Safety Audit

The Designer should prepare an Audit Response for each of the recommendations using the Road Safety Audit Feedback Form attached in Appendix A.

When completed, this form should be signed by the Designer and returned to the Audit Team for consideration. See flow-chart following for further description.


**Figure 4.1 – Road Safety Audit Sign-Off and Completion Process**

## 4.2 Returning the Completed Feedback Form

The Designer should return the completed Road Safety Audit Feedback Form attached in Appendix A of this report to the following email address:

- Email address: martin@traffico.ie

The Audit Team will consider the Designer's response and reply indicating acceptance or otherwise of the Designers response to each recommendation.

### Triggering the Need for an Exception Report

Where the Designer and the Audit Team cannot agree on an appropriate means of addressing an underlying safety issue identified as part of the audit process, an Exception Report must be prepared by the Designer on each disputed item listed in the audit report.

# Appendix A

## A.1 Road Safety Audit Feedback Form

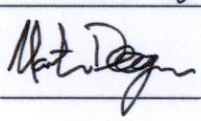
# Road Safety Audit Feedback Form

**Scheme:** Aderrig Phase 3 - Controlled Pedestrian Crossing & Bus Stops

**Audit Stage:** Stage 1 Road Safety Audit | **Audit Date:** 7th March 2023

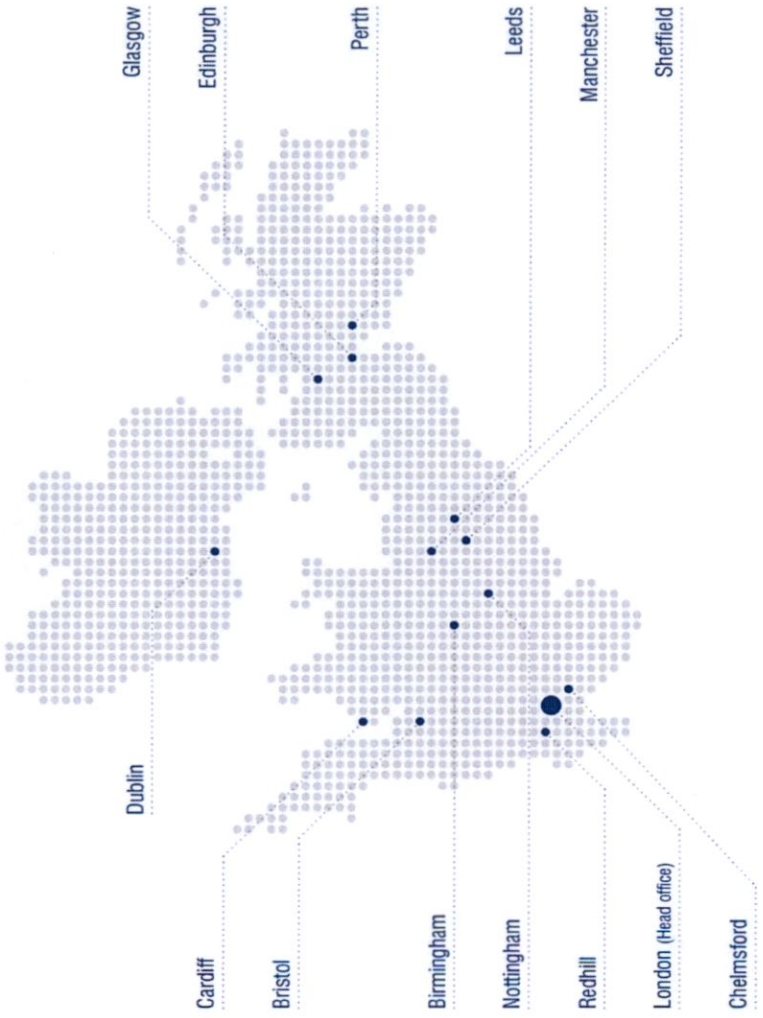
| Problem Reference (Section 2) | Designer Response Section | | | Audit Team Response Section |
|---|---|---|---|---|
| | Problem Accepted ( yes / no ) | Recommended Measure Accepted ( yes / no ) | Alternative Measures or Comments | Alternative Measures Accepted ( yes / no ) |
| 2.1 | YES | YES | We propose that the two trees in query are to be grassed landscape areas instead of trees. This will provide a clear line of sight throughout the length of bus stops and toucan crossing, ensuring that drivers are afforded with appropriate forward visibility to the traffic signal heads. | Noted with thanks. |
| 2.2 | YES | YES | The approach zig-zag road markings (and terminal lines) shall be extended past the limits of the adjacent bus stop to indicate to drivers that it is not safe for them to stop within the crossing's controlled zone. | Noted with thanks. |

**The Designer should complete the Designer Response Section above, then fill out the designer details below and return the completed form to the Road Safety Audit Team for consideration and signing.*

| | | | | | |
|---|---|---|---|---|---|
| Designer's Name: | J. Burger - For Waterman Moylan | Designer's Signature: |  | Date: | 08/03/2023 |
| Employer's Name: | S. Corrigan - Quintain | Employer's Signature: | Simon Corrigan | Date: | 08/03/2023 |
| Audit Team's Name: | M. Deegan | Audit Team's Signature: |  | Date: | 08/03/2023 |


traffico
e: hello@traffico.ie
w: www.traffico.ie

# UK and Ireland Office Locations




(South Dublin County Council Register Reference SDZ22A/0014)
Project Number: 22-023
Document Reference: 22-023r.008