consulting engineers

NRB

Transportation Assessment Report

Incl…

Preliminary Mobility Management Plan

(Appendix K)

Stage 1 Independent Road Safety/Quality Audit

(Appendix L)

For

Large Scale Residential Development

At

Wellwood Housing Site, Tyrells Rd, Puttaghan, Tullamore.

SUBMISSION ISSUE

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

Registered in Ireland No. 491679

Contents

Appendices……

EXECUTIVE SUMMARY

NRB Consulting Engineers Ltd were appointed to address the Traffic & Transportation impact associated with the construction of a proposed residential development comprising 148 units on residential zoned lands at Wellwood, Puttaghan, Tullamore. The development consists of a total of 90 residential houses, 20 private residential apartments, 38 age-friendly assisted living units plus an ancillary Crèche on the site.

We have assessed the impact of the traffic associated with these proposed elements, together with the established traffic on the adjacent affected road network for the AM Peak and PM Peak Commuter Hours, based on an extensive traffic survey undertaken in 2022 following lifting of the Covid 19 Pandemic measures.

Surface car parking is proposed for the scheme, accessed internally from within the Site. The parking quantum provided is further considered within this Report.

Vehicular access to the lands is provided by way of a DMURS compliant simple priority controlled T-junction onto the adjacent L1024 Tinnycross Road.

The multi modal accessibility by non-car transportation modes is highlighted and addressed within the Preliminary Mobility Management Plan included as ***Appendix K***.

The Transportation Assessment has been prepared in accordance with the TII's Traffic & Transport Assessment Guidelines and addresses the traffic impact of the proposals. The assessment is based on comprehensive Weekday AM & Weekday PM Peak classified interval turning movement surveys of the local roads carried out in 2022 following the lifting of the Covid 19 Emergency Measures. (Refer to Traffic Data included as ***Appendix B***).

The Report & analysis includes an assessment of impact of the proposed development traffic during the selected Opening Year 2026 together with an assessment of the Design Year 2041 (15 years following opening).

Whilst we have selected an opening year of 2026, it should be noted that, if required, minor changes of 2-3 years in the choice of opening or design year would have no effect on the conclusions of this study.

The Transportation Assessment Report confirms that there is a small local traffic impact associated with the opening of the proposed subject development, and that it can be accommodated without any adverse traffic impact arising.

The Transportation Assessment confirms that the proposed site access junction and the established road network are more than adequate to accommodate the worst-case traffic associated with the entire development being occupied and operational. The assessment also confirms that the construction and full occupation of the scheme will have a small and unnoticeable impact upon the operation of the adjacent road network.

The assessment will include a Preliminary Mobility Management Plan (MMP or Travel Plan) included as ***Appendix K***. An independent Stage 1 Road Safety/Quality Audit, together with the Designer Feedback form is included as ***Appendix L***.

Based on our studies, we conclude that there are no adverse traffic/transportation capacity or operational issues associated with the construction and occupation of the proposed development that would prevent a positive determination of the planning application by Offaly County Council (OCC).

1.0 INTRODUCTION

1.1 This Transportation Assessment (TA) has been prepared by NRB Consulting Engineers Ltd and addresses the transportation capacity considerations associated with the construction of a proposed Large Scale Residential Development (LRD) on residential zoned lands at Wellwood, Puttaghan, Tullamore, Co Offaly. The development consists of a total of 90 residential houses, 20 private residential apartments, 38 age-friendly assisted living units plus an ancillary Crèche on the site.

1.2 A site location map for the development is included below as ***Figure 1.1***.

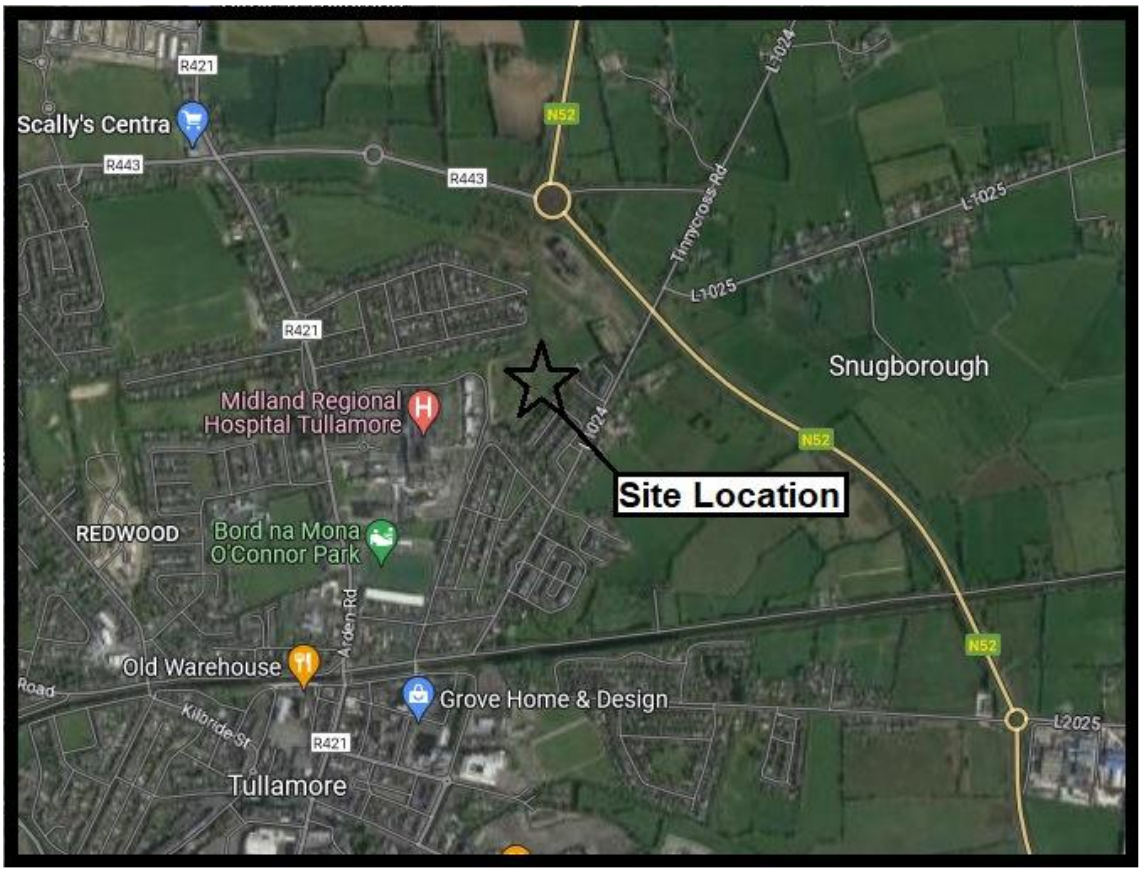


Figure 1.1: Site Location Map in Context of Local Roads

1.3 This Report addresses the impact of the proposed development and the implications for the adjacent road network for the weekday AM and PM Peak Hours, taking account of existing traffic conditions.

1.4 The site is considered to represent a highly sustainable location for primarily residential development of the nature proposed, in the context of the location within the urban area of Tullamore, with the range of services within sustainable distance. The current facilities

in terms of alternative transport accessibility are highlighted within the Preliminary Mobility Management Plan as ***Appendix K.***

1.5 The layout and design of the scheme will meet the requirements of OCC and meets the requirements of DMURS in terms of layout & geometric design (Refer to layout plan included herein as ***Appendix A***).

1.6 In describing the Receiving Environment and the Proposed Future Environment, this report addresses the following aspects of the proposed development:

- Appropriate Scale of Development Proposals (conscious that the development constitutes primarily replacement residential development in an established urban area),
- Location of the development within Tullamore urban area,
- Traffic & Transportation impact,
- Capacity of the proposed access junction to accommodate the worst-case development traffic flows,
- Pedestrian and cyclist permeability and promotion,
- Impact of the development on the free flow and capacity of the adjacent roads and junctions in the area of influence, and
- The locational characteristics of the site being in a highly sustainable location in terms of travel characteristics (Refer to Preliminary Mobility Management Plan included herein).

1.7 Recommendations contained within this Transportation Assessment are based on the following sources of information and industry-standard practices:

- Transport Infrastructure Ireland (TII) Traffic & Transport Assessment Guidelines,
- TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3,
- New comprehensive traffic turning movement surveys of the adjacent affected road network undertaken in 2022 following lifting of the Covid 19 Pandemic Measures,
- Our experience in assessing the impact of developments of this nature, and
- Site visits and observations.

1.8 The Report has been prepared in accordance with the requirements of TII's Traffic & Transport Assessment Guidelines. These are the professional Guidelines used to assess the impact of developments on public roads.

1.9 The assessment includes a Preliminary Mobility Management Plan within ***Appendix K***. An independent Stage 1 Road Safety/Quality Audit, accompanies the application and is included as ***Appendix L.***

2.0 RECEIVING ENVIRONMENT & DEVELOPMENT PROPOSALS

2.1 The proposal consists of a residential development sustainably located within the Tullamore urban area, with multi modal accessibility provided for.

2.2 The site is bound to the north by both the established residential estate Arden vale and by other portions of the Wellwood Landholding. It is bound to the west by the grounds of Tullamore Regional Hospital, and immediately to the south by established residential estates (Thornsberry Estate, Harbour Walk and Harbour Drive).

2.3 The local road L1024 Tinnycross Road is located immediately east of the subject site, and it is intended that vehicular access will be formed to this road. Running generally in a N-S orientation, it consists of a single carriageway 2-way street provided with footpaths on both sides. Google street-view images showing the adjacent street approximately at the access location are included below as ***Figure 2.1*** and ***Figure 2.2***.

Figure 2.1 – L1024 View South Adjacent Proposed Access

Figure 2.2 – L1024 View North Adjacent Proposed Access

2.4 The 2022 traffic survey confirms that the L1024 Tinnycross Road is lightly trafficked adjacent the site, with a weekday AM Peak Hour 2-way Traffic Flow of 275 PCUs and a weekday PM Peak Hour Traffic Flow of 257 PCUs, measured immediately north of the location of the proposed site access.

2.5 The L1024 provides connectivity to the N52 Tullamore Bypass immediately to the north of the site, by way of access from the Ardan Roundabout. To the south, the road links to the Canal some 800m distant, Davitt Street and Convent View, both of which are single carriageway 2-way streets providing for easy access to the town centre. Davitt Street is very lightly trafficked, with a weekday AM Peak Hour 2-way Traffic Flow of 72 PCUs and a weekday PM Peak Hour Traffic Flow of 57 PCUs, measured immediately west of the junction with the L1024. Convent View is also lightly trafficked, with a weekday AM Peak Hour 2-way Traffic Flow of 297 PCUs and a weekday PM Peak Hour Traffic Flow of 242 PCUs, also measured immediately west of the junction with the L1024.

2.6 A Google Streetview showing the Convent View approach to the town centre at Arden Road (R421) junction is included below as ***Figure 2.3***

Figure 2.3 – Convent View Junction at Arden Road

2.7 Whilst these existing traffic flows are likely considered significant locally, the streets each have an associated traffic link capacity of 1,000 to 1,200 PCUs per-lane per-hour. In these terms they each have a 2-way traffic carrying or 'link capacity' of approximately 2,000-2,400 PCUs. For this reason they are considered lightly or at worst moderately trafficked in terms of their Link Capacity. It is generally accepted that the traffic carrying capacity of any road in urban areas is normally governed by the capacity of terminal junctions, and this is true in the case of the subject streets.

2.8 A previous review of the Road Safety Authority (RSA) online collision database indicates that there is no record of any relevant collisions proximate to the site on the L1024 between 2005-Date inclusive**.** An extract from the RSA Database or accidents is included below as ***Figure 2.4*** for reference.

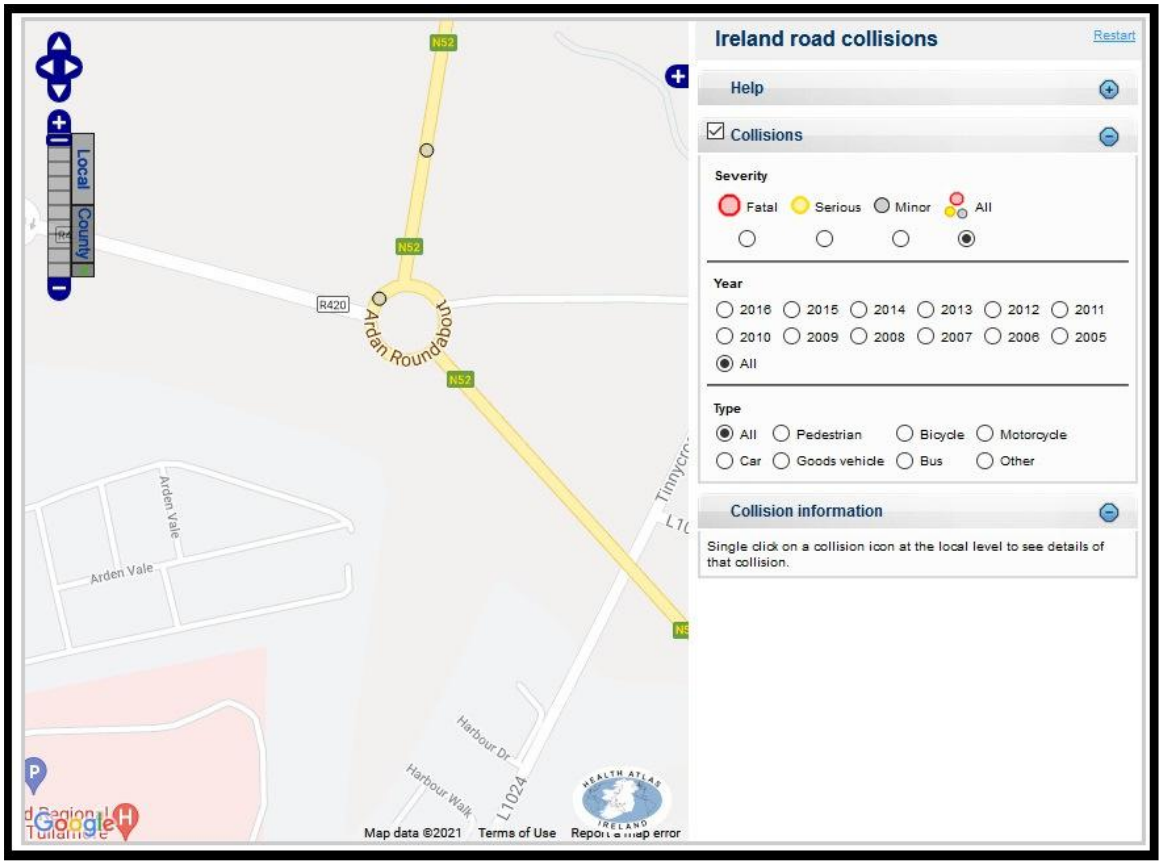


Figure 2.4 – RSA Database Extract of Accident Records

2.9 We undertook a new 2022 Traffic Survey of the existing road and affected junctions in order to establish background conditions. The network extent of Traffic Survey is as illustrated on ***Figure 2.5*** below. Details of the surveys are included as ***Appendix B***.

2.10 These new traffic surveys of the adjacent road network were undertaken by specialist supplier during 2022 and reflect non-pandemic times, following lifting of emergency measures. This traffic survey data formed the basis of the study. Details of the surveys undertaken are included with the Peak Hour Network flows (expressed as PCUs) identified, all as outlined herein as ***Appendix D***.

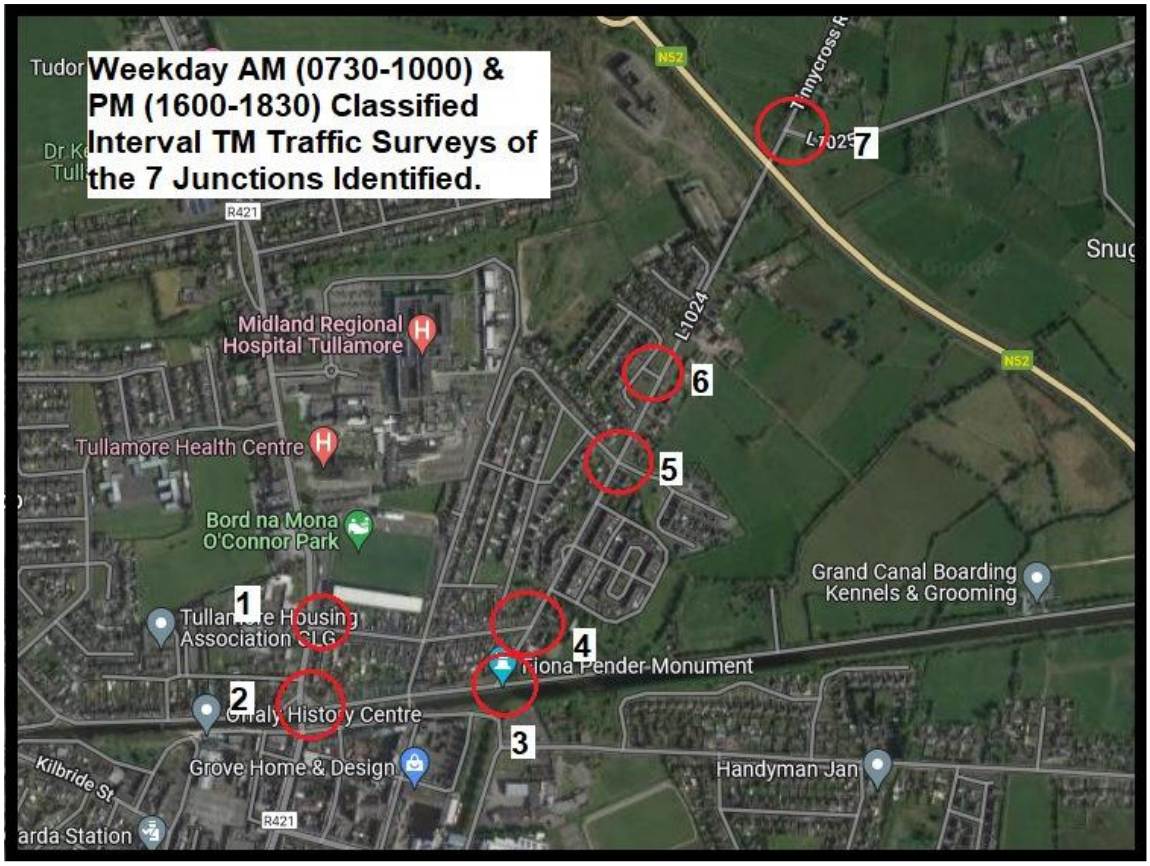


Figure 2.5 – Details of Traffic Surveys of Existing Conditions Locally

Subject Development Proposals

2.11 The proposed development consists of the demolition of existing buildings and the construction of large scale Residential Development comprising 148 dwellings, consisting of:

- 90 residential houses (comprising 08 x 2 bedroom houses, 58 x 3 bedroom houses and 24 x 4 bedroom houses. 89 of the houses are 2 storey with 1 x 3 bed bungalow):
- 20 dwelling apartments (comprising 4 x 1 bed units & 16 x 2 bed units over 4 storeys):
- 38 x age friendly assisted living units (comprising of 28 x 1 bed units and 10 x 2 bed units with associated communal and administrative facilities):
- An ancillary Creche,
- All ancillary site development works including access, roads and footpaths, landscaping and boundary treatments, public and private open space areas, car parking, bicycle parking, ESB substations, bin and bicycle stores, replacement waste water pumping station and drainage connections:
- All ancillary site development works

2.12 As with all such residential developments, it is anticipated that the development will be mainly serviced using regular weekly refuse lorries within the site as required, with small transit vans or small-wheelbase trucks for day-to-day servicing of the houses and apartments, which do not have onerous swept-paths and can easily be facilitated on the site.

2.13 In traffic terms, whilst there are a significant number of units, residential schemes of this nature within urban areas with very good alternative transport links do not generate a significant volume of car movements, and TRICS provides clear evidence in this regard. The small scale of the entire facility in traffic terms is confirmed through the robust assessment of Car Traffic Generated, which is addressed further within Section 3 of this Report.

3.0 TRIP GENERATION, ASSIGNMENT AND DISTRIBUTION

3.1 In terms of assessing car traffic and the impact of same on the local road network, the Trip Rate Information Computer System database is ordinarily used to ascertain vehicular trip generation associated with the use of any particular site. This represents industry standard practice for Transportation Assessments in Ireland and is specifically referenced and recommended for use in the TII Guidelines for Traffic and Transport Assessment.

3.2 We have included in ***Appendix C*** the TRICS output for all of the individual elements of the proposed Development, being residential housing, residential apartments and a Crèche, and this provides an accurate estimation of traffic as illustrated in ***Table 3.1*** below.

3.3 The following Table summarises the output from the TRICS database which is included herein as ***Appendix C*** for comparison purposes.

Table 3.1: TRICS Data Summary - Proposed Scheme – Traffic Generated (PCUs)

90 No Houses	**Arrivals (PCUs)**		**Departures (PCUs)**		**Total 2-Way Vehicular Traffic Generated**
Network Hour	**Per Unit**	**Site**	**Per Unit**	**Site**	
Weekday AM Peak Hr 8-9	0.147	13	0.375	34	47
Weekday PM Peak Hr 5-6	0.340	31	0.171	15	46
24 Hours	2.322	209	2.340	211	420
58 Apts/Duplex	**Arrivals (PCUs)**		**Departures (PCUs)**		**Total 2-Way Vehicular Traffic Generated**
Network Hour	**Per Unit**	**Site**	**Per Unit**	**Site**	
Weekday AM Peak Hr 8-9	0.062	4	0.183	11	15
Weekday PM Peak Hr 5-6	0.170	10	0.088	5	15
24 Hours	1.105	64	1.172	68	132
170 m2 Creche	**Arrivals (PCUs)**		**Departures (PCUs)**		**Total 2-Way Vehicular Traffic Generated**
Network Hour	**/100m2**	**Site**	**/100m2**	**Site**	
Weekday AM Peak Hr 8-9	3.261	6	2.682	5	11
Weekday PM Peak Hr 5-6	2.438	4	3.109	5	9
24 Hours	15.154	26	15.957	27	53

COMBINATION OF ABOVE TABLES			
Network Hour	**Arrivals**	**Departures**	**Total 2-Way**
Weekday AM Peak Hr 8-9	23	50	73
Weekday PM Peak Hr 5-6	45	26	71
24 Hours	299	306	605

3.4 In the case of residential elements and the crèche, the application of TRICS in this case specifically excludes the effect of shared visits and quantifies the volumes of traffic on an individual basis. In addition, the proximity to the town centre will likely further dilute and reduce primary trips - in these terms the assessment can be considered further robust.

3.5 Therefore, we consider that the use of TRICS in the methodology adopted is robust and onerous and the Trip Rates applied and used provide for a robust reflection of the worst-case traffic generated by the proposed development. This is particularly the case for the subject site within the urban area, the employment and services nearby, and the lower levels of car parking provision which will further limit car trip generation.

3.6 Notwithstanding, in light of observation of existing capacity conditions, the use of higher Trip Rates, if required, would have no impact upon the conclusions of the study. This is particularly the case given the clear modelled low impact of the proposed development on the locally affected junctions and the capacity available.

Assessment Methodology

3.7 We undertook a new 2022 Traffic Survey of the existing road and affected junctions in order to establish background conditions. The network extent of Traffic Survey is as illustrated on ***Figure 2.5*** above. Details of the surveys are included as ***Appendix B***.

3.8 In Traffic Engineering all vehicles are expressed in terms of “Passenger Car Units” (PCUs), sometimes referred to as “Car Equivalents”. This is the methodology that has been employed here, with specific industry standard conversion factors to convert HGVs, Skip Lorries, Cars/Trailers and Bin Lorries to PCUs. The conversion factors used are in accordance with industry-standard recommendations.

3.9 We have assigned the subject development traffic to the road network based on the reasonable and industry standard assumption that the trip patterns will mirror the existing established weekday AM and PM peak hour traffic count data in terms of traffic turning proportions and distribution at junctions and in particular here, they reflect the observed patterns during the commuter peak hours on the local roads. This represents Industry Standard practice.

3.10 The Guidance recommends that we are required to provide a robust and onerous assessment of the likely impact of the proposed development, in order to provide reassurance that the road infrastructure is adequate to accommodate the development.

We have therefore assigned the development traffic to the local roads based on the onerous assumption that ALL of the traffic is new traffic, constituting Primary Trips.

3.11 The resulting traffic flow diagrams for the subject site are included as ***Appendix D*** with the calculated subject development traffic applied.

3.12 We have selected a year of opening of 2026 for the purposes of this assessment, however it should be noted that minor changes of 2-3 years in the selected or actual year of opening will have no impact on the conclusions of the study. We have also undertaken assessment of the Design Year 2041, 15 years following opening.

3.13 Traffic growth factors for future year assessments were calculated from data obtained in the TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 (Travel Demand Projections, Table 6.2: Central Growth Rates: Annual Growth Factors Offaly), which provides the recommended method of predicting future year traffic growth on roads. Calculations of the relevant growth factors are included in ***Table 3.2*** below.

Table 3.2 - Traffic Growth Rates, TII Project Appraisal Guidelines

Year	to Year	Table 6.2:
2022	2026	1.048 (ie 5% growth)
2026	2041	1.097 (ie 10% growth)

4.0 TRAFFIC IMPACT - ROAD JUNCTION CAPACITY

4.1 The TII Traffic and Transport Assessment Guidelines, being the National Standard Guidance applied to Assessments, sets out a strict mechanism for assessment of developments of this nature and determining whether further assessment is indeed required. These Guidelines require a '*Threshold Assessment'* of the impact on the local roads to be provided in order to determine whether additional more detailed modelling and assessment of particular critical junctions is necessary.

4.2 We have assessed the impact of the proposed development with a wide area of influence included. The professional guidance referenced above sets out specific increases in traffic volume associated with new development, which, when breached, requires further detailed analysis to be undertaken. The recommendation is that, if the expected increase is **5%** for networks that are considered heavily trafficked or congested, then further analysis is warranted. The Threshold is set lower, at 10% for uncongested networks. We have applied the 10% threshold in this case.

4.3 It is demonstrated herein that the proposed construction and operation of the facility, with relatively low volumes of vehicular traffic added to a relatively quiet local network, will not result in any significant or noticeable level of new trips on the local roads at/beyond Convent View towards the town centre. All anticipated traffic increases beyond these points are **well below** the Industry-Standard 10%, above which further assessment is required.

4.4 It should be noted that the net effect of the proposed development traffic is exacerbated given the lightly trafficked conditions on the local roads. Our assessment confirms that the absolute worst-case traffic increases on the adjacent road network junctions, for the entire development open and occupied, undertaken in accordance with Guidelines, is as summarised below as ***Table 4.1***.

Table 4.1: All of Proposed Development Open & Occupied - Threshold Assessment, Worst-Case Impact - AM & PM Peak Hours 2026

Assessed Road or Junction	Traffic Increase %		COMMENT
	AM Hr	PM Hr	
Site Access	NA	NA	Capacity Assessment Undertaken
L1024 2-way flow Nth of L1025	6.9%	5.8%	<10% so further assessment not required
L1024/L1025 T Junction	9.0%	7.8%	<10% BUT assessment included
L1024/Harbour Walk T Junction	13%	14%	>10%: Junction Assessed
L1024/Puttaghan Cl/Thornsberry	12%	13%	>10%: Junction Assessed
L1024/Callary St T Junction	11%	14%	>10%: Junction Assessed
L1024/Convent View 'Junction'	11%	14%	>10%: Junction Assessed
Convent View/Arden Rd Junction	2%	3%	<10% so further assessment not required

4.5 These worst-case traffic increases at and beyond Arden Road and beyond the local area of influence and are well below the Guideline and industry standard level above which further assessment is required in accordance with the Guidelines.

4.6 To set these increased levels of traffic in context, the day-to-day variation in traffic volume (due to day-of-week or weather conditions for example) is accepted as 10%. The low increases locally underscores the small impact of the proposed development traffic on traffic conditions within Tullamore.

4.7 For capacity assessment of the existing junctions, we have used the TII-approved software package PiCADY (**P**riority **I**ntersection **C**apacity **A**nd **D**elay) software package (as part of the TRL Package 'Junctions 9'). This TII approved software has been used to assess the capacity of each of the junctions highlighted in Table 4.1 above.

4.8 PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater that 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value. We have appended the detailed computer simulation model results for all of the modelled junctions herein, with a summary of the results for each junction tabulated below for ease of reference.

Table 4.2 – PiCADY Summary Results, Proposed Site Access T junction (*Appendix E*)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.1
2026 Opening Year PM Peak Hr	0.1	0.05
2041 Design Year AM Peak Hr	0.1	0.1
2041 Design Year PM Peak Hr	0.1	0.05

Table 4.3 - PiCADY Summary Results, Existing L1024/L1025 T junction (*Appendix F*)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.5	0.33
2026 Opening Year PM Peak Hr	0.2	0.19
2041 Design Year AM Peak Hr	0.6	0.36
2041 Design Year PM Peak Hr	0.3	0.2

Table 4.3 – PiCADY Summary Results, Existing Harbour Walk Access Junct (*Appendix G*)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.06
2026 Opening Year PM Peak Hr	0.0	0.04
2041 Design Year AM Peak Hr	0.1	0.07
2041 Design Year PM Peak Hr	0.1	0.05

Table 4.4 – PiCADY Summary Results, Thornsberry/Puttaghan Access Junct (*Appendix H*)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.05
2026 Opening Year PM Peak Hr	0.1	0.07
2041 Design Year AM Peak Hr	0.1	0.05
2041 Design Year PM Peak Hr	0.1	0.07

Table 4.5 – PiCADY Summary Results, Existing L1024/Callary St Junct (*Appendix I*)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.11
2026 Opening Year PM Peak Hr	0.1	0.08
2041 Design Year AM Peak Hr	0.1	0.12
2041 Design Year PM Peak Hr	0.1	0.08

Table 4.6 – PiCADY Summary Results, Existing L1024/Callary St Junct (*Appendix J*)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.0	0.01
2026 Opening Year PM Peak Hr	0.0	0.01
2041 Design Year AM Peak Hr	0.0	0.01
2041 Design Year PM Peak Hr	0.0	0.01

4.9 The modelling results for all of the locally affected junctions above confirms that the existing established junctions, and the proposed site access, can accommodate the worst case predicted traffic flows during the year of opening and the design year, without any capacity issues whatsoever arising, with all RFCs well below 0.85.

4.10 The results of the assessment and associated modelling clearly shows that the development will have a small and unnoticeable impact upon traffic conditions locally.

5.0 CONCLUSIONS

5.1 NRB Consulting Engineers Ltd were appointed to address the Traffic & Transportation impact associated with the construction of a proposed residential development comprising 148 units on residential zoned lands at Wellwood, Puttaghan, Tullamore. The development consists of a total of 90 residential houses, 20 private residential apartments, 38 age-friendly assisted living units plus an ancillary Crèche on the site.

5.2 We have assessed the impact of the traffic associated with these proposed elements, together with the established traffic on the adjacent affected road network for the AM Peak and PM Peak Commuter Hours, based on an extensive traffic survey undertaken in 2022 following lifting of the Covid 19 Pandemic measures.

5.3 This Report has been prepared in accordance with TII's Traffic & Transport Assessment Guidelines, and it provides an onerous and robust assessment of the impact of the proposed development on the local roads.

5.4 This report demonstrates that the traffic generated by the proposed development will have an unnoticeable impact upon the established local traffic conditions and can be accommodated on the road network.

5.5 An assessment of junction capacity has been undertaken and this confirms that the existing local junctions, and the locally affected road links and junctions, are adequate to accommodate the worst-case traffic associated with the development scheme. The development demonstrably has a negligible impact upon key road network node junctions in the vicinity of the site based on the assessment and modelling undertaken.

5.6 The assessment includes a Preliminary Mobility Management Plan (MMP or Travel Plan) for the site, setting out the non-car modal accessibility, which is included as ***Appendix K***. An independent Stage 1 Road Safety/Quality Audit, together with the Designer Feedback form, has been undertaken and is included as ***Appendix L.***

5.7 It is considered that there are no significant Operational Traffic Safety or Road Capacity issues affecting the established road network, that prevent a positive determination of the application by Offaly County Council.

APPENDICES - CONTENT

A	Proposed Development – Site Layout Plans
B	2022 Post Covid Pandemic Traffic Survey Output Data
C	TRICS Output Data – Housing/Apartments & Crèche
D	Traffic Calculations, Trip Distribution, Network Traffic Flow Diagrams & Projections Based on 2022 Traffic Surveys
E	PiCADY Capacity Modelling – L1024 / Site Access Priority Junction
F	PiCADY Capacity Modelling – L1024 / L1025 Priority Junction
G	PiCADY Capacity Modelling – L1024 / Harbour Walk Priority Junction
H	PiCADY Capacity Modelling – L1024 / Thornsberry / P'gan Close Crossroads
I	PiCADY Capacity Modelling – L1024 / Callary St Priority Junction
J	PiCADY Capacity Modelling – L1024 / Convent View Priority Junction
K	Preliminary Mobility Management Plan/Travel Plan
L	Stage 1 Independent Road Safety/Quality Audit & Designer Feedback Form.

APPENDIX A

Proposed Development
Site Layout Plans

NRB Consulting Engineers Ltd recommend that Road and land ownership boundaries are verified through Legal & Land searches by the Client.

This drawing is based upon Architects drawing 18037-PL03 - Site Plan 230324, received 24/03/23. NRB Consulting Engineers Ltd shall not be liable for any inaccuracies or deficiencies.

REV	DATE	AMENDMENTS	DRAWN	CHK	APP

NRB Consulting Engineers Ltd
1st Floor, Apollo Building
Dundrum Road
Dundrum
Dublin 14

Phone/Fax: +353 1 292 1941
Email: info@nrb.ie
Web: www.nrb.ie
Registered in Ireland No. 491679

Client

Project: Tullamore Residential Offaly

Title: Proposed Site Layout

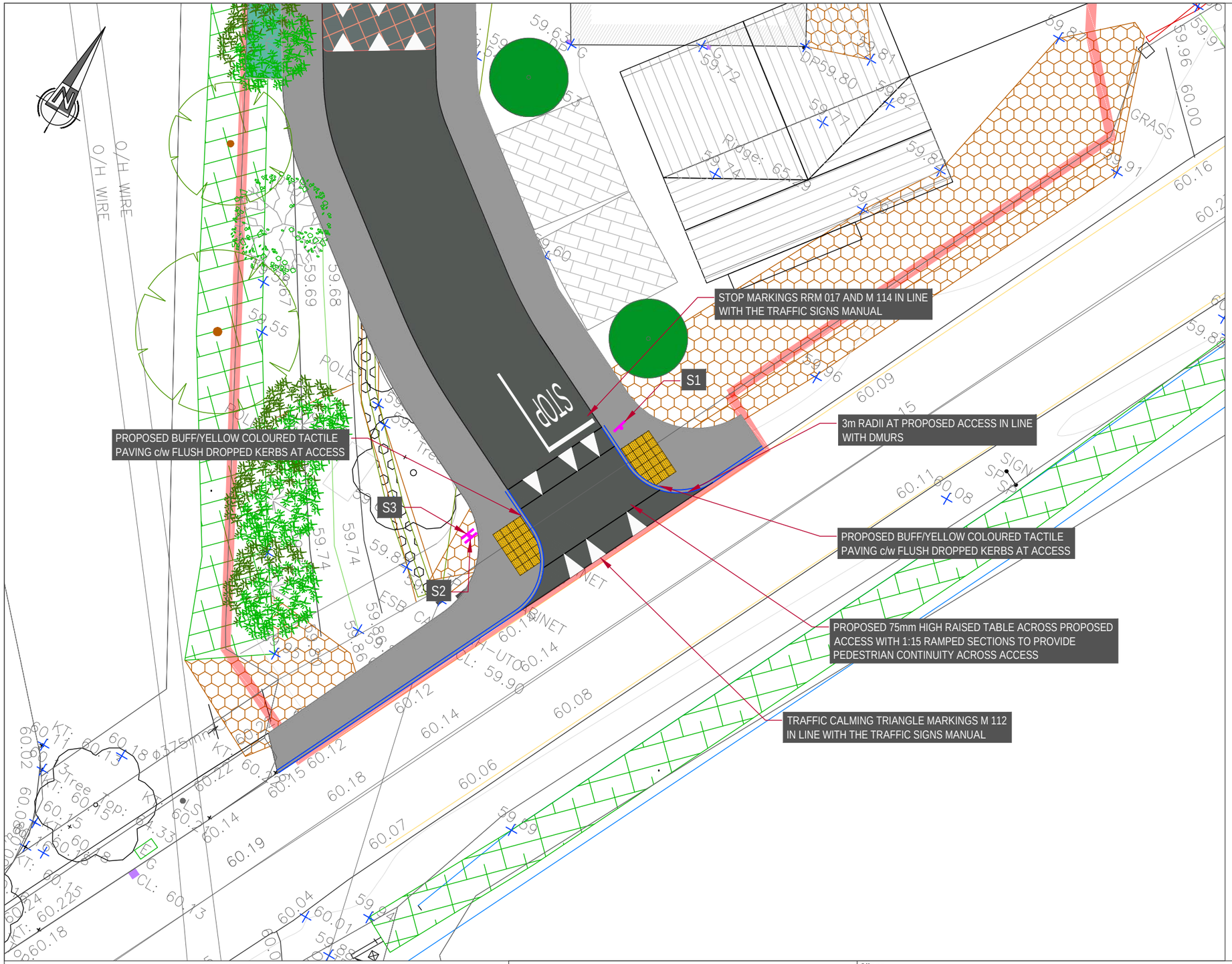
NRB Consulting Engineers Ltd accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions to be worked to.

Project No.	Drawing No.
22-059	NRB-TA-001

Drawn	Checked	Approved
PB	ER 09/04/23	ER 09/04/23

Date	Scale @ A3	Rev
9-Apr-23	1:1000	B

Purpose of Issue: ☐ Draft ☐ Information ☐ Approval ☐ As Built ☐ Tender ☐ Construction



PROPOSED TRAFFIC SIGNS:

S1 — STOP

- proposed STOP sign RUS 027 per the Traffic Signs Manual

S2 — 30 km/h, Crios Mall SLOW ZONE

- proposed SLOW ZONE sign F 403 per the Traffic Signs Manual

S3 — 50 km/h

- proposed 50km/h speed limit sign RUS 043 per the Traffic Signs Manual

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NRB Consulting Engineers Ltd
1st Floor, Apollo Building
Dundrum Road
Dundrum
Dublin 14

Phone/Fax: +353 1 292 1941
Email: info@nrb.ie
Web: www.nrb.ie
Registered in Ireland No. 491679

NRB consulting engineers

Client

Project: Tullamore Residential Offaly

Title: Proposed Site Access Layout

Project No.: 22-059

Drawing No.: NRB-TA-002

Drawn	Checked	Approved
PB	ER 09/04/23	ER 09/04/23

Date: 9-Apr-23

Scale @ A3: 1:200

Rev: B

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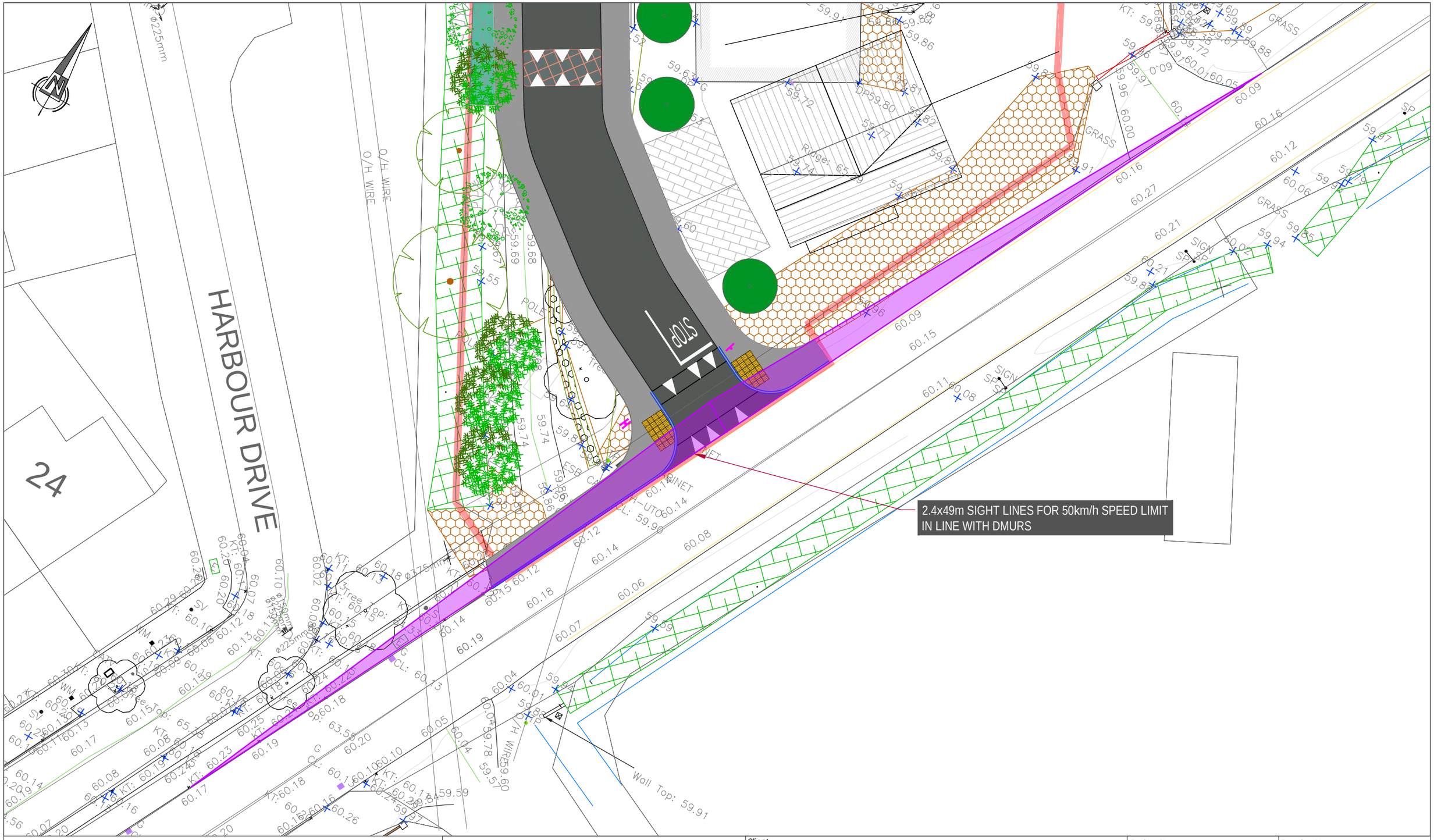

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NRB Consulting Engineers Ltd
1st Floor, Apollo Building
Dundrum Road
Dundrum
Dublin 14

Phone/Fax: +353 1 292 1941
Email: info@nrb.ie
Web: www.nrb.ie
Registered in Ireland No. 491679

NRB consulting engineers

Client

Project: Tullamore Residential Offaly

Title: Proposed Site Access Sight Lines

NRB Consulting Engineers Ltd accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions to be worked to.

Project No.	Drawing No.
22-059	NRB-TA-003

Drawn	Checked	Approved
PB	ER 09/04/23	ER 09/04/23

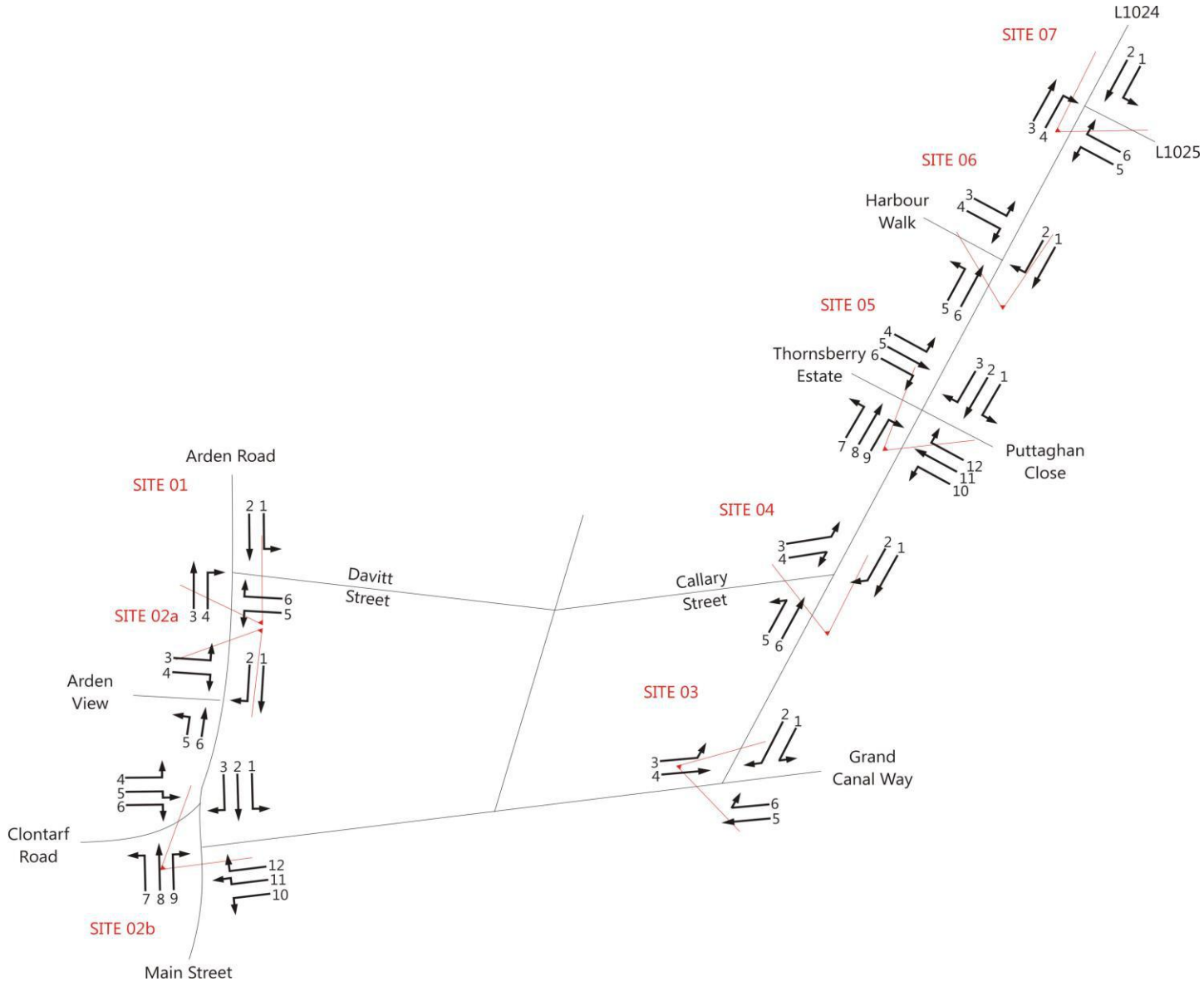
Date	Scale @ A3	Rev
9-Apr-23	1:250	B

Purpose of Issue: ☐ Draft ☐ Information ☐ Approval ☐ As Built ☐ Tender ☐ Construction

APPENDIX B

2022 Post Covid Pandemic
Traffic Survey Output Data

Site/Movement Numbering



Job number: TRA/22/209	Job Date: 13th July 2022	Drawing No: TRA/22/209-02	traffinomics.ie
Client: NRB Consulting Engineers	Job Day: Tuesday	Site Map Details	

TRAFFINOMICS LIMITED

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 01 DATE: 13th September 2022

LOCATION: Arden Road/Davitt Street DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	21	4	0	0	25	25	1	0	34	9	0	1	45	45
07:15	0	0	0	0	0	1	1	2	1	0	14	4	0	0	19	18	0	0	48	5	1	2	56	59
07:30	0	0	0	0	0	0	0	0	0	0	48	5	1	1	55	57	0	0	57	9	2	3	71	76
07:45	0	0	1	2	0	0	3	3	1	0	36	4	3	0	44	46	1	1	88	13	2	4	109	114
H/TOT	0	0	1	2	0	1	4	5	2	0	119	17	4	1	143	146	2	1	227	36	5	10	281	294
08:00	0	0	0	1	0	0	1	1	0	3	58	12	0	0	73	71	0	0	83	8	5	2	98	105
08:15	0	0	1	0	0	0	1	1	4	0	68	9	4	1	86	88	1	0	98	7	2	4	112	117
08:30	0	0	0	2	0	0	2	2	1	0	95	3	2	1	102	104	1	0	117	8	2	2	130	133
08:45	0	0	5	0	0	0	5	5	0	1	78	5	0	2	86	87	3	0	155	8	3	3	172	176
H/TOT	0	0	6	3	0	0	9	9	5	4	299	29	6	4	347	351	5	0	453	31	12	11	512	531
09:00	0	0	6	0	0	0	6	6	3	0	99	6	2	3	113	116	1	0	119	10	0	5	135	139
09:15	0	0	6	1	0	0	7	7	2	0	101	10	2	6	121	127	1	0	89	2	2	2	96	99
09:30	0	0	0	0	0	0	0	0	1	0	75	12	2	0	90	91	0	0	70	4	1	2	77	80
09:45	0	0	4	0	0	0	4	4	1	0	101	8	1	1	112	113	0	0	65	6	2	0	73	75
H/TOT	0	0	16	1	0	0	17	17	7	0	376	36	7	10	436	447	2	0	343	22	5	9	381	393
P/TOT	0	0	23	6	0	1	30	31	14	4	794	82	17	15	926	944	9	1	1023	89	22	30	1174	1218

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	7	0	0	0	7	7	1	0	101	4	0	6	112	117	3	0	71	11	3	0	88	89
16:15	0	0	2	1	0	0	3	3	2	0	88	5	1	3	99	101	4	0	70	8	2	2	86	87
16:30	0	0	1	1	0	0	2	2	0	0	100	14	2	0	116	118	4	0	73	5	2	0	84	83
16:45	0	0	7	2	0	0	9	9	1	0	96	8	0	0	105	104	1	1	86	3	2	0	93	94
H/TOT	0	0	17	4	0	0	21	21	4	0	385	31	3	9	432	441	12	1	300	27	9	2	351	352
17:00	1	0	10	0	0	0	11	10	2	0	124	11	1	0	138	137	3	1	85	10	0	0	99	96
17:15	0	0	10	0	0	0	10	10	3	0	132	6	0	0	141	139	0	0	76	5	0	2	83	85
17:30	0	0	6	1	0	0	7	7	1	1	109	6	1	2	120	122	1	0	98	6	2	0	107	108
17:45	0	0	1	1	0	0	2	2	4	0	83	6	3	3	99	102	0	0	94	0	0	1	95	96
H/TOT	1	0	27	2	0	0	30	29	10	1	448	29	5	5	498	499	4	1	353	21	2	3	384	385
18:00	0	0	10	1	0	0	11	11	2	1	115	7	0	1	126	125	19	0	104	4	0	1	128	114
18:15	0	0	6	0	0	0	6	6	0	0	83	4	3	4	94	101	0	0	92	11	1	1	105	107
18:30	0	0	3	1	0	0	4	4	3	0	74	3	0	3	83	84	2	0	69	5	2	1	79	80
18:45	0	0	3	0	0	0	3	3	1	1	74	3	0	0	79	78	2	0	75	4	0	1	82	81
H/TOT	0	0	22	2	0	0	24	24	6	2	346	17	3	8	382	387	23	0	340	24	3	4	394	383
P/TOT	1	0	66	8	0	0	75	74	20	3	1179	77	11	22	1312	1327	39	2	993	72	14	9	1129	1120

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 01 DATE: 13th September 2022

LOCATION: Arden Road/Davitt Street DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
07:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	2	1	0	0	3	3
07:30	0	0	2	0	0	0	2	2	0	1	5	2	0	0	8	7	0	0	5	0	0	0	5	5
07:45	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	1	0	0	1	2	3
H/TOT	0	0	3	0	0	0	3	3	0	1	9	2	0	0	12	11	0	0	9	1	0	1	11	12
08:00	0	0	1	0	0	0	1	1	0	0	5	1	0	0	6	6	0	0	4	0	0	0	4	4
08:15	0	0	2	0	0	0	2	2	1	0	4	1	0	0	6	5	0	0	6	1	0	0	7	7
08:30	0	0	5	0	0	0	5	5	0	0	9	0	0	0	9	9	1	0	12	1	0	1	15	15
08:45	0	0	5	1	0	0	6	6	1	0	11	0	0	1	13	13	0	0	21	1	0	1	23	24
H/TOT	0	0	13	1	0	0	14	14	2	0	29	2	0	1	34	33	1	0	43	3	0	2	49	50
09:00	0	0	8	0	0	0	8	8	0	0	4	0	0	0	4	4	0	0	15	0	0	0	15	15
09:15	0	0	4	0	0	1	5	6	1	0	7	0	0	0	8	7	0	0	5	0	0	0	5	5
09:30	0	0	5	2	0	0	7	7	0	0	4	3	0	0	7	7	0	0	1	0	0	0	1	1
09:45	0	0	3	0	0	0	3	3	0	0	5	0	0	0	5	5	0	0	2	0	0	0	2	2
H/TOT	0	0	20	2	0	1	23	24	1	0	20	3	0	0	24	23	0	0	23	0	0	0	23	23
P/TOT	0	0	36	3	0	1	40	41	3	1	58	7	0	1	70	68	1	0	75	4	0	3	83	85

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	5	1	0	0	6	6	0	0	7	0	0	0	7	7	0	0	6	1	0	0	7	7
16:15	0	0	0	0	0	0	0	0	0	0	6	3	0	0	9	9	0	0	4	0	0	0	4	4
16:30	0	0	6	1	0	0	7	7	0	0	5	1	0	0	6	6	0	0	3	0	0	1	4	5
16:45	0	0	7	0	0	0	7	7	0	0	4	1	0	0	5	5	0	0	2	0	0	0	2	2
H/TOT	0	0	18	2	0	0	20	20	0	0	22	5	0	0	27	27	0	0	15	1	0	1	17	18
17:00	0	0	10	3	0	0	13	13	0	0	6	0	0	0	6	6	0	0	5	0	0	0	5	5
17:15	2	0	7	2	0	0	11	9	0	0	5	0	0	0	5	5	0	0	6	1	0	0	7	7
17:30	0	0	6	1	0	0	7	7	0	0	6	0	0	0	6	6	0	0	1	1	0	0	2	2
17:45	0	0	6	0	0	0	6	6	0	0	10	1	0	0	11	11	0	0	10	0	0	0	10	10
H/TOT	2	0	29	6	0	0	37	35	0	0	27	1	0	0	28	28	0	0	22	2	0	0	24	24
18:00	0	0	12	0	0	0	12	12	0	0	2	1	0	0	3	3	0	0	5	0	0	0	5	5
18:15	0	0	7	1	0	0	8	8	0	0	13	0	0	0	13	13	0	0	5	0	0	0	5	5
18:30	0	0	6	0	0	0	6	6	0	0	6	1	0	0	7	7	0	0	6	0	0	0	6	6
18:45	0	0	5	0	0	0	5	5	0	0	5	0	0	0	5	5	0	0	8	0	0	0	8	8
H/TOT	0	0	30	1	0	0	31	31	0	0	26	2	0	0	28	28	0	0	24	0	0	0	24	24
P/TOT	2	0	77	9	0	0	88	86	0	0	75	8	0	0	83	83	0	0	61	3	0	1	65	66

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 02a DATE: 13th September 2022

LOCATION: Arden Road/Arden View DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	22	4	0	0	26	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	1	0	16	4	0	0	21	20	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
07:30	0	1	53	7	1	1	63	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	1	0	37	4	3	0	45	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	1	128	19	4	1	155	158	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
08:00	0	3	63	13	0	0	79	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	5	0	71	10	4	1	91	92	0	0	1	0	0	0	1	1	0	0	3	0	0	0	3	3
08:30	1	0	104	3	2	1	111	113	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
08:45	1	1	89	5	0	3	99	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	7	4	327	31	6	5	380	383	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
09:00	3	0	102	6	2	3	116	119	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2
09:15	3	0	108	10	2	6	129	135	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
09:30	1	0	79	15	2	0	97	98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	1	0	106	8	1	1	117	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	8	0	395	39	7	10	459	470	0	0	1	0	0	0	1	1	0	0	3	0	0	0	3	3
P/TOT	17	5	850	89	17	16	994	1010	0	0	2	0	0	0	2	2	0	0	8	0	0	0	8	8

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	1	0	108	4	0	6	119	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	2	0	93	8	1	3	107	109	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
16:30	0	0	105	15	2	0	122	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	1	0	100	9	0	0	110	109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	4	0	406	36	3	9	458	467	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
17:00	2	0	130	11	1	0	144	143	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
17:15	3	0	135	6	0	0	144	142	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
17:30	1	1	115	6	1	2	126	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	4	0	91	7	3	3	108	111	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
H/TOT	10	1	471	30	5	5	522	523	0	0	4	0	0	0	4	4	0	0	3	0	0	0	3	3
18:00	2	1	116	7	0	1	127	126	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0
18:15	0	0	96	4	3	4	107	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	3	0	79	4	0	3	89	90	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
18:45	1	1	79	3	0	0	84	83	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
H/TOT	6	2	370	18	3	8	407	412	0	0	2	1	0	0	3	3	0	0	2	0	0	0	2	2
P/TOT	20	3	1247	84	11	22	1387	1402	0	0	7	1	0	0	8	8	0	0	6	0	0	0	6	6

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 02a DATE: 13th September 2022

LOCATION: Arden Road/Arden View DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	34	9	0	1	45	45
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	5	1	2	55	58
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	9	2	3	73	78
07:45	0	0	1	0	0	0	1	1	1	0	0	0	0	0	1	0	1	1	89	13	2	4	110	115
H/TOT	0	0	1	0	0	0	1	1	1	0	0	0	0	0	1	0	2	1	229	36	5	10	283	296
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	8	5	2	99	106
08:15	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	97	7	2	4	111	116
08:30	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	1	0	121	8	2	2	134	137
08:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	3	0	160	9	3	3	178	182
H/TOT	0	0	2	1	0	0	3	3	0	0	1	0	0	0	1	1	5	0	462	32	12	11	522	541
09:00	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	1	0	125	10	0	5	141	145
09:15	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0	1	0	92	2	2	3	100	104
09:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	75	6	1	2	84	87
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68	6	2	0	76	78
H/TOT	0	0	6	1	0	0	7	7	0	0	0	0	0	0	0	0	2	0	360	24	5	10	401	414
P/TOT	0	0	9	2	0	0	11	11	1	0	1	0	0	0	2	1	9	1	1051	92	22	31	1206	1251

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3	0	76	12	3	0	94	95
16:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	4	0	69	8	2	2	85	86
16:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	4	0	79	6	2	0	91	90
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	93	3	2	0	100	101
H/TOT	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	12	1	317	29	9	2	370	371
17:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3	1	93	13	0	0	110	107
17:15	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	2	0	82	7	0	2	93	93
17:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	104	7	2	0	114	115
17:45	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	100	0	0	1	101	102
H/TOT	0	0	7	0	0	0	7	7	0	0	1	0	0	0	1	1	6	1	379	27	2	3	418	418
18:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	19	0	116	4	0	1	140	126
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	12	1	1	113	115
18:30	0	0	2	0	0	0	2	2	0	0	0	1	0	0	1	1	2	0	75	5	2	1	85	86
18:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2	0	78	4	0	1	85	84
H/TOT	0	0	3	0	0	0	3	3	0	0	1	1	0	0	2	2	23	0	368	25	3	4	423	412
P/TOT	0	0	13	0	0	0	13	13	0	0	2	1	0	0	3	3	41	2	1064	81	14	9	1211	1200

SITE: 02b DATE: 13th September 2022

LOCATION: Arden Road/Clontarf Road/Main Street/Convent View DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	22	4	0	0	26	26	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	1	0	13	4	0	0	18	17	0	0	3	0	0	0	3	3
07:30	0	0	3	0	0	0	3	3	0	1	45	6	1	1	54	55	0	0	5	1	0	0	6	6
07:45	0	0	0	0	0	0	0	0	1	0	38	4	3	0	46	48	0	0	0	0	0	0	0	0
H/TOT	0	0	3	0	0	0	3	3	2	1	118	18	4	1	144	147	0	0	8	1	0	0	9	9
08:00	0	0	1	0	0	0	1	1	0	2	58	13	0	0	73	72	0	1	4	0	0	0	5	4
08:15	1	0	2	1	0	0	4	3	4	0	68	10	3	1	86	87	0	0	1	0	1	0	2	3
08:30	0	0	5	0	0	0	5	5	1	0	96	3	2	1	103	105	0	0	5	0	0	0	5	5
08:45	0	0	7	0	0	0	7	7	0	0	67	5	0	2	74	76	1	1	15	0	0	1	18	18
H/TOT	1	0	15	1	0	0	17	16	5	2	289	31	5	4	336	340	1	2	25	0	1	1	30	30
09:00	0	0	5	0	0	0	5	5	3	0	94	6	2	3	108	111	0	0	6	0	0	0	6	6
09:15	0	0	3	0	1	0	4	5	3	0	104	11	1	6	125	130	0	0	3	0	0	0	3	3
09:30	0	0	2	0	0	0	2	2	1	0	76	13	2	0	92	93	0	0	2	2	0	0	4	4
09:45	0	0	2	1	0	0	3	3	1	0	102	7	1	1	112	113	0	0	2	0	0	0	2	2
H/TOT	0	0	12	1	1	0	14	15	8	0	376	37	6	10	437	447	0	0	13	2	0	0	15	15
P/TOT	1	0	30	2	1	0	34	34	15	3	783	86	15	15	917	933	1	2	46	3	1	1	54	54

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	3	0	0	0	3	3	0	0	101	3	0	6	110	116	1	0	5	1	0	0	7	6
16:15	0	0	3	0	0	0	3	3	2	0	89	7	1	3	102	104	0	0	2	1	0	0	3	3
16:30	0	0	0	0	0	0	0	0	0	0	102	15	1	0	118	119	0	0	4	0	1	0	5	6
16:45	0	0	1	0	0	0	1	1	1	0	90	8	0	0	99	98	0	0	9	1	0	0	10	10
H/TOT	0	0	7	0	0	0	7	7	3	0	382	33	2	9	429	438	1	0	20	3	1	0	25	25
17:00	0	0	0	0	0	0	0	0	2	0	121	11	1	0	135	134	0	0	10	0	0	0	10	10
17:15	0	0	1	0	0	0	1	1	3	0	131	6	0	0	140	138	0	0	6	0	0	0	6	6
17:30	0	0	5	0	0	0	5	5	1	1	107	6	1	2	118	120	0	0	4	0	0	0	4	4
17:45	1	0	1	0	0	0	2	1	3	0	88	7	3	3	104	108	0	0	4	0	0	0	4	4
H/TOT	1	0	7	0	0	0	8	7	9	1	447	30	5	5	497	499	0	0	24	0	0	0	24	24
18:00	1	0	2	0	0	0	3	2	1	1	113	6	0	1	122	122	0	0	2	1	0	0	3	3
18:15	0	0	2	0	0	0	2	2	0	0	92	4	3	4	103	110	0	0	2	0	0	0	2	2
18:30	3	0	2	2	0	0	7	5	0	0	75	1	0	3	79	82	0	0	4	1	0	0	5	5
18:45	0	0	0	1	0	0	1	1	1	1	77	2	0	0	81	80	0	0	2	0	0	0	2	2
H/TOT	4	0	6	3	0	0	13	10	2	2	357	13	3	8	385	393	0	0	10	2	0	0	12	12
P/TOT	5	0	20	3	0	0	28	24	14	3	1186	76	10	22	1311	1330	1	0	54	5	1	0	61	61

SITE: 02b DATE: 13th September 2022

LOCATION: Arden Road/Clontarf Road/Main Street/Convent View DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	3	4
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	0	0	0	7	6
07:30	0	0	2	1	0	0	3	3	0	0	1	0	0	0	1	1	0	0	7	0	0	0	7	7
07:45	0	0	8	1	0	0	9	9	0	0	0	1	0	0	1	1	0	0	3	3	0	1	7	8
H/TOT	0	0	10	2	0	0	12	12	0	0	1	1	0	0	2	2	1	0	18	3	0	2	24	25
08:00	0	0	2	0	0	0	2	2	0	0	2	1	0	0	3	3	0	0	8	4	1	1	14	16
08:15	0	0	4	0	0	0	4	4	0	0	2	0	0	0	2	2	0	0	11	2	0	1	14	15
08:30	0	0	7	1	0	0	8	8	0	0	2	0	0	0	2	2	1	0	25	1	0	0	27	26
08:45	0	0	13	0	0	0	13	13	0	0	2	0	0	0	2	2	0	0	19	0	0	0	19	19
H/TOT	0	0	26	1	0	0	27	27	0	0	8	1	0	0	9	9	1	0	63	7	1	2	74	76
09:00	0	0	16	0	0	0	16	16	0	0	2	1	0	0	3	3	0	0	24	1	0	1	26	27
09:15	0	0	14	0	0	1	15	16	0	0	0	0	0	0	0	0	0	0	13	0	1	0	14	15
09:30	0	0	5	2	0	0	7	7	0	0	1	0	0	0	1	1	0	0	13	0	0	0	13	13
09:45	0	0	2	0	0	0	2	2	0	0	0	1	0	0	1	1	0	0	9	0	1	0	10	11
H/TOT	0	0	37	2	0	1	40	41	0	0	3	2	0	0	5	5	0	0	59	1	2	1	63	66
P/TOT	0	0	73	5	0	1	79	80	0	0	12	4	0	0	16	16	2	0	140	11	3	5	161	167

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	1	1	0	0	2	2	0	0	4	0	0	0	4	4	1	0	15	1	0	0	17	16
16:15	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	7	1	0	0	8	8
16:30	0	0	4	0	0	0	4	4	1	0	0	0	0	0	1	0	0	0	8	2	0	0	10	10
16:45	0	0	2	0	0	0	2	2	0	0	1	1	0	0	2	2	0	0	11	3	0	1	15	16
H/TOT	0	0	10	1	0	0	11	11	1	0	6	1	0	0	8	7	1	0	41	7	0	1	50	50
17:00	0	0	6	4	0	0	10	10	0	0	2	1	0	0	3	3	0	0	15	2	0	0	17	17
17:15	0	0	4	1	0	0	5	5	0	0	1	1	0	0	2	2	0	0	13	1	0	0	14	14
17:30	0	0	2	1	0	0	3	3	0	0	2	1	0	0	3	3	0	0	12	3	0	0	15	15
17:45	0	0	5	0	0	0	5	5	0	0	2	1	0	0	3	3	0	0	11	1	0	0	12	12
H/TOT	0	0	17	6	0	0	23	23	0	0	7	4	0	0	11	11	0	0	51	7	0	0	58	58
18:00	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	5	1	0	0	6	6
18:15	0	0	5	0	1	0	6	7	0	0	2	0	0	0	2	2	0	0	8	1	0	0	9	9
18:30	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	0	5	0	1	0	7	7
18:45	0	0	3	0	0	0	3	3	0	1	0	0	0	0	1	0	0	0	3	0	0	0	3	3
H/TOT	0	0	12	0	1	0	13	14	0	1	4	0	0	0	5	4	1	0	21	2	1	0	25	25
P/TOT	0	0	39	7	1	0	47	48	1	1	17	5	0	0	24	23	2	0	113	16	1	1	133	133

SITE: 02b DATE: 13th September 2022

LOCATION: Arden Road/Clontarf Road/Main Street/Convent View DAY: Tuesday

	MOVEMENT 7								MOVEMENT 8								MOVEMENT 9							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	11	0	1	0	12	13	1	0	34	9	0	1	45	45	0	0	3	0	0	0	3	3
07:15	0	0	10	0	0	0	10	10	0	0	46	5	1	2	54	57	0	0	2	1	0	0	3	3
07:30	0	0	4	2	0	0	6	6	0	0	57	8	2	3	70	75	0	0	4	1	1	1	7	9
07:45	0	0	12	0	0	0	12	12	2	1	80	12	2	4	101	105	0	0	8	1	0	0	9	9
H/TOT	0	0	37	2	1	0	40	41	3	1	217	34	5	10	270	282	0	0	17	3	1	1	22	24
08:00	0	0	10	3	0	1	14	15	0	0	82	8	5	2	97	104	0	0	8	2	1	1	12	14
08:15	0	0	14	1	0	0	15	15	1	0	93	7	2	4	107	112	0	0	19	1	1	2	23	26
08:30	0	0	18	3	0	0	21	21	0	0	110	7	1	2	120	123	0	0	20	0	1	3	24	28
08:45	0	0	25	1	0	0	26	26	1	0	145	8	3	3	160	165	0	0	21	0	0	1	22	23
H/TOT	0	0	67	8	0	1	76	77	2	0	430	30	11	11	484	504	0	0	68	3	3	7	81	91
09:00	1	0	11	3	0	1	16	16	1	0	109	10	0	3	123	125	1	0	12	2	0	1	16	16
09:15	0	0	12	1	1	0	14	15	1	0	78	2	2	2	85	88	0	0	8	3	1	3	15	19
09:30	0	0	12	1	0	0	13	13	0	0	70	3	1	2	76	79	0	0	12	2	0	1	15	16
09:45	0	0	9	1	1	0	11	12	0	0	65	6	2	0	73	75	0	0	14	0	1	0	15	16
H/TOT	1	0	44	6	2	1	54	56	2	0	322	21	5	7	357	367	1	0	46	7	2	5	61	67
P/TOT	1	0	148	16	3	2	170	174	7	1	969	85	21	28	1111	1154	1	0	131	13	6	13	164	182

	MOVEMENT 7								MOVEMENT 8								MOVEMENT 9							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	21	5	0	1	27	28	2	0	75	10	3	0	90	91	0	0	17	3	1	1	22	24
16:15	0	0	10	2	1	1	14	16	4	0	66	8	2	2	82	83	0	0	20	2	1	1	24	26
16:30	1	0	11	2	0	0	14	13	1	0	75	6	2	0	84	85	0	0	23	6	0	0	29	29
16:45	0	0	15	1	0	0	16	16	1	1	88	3	2	0	95	96	0	0	27	5	0	0	32	32
H/TOT	1	0	57	10	1	2	71	73	8	1	304	27	9	2	351	355	0	0	87	16	2	2	107	111
17:00	0	0	18	3	0	0	21	21	2	1	86	8	0	0	97	95	0	1	27	4	0	0	32	31
17:15	0	0	23	1	0	0	24	24	2	0	79	6	0	2	89	89	1	0	21	5	0	0	27	26
17:30	0	0	12	1	0	0	13	13	1	0	101	6	2	0	110	111	1	0	23	3	0	0	27	26
17:45	0	0	15	2	0	0	17	17	0	0	95	0	0	1	96	97	2	0	18	2	0	0	22	20
H/TOT	0	0	68	7	0	0	75	75	5	1	361	20	2	3	392	392	4	1	89	14	0	0	108	104
18:00	0	0	17	0	1	0	18	19	19	0	113	4	0	1	137	123	0	0	18	4	0	0	22	22
18:15	0	0	14	0	0	0	14	14	0	0	93	12	0	1	106	107	0	0	25	1	0	1	27	28
18:30	0	0	15	1	0	0	16	16	0	0	73	5	2	1	81	84	2	0	27	1	1	0	31	30
18:45	0	0	9	0	0	0	9	9	0	0	74	4	0	1	79	80	0	0	29	2	0	0	31	31
H/TOT	0	0	55	1	1	0	57	58	19	0	353	25	2	4	403	394	2	0	99	8	1	1	111	111
P/TOT	1	0	180	18	2	2	203	206	32	2	1018	72	13	9	1146	1141	6	1	275	38	3	3	326	327

SITE: 02b DATE: 13th September 2022

LOCATION: Arden Road/Clontarf Road/Main Street/Convent View DAY: Tuesday

	MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	1	0	7	9	0	0	17	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	2	0	4	4	0	0	10	8	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
07:30	0	0	7	5	1	0	13	14	0	0	1	0	0	2	3	5	0	0	0	0	0	0	0	0
07:45	0	0	10	8	1	1	20	22	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	3	0	28	26	2	1	60	61	0	0	3	0	0	2	5	7	0	0	2	0	0	0	2	2
08:00	0	0	17	5	0	5	27	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	44	3	0	1	48	49	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0
08:30	1	0	52	5	1	0	59	59	0	0	0	1	0	0	1	1	1	0	4	0	1	0	6	6
08:45	0	0	46	5	1	0	52	53	0	0	1	0	0	0	1	1	2	0	3	1	0	0	6	4
H/TOT	1	0	159	18	2	6	186	193	0	0	2	2	0	0	4	4	3	0	7	1	1	0	12	11
09:00	1	0	25	1	0	0	27	26	0	0	0	1	0	0	1	1	0	0	0	0	0	2	2	4
09:15	0	0	34	1	0	1	36	37	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
09:30	0	0	26	2	0	1	29	30	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	1
09:45	0	0	20	1	1	0	22	23	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	1	0	105	5	1	2	114	116	0	0	2	1	0	0	3	3	0	0	1	1	0	2	4	6
P/TOT	5	0	292	49	5	9	360	370	0	0	7	3	0	2	12	14	3	0	10	2	1	2	18	19

	MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	23	4	1	0	28	29	0	0	1	0	0	0	1	1	1	0	0	1	0	0	2	1
16:15	0	0	17	1	0	0	18	18	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
16:30	1	0	24	2	1	0	28	28	0	0	2	0	0	0	2	2	3	0	0	0	0	0	3	1
16:45	2	0	16	4	0	0	22	20	0	0	1	1	0	0	2	2	0	0	3	0	0	0	3	3
H/TOT	3	0	80	11	2	0	96	96	0	0	5	1	0	0	6	6	4	0	3	1	0	0	8	5
17:00	0	0	26	4	1	0	31	32	0	0	1	1	0	0	2	2	1	0	1	1	0	0	3	2
17:15	0	0	18	6	0	0	24	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	29	3	0	0	32	32	0	0	3	1	0	0	4	4	0	0	1	0	0	0	1	1
17:45	0	0	27	5	0	0	32	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	100	18	1	0	119	120	0	0	4	2	0	0	6	6	1	0	2	1	0	0	4	3
18:00	0	0	15	6	0	0	21	21	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
18:15	2	0	22	1	0	0	25	23	0	0	2	1	0	0	3	3	0	0	1	0	0	0	1	1
18:30	0	0	28	3	1	0	32	33	0	0	1	0	0	0	1	1	2	0	1	1	0	0	4	2
18:45	4	0	26	2	0	0	32	29	0	0	0	0	0	0	0	0	2	0	2	0	0	0	4	2
H/TOT	6	0	91	12	1	0	110	106	0	0	4	1	0	0	5	5	4	0	4	1	0	0	9	6
P/TOT	9	0	271	41	4	0	325	322	0	0	13	4	0	0	17	17	9	0	9	3	0	0	21	14

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 03 DATE: 13th September 2022

LOCATION: L1024/Convent View/Grand Canal Way DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	9	12	0	0	21	21	0	0	2	0	0	0	2	2
07:15	0	0	1	0	0	0	1	1	1	0	10	1	0	0	12	11	0	0	2	1	0	0	3	3
07:30	0	0	0	0	0	0	0	0	0	0	13	2	0	2	17	19	0	0	5	1	1	1	8	10
07:45	0	0	0	0	0	0	0	0	1	0	13	8	0	1	23	23	0	0	4	1	0	0	5	5
H/TOT	0	0	1	0	0	0	1	1	2	0	45	23	0	3	73	74	0	0	13	3	1	1	18	20
08:00	0	0	0	0	0	0	0	0	0	0	18	3	1	4	26	31	0	0	9	3	0	1	13	14
08:15	0	0	0	0	0	0	0	0	0	0	49	2	0	1	52	53	0	0	21	1	0	2	24	26
08:30	0	0	1	0	0	0	1	1	1	0	54	6	1	0	62	62	0	0	21	0	0	3	24	27
08:45	0	0	0	0	0	0	0	0	1	0	47	2	1	0	51	51	0	0	26	0	1	0	27	28
H/TOT	0	0	1	0	0	0	1	1	2	0	168	13	3	5	191	197	0	0	77	4	1	6	88	95
09:00	1	0	0	0	0	0	1	0	0	0	23	2	0	2	27	29	0	0	20	1	0	1	22	23
09:15	0	0	0	0	0	0	0	0	0	0	40	0	1	1	42	44	0	0	8	3	2	3	16	21
09:30	0	0	0	0	0	0	0	0	0	0	21	2	0	1	24	25	0	0	14	3	0	1	18	19
09:45	0	0	0	0	0	0	0	0	0	0	20	1	1	0	22	23	0	0	14	1	1	0	16	17
H/TOT	1	0	0	0	0	0	1	0	0	0	104	5	2	4	115	121	0	0	56	8	3	5	72	80
P/TOT	1	0	2	0	0	0	3	2	4	0	317	41	5	12	379	393	0	0	146	15	5	12	178	195

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	0	0	0	0	0	0	0	0	23	3	1	0	27	28	0	0	20	4	1	1	26	28
16:15	0	0	0	0	0	0	0	0	0	0	17	1	0	0	18	18	0	0	23	2	1	1	27	29
16:30	0	0	0	0	0	0	0	0	0	0	24	2	1	0	27	28	0	0	21	3	0	0	24	24
16:45	0	0	0	0	0	0	0	0	0	0	17	5	0	0	22	22	1	0	26	6	0	0	33	32
H/TOT	0	0	0	0	0	0	0	0	0	0	81	11	2	0	94	96	1	0	90	15	2	2	110	113
17:00	0	0	0	0	0	0	0	0	0	0	26	4	1	0	31	32	2	0	33	5	0	0	40	38
17:15	0	0	0	0	0	0	0	0	0	0	20	1	0	0	21	21	2	0	19	3	0	0	24	22
17:30	0	0	0	0	0	0	0	0	0	0	29	4	0	0	33	33	0	0	28	2	0	0	30	30
17:45	0	0	0	0	0	0	0	0	1	0	27	4	0	0	32	31	0	0	24	3	0	0	27	27
H/TOT	0	0	0	0	0	0	0	0	1	0	102	13	1	0	117	117	4	0	104	13	0	0	121	118
18:00	0	0	0	0	0	0	0	0	1	0	18	6	0	0	25	24	0	0	22	1	0	0	23	23
18:15	0	0	0	0	0	0	0	0	0	0	23	2	0	0	25	25	1	0	27	2	0	0	30	29
18:30	0	0	0	0	0	0	0	0	0	0	25	2	1	0	28	29	2	0	28	3	1	0	34	33
18:45	0	0	0	0	0	0	0	0	2	0	26	2	0	0	30	28	1	1	27	2	0	0	31	30
H/TOT	0	0	0	0	0	0	0	0	3	0	92	12	1	0	108	107	4	1	104	8	1	0	118	115
P/TOT	0	0	0	0	0	0	0	0	4	0	275	36	4	0	319	320	9	1	298	36	3	2	349	346

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 03 DATE: 13th September 2022

LOCATION: L1024/Convent View/Grand Canal Way DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	1	0	0	2	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
08:30	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
08:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1
H/TOT	0	0	1	0	0	0	1	1	1	0	3	1	0	0	5	4	0	0	2	0	0	0	2	2
09:00	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
P/TOT	1	0	3	1	0	0	5	4	2	0	3	1	0	0	6	4	0	0	3	0	0	0	3	3

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	1	0	1	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0
16:45	1	0	1	0	0	0	2	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
H/TOT	2	0	1	0	0	0	3	1	5	0	1	0	0	0	6	2	0	0	0	0	0	0	0	0
17:00	2	0	0	0	0	0	2	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
17:15	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	1	0	0	1	1	0	0	1	1	0	0	2	2	0	0	1	0	0	0	1	1
17:45	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	4	0	2	1	0	0	7	4	0	0	2	1	0	0	3	3	0	0	1	0	0	0	1	1
18:00	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	3	0	0	0	0	0	3	1	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	4	0	0	0	0	0	4	1	3	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
P/TOT	10	0	3	1	0	0	14	6	8	0	3	1	0	0	12	6	0	0	1	0	0	0	1	1

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 04 DATE: 13th September 2022

LOCATION: L1024/Callary Street DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	9	12	0	0	21	21	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	1
07:15	1	0	9	1	0	0	11	10	0	0	3	1	0	0	4	4	0	0	0	0	0	1	1	2
07:30	0	0	10	2	1	2	15	18	0	0	5	0	0	0	5	5	0	0	0	0	0	0	0	0
07:45	1	0	13	8	1	1	24	25	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	2	0	41	23	2	3	71	74	0	0	10	1	0	0	11	11	0	0	0	1	0	1	2	3
08:00	0	0	18	3	1	4	26	31	0	0	4	0	0	0	4	4	0	0	1	1	0	0	2	2
08:15	0	0	49	2	0	1	52	53	0	0	2	2	0	0	4	4	0	0	4	0	0	0	4	4
08:30	1	0	54	6	0	0	61	60	0	0	13	1	0	1	15	16	0	0	2	2	0	0	4	4
08:45	1	0	44	2	1	0	48	48	0	0	23	1	0	1	25	26	0	0	4	0	0	0	4	4
H/TOT	2	0	165	13	2	5	187	192	0	0	42	4	0	2	48	50	0	0	11	3	0	0	14	14
09:00	1	0	22	2	0	2	27	28	0	0	9	0	0	0	9	9	0	0	8	0	0	0	8	8
09:15	0	0	42	0	1	1	44	46	0	0	5	0	0	0	5	5	0	0	4	0	1	0	5	6
09:30	0	0	19	1	1	1	22	24	0	0	2	1	0	0	3	3	0	0	1	0	0	0	1	1
09:45	0	0	19	1	0	0	20	20	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2
H/TOT	1	0	102	4	2	4	113	118	0	0	18	1	0	0	19	19	0	0	15	0	1	0	16	17
P/TOT	5	0	308	40	6	12	371	385	0	0	70	6	0	2	78	80	0	0	26	4	1	1	32	34

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	26	2	1	0	29	30	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
16:15	0	0	16	2	0	0	18	18	0	0	2	0	0	0	2	2	0	0	0	1	0	0	1	1
16:30	0	0	21	2	1	0	24	25	0	0	1	0	0	0	1	1	0	0	3	1	0	0	4	4
16:45	0	0	17	4	0	0	21	21	0	0	4	0	0	0	4	4	0	0	5	1	0	0	6	6
H/TOT	0	0	80	10	2	0	92	94	0	0	8	0	0	0	8	8	0	0	12	3	0	0	15	15
17:00	0	0	26	3	1	0	30	31	0	0	6	0	0	0	6	6	1	0	10	1	0	0	12	11
17:15	0	0	19	2	0	0	21	21	0	0	4	0	0	0	4	4	0	0	9	1	0	0	10	10
17:30	0	0	27	3	0	0	30	30	0	0	2	0	0	0	2	2	0	0	4	1	0	0	5	5
17:45	0	0	26	4	0	0	30	30	0	0	8	0	0	0	8	8	0	0	3	0	0	0	3	3
H/TOT	0	0	98	12	1	0	111	112	0	0	20	0	0	0	20	20	1	0	26	3	0	0	30	29
18:00	1	0	16	5	0	0	22	21	0	0	4	1	0	0	5	5	0	0	8	0	0	0	8	8
18:15	0	0	23	2	0	0	25	25	0	0	6	0	0	0	6	6	0	0	5	0	0	0	5	5
18:30	1	0	25	2	1	0	29	29	0	0	5	1	0	0	6	6	0	0	3	0	0	0	3	3
18:45	2	0	23	3	0	0	28	26	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3
H/TOT	4	0	87	12	1	0	104	102	0	0	18	2	0	0	20	20	0	0	19	0	0	0	19	19
P/TOT	4	0	265	34	4	0	307	308	0	0	46	2	0	0	48	48	1	0	57	6	0	0	64	63

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 04 DATE: 13th September 2022

LOCATION: L1024/Callary Street DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	4
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	1	6	8
07:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	2	0	0	6	6
H/TOT	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	14	3	1	1	19	21
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0	1	12	13
08:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	20	1	0	2	23	25
08:30	0	0	1	0	1	0	2	3	0	0	2	0	0	0	2	2	0	0	20	0	0	3	23	26
08:45	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	27	0	1	0	28	29
H/TOT	0	0	3	0	1	0	4	5	0	0	3	0	0	0	3	3	0	0	76	3	1	6	86	93
09:00	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	17	1	0	1	19	20
09:15	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3	0	0	7	3	1	3	14	18
09:30	0	0	2	1	0	0	3	3	0	0	1	2	0	0	3	3	0	0	14	1	0	1	16	17
09:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	14	1	1	0	16	17
H/TOT	0	0	2	1	0	0	3	3	0	0	4	3	1	0	8	9	0	0	52	6	2	5	65	72
P/TOT	0	0	6	1	1	0	8	9	0	0	7	3	1	0	11	12	0	0	142	12	4	12	170	186

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	2	1	1	24	26
16:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	23	2	1	1	27	29
16:30	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1	0	0	21	4	0	0	25	25
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	25	5	0	0	31	30
H/TOT	0	0	4	0	0	0	4	4	0	0	1	2	0	0	3	3	1	0	89	13	2	2	107	110
17:00	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	2	0	33	3	0	0	38	36
17:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2	0	20	4	0	0	26	24
17:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	29	2	0	0	31	31
17:45	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	26	3	0	0	29	29
H/TOT	0	0	6	0	0	0	6	6	0	0	2	0	0	0	2	2	4	0	108	12	0	0	124	121
18:00	0	0	2	1	0	0	3	3	0	0	1	0	0	0	1	1	0	0	20	1	0	0	21	21
18:15	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3	1	0	24	2	0	0	27	26
18:30	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1	1	1	28	3	1	0	34	34
18:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	28	2	0	0	32	30
H/TOT	0	0	5	1	0	0	6	6	0	0	5	0	0	0	5	5	4	1	100	8	1	0	114	111
P/TOT	0	0	15	1	0	0	16	16	0	0	8	2	0	0	10	10	9	1	297	33	3	2	345	342

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 05 DATE: 13th September 2022

LOCATION: L1024/Thornsberry Estate/Puttagham Close DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	9	8	0	0	17	17	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	1	0	11	3	0	0	15	14	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	13	4	0	2	19	21	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	1	0	15	8	2	0	26	27	0	0	0	1	0	1	2	3
H/TOT	0	0	0	0	0	0	0	0	2	0	48	23	2	2	77	79	0	0	0	1	0	1	2	3
08:00	0	0	0	1	0	0	1	1	0	0	19	4	1	4	28	33	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	45	3	0	1	49	50	0	0	2	0	0	0	2	2
08:30	0	0	0	0	0	1	1	2	1	0	54	3	0	1	59	59	0	0	2	0	0	0	2	2
08:45	0	0	2	0	0	0	2	2	1	0	46	3	1	0	51	51	0	0	6	0	0	0	6	6
H/TOT	0	0	2	1	0	1	4	5	2	0	164	13	2	6	187	193	0	0	10	0	0	0	10	10
09:00	0	0	0	0	0	0	0	0	1	0	29	2	0	2	34	35	0	0	1	0	0	0	1	1
09:15	0	0	1	0	0	0	1	1	0	0	40	1	0	0	41	41	0	0	1	1	0	0	2	2
09:30	0	0	0	0	0	0	0	0	0	0	18	1	0	0	19	19	0	0	1	0	0	0	1	1
09:45	0	0	0	0	0	0	0	0	0	0	19	1	1	0	21	22	0	0	1	0	1	0	2	3
H/TOT	0	0	1	0	0	0	1	1	1	0	106	5	1	2	115	117	0	0	4	1	1	0	6	7
P/TOT	0	0	3	1	0	1	5	6	5	0	318	41	5	10	379	390	0	0	14	2	1	1	18	20

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	4	0	0	0	4	4	0	0	18	1	1	0	20	21	0	0	3	2	0	1	6	7
16:15	0	0	0	0	0	0	0	0	0	0	14	1	0	0	15	15	0	0	3	0	0	1	4	5
16:30	0	0	1	0	0	0	1	1	0	0	21	2	1	0	24	25	0	0	4	0	0	1	5	6
16:45	0	0	0	0	0	0	0	0	0	0	20	3	0	0	23	23	1	0	4	0	0	0	5	4
H/TOT	0	0	5	0	0	0	5	5	0	0	73	7	2	0	82	84	1	0	14	2	0	3	20	22
17:00	0	0	0	0	0	0	0	0	0	0	25	3	1	0	29	30	0	0	4	1	0	0	5	5
17:15	0	0	0	0	0	0	0	0	0	0	22	1	0	0	23	23	0	0	4	0	0	0	4	4
17:30	0	0	1	1	0	0	2	2	0	0	31	3	0	0	34	34	0	0	3	0	0	0	3	3
17:45	0	0	1	0	0	0	1	1	0	0	23	4	0	0	27	27	0	0	3	1	0	0	4	4
H/TOT	0	0	2	1	0	0	3	3	0	0	101	11	1	0	113	114	0	0	14	2	0	0	16	16
18:00	0	0	0	1	0	0	1	1	1	0	23	6	0	0	30	29	0	0	9	0	0	0	9	9
18:15	0	0	2	0	0	0	2	2	0	0	21	2	0	0	23	23	0	0	2	0	0	0	2	2
18:30	0	0	0	0	0	0	0	0	0	0	24	2	1	0	27	28	0	0	3	0	0	0	3	3
18:45	0	0	1	0	0	0	1	1	2	0	18	2	0	0	22	20	0	0	3	0	0	0	3	3
H/TOT	0	0	3	1	0	0	4	4	3	0	86	12	1	0	102	101	0	0	17	0	0	0	17	17
P/TOT	0	0	10	2	0	0	12	12	3	0	260	30	4	0	297	299	1	0	45	4	0	3	53	55

SITE: 05 DATE: 13th September 2022

LOCATION: L1024/Thornsberry Estate/Puttagham Close DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	5	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
07:45	0	0	3	1	1	0	5	6	0	0	1	0	0	0	1	1	0	0	2	0	0	1	3	4
H/TOT	0	0	9	1	1	0	11	12	0	0	1	0	0	0	1	1	0	0	3	1	0	1	5	6
08:00	0	0	2	2	0	1	5	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
08:15	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5
H/TOT	0	0	4	2	0	1	7	8	0	0	0	0	0	0	0	0	0	0	11	1	0	0	12	12
09:00	0	0	2	1	0	0	3	3	0	0	1	1	0	0	2	2	0	0	1	0	0	0	1	1
09:15	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
09:30	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
09:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	7	2	0	0	9	9	0	0	1	1	0	0	2	2	0	0	4	0	0	1	5	6
P/TOT	0	0	20	5	1	1	27	29	0	0	2	1	0	0	3	3	0	0	18	2	0	2	22	24

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	1	0	5	1	0	0	7	6	0	0	0	0	0	0	0	0	0	0	5	2	0	0	7	7
16:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
16:30	0	0	2	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
16:45	0	0	5	1	0	0	6	6	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	1	0	13	2	0	1	17	17	0	0	1	0	0	0	1	1	0	0	9	2	0	0	11	11
17:00	0	0	4	1	0	0	5	5	0	0	2	0	0	0	2	2	0	0	4	1	0	0	5	5
17:15	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	2	1	0	0	3	3
17:30	1	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	1	4	0	0	0	5	4	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5
H/TOT	1	1	12	1	0	0	15	14	0	0	3	0	0	0	3	3	0	0	11	2	0	0	13	13
18:00	0	0	4	1	0	0	5	5	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
18:15	0	0	6	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
18:30	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	1	1	0	0	2	2
18:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
H/TOT	0	0	14	1	0	0	15	15	0	0	2	0	0	0	2	2	0	0	8	1	0	0	9	9
P/TOT	2	1	39	4	0	1	47	46	0	0	6	0	0	0	6	6	0	0	28	5	0	0	33	33

SITE: 05 DATE: 13th September 2022

LOCATION: L1024/Thornsberry Estate/Puttagham Close DAY: Tuesday

	MOVEMENT 7								MOVEMENT 8								MOVEMENT 9							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	0	0	1	0	0	0	1	1
07:15	0	0	0	0	0	0	0	0	0	0	5	2	0	1	8	9	0	0	0	0	0	0	0	0
07:30	0	0	1	0	0	0	1	1	0	0	4	0	1	0	5	6	0	0	0	0	0	1	1	2
07:45	0	0	0	0	0	0	0	0	0	0	6	1	0	0	7	7	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	16	4	1	1	22	24	0	0	1	0	0	1	2	3
08:00	0	0	1	1	0	1	3	4	0	0	8	2	1	1	12	14	0	0	0	0	0	0	0	0
08:15	0	0	1	0	0	0	1	1	0	0	13	0	0	2	15	17	0	0	0	0	0	0	0	0
08:30	0	0	3	0	0	0	3	3	0	0	18	1	0	1	20	21	0	0	3	1	0	0	4	4
08:45	0	0	1	0	0	0	1	1	0	0	26	0	1	1	28	30	0	0	3	0	0	0	3	3
H/TOT	0	0	6	1	0	1	8	9	0	0	65	3	2	5	75	82	0	0	6	1	0	0	7	7
09:00	0	0	1	0	0	0	1	1	0	0	24	2	0	1	27	28	0	0	3	0	0	0	3	3
09:15	0	0	0	0	0	0	0	0	0	0	8	2	1	3	14	18	0	0	0	1	0	0	1	1
09:30	0	0	2	1	0	0	3	3	0	0	8	2	0	1	11	12	0	0	2	0	1	0	3	4
09:45	0	0	1	0	0	0	1	1	0	0	8	0	1	0	9	10	1	0	1	0	0	0	2	1
H/TOT	0	0	4	1	0	0	5	5	0	0	48	6	2	5	61	68	1	0	6	1	1	0	9	9
P/TOT	0	0	11	2	0	1	14	15	0	0	129	13	5	11	158	174	1	0	13	2	1	1	18	19

	MOVEMENT 7								MOVEMENT 8								MOVEMENT 9							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	1	1	1	0	3	4	0	0	15	1	0	0	16	16	0	0	1	0	0	1	2	3
16:15	0	0	3	0	0	0	3	3	0	0	11	2	1	1	15	17	0	0	3	0	0	0	3	3
16:30	0	0	2	0	0	0	2	2	0	0	20	3	0	0	23	23	0	0	4	1	0	0	5	5
16:45	0	0	4	1	0	0	5	5	0	0	19	5	0	0	24	24	0	0	3	0	0	0	3	3
H/TOT	0	0	10	2	1	0	13	14	0	0	65	11	1	1	78	80	0	0	11	1	0	1	13	14
17:00	1	0	6	0	0	0	7	6	2	0	29	2	0	0	33	31	0	0	2	1	0	0	3	3
17:15	0	0	3	0	0	0	3	3	1	0	28	3	0	0	32	31	0	0	0	1	0	0	1	1
17:30	1	0	1	0	0	0	2	1	0	0	30	2	0	0	32	32	0	0	3	0	0	0	3	3
17:45	0	0	2	0	0	0	2	2	0	0	21	2	0	0	23	23	0	0	4	0	0	0	4	4
H/TOT	2	0	12	0	0	0	14	12	3	0	108	9	0	0	120	118	0	0	9	2	0	0	11	11
18:00	0	0	1	0	0	0	1	1	0	0	23	1	0	0	24	24	0	0	2	0	0	0	2	2
18:15	0	0	9	0	0	0	9	9	1	0	19	2	0	0	22	21	0	0	1	0	0	0	1	1
18:30	0	0	4	0	0	0	4	4	1	0	20	3	0	0	24	23	0	0	0	0	0	0	0	0
18:45	0	0	5	1	0	0	6	6	1	0	22	1	0	0	24	23	0	0	4	0	0	0	4	4
H/TOT	0	0	19	1	0	0	20	20	3	0	84	7	0	0	94	92	0	0	7	0	0	0	7	7
P/TOT	2	0	41	3	1	0	47	46	6	0	257	27	1	1	292	289	0	0	27	3	0	1	31	32

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 05 DATE: 13th September 2022

LOCATION: L1024/Thornsberry Estate/Puttagham Close DAY: Tuesday

	MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	1	2
H/TOT	0	0	1	1	0	0	2	2	0	0	1	0	0	0	1	1	0	0	0	0	0	1	1	2
08:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	3
08:30	0	0	7	1	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	4	1	0	1	6	7	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
H/TOT	0	0	14	2	0	1	17	18	0	0	2	0	0	0	2	2	0	0	2	1	0	0	3	3
09:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	4
09:15	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2
09:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3
09:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	6	0	0	0	6	6	0	0	1	0	0	0	1	1	0	0	5	2	1	0	8	9
P/TOT	0	0	21	3	0	1	25	26	0	0	4	0	0	0	4	4	0	0	7	3	1	1	12	14

	MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
16:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
16:30	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
16:45	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	7	1	0	0	8	8	0	0	0	0	0	0	0	0	0	0	3	0	0	1	4	5
17:00	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
17:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
17:30	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
17:45	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	8	0	0	0	8	8	0	0	2	0	0	0	2	2	0	0	2	1	0	0	3	3
18:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
18:15	0	0	2	0	0	0	2	2	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
18:30	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2
18:45	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	1
H/TOT	0	0	5	0	0	0	5	5	0	0	2	1	0	0	3	3	0	0	3	1	0	0	4	4
P/TOT	0	0	20	1	0	0	21	21	0	0	4	1	0	0	5	5	0	0	8	2	0	1	11	12

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 06 DATE: 13th September 2022

LOCATION: L1024/Harbour Walk DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	8	6	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	9	3	0	0	12	12	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
07:30	0	0	13	5	0	2	20	22	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
07:45	0	0	10	7	2	1	20	23	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	40	21	2	3	66	71	0	0	2	0	0	0	2	2	0	0	3	1	0	0	4	4
08:00	0	0	14	4	1	5	24	30	0	0	1	0	0	0	1	1	0	0	3	0	0	0	3	3
08:15	0	0	44	3	0	1	48	49	0	0	1	1	0	0	2	2	0	0	0	1	0	0	1	1
08:30	1	0	50	3	0	1	55	55	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2
08:45	1	0	50	3	1	0	55	55	0	0	0	1	0	0	1	1	0	0	4	1	0	0	5	5
H/TOT	2	0	158	13	2	7	182	189	0	0	4	2	0	0	6	6	0	0	9	2	0	0	11	11
09:00	0	0	27	2	0	2	31	33	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
09:15	0	0	35	0	0	0	35	35	0	0	1	1	0	0	2	2	0	0	1	1	0	0	2	2
09:30	0	0	18	2	0	0	20	20	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
09:45	0	0	20	1	2	0	23	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	100	5	2	2	109	113	0	0	2	1	0	0	3	3	0	0	2	1	1	0	4	5
P/TOT	2	0	298	39	6	12	357	373	0	0	8	3	0	0	11	11	0	0	14	4	1	0	19	20

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	26	2	0	1	29	30	0	0	3	2	0	0	5	5	0	0	2	1	0	0	3	3
16:15	0	0	16	1	0	1	18	19	0	0	3	0	0	0	3	3	0	0	1	1	0	0	2	2
16:30	0	0	22	2	1	1	26	28	0	0	2	2	0	0	4	4	0	0	1	1	0	0	2	2
16:45	1	0	21	3	0	0	25	24	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1
H/TOT	1	0	85	8	1	3	98	101	0	0	12	4	0	0	16	16	0	0	5	3	0	0	8	8
17:00	0	0	23	5	1	0	29	30	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2
17:15	0	0	26	1	0	0	27	27	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1
17:30	0	0	30	3	0	0	33	33	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
17:45	0	0	25	6	0	0	31	31	0	0	1	1	0	0	2	2	0	0	1	0	0	0	1	1
H/TOT	0	0	104	15	1	0	120	121	0	0	6	1	0	0	7	7	0	0	7	0	0	0	7	7
18:00	1	0	28	7	1	0	37	37	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
18:15	0	0	22	1	0	0	23	23	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
18:30	0	0	24	1	1	0	26	27	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
18:45	2	0	20	2	0	0	24	22	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
H/TOT	3	0	94	11	2	0	110	110	0	0	4	0	0	0	4	4	0	0	5	0	0	0	5	5
P/TOT	4	0	283	34	4	3	328	332	0	0	22	5	0	0	27	27	0	0	17	3	0	0	20	20

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 06 DATE: 13th September 2022

LOCATION: L1024/Harbour Walk DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
07:15	1	0	2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	7	1	0	1	9	10
07:30	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	9	1	1	0	11	12
07:45	1	0	2	1	0	0	4	3	0	0	0	0	0	0	0	0	0	0	7	2	1	1	11	13
H/TOT	2	0	6	2	0	0	10	8	0	0	0	0	0	0	0	0	0	0	24	5	2	2	33	37
08:00	0	0	4	1	0	0	5	5	0	0	1	1	0	0	2	2	0	0	10	5	1	1	17	19
08:15	1	0	3	0	0	0	4	3	0	0	1	0	0	0	1	1	0	0	16	1	0	2	19	21
08:30	0	0	5	0	0	0	5	5	0	0	2	0	0	0	2	2	0	0	17	1	0	1	19	20
08:45	0	0	3	0	0	0	3	3	0	0	4	0	0	0	4	4	0	0	22	0	1	1	24	26
H/TOT	1	0	15	1	0	0	17	16	0	0	8	1	0	0	9	9	0	0	65	7	2	5	79	86
09:00	1	0	4	0	0	0	5	4	0	0	2	1	0	0	3	3	0	0	26	2	0	1	29	30
09:15	0	0	5	1	0	0	6	6	0	0	3	0	0	0	3	3	0	0	14	2	1	3	20	24
09:30	0	0	1	0	0	0	1	1	0	0	1	0	1	0	2	3	0	0	9	3	0	1	13	14
09:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	7	0	1	0	8	9
H/TOT	1	0	11	1	0	0	13	12	0	0	6	1	1	0	8	9	0	0	56	7	2	5	70	77
P/TOT	4	0	32	4	0	0	40	37	0	0	14	2	1	0	17	18	0	0	145	19	6	12	182	200

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	19	1	1	1	23	24
16:15	0	0	1	0	0	0	1	1	0	0	1	1	0	0	2	2	0	0	12	1	1	1	15	17
16:30	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3	0	0	21	2	0	1	24	25
16:45	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3	0	0	23	5	0	0	28	28
H/TOT	0	0	7	0	0	0	7	7	0	0	7	1	0	0	8	8	1	0	75	9	2	3	90	94
17:00	0	0	4	0	0	0	4	4	1	0	6	0	0	0	7	6	0	0	28	4	0	0	32	32
17:15	0	0	1	0	0	0	1	1	1	0	6	1	0	0	8	7	0	0	26	4	0	0	30	30
17:30	0	0	2	1	0	0	3	3	0	0	3	0	0	0	3	3	1	0	25	4	0	0	30	29
17:45	0	0	4	0	0	0	4	4	0	0	4	0	0	0	4	4	1	1	23	2	0	0	27	26
H/TOT	0	0	11	1	0	0	12	12	2	0	19	1	0	0	22	20	2	1	102	14	0	0	119	117
18:00	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3	0	0	26	2	0	0	28	28
18:15	0	0	3	0	0	0	3	3	0	0	2	0	0	0	2	2	1	0	23	2	0	0	26	25
18:30	0	0	4	0	0	0	4	4	1	0	8	0	0	0	9	8	0	0	19	3	0	0	22	22
18:45	1	0	2	0	0	0	3	2	1	0	1	1	0	0	3	2	0	0	23	1	0	0	24	24
H/TOT	1	0	12	0	0	0	13	12	2	0	14	1	0	0	17	15	1	0	91	8	0	0	100	99
P/TOT	1	0	30	1	0	0	32	31	4	0	40	3	0	0	47	44	4	1	268	31	2	3	309	310

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 07 DATE: 13th September 2022

LOCATION: L1024/L1025 DAY: Tuesday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	4	0	0	0	4	4	0	0	2	4	0	0	6	6	0	0	0	1	0	0	1	1
07:15	0	0	3	0	0	2	5	7	0	0	5	1	0	0	6	6	0	0	7	3	0	1	11	12
07:30	0	0	4	0	1	0	5	6	0	0	8	1	0	0	9	9	0	0	10	1	0	0	11	11
07:45	0	0	6	3	0	0	9	9	0	0	7	4	1	1	13	15	0	0	5	1	1	1	8	10
H/TOT	0	0	17	3	1	2	23	26	0	0	22	10	1	1	34	36	0	0	22	6	1	2	31	34
08:00	0	0	3	1	0	0	4	4	0	0	7	2	0	0	9	9	0	0	11	2	1	1	15	17
08:15	0	0	4	2	1	1	8	10	0	0	20	2	0	0	22	22	0	0	13	2	0	1	16	17
08:30	0	0	6	0	0	2	8	10	0	0	24	2	1	1	28	30	0	0	12	0	0	0	12	12
08:45	0	0	4	0	0	0	4	4	0	0	22	2	1	0	25	26	0	0	14	1	1	1	17	19
H/TOT	0	0	17	3	1	3	24	28	0	0	73	8	2	1	84	87	0	0	50	5	2	3	60	65
09:00	0	0	4	1	0	1	6	7	0	0	10	4	0	2	16	18	0	0	14	3	0	1	18	19
09:15	0	0	9	1	1	0	11	12	0	0	11	0	0	0	11	11	0	0	7	2	1	0	10	11
09:30	0	0	0	1	0	0	1	1	0	0	9	0	1	0	10	11	0	1	9	1	0	0	11	10
09:45	0	0	3	0	1	0	4	5	0	0	12	0	1	0	13	14	0	0	3	0	2	0	5	7
H/TOT	0	0	16	3	2	1	22	25	0	0	42	4	2	2	50	54	0	1	33	6	3	1	44	47
P/TOT	0	0	50	9	4	6	69	79	0	0	137	22	5	4	168	177	0	1	105	17	6	6	135	146

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	12	2	1	0	15	16	0	0	16	4	0	1	21	22	0	0	12	0	1	1	14	16
16:15	0	0	13	3	0	1	17	18	0	0	14	1	0	0	15	15	1	0	5	1	1	0	8	8
16:30	0	0	10	2	0	2	14	16	0	0	19	4	0	1	24	25	0	0	15	1	1	1	18	20
16:45	1	0	13	8	1	0	23	23	2	0	16	2	0	0	20	18	0	0	14	3	0	0	17	17
H/TOT	1	0	48	15	2	3	69	73	2	0	65	11	0	2	80	80	1	0	46	5	3	2	57	61
17:00	0	0	9	6	2	0	17	19	0	0	22	5	0	0	27	27	0	0	16	0	0	0	16	16
17:15	0	0	21	6	3	0	30	33	0	0	22	1	0	0	23	23	0	0	18	2	0	0	20	20
17:30	0	0	12	3	0	0	15	15	0	0	19	1	0	0	20	20	1	0	21	3	0	0	25	24
17:45	0	0	4	0	2	0	6	8	0	0	20	1	0	0	21	21	1	1	10	3	0	0	15	14
H/TOT	0	0	46	15	7	0	68	75	0	0	83	8	0	0	91	91	2	1	65	8	0	0	76	74
18:00	0	0	16	1	2	0	19	21	0	0	18	4	1	0	23	24	0	0	16	2	0	0	18	18
18:15	0	0	9	1	0	0	10	10	0	0	17	0	1	0	18	19	0	0	13	0	0	0	13	13
18:30	0	0	12	1	1	0	14	15	0	0	20	2	0	0	22	22	0	0	12	0	0	0	12	12
18:45	0	0	10	0	0	0	10	10	0	0	12	0	0	0	12	12	0	0	15	1	0	0	16	16
H/TOT	0	0	47	3	3	0	53	56	0	0	67	6	2	0	75	77	0	0	56	3	0	0	59	59
P/TOT	1	0	141	33	12	3	190	204	2	0	215	25	2	2	246	248	3	1	167	16	3	2	192	194

TULLAMORE II TRAFFIC COUNTS **SEPTEMBER 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/209**

SITE: 07 DATE: 13th September 2022

LOCATION: L1024/L1025 DAY: Tuesday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	5	2	0	0	7	7	0	0	6	3	0	0	9	9
07:15	0	0	2	0	0	0	2	2	0	0	4	1	0	0	5	5	0	0	7	1	0	1	9	10
07:30	0	0	0	1	0	0	1	1	0	0	5	3	0	2	10	12	0	0	8	5	0	0	13	13
07:45	0	0	4	1	0	0	5	5	0	0	7	2	0	1	10	11	0	0	12	1	3	0	16	19
H/TOT	0	0	6	2	0	0	8	8	0	0	21	8	0	3	32	35	0	0	33	10	3	1	47	51
08:00	0	0	1	2	1	0	4	5	0	0	10	0	0	4	14	18	0	0	7	3	0	1	11	12
08:15	0	0	7	0	0	1	8	9	0	0	23	3	0	0	26	26	0	0	14	3	0	0	17	17
08:30	0	0	5	0	0	1	6	7	1	0	24	0	0	0	25	24	0	0	12	1	0	2	15	17
08:45	0	0	8	0	0	0	8	8	1	0	23	3	0	0	27	26	0	0	15	1	0	1	17	18
H/TOT	0	0	21	2	1	2	26	29	2	0	80	6	0	4	92	94	0	0	48	8	0	4	60	64
09:00	0	0	14	0	0	0	14	14	0	0	15	0	0	0	15	15	0	0	12	2	0	0	14	14
09:15	0	0	5	1	0	3	9	12	0	0	24	0	1	1	26	28	1	0	7	0	0	0	8	7
09:30	0	0	2	0	0	1	3	4	0	0	8	1	0	0	9	9	0	0	8	2	1	1	12	14
09:45	0	0	5	0	0	0	5	5	0	0	13	1	0	0	14	14	0	0	5	1	0	0	6	6
H/TOT	0	0	26	1	0	4	31	35	0	0	60	2	1	1	64	66	1	0	32	5	1	1	40	41
P/TOT	0	0	53	5	1	6	65	72	2	0	161	16	1	8	188	195	1	0	113	23	4	6	147	156

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	9	1	0	0	10	10	0	0	9	1	0	0	10	10	0	0	2	2	0	0	4	4
16:15	0	0	7	0	0	1	8	9	0	0	9	0	1	1	11	13	0	0	6	0	1	1	8	10
16:30	0	0	5	1	0	0	6	6	0	0	7	0	0	0	7	7	0	0	6	3	0	1	10	11
16:45	0	0	12	2	0	0	14	14	0	0	4	1	0	0	5	5	0	0	9	1	1	0	11	12
H/TOT	0	0	33	4	0	1	38	39	0	0	29	2	1	1	33	35	0	0	23	6	2	2	33	37
17:00	1	0	15	3	0	0	19	18	0	0	8	0	1	0	9	10	0	0	5	1	1	0	7	8
17:15	0	0	12	1	0	0	13	13	0	0	8	0	0	0	8	8	0	0	9	1	0	0	10	10
17:30	0	0	7	0	0	0	7	7	0	0	9	0	0	0	9	9	0	0	7	4	0	0	11	11
17:45	0	0	15	0	0	0	15	15	1	0	9	3	0	0	13	12	0	0	13	1	0	0	14	14
H/TOT	1	0	49	4	0	0	54	53	1	0	34	3	1	0	39	39	0	0	34	7	1	0	42	43
18:00	0	0	11	0	0	0	11	11	0	0	9	3	0	0	12	12	0	0	3	1	0	0	4	4
18:15	1	0	8	2	0	0	11	10	0	0	7	0	0	0	7	7	0	0	6	0	1	0	7	8
18:30	0	0	6	3	1	0	10	11	0	0	7	1	0	0	8	8	0	0	4	0	3	0	7	10
18:45	0	0	11	0	0	0	11	11	1	0	10	1	0	0	12	11	0	0	5	0	0	0	5	5
H/TOT	1	0	36	5	1	0	43	43	1	0	33	5	0	0	39	38	0	0	18	1	4	0	23	27
P/TOT	2	0	118	13	1	1	135	135	2	0	96	10	2	1	111	112	0	0	75	14	7	2	98	107

APPENDIX C

TRICS Output Data
Housing, Apartments & Crèche

Calculation Reference: AUDIT-160301-230116-0135

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	BO	BEDFORD	1 days
	CT	CENTRAL BEDFORDSHIRE	1 days
	ES	EAST SUSSEX	5 days
	EX	ESSEX	2 days
	HC	HAMPSHIRE	10 days
	HF	HERTFORDSHIRE	2 days
	IW	ISLE OF WIGHT	1 days
	KC	KENT	6 days
	MW	MEDWAY	2 days
	SC	SURREY	5 days
	SP	SOUTHAMPTON	1 days
	WB	WEST BERKSHIRE	1 days
	WS	WEST SUSSEX	8 days
03	SOUTH WEST		
	BC	BOURNEMOUTH CHRISTCHURCH & POOLE	1 days
	DC	DORSET	1 days
	DV	DEVON	2 days
	GS	GLOUCESTERSHIRE	1 days
	SD	SWINDON	1 days
	SM	SOMERSET	3 days
	TB	TORBAY	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	2 days
	NF	NORFOLK	20 days
	PB	PETERBOROUGH	1 days
	SF	SUFFOLK	5 days
05	EAST MIDLANDS		
	DY	DERBY	1 days
	LE	LEICESTERSHIRE	1 days
	LN	LINCOLNSHIRE	1 days
	NM	WEST NORTHAMPTONSHIRE	1 days
	NN	NORTH NORTHAMPTONSHIRE	1 days
	NT	NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	ST	STAFFORDSHIRE	3 days
	WK	WARWICKSHIRE	2 days
	WM	WEST MIDLANDS	2 days
	WO	WORCESTERSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	2 days
	NY	NORTH YORKSHIRE	3 days
	SY	SOUTH YORKSHIRE	2 days
	WY	WEST YORKSHIRE	1 days
08	NORTH WEST		
	AC	CHESHIRE WEST & CHESTER	3 days
	EC	CHESHIRE EAST	1 days
	GM	GREATER MANCHESTER	1 days
	LC	LANCASHIRE	1 days
09	NORTH		
	CB	CUMBRIA	1 days
	DH	DURHAM	3 days
	TW	TYNE & WEAR	1 days
10	WALES		
	PS	POWYS	2 days
	VG	VALE OF GLAMORGAN	1 days
11	SCOTLAND		
	AS	ABERDEENSHIRE	1 days
	HI	HIGHLAND	1 days
12	CONNAUGHT		
	CS	SLIGO	2 days
	LT	LEITRIM	2 days
	MA	MAYO	1 days
	RO	ROSCOMMON	2 days

13	MUNSTER		
	TI	TIPPERARY	1 days
	WA	WATERFORD	1 days
14	LEINSTER		
	CC	CARLOW	1 days
	LU	LOUTH	1 days
	WC	WICKLOW	2 days
	WX	WEXFORD	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	2 days
16	ULSTER (REPUBLIC OF IRELAND)		
	CV	CAVAN	2 days
	DN	DONEGAL	6 days
	MG	MONAGHAN	2 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	1 days
	DE	DERRY	2 days
	TY	TYRONE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	152	129	0.074	152	129	0.277	152	129	0.351
08:00 - 09:00	152	129	0.147	152	129	0.375	152	129	0.522
09:00 - 10:00	152	129	0.137	152	129	0.166	152	129	0.303
10:00 - 11:00	152	129	0.124	152	129	0.145	152	129	0.269
11:00 - 12:00	152	129	0.133	152	129	0.143	152	129	0.276
12:00 - 13:00	152	129	0.156	152	129	0.153	152	129	0.309
13:00 - 14:00	152	129	0.158	152	129	0.151	152	129	0.309
14:00 - 15:00	152	129	0.168	152	129	0.184	152	129	0.352
15:00 - 16:00	152	129	0.249	152	129	0.174	152	129	0.423
16:00 - 17:00	152	129	0.271	152	129	0.165	152	129	0.436
17:00 - 18:00	152	129	0.340	152	129	0.171	152	129	0.511
18:00 - 19:00	152	129	0.272	152	129	0.163	152	129	0.435
19:00 - 20:00	1	97	0.062	1	97	0.052	1	97	0.114
20:00 - 21:00	1	97	0.031	1	97	0.021	1	97	0.052
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.322			2.340			4.662

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

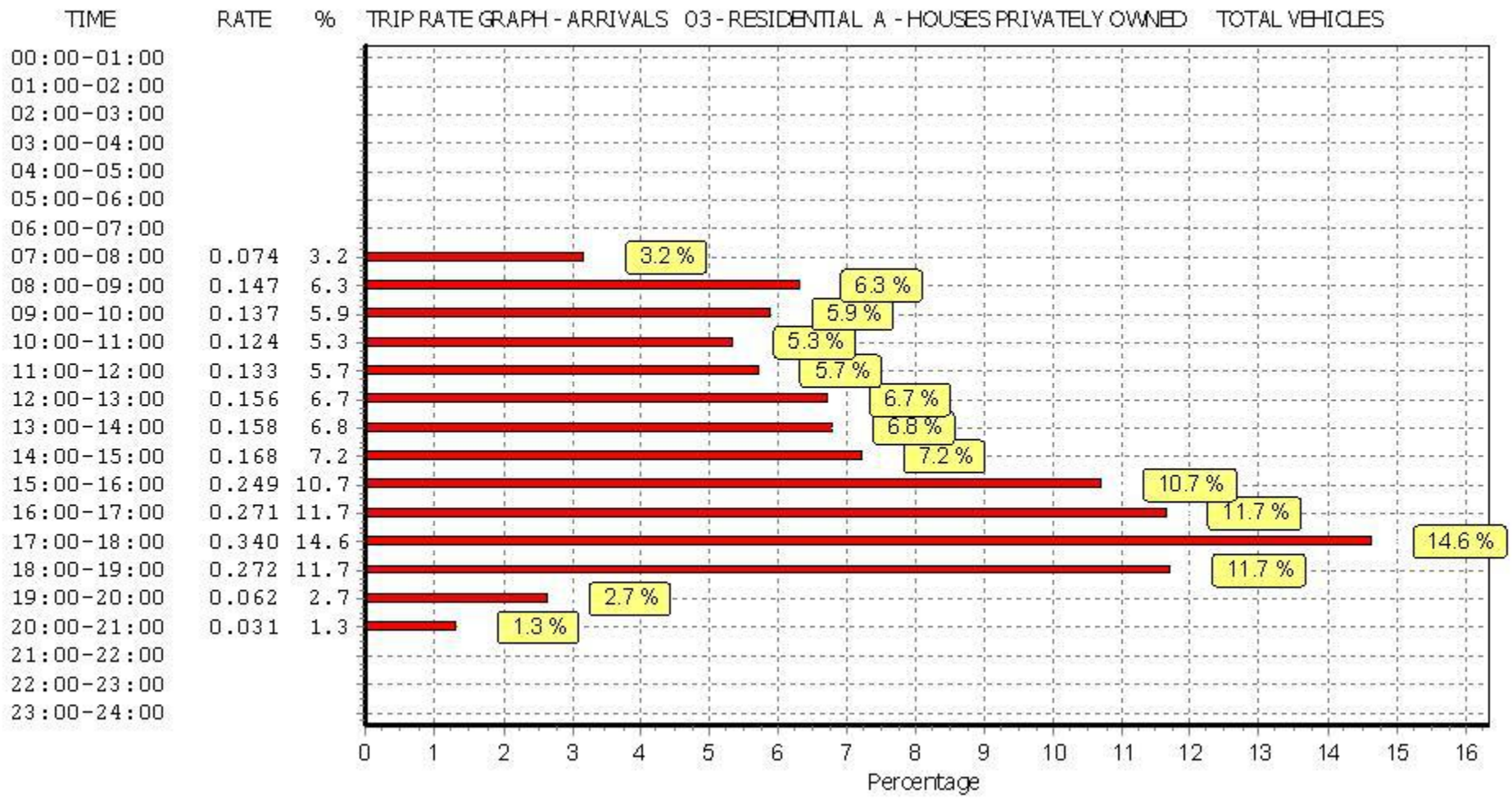
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	6 - 1882 (units:)
Survey date date range:	01/01/14 - 14/10/22
Number of weekdays (Monday-Friday):	152
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	55
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

NRB Consulting Engineers Ltd 8 Leopardstown Business Centre, Ballyogan Avenue Dublin 18 Licence No: 160301



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

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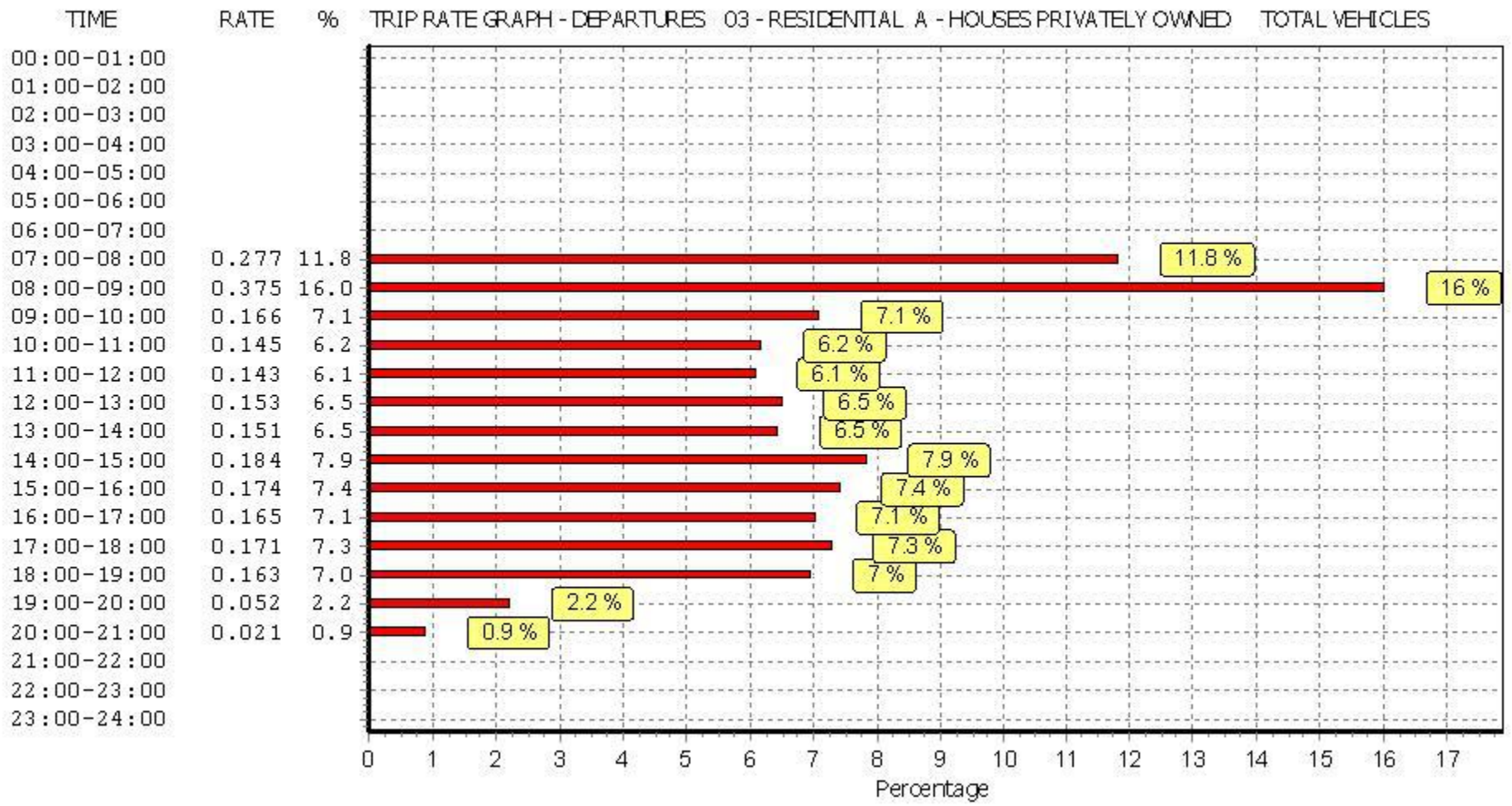

This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

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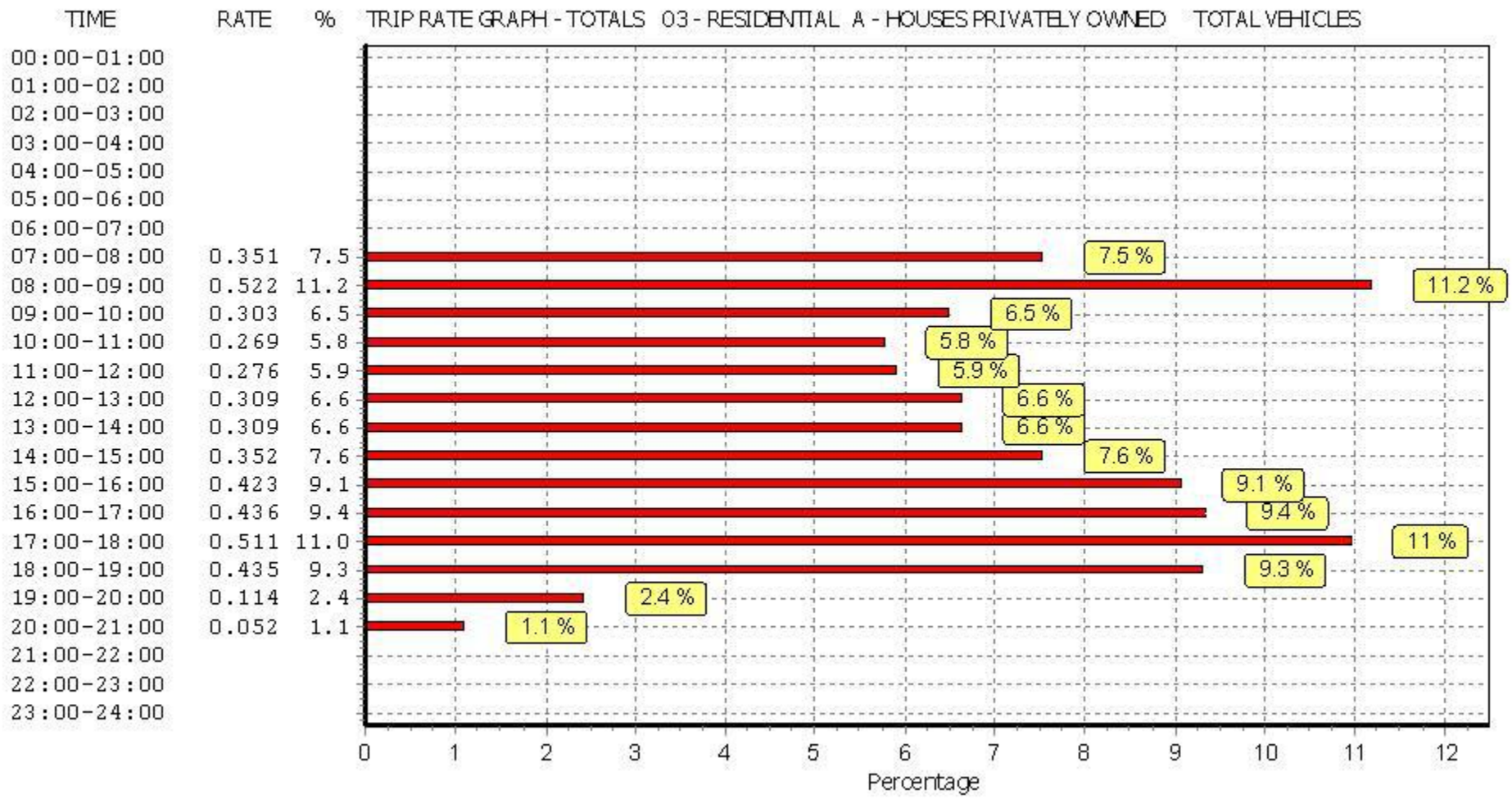


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-160301-230116-0107

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	BH	BRIGHTON & HOVE	1 days
	CT	CENTRAL BEDFORDSHIRE	3 days
	HF	HERTFORDSHIRE	4 days
	PO	PORTSMOUTH	1 days
	WS	WEST SUSSEX	1 days
03	SOUTH WEST		
	DC	DORSET	1 days
	DV	DEVON	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	2 days
	SF	SUFFOLK	4 days
05	EAST MIDLANDS		
	DY	DERBY	1 days
	LE	LEICESTERSHIRE	1 days
	NG	NOTTINGHAM	2 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	RI	EAST RIDING OF YORKSHIRE	1 days
	SY	SOUTH YORKSHIRE	1 days
08	NORTH WEST		
	MS	MERSEYSIDE	3 days
09	NORTH		
	CB	CUMBRIA	3 days
	TW	TYNE & WEAR	1 days
10	WALES		
	CO	CONWY	1 days
11	SCOTLAND		
	EB	CITY OF EDINBURGH	1 days
	SA	SOUTH AYRSHIRE	1 days
	SR	STIRLING	3 days
12	CONNAUGHT		
	MA	MAYO	1 days
13	MUNSTER		
	WA	WATERFORD	1 days
14	LEINSTER		
	LU	LOUTH	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	4 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	47	64	0.040	47	64	0.146	47	64	0.186
08:00 - 09:00	47	64	0.062	47	64	0.183	47	64	0.245
09:00 - 10:00	47	64	0.078	47	64	0.083	47	64	0.161
10:00 - 11:00	47	64	0.066	47	64	0.084	47	64	0.150
11:00 - 12:00	47	64	0.068	47	64	0.082	47	64	0.150
12:00 - 13:00	47	64	0.088	47	64	0.084	47	64	0.172
13:00 - 14:00	47	64	0.074	47	64	0.087	47	64	0.161
14:00 - 15:00	47	64	0.082	47	64	0.085	47	64	0.167
15:00 - 16:00	47	64	0.103	47	64	0.070	47	64	0.173
16:00 - 17:00	47	64	0.127	47	64	0.080	47	64	0.207
17:00 - 18:00	47	64	0.170	47	64	0.088	47	64	0.258
18:00 - 19:00	47	64	0.147	47	64	0.100	47	64	0.247
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.105			1.172			2.277

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

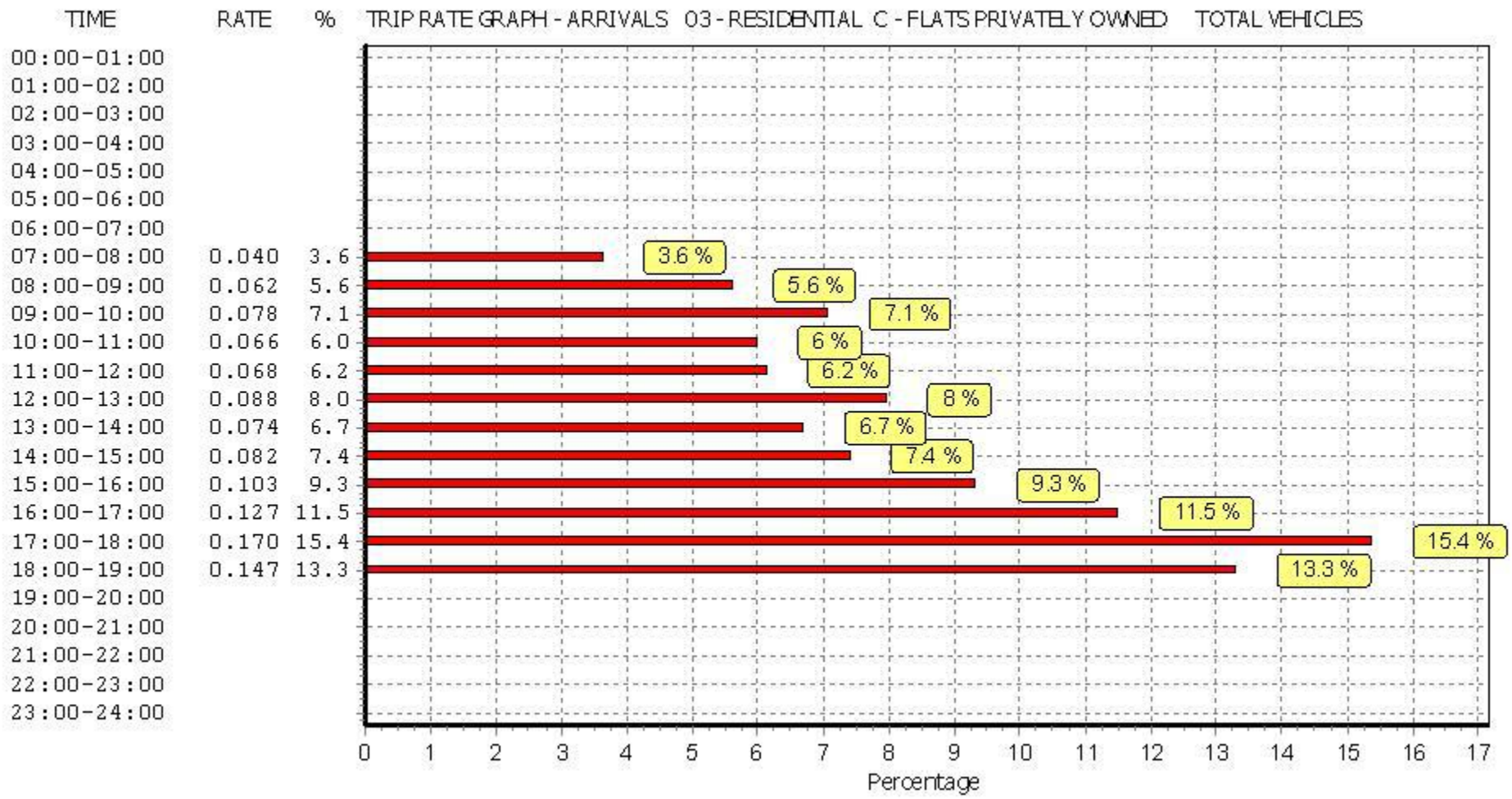
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	9 - 332 (units:)
Survey date date range:	01/01/14 - 11/05/22
Number of weekdays (Monday-Friday):	47
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

NRB Consulting Engineers Ltd 8 Leopardstown Business Centre, Ballyogan Avenue Dublin 18 Licence No: 160301



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

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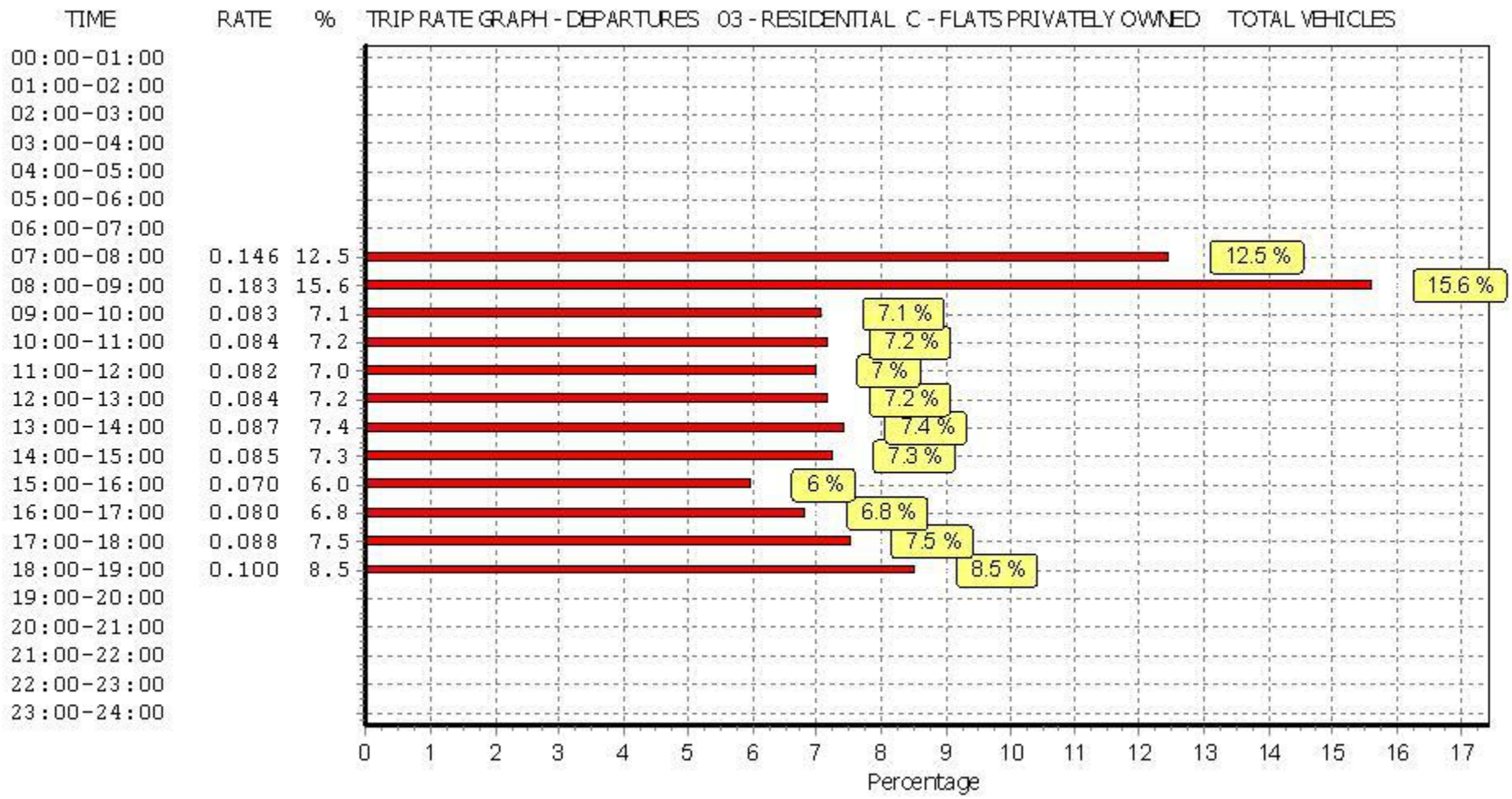

This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

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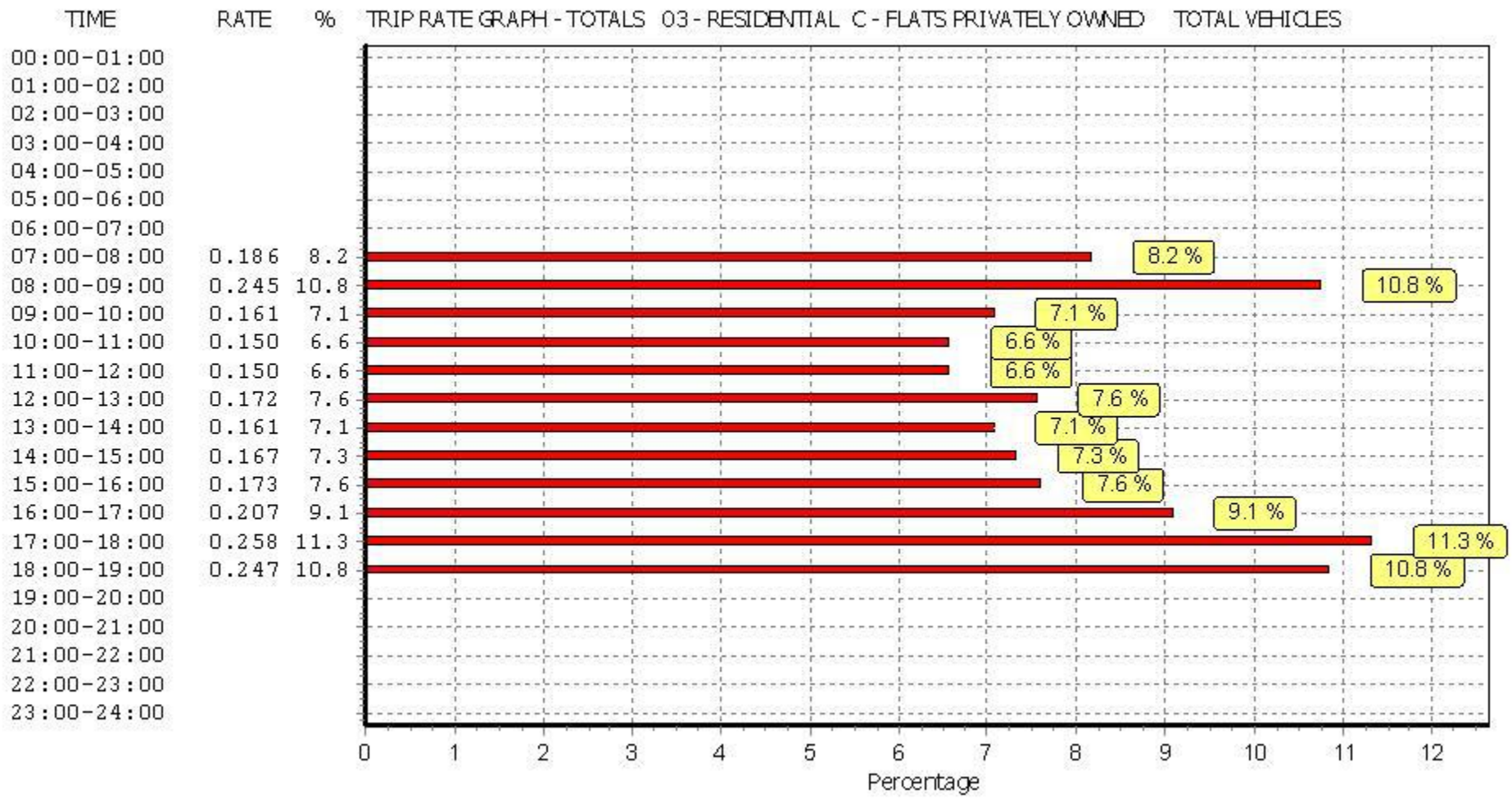

This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-160301-230116-0119

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	BH	BRIGHTON & HOVE	1 days
	WS	WEST SUSSEX	1 days
03	SOUTH WEST		
	SD	SWINDON	1 days
04	EAST ANGLIA		
	PB	PETERBOROUGH	1 days
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DY	DERBY	1 days
	LE	LEICESTERSHIRE	1 days
	LN	LINCOLNSHIRE	1 days
	NN	NORTH NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	WK	WARWICKSHIRE	1 days
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	1 days
	SY	SOUTH YORKSHIRE	1 days
08	NORTH WEST		
	EC	CHESHIRE EAST	1 days
09	NORTH		
	TV	TEES VALLEY	1 days
	TW	TYNE & WEAR	1 days
10	WALES		
	BG	BRIDGEND	1 days
	MM	MONMOUTHSHIRE	1 days
	RC	RHONDDA CYNON TAFF	1 days
11	SCOTLAND		
	DU	DUNDEE CITY	1 days
	SR	STIRLING	1 days
12	CONNAUGHT		
	RO	ROSCOMMON	2 days
16	ULSTER (REPUBLIC OF IRELAND)		
	MG	MONAGHAN	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	3	453	0.147	3	453	0.000	3	453	0.147
07:00 - 08:00	25	525	2.019	25	525	0.975	25	525	2.994
08:00 - 09:00	25	525	3.261	25	525	2.682	25	525	5.943
09:00 - 10:00	25	525	1.341	25	525	1.311	25	525	2.652
10:00 - 11:00	25	525	0.411	25	525	0.312	25	525	0.723
11:00 - 12:00	25	525	0.549	25	525	0.373	25	525	0.922
12:00 - 13:00	25	525	1.189	25	525	1.303	25	525	2.492
13:00 - 14:00	25	525	0.891	25	525	1.250	25	525	2.141
14:00 - 15:00	25	525	0.587	25	525	0.541	25	525	1.128
15:00 - 16:00	25	525	0.739	25	525	0.800	25	525	1.539
16:00 - 17:00	25	525	1.333	25	525	1.478	25	525	2.811
17:00 - 18:00	25	525	2.438	25	525	3.109	25	525	5.547
18:00 - 19:00	24	541	0.131	24	541	0.647	24	541	0.778
19:00 - 20:00	2	425	0.118	2	425	1.176	2	425	1.294
20:00 - 21:00	1	450	0.000	1	450	0.000	1	450	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			15.154			15.957			31.111

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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Parameter summary

Trip rate parameter range selected:	150 - 1250 (units: sqm)
Survey date date range:	01/01/14 - 07/06/22
Number of weekdays (Monday-Friday):	25
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

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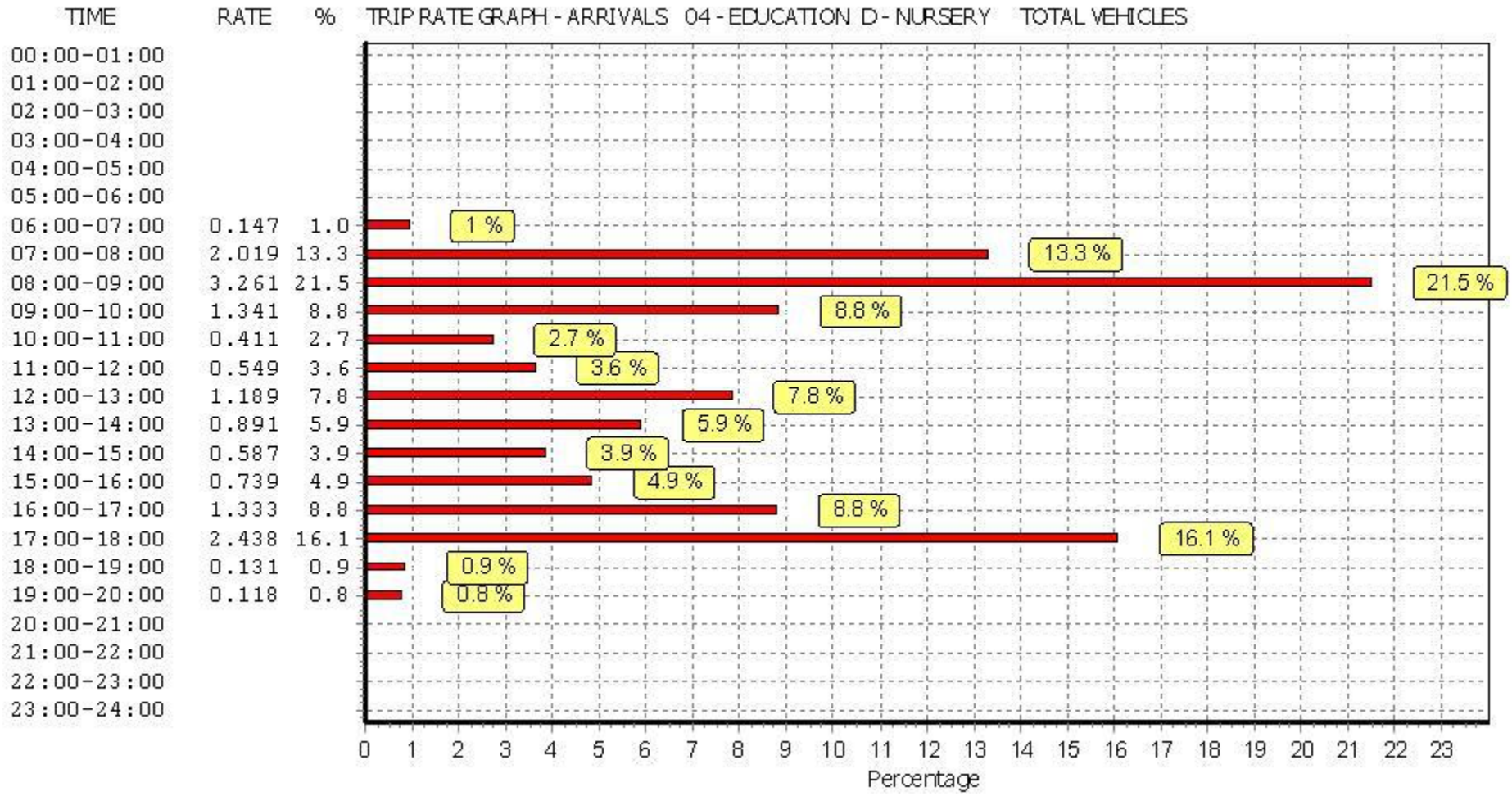
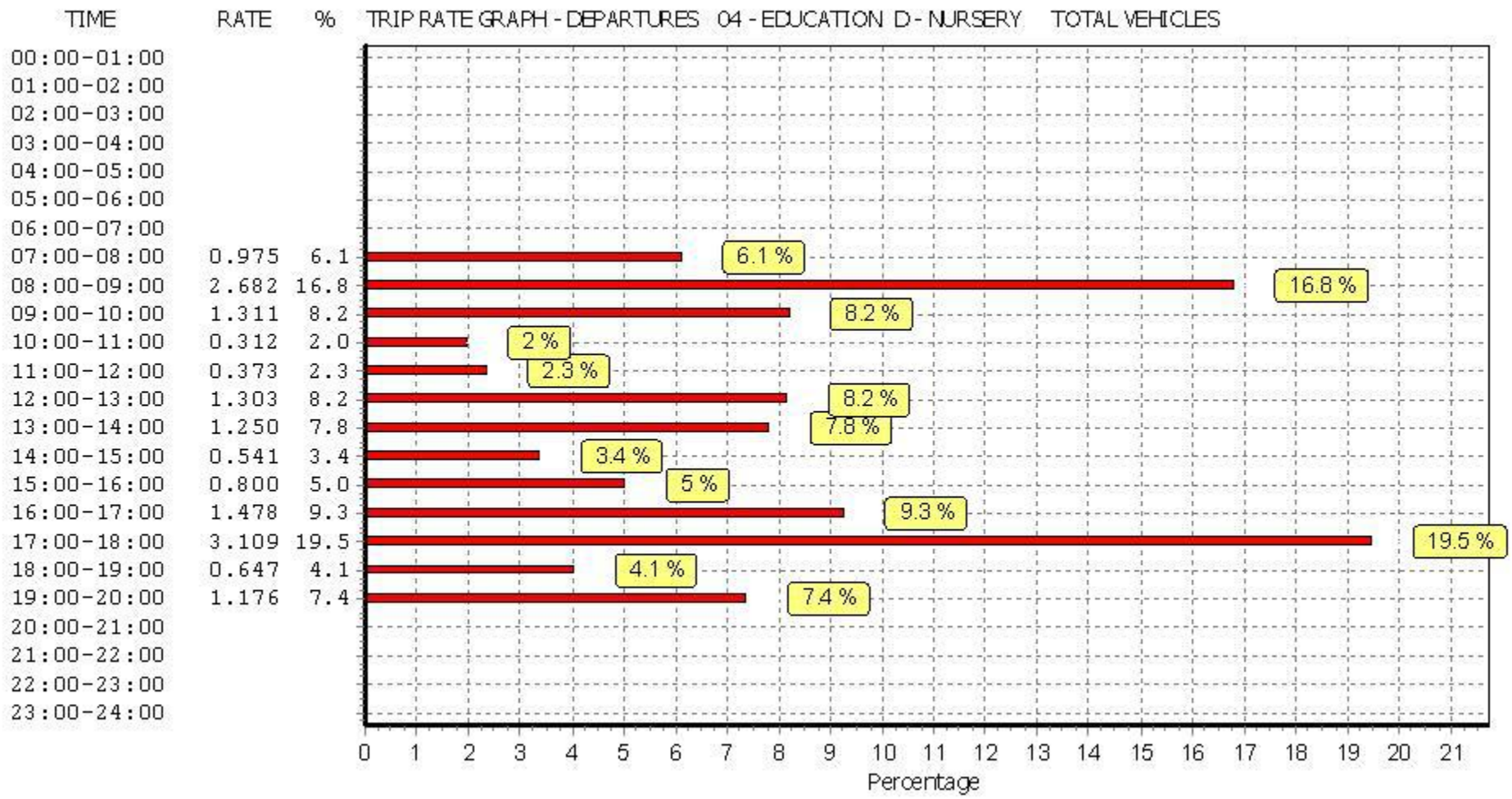


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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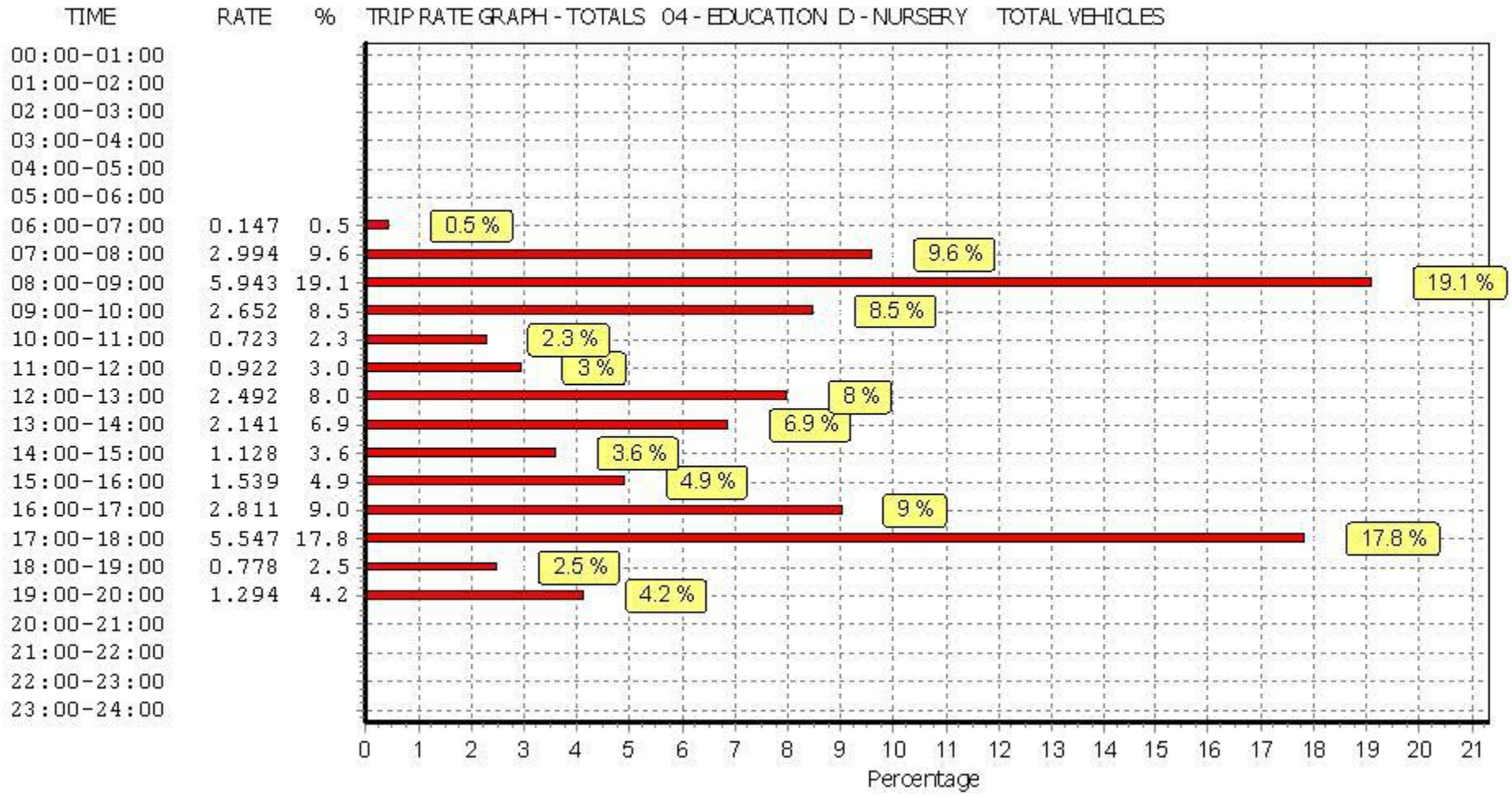

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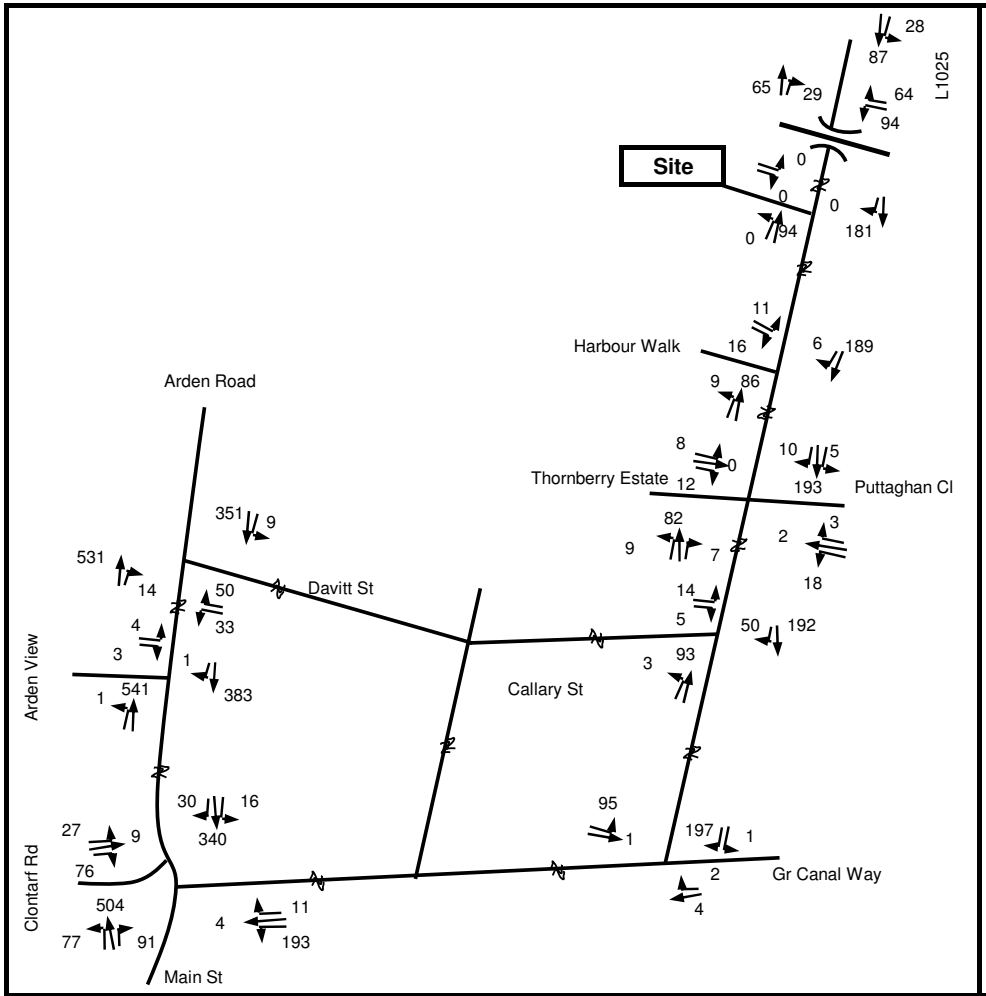
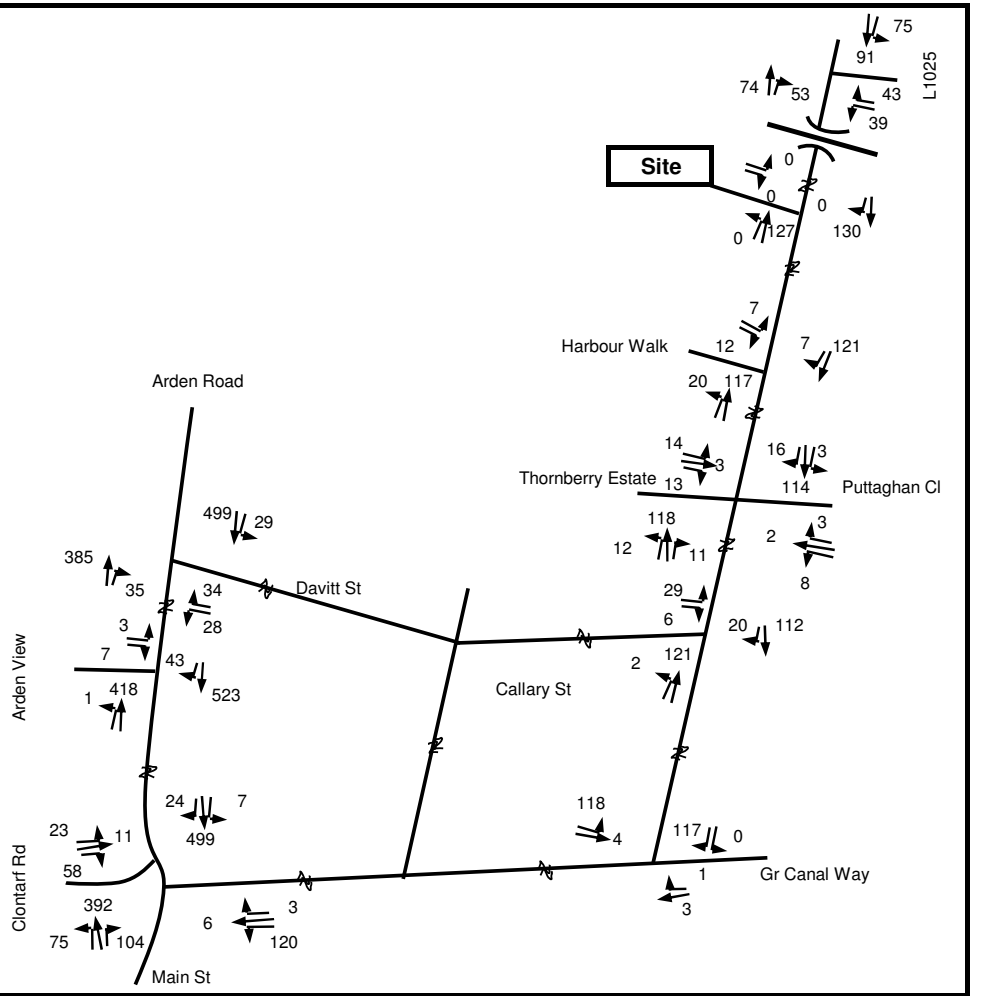
NRB consulting engineers

APPENDIX D

Traffic Calculations, Trip Distribution, Network Traffic Flow Diagrams & Projections Based on 2022 Traffic Surveys/TRICS



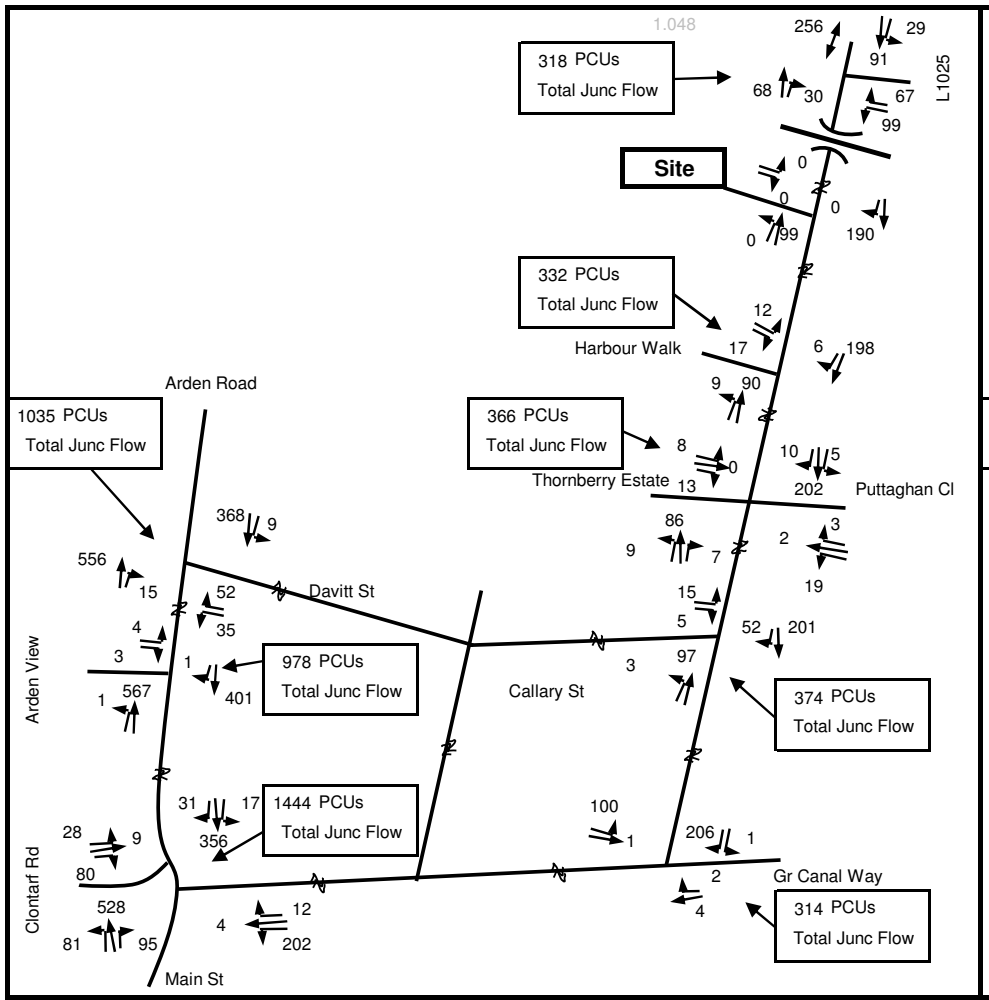
AM PEAK HR 8-9am



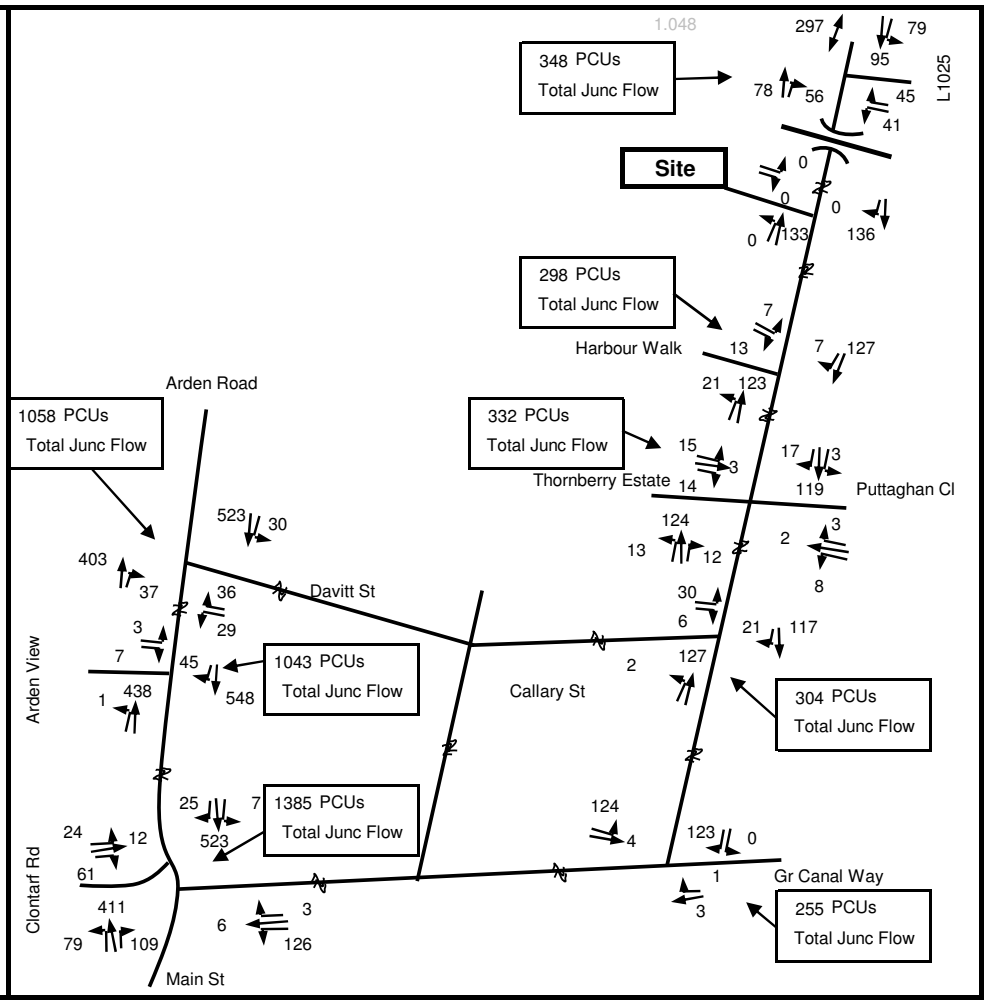
PM PEAK HR 5-6pm

As Surveyed 2022 Weekday Peak Hour Traffic Volumes - Post Covid Pandemic (PCUs) - WITHOUT NEW DEVELOPMENT (Refer Appendix B)

TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 **(Travel Demand Projections, Table 6.2: Central Growth Rates: Annual Growth Factors County Offaly)**	**2022 to 2026 = 1.048** **2026 to 2041 = 1.097**

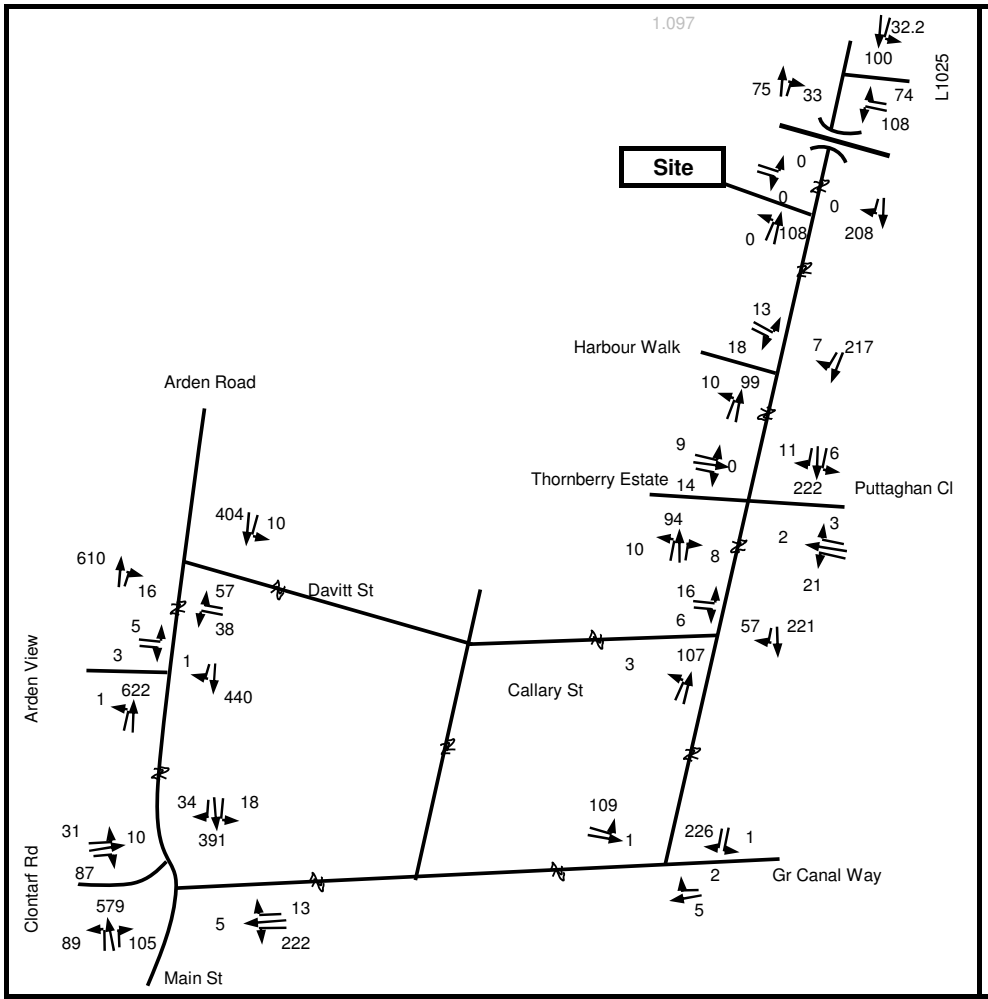


AM PEAK HR 8-9am

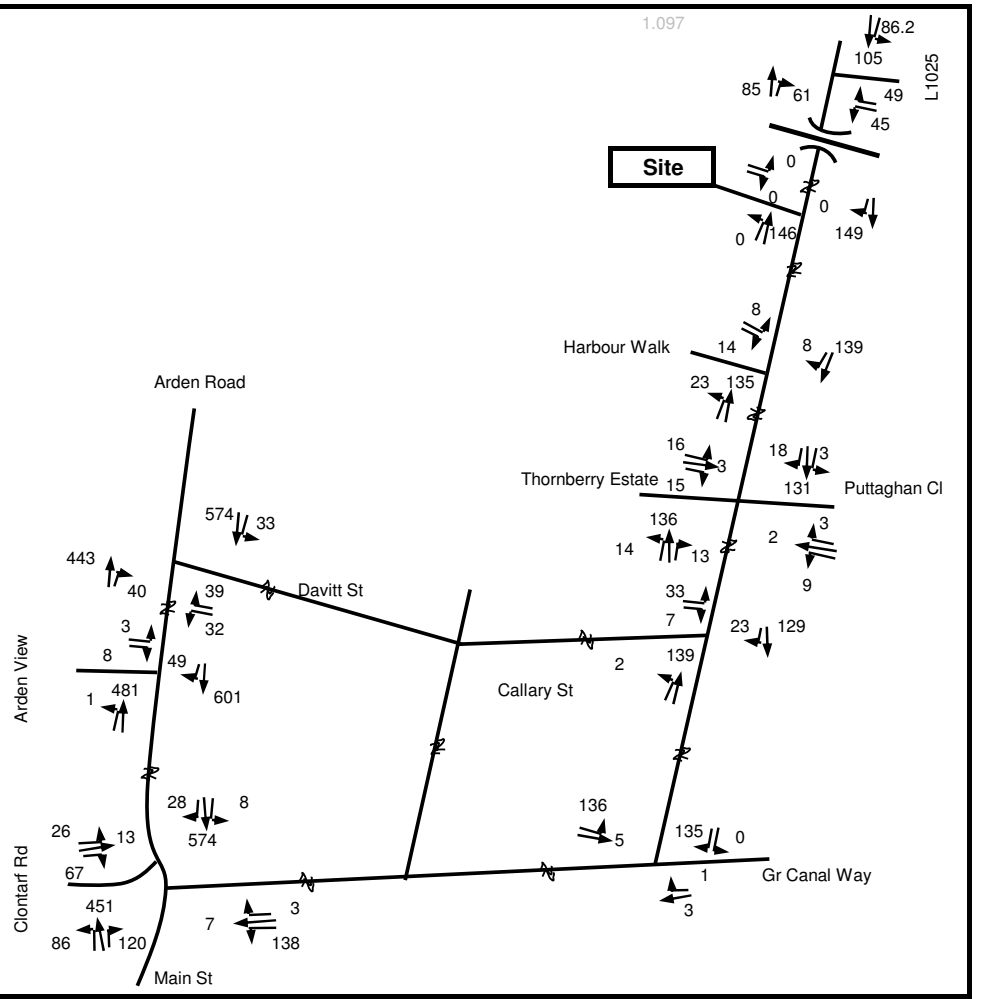


PM PEAK HR 5-6pm

Projected Selected Opening Year 2026 Weekday Peak Hour Traffic Volumes - TII Annual Growth Factors Applied (PCUs) - WITHOUT NEW DEVELOPMENT



AM PEAK HR 8-9am



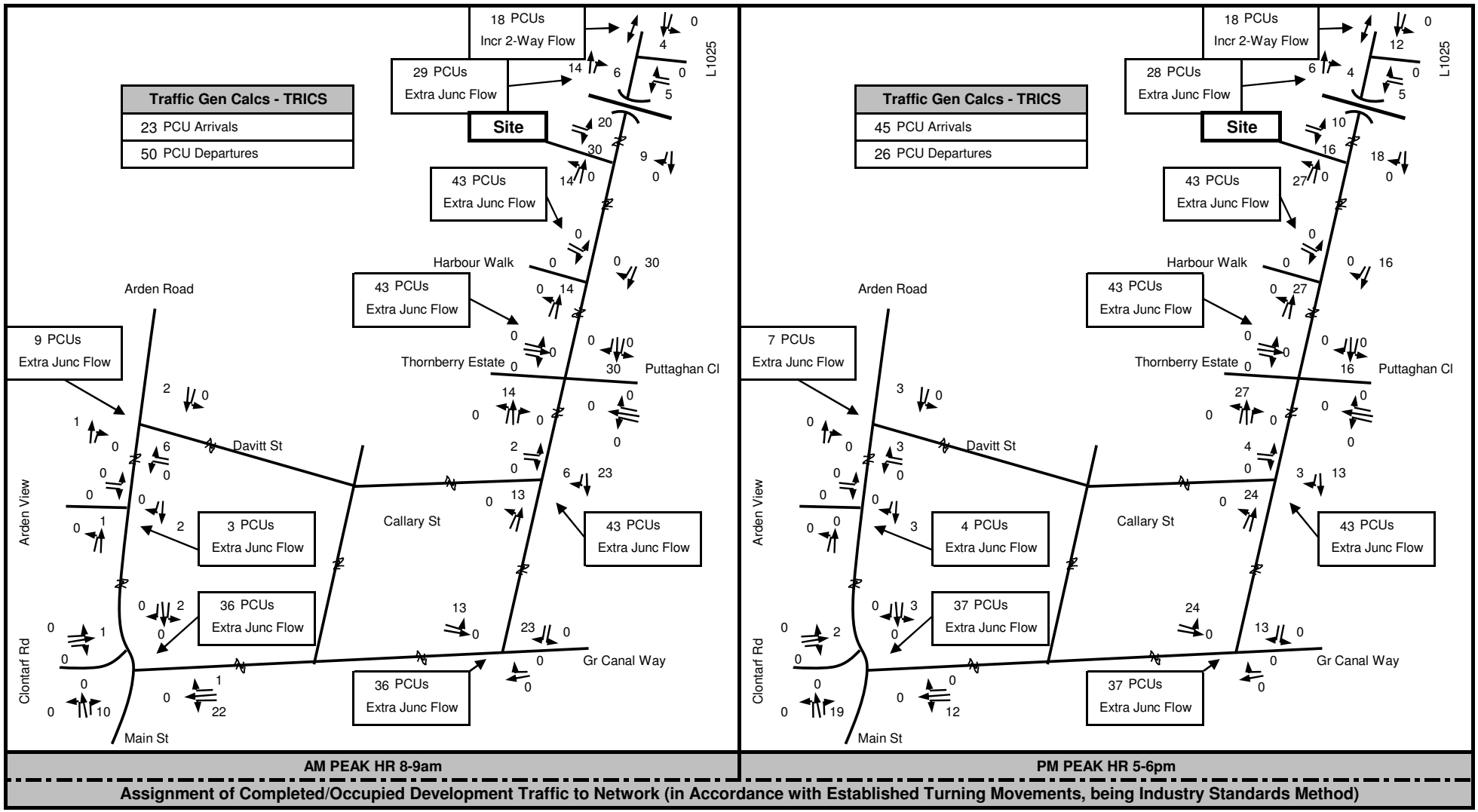
PM PEAK HR 5-6pm

Associated Design Year 2041 Weekday Peak Hour Traffic Volumes - TII Annual Growth Factors Applied (PCUs) - WITHOUT NEW DEVELOPMENT

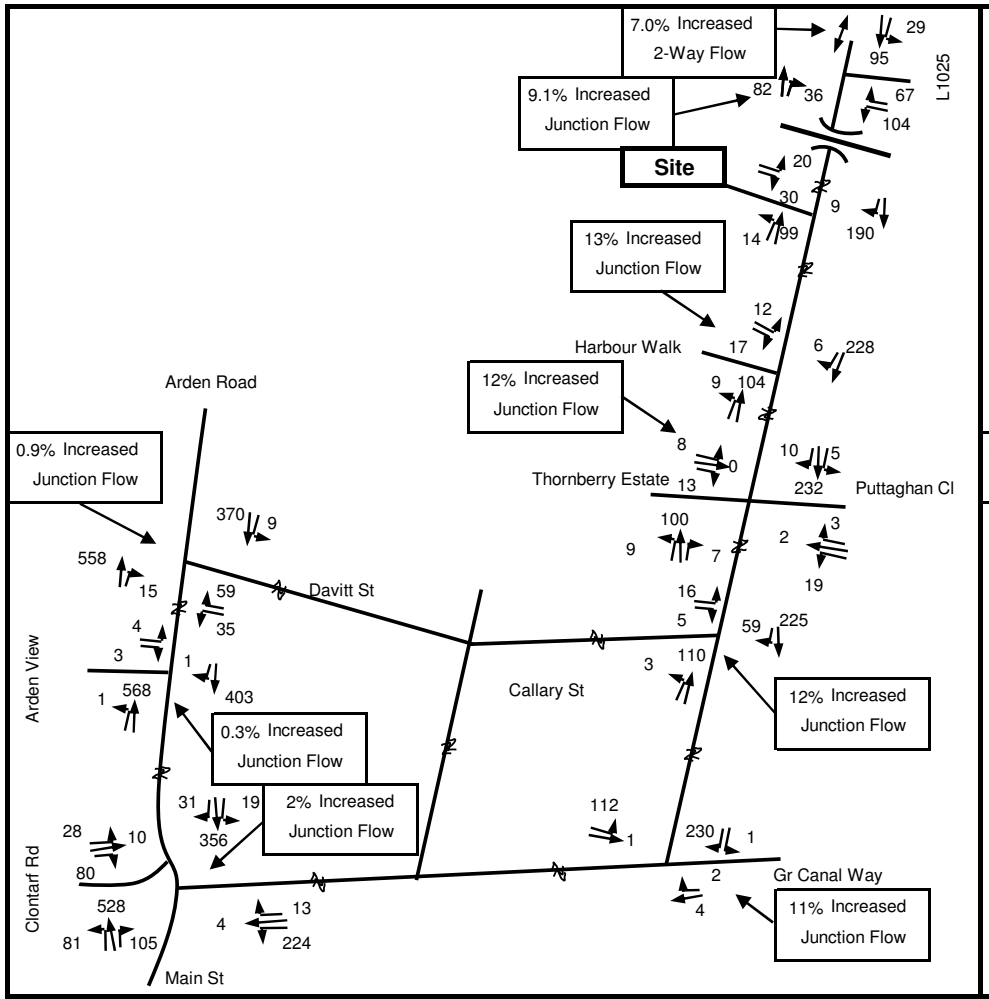
TRICS ASSESSMENT OF WORST-CASE TRAFFIC GENERATED BY PROPOSED DEVELOPMENT (REFER APPENDIX C)

90 No Houses	**Arrivals (PCUs)**		**Departures (PCUs)**		**Total 2-Way Vehicular Traffic Generated**	
Network Hour	**Per Unit**	**Site**	**Per Unit**	**Site**		
Weekday AM Peak Hr 8-9	0.147	13	0.375	34	47	**90 Houses**
Weekday PM Peak Hr 5-6	0.340	31	0.171	15	46	
24 Hours	2.322	209	2.340	211	420	
58 Apts/Duplex	**Arrivals (PCUs)**		**Departures (PCUs)**		**Total 2-Way Vehicular Traffic Generated**	
Network Hour	**Per Unit**	**Site**	**Per Unit**	**Site**		**58 Apartments**
Weekday AM Peak Hr 8-9	0.062	4	0.183	11	15	
Weekday PM Peak Hr 5-6	0.170	10	0.088	5	15	
24 Hours	1.105	64	1.172	68	132	
170 m2 Creche	**Arrivals (PCUs)**		**Departures (PCUs)**		**Total 2-Way Vehicular Traffic Generated**	
Network Hour	**/100m2**	**Site**	**/100m2**	**Site**		**Small Creche**
Weekday AM Peak Hr 8-9	3.261	6	2.682	5	11	
Weekday PM Peak Hr 5-6	2.438	4	3.109	5	9	
24 Hours	15.154	26	15.957	27	53	

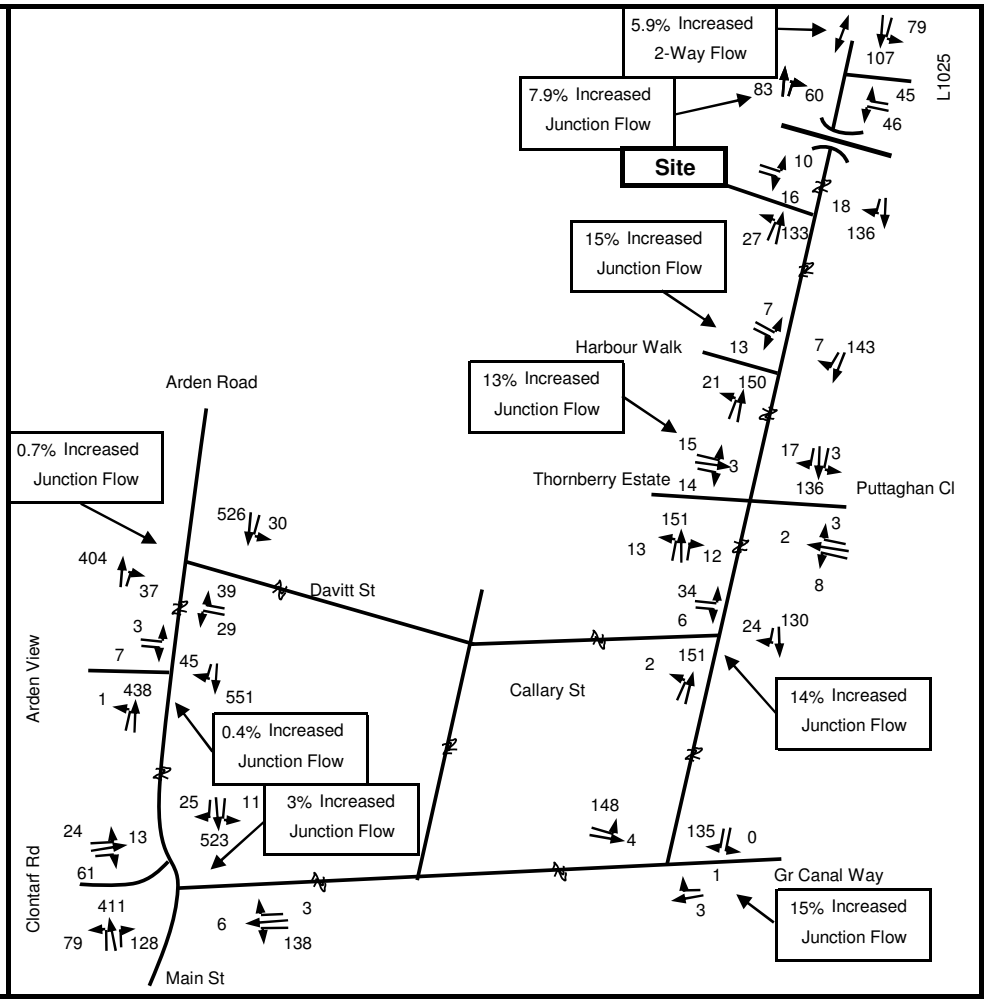
COMBINATION OF ABOVE TABLES				
Network Hour	**Arrivals**	**Departures**	**Total 2-Way**	
Weekday AM Peak Hr 8-9	23	50	73	
Weekday PM Peak Hr 5-6	45	26	71	**Full Site**
24 Hours	299	306	605	



Assignment of Completed/Occupied Development Traffic to Network (in Accordance with Established Turning Movements, being Industry Standards Method)

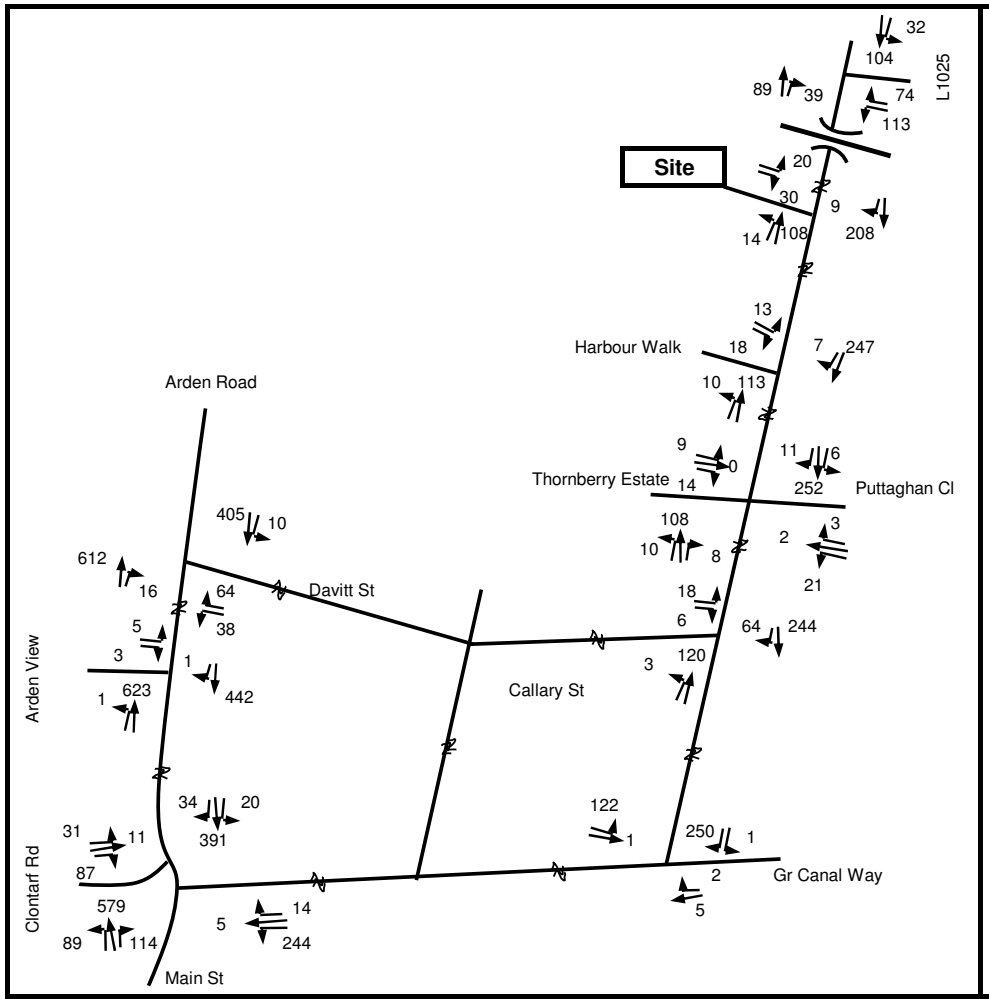


AM PEAK HR 8-9am

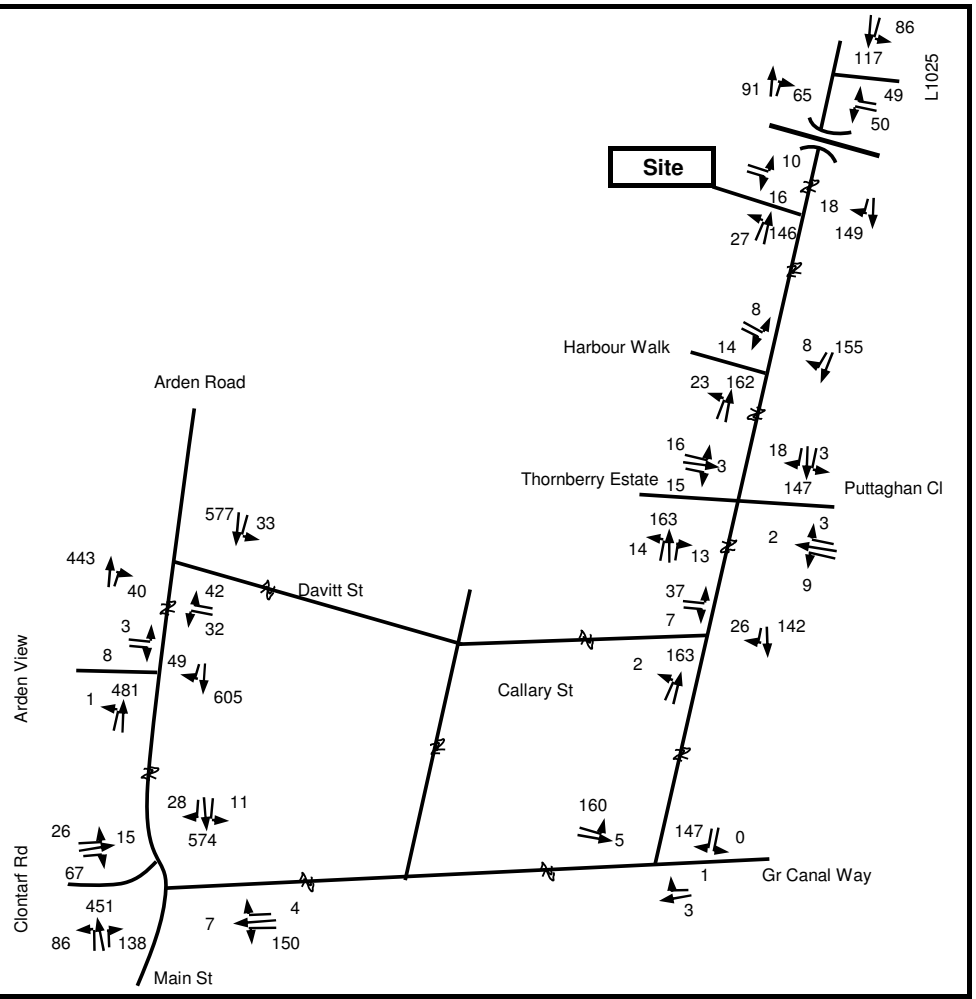


PM PEAK HR 5-6pm

Projected Selected Opening Year 2026 Weekday Peak Hour Traffic Volumes - WITH ENTIRE NEW DEVELOPMENT



AM PEAK HR 8-9am



PM PEAK HR 5-6pm

Associated Design Year 2041 (Opening + 15) Weekday Peak Hour Traffic Volumes - WITH ENTIRE NEW DEVELOPMENT

APPENDIX E

PiCADY Model Output
(L1024 / Site Access Priority Junction)

Capacity Assessment With Subject Development Open and Occupied
Proposed Priority Controlled Access T-Junction

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.1
2026 Opening Year PM Peak Hr	0.1	0.05
2041 Design Year AM Peak Hr	0.1	0.1
2041 Design Year PM Peak Hr	0.1	0.05

All Results Above are WAY below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues

NB - Any Small Changes to Selected Opening Year 2026 or Design Year 2041, or indeed significantly higher traffic volumes experienced, as deductable from the positive results presented, will clearly have no significant implications in terms of the conclusions of the Study.

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2026 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Site Access Capacity
Report generation date: 30/01/2023 13:48:21

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2026							
Stream B-AC	0.1	7.72	0.10	A	0.1	7.52	0.05	A
Stream C-AB	0.0	6.05	0.02	A	0.0	6.28	0.03	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2026	AM	ONE HOUR	07:45	09:15	15
D2	2026	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Site Access Junc	T-Junction	Two-way	1.20	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 South		Major
B	Site Access Entry/Exit		Minor
C	L1024 North		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2026	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	112	100.000
B		✓	49	100.000
C		✓	199	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	13	99
	B	29	0	20
	C	190	9	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.10	7.72	0.1	A
C-AB	0.02	6.05	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	37	538	0.069	37	0.1	7.182	A
C-AB	7	613	0.011	7	0.0	5.940	A
C-A	143			143			
A-B	10			10			
A-C	75			75			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	44	530	0.083	44	0.1	7.401	A
C-AB	8	609	0.013	8	0.0	5.986	A
C-A	171			171			
A-B	12			12			
A-C	89			89			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	54	520	0.104	54	0.1	7.716	A
C-AB	10	605	0.016	10	0.0	6.048	A
C-A	209			209			
A-B	14			14			
A-C	109			109			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	54	520	0.104	54	0.1	7.719	A
C-AB	10	605	0.016	10	0.0	6.048	A
C-A	209			209			
A-B	14			14			
A-C	109			109			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	44	530	0.083	44	0.1	7.404	A
C-AB	8	610	0.013	8	0.0	5.988	A
C-A	171			171			
A-B	12			12			
A-C	89			89			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	37	538	0.069	37	0.1	7.192	A
C-AB	7	613	0.011	7	0.0	5.942	A
C-A	143			143			
A-B	10			10			
A-C	75			75			

2026, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Site Access Junc	T-Junction	Two-way	0.89	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)
D2	2026	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	160	100.000
B		✓	25	100.000
C		✓	154	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	27	133
	B	16	0	9
	C	136	18	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.05	7.52	0.1	A
C-AB	0.03	6.28	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	19	526	0.036	19	0.0	7.091	A
C-AB	14	605	0.023	14	0.0	6.090	A
C-A	102			102			
A-B	20			20			
A-C	100			100			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	518	0.043	22	0.0	7.265	A
C-AB	16	600	0.027	16	0.0	6.167	A
C-A	122			122			
A-B	24			24			
A-C	120			120			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	28	506	0.054	27	0.1	7.516	A
C-AB	20	594	0.034	20	0.0	6.274	A
C-A	150			150			
A-B	30			30			
A-C	146			146			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	28	506	0.054	28	0.1	7.517	A
C-AB	20	594	0.034	20	0.0	6.276	A
C-A	150			150			
A-B	30			30			
A-C	146			146			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	518	0.043	23	0.0	7.267	A
C-AB	16	600	0.027	16	0.0	6.170	A
C-A	122			122			
A-B	24			24			
A-C	120			120			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	19	526	0.036	19	0.0	7.095	A
C-AB	14	605	0.023	14	0.0	6.090	A
C-A	102			102			
A-B	20			20			
A-C	100			100			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2041 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Site Access Capacity
Report generation date: 30/01/2023 13:50:33

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2041							
Stream B-AC	0.1	7.80	0.10	A	0.1	7.60	0.05	A
Stream C-AB	0.0	6.07	0.02	A	0.0	6.31	0.03	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2041	AM	ONE HOUR	07:45	09:15	15
D2	2041	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2041, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Site Access Junc	T-Junction	Two-way	1.13	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 South		Major
B	Site Access Entry/Exit		Minor
C	L1024 North		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2041	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	121	100.000
B		✓	49	100.000
C		✓	217	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	13	108
	B	29	0	20
	C	208	9	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.10	7.80	0.1	A
C-AB	0.02	6.07	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	37	534	0.069	37	0.1	7.228	A
C-AB	7	611	0.011	7	0.0	5.954	A
C-A	157			157			
A-B	10			10			
A-C	81			81			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	44	527	0.084	44	0.1	7.460	A
C-AB	8	608	0.013	8	0.0	6.003	A
C-A	187			187			
A-B	12			12			
A-C	97			97			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	54	516	0.105	54	0.1	7.795	A
C-AB	10	603	0.017	10	0.0	6.070	A
C-A	229			229			
A-B	14			14			
A-C	119			119			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	54	516	0.105	54	0.1	7.798	A
C-AB	10	603	0.017	10	0.0	6.070	A
C-A	229			229			
A-B	14			14			
A-C	119			119			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	44	527	0.084	44	0.1	7.463	A
C-AB	8	608	0.013	8	0.0	6.003	A
C-A	187			187			
A-B	12			12			
A-C	97			97			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	37	534	0.069	37	0.1	7.239	A
C-AB	7	611	0.011	7	0.0	5.957	A
C-A	157			157			
A-B	10			10			
A-C	81			81			

2041, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Site Access Junc	T-Junction	Two-way	0.83	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)
D2	2041	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	173	100.000
B		✓	25	100.000
C		✓	167	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	27	146
	B	16	0	9
	C	149	18	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.05	7.60	0.1	A
C-AB	0.03	6.31	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	19	523	0.036	19	0.0	7.142	A
C-AB	14	603	0.023	14	0.0	6.112	A
C-A	112			112			
A-B	20			20			
A-C	110			110			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	514	0.044	22	0.0	7.329	A
C-AB	16	597	0.027	16	0.0	6.194	A
C-A	134			134			
A-B	24			24			
A-C	131			131			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	28	501	0.055	27	0.1	7.600	A
C-AB	20	591	0.034	20	0.0	6.307	A
C-A	164			164			
A-B	30			30			
A-C	161			161			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	28	501	0.055	28	0.1	7.601	A
C-AB	20	591	0.034	20	0.0	6.307	A
C-A	164			164			
A-B	30			30			
A-C	161			161			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	514	0.044	23	0.0	7.331	A
C-AB	16	597	0.027	16	0.0	6.197	A
C-A	134			134			
A-B	24			24			
A-C	131			131			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	19	523	0.036	19	0.0	7.149	A
C-AB	14	603	0.023	14	0.0	6.115	A
C-A	112			112			
A-B	20			20			
A-C	110			110			

APPENDIX F

PiCADY Model Output
(Local Road L1024 / L1024 Priority Junction)

Capacity Assessment With Subject Development Open and Occupied
Existing Priority Controlled L1024 / L1025 T-Junction

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.5	0.33
2026 Opening Year PM Peak Hr	0.2	0.19
2041 Design Year AM Peak Hr	0.6	0.36
2041 Design Year PM Peak Hr	0.3	0.2

All Results Above are WAY below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues

NB - Any Small Changes to Selected Opening Year 2026 or Design Year 2041, or indeed significantly higher traffic volumes experienced, as deductable from the positive results presented, will clearly have no significant implications in terms of the conclusions of the Study

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2026 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\L1025 to L1024 T Junc Capacity
Report generation date: 30/01/2023 13:58:40

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2026							
Stream B-AC	0.5	9.51	0.33	A	0.2	8.32	0.19	A
Stream C-AB	0.1	6.50	0.07	A	0.1	6.98	0.11	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2026	AM	ONE HOUR	07:45	09:15	15
D2	2026	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	L1024 L1025 T Junction	T-Junction	Two-way	4.50	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Tinnycross L1024 North		Major
B	L1025 Minor Arm		Minor
C	Tinnycross L1024 South		Major

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)
C	6.00			100.0	✓	1.00

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	3.30	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	543	0.099	0.250	0.157	0.357
1	B-C	682	0.104	0.264	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2026	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	124	100.000
B		✓	170	100.000
C		✓	118	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	29	95
	B	67	0	103
	C	82	36	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.33	9.51	0.5	A
C-AB	0.07	6.50	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	128	588	0.218	127	0.3	7.943	A
C-AB	27	612	0.045	27	0.0	6.276	A
C-A	62			62			
A-B	22			22			
A-C	72			72			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	153	582	0.263	153	0.4	8.545	A
C-AB	33	609	0.054	33	0.1	6.372	A
C-A	73			73			
A-B	26			26			
A-C	85			85			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	187	573	0.326	187	0.5	9.482	A
C-AB	40	605	0.066	40	0.1	6.501	A
C-A	90			90			
A-B	32			32			
A-C	105			105			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	187	573	0.326	187	0.5	9.506	A
C-AB	40	605	0.066	40	0.1	6.501	A
C-A	90			90			
A-B	32			32			
A-C	105			105			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	153	582	0.263	153	0.4	8.577	A
C-AB	33	609	0.054	33	0.1	6.373	A
C-A	73			73			
A-B	26			26			
A-C	85			85			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	128	588	0.218	128	0.3	7.995	A
C-AB	27	612	0.045	27	0.0	6.280	A
C-A	62			62			
A-B	22			22			
A-C	72			72			

2026, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	L1024 L1025 T Junction	T-Junction	Two-way	2.80	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)
D2	2026	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	186	100.000
B		✓	91	100.000
C		✓	142	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	79	107
	B	45	0	46
	C	83	59	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.19	8.32	0.2	A
C-AB	0.11	6.98	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	69	562	0.122	68	0.1	7.428	A
C-AB	45	602	0.074	44	0.1	6.578	A
C-A	62			62			
A-B	59			59			
A-C	81			81			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	82	553	0.148	82	0.2	7.784	A
C-AB	54	598	0.090	54	0.1	6.745	A
C-A	74			74			
A-B	71			71			
A-C	96			96			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	100	541	0.185	100	0.2	8.314	A
C-AB	66	592	0.112	66	0.1	6.974	A
C-A	90			90			
A-B	87			87			
A-C	118			118			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	100	541	0.185	100	0.2	8.323	A
C-AB	66	592	0.112	66	0.1	6.977	A
C-A	90			90			
A-B	87			87			
A-C	118			118			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	82	553	0.148	82	0.2	7.796	A
C-AB	54	598	0.090	54	0.1	6.751	A
C-A	74			74			
A-B	71			71			
A-C	96			96			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	69	562	0.122	69	0.1	7.451	A
C-AB	45	602	0.074	45	0.1	6.585	A
C-A	62			62			
A-B	59			59			
A-C	81			81			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2041 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\L1025 to L1024 T Junc Capacity
Report generation date: 30/01/2023 14:07:05

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2041							
Stream B-AC	0.6	10.11	0.36	B	0.3	8.62	0.20	A
Stream C-AB	0.1	6.57	0.07	A	0.1	7.11	0.12	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2041	AM	ONE HOUR	07:45	09:15	15
D2	2041	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2041, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	L1024 L1025 T Junction	T-Junction	Two-way	4.78	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Tinnycross L1024 North		Major
B	L1025 Minor Arm		Minor
C	Tinnycross L1024 South		Major

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)
C	6.00			100.0	✓	1.00

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	3.30	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	543	0.099	0.250	0.157	0.357
1	B-C	682	0.104	0.264	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2041	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	136	100.000
B		✓	187	100.000
C		✓	127	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	32	104
	B	74	0	113
	C	88	39	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.36	10.11	0.6	B
C-AB	0.07	6.57	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	141	585	0.241	140	0.3	8.221	A
C-AB	30	610	0.048	29	0.1	6.320	A
C-A	66			66			
A-B	24			24			
A-C	78			78			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	168	578	0.291	168	0.4	8.937	A
C-AB	35	607	0.058	35	0.1	6.424	A
C-A	79			79			
A-B	29			29			
A-C	93			93			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	206	569	0.362	205	0.6	10.076	B
C-AB	43	603	0.072	43	0.1	6.566	A
C-A	96			96			
A-B	35			35			
A-C	115			115			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	206	569	0.362	206	0.6	10.111	B
C-AB	43	603	0.072	43	0.1	6.569	A
C-A	96			96			
A-B	35			35			
A-C	115			115			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	168	578	0.291	169	0.4	8.979	A
C-AB	35	607	0.058	35	0.1	6.426	A
C-A	79			79			
A-B	29			29			
A-C	93			93			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	141	585	0.241	141	0.3	8.282	A
C-AB	30	610	0.048	30	0.1	6.326	A
C-A	66			66			
A-B	24			24			
A-C	78			78			

2041, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	L1024 L1025 T Junction	T-Junction	Two-way	2.89	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)
D2	2041	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	203	100.000
B		✓	99	100.000
C		✓	155	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	86	117
	B	49	0	50
	C	90	65	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.20	8.62	0.3	A
C-AB	0.12	7.11	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	75	558	0.134	74	0.2	7.582	A
C-AB	49	600	0.082	49	0.1	6.656	A
C-A	67			67			
A-B	65			65			
A-C	88			88			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	89	548	0.162	89	0.2	7.991	A
C-AB	59	596	0.100	59	0.1	6.845	A
C-A	80			80			
A-B	77			77			
A-C	105			105			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	109	535	0.204	109	0.3	8.604	A
C-AB	73	590	0.124	73	0.1	7.101	A
C-A	98			98			
A-B	95			95			
A-C	129			129			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	109	535	0.204	109	0.3	8.615	A
C-AB	73	590	0.124	73	0.1	7.107	A
C-A	98			98			
A-B	95			95			
A-C	129			129			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	89	548	0.162	89	0.2	8.005	A
C-AB	59	596	0.100	59	0.1	6.851	A
C-A	80			80			
A-B	77			77			
A-C	105			105			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	75	558	0.134	75	0.2	7.609	A
C-AB	49	600	0.082	50	0.1	6.666	A
C-A	67			67			
A-B	65			65			
A-C	88			88			

APPENDIX G

PiCADY Model Output
(L1024 / Harbour Walk Priority Junction)

Capacity Assessment With Subject Development Open and Occupied
Existing L1024 / Harbour Walk Access Junction

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.06
2026 Opening Year PM Peak Hr	0.0	0.04
2041 Design Year AM Peak Hr	0.1	0.07
2041 Design Year PM Peak Hr	0.1	0.05

All Results Above are WAY below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues

NB - Any Small Changes to Selected Opening Year 2026 or Design Year 2041, or indeed significantly higher traffic volumes experienced, as deductable from the positive results presented, will clearly have no significant implications in terms of the conclusions of the Study.

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2026 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Harbour Walk L1024 Junc Capacity
Report generation date: 30/01/2023 14:13:21

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2026							
Stream B-AC	0.1	7.43	0.06	A	0.0	7.55	0.04	A
Stream C-AB	0.0	6.02	0.01	A	0.0	6.33	0.04	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2026	AM	ONE HOUR	07:45	09:15	15
D2	2026	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Harbour Walk Access Junc	T-Junction	Two-way	0.67	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 South		Major
B	Harbour Walk Est		Minor
C	L1024 North		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2026	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	113	100.000
B		✓	29	100.000
C		✓	233	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	9	104
	B	17	0	12
	C	227	6	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.06	7.43	0.1	A
C-AB	0.01	6.02	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	535	0.041	22	0.0	7.007	A
C-AB	5	612	0.007	4	0.0	5.922	A
C-A	171			171			
A-B	7			7			
A-C	78			78			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	26	527	0.049	26	0.1	7.179	A
C-AB	5	609	0.009	5	0.0	5.965	A
C-A	204			204			
A-B	8			8			
A-C	93			93			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	516	0.062	32	0.1	7.428	A
C-AB	7	604	0.011	7	0.0	6.024	A
C-A	250			250			
A-B	10			10			
A-C	115			115			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	516	0.062	32	0.1	7.429	A
C-AB	7	604	0.011	7	0.0	6.024	A
C-A	250			250			
A-B	10			10			
A-C	115			115			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	26	527	0.049	26	0.1	7.181	A
C-AB	5	609	0.009	5	0.0	5.968	A
C-A	204			204			
A-B	8			8			
A-C	93			93			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	535	0.041	22	0.0	7.011	A
C-AB	5	612	0.007	5	0.0	5.925	A
C-A	171			171			
A-B	7			7			
A-C	78			78			

2026, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Harbour Walk Access Junc	T-Junction	Two-way	0.79	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)
D2	2026	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	170	100.000
B		✓	20	100.000
C		✓	170	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	21	149
	B	13	0	7
	C	149	21	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.04	7.55	0.0	A
C-AB	0.04	6.33	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	15	520	0.029	15	0.0	7.119	A
C-AB	16	603	0.026	16	0.0	6.126	A
C-A	112			112			
A-B	16			16			
A-C	112			112			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	18	511	0.035	18	0.0	7.296	A
C-AB	19	599	0.032	19	0.0	6.210	A
C-A	134			134			
A-B	19			19			
A-C	134			134			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	499	0.044	22	0.0	7.553	A
C-AB	23	593	0.039	23	0.0	6.325	A
C-A	164			164			
A-B	23			23			
A-C	164			164			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	499	0.044	22	0.0	7.554	A
C-AB	23	593	0.039	23	0.0	6.328	A
C-A	164			164			
A-B	23			23			
A-C	164			164			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	18	511	0.035	18	0.0	7.301	A
C-AB	19	599	0.032	19	0.0	6.213	A
C-A	134			134			
A-B	19			19			
A-C	134			134			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	15	520	0.029	15	0.0	7.125	A
C-AB	16	604	0.026	16	0.0	6.126	A
C-A	112			112			
A-B	16			16			
A-C	112			112			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2041 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Harbour Walk L1024 Junc Capacity
Report generation date: 30/01/2023 14:16:17

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2041							
Stream B-AC	0.1	7.53	0.07	A	0.1	7.65	0.05	A
Stream C-AB	0.0	6.05	0.01	A	0.0	6.38	0.04	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2041	AM	ONE HOUR	07:45	09:15	15
D2	2041	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2041, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Harbour Walk Access Junc	T-Junction	Two-way	0.68	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 South		Major
B	Harbour Walk Est		Minor
C	L1024 North		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2041	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	122	100.000
B		✓	31	100.000
C		✓	254	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	10	112
	B	18	0	13
	C	247	7	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.07	7.53	0.1	A
C-AB	0.01	6.05	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	23	533	0.044	23	0.0	7.063	A
C-AB	5	611	0.009	5	0.0	5.943	A
C-A	186			186			
A-B	8			8			
A-C	84			84			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	28	524	0.053	28	0.1	7.253	A
C-AB	6	607	0.010	6	0.0	5.989	A
C-A	222			222			
A-B	9			9			
A-C	101			101			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	34	512	0.067	34	0.1	7.528	A
C-AB	8	602	0.013	8	0.0	6.053	A
C-A	272			272			
A-B	11			11			
A-C	123			123			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	34	512	0.067	34	0.1	7.528	A
C-AB	8	602	0.013	8	0.0	6.053	A
C-A	272			272			
A-B	11			11			
A-C	123			123			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	28	524	0.053	28	0.1	7.257	A
C-AB	6	607	0.010	6	0.0	5.992	A
C-A	222			222			
A-B	9			9			
A-C	101			101			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	23	533	0.044	23	0.0	7.067	A
C-AB	5	611	0.009	5	0.0	5.943	A
C-A	186			186			
A-B	8			8			
A-C	84			84			

2041, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Harbour Walk Access Junc	T-Junction	Two-way	0.81	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)
D2	2041	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	184	100.000
B		✓	22	100.000
C		✓	184	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	23	161
	B	14	0	8
	C	161	23	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.05	7.65	0.1	A
C-AB	0.04	6.38	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	17	519	0.032	16	0.0	7.168	A
C-AB	17	601	0.029	17	0.0	6.161	A
C-A	121			121			
A-B	17			17			
A-C	121			121			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	20	509	0.039	20	0.0	7.363	A
C-AB	21	596	0.035	21	0.0	6.254	A
C-A	145			145			
A-B	21			21			
A-C	145			145			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	24	495	0.049	24	0.1	7.648	A
C-AB	26	590	0.043	26	0.0	6.380	A
C-A	177			177			
A-B	25			25			
A-C	177			177			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	24	495	0.049	24	0.1	7.648	A
C-AB	26	590	0.043	26	0.0	6.382	A
C-A	177			177			
A-B	25			25			
A-C	177			177			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	20	509	0.039	20	0.0	7.365	A
C-AB	21	596	0.035	21	0.0	6.255	A
C-A	145			145			
A-B	21			21			
A-C	145			145			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	17	518	0.032	17	0.0	7.172	A
C-AB	17	601	0.029	17	0.0	6.164	A
C-A	121			121			
A-B	17			17			
A-C	121			121			

APPENDIX H

PiCADY Model Output
(Thornsberry/L1024/Puttaghan Cls Priority Junction)

Capacity Assessment With Subject Development Open and Occupied
Existing 4-Arm at-grade Priority Controlled 'Crossroads' Junction

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.05
2026 Opening Year PM Peak Hr	0.1	0.07
2041 Design Year AM Peak Hr	0.1	0.05
2041 Design Year PM Peak Hr	0.1	0.07

All Results Above are WAY below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues

NB - Any Small Changes to Selected Opening Year 2026 or Design Year 2041, or indeed significantly higher traffic volumes experienced, as deductable from the positive results presented, will clearly have no significant implications in terms of the conclusions of the Study.

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2026 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Thornsbry Puttaghan Cl Junc Capacity
Report generation date: 30/01/2023 15:56:53

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2026							
Stream B-ACD	0.1	6.95	0.05	A	0.0	6.94	0.03	A
Stream A-BCD	0.0	6.18	0.02	A	0.0	6.46	0.03	A
Stream D-ABC	0.0	7.62	0.05	A	0.1	7.64	0.07	A
Stream C-ABD	0.0	6.58	0.01	A	0.0	6.34	0.02	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2026	AM	ONE HOUR	07:45	09:15	15
D2	2026	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Thornsb Est/L1014/Puttaghan Cl Crossroads	Crossroads	Two-way	1.07	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 North		Major
B	Puttaghan Close		Minor
C	L1024 South		Major
D	Thornsberry est		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			100.0	✓	1.00
C	6.00			100.0	✓	1.00

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	60	60
D	One lane	3.00	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	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
1	A-D	632	-	-	-	-	-	-	0.245	0.350	0.245	-	-	-
1	B-A	527	0.096	0.243	0.243	-	-	-	0.153	0.346	-	0.243	0.243	0.121
1	B-C	662	0.101	0.256	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	527	0.096	0.243	0.243	-	-	-	0.153	0.346	0.153	-	-	-
1	B-D, offside lane	527	0.096	0.243	0.243	-	-	-	0.153	0.346	0.153	-	-	-
1	C-B	632	0.245	0.245	0.350	-	-	-	-	-	-	-	-	-
1	D-A	662	-	-	-	-	-	-	0.256	-	0.101	-	-	-
1	D-B, nearside lane	527	0.153	0.153	0.346	-	-	-	0.243	0.243	0.096	-	-	-
1	D-B, offside lane	527	0.153	0.153	0.346	-	-	-	0.243	0.243	0.096	-	-	-
1	D-C	527	-	0.153	0.346	0.121	0.243	0.243	0.243	0.243	0.096	-	-	-

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)
D1	2026	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	247	100.000
B		✓	24	100.000
C		✓	115	100.000
D		✓	21	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	5	232	10
	B	3	0	19	2
	C	99	7	0	9
	D	8	0	13	0

Vehicle Mix

HV %s

		To			
		A	B	C	D
From	A	0	2	2	2
	B	2	0	2	2
	C	2	2	0	2
	D	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-ACD	0.05	6.95	0.1	A
A-BCD	0.02	6.18	0.0	A
A-B				
A-C				
D-ABC	0.05	7.62	0.0	A
C-ABD	0.01	6.58	0.0	A
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	18	578	0.031	18	0.0	6.554	A
A-BCD	8	613	0.012	8	0.0	6.069	A
A-B	4			4			
A-C	175			175			
D-ABC	16	526	0.030	16	0.0	7.192	A
C-ABD	5	586	0.009	5	0.0	6.318	A
C-D	7			7			
C-A	75			75			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	22	568	0.038	22	0.0	6.716	A
A-BCD	9	609	0.015	9	0.0	6.116	A
A-B	4			4			
A-C	209			209			
D-ABC	19	517	0.037	19	0.0	7.369	A
C-ABD	6	578	0.011	6	0.0	6.425	A
C-D	8			8			
C-A	89			89			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	26	555	0.048	26	0.1	6.951	A
A-BCD	11	605	0.018	11	0.0	6.179	A
A-B	6			6			
A-C	255			255			
D-ABC	23	505	0.046	23	0.0	7.625	A
C-ABD	8	566	0.014	8	0.0	6.578	A
C-D	10			10			
C-A	109			109			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	26	555	0.048	26	0.1	6.951	A
A-BCD	11	605	0.018	11	0.0	6.179	A
A-B	6			6			
A-C	255			255			
D-ABC	23	505	0.046	23	0.0	7.625	A
C-ABD	8	566	0.014	8	0.0	6.578	A
C-D	10			10			
C-A	109			109			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	22	568	0.038	22	0.0	6.718	A
A-BCD	9	609	0.015	9	0.0	6.116	A
A-B	4			4			
A-C	209			209			
D-ABC	19	517	0.037	19	0.0	7.371	A
C-ABD	6	578	0.011	6	0.0	6.425	A
C-D	8			8			
C-A	89			89			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	18	578	0.031	18	0.0	6.560	A
A-BCD	8	613	0.012	8	0.0	6.069	A
A-B	4			4			
A-C	175			175			
D-ABC	16	526	0.030	16	0.0	7.197	A
C-ABD	5	586	0.009	5	0.0	6.318	A
C-D	7			7			
C-A	75			75			

2026, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Thornsb Est/L1014/Puttaghan Cl Crossroads	Crossroads	Two-way	1.38	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)
D2	2026	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	155	100.000
B		✓	13	100.000
C		✓	179	100.000
D		✓	32	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	3	135	17
	B	3	0	8	2
	C	150	12	0	17
	D	15	3	14	0

Vehicle Mix

HV %s

		To			
		A	B	C	D
From	A	0	2	2	2
	B	2	0	2	2
	C	2	2	0	2
	D	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-ACD	0.03	6.94	0.0	A
A-BCD	0.03	6.46	0.0	A
A-B				
A-C				
D-ABC	0.07	7.64	0.1	A
C-ABD	0.02	6.34	0.0	A
C-D				
C-A				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	10	562	0.017	10	0.0	6.644	A
A-BCD	13	600	0.021	13	0.0	6.249	A
A-B	2			2			
A-C	102			102			
D-ABC	24	537	0.045	24	0.0	7.156	A
C-ABD	9	604	0.015	9	0.0	6.171	A
C-D	13			13			
C-A	113			113			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	12	554	0.021	12	0.0	6.765	A
A-BCD	15	595	0.026	15	0.0	6.336	A
A-B	3			3			
A-C	121			121			
D-ABC	29	528	0.054	29	0.1	7.355	A
C-ABD	11	599	0.018	11	0.0	6.241	A
C-D	15			15			
C-A	135			135			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	14	543	0.026	14	0.0	6.939	A
A-BCD	19	587	0.032	19	0.0	6.457	A
A-B	3			3			
A-C	148			148			
D-ABC	35	515	0.068	35	0.1	7.645	A
C-ABD	13	593	0.022	13	0.0	6.338	A
C-D	19			19			
C-A	165			165			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	14	543	0.026	14	0.0	6.939	A
A-BCD	19	587	0.032	19	0.0	6.457	A
A-B	3			3			
A-C	148			148			
D-ABC	35	515	0.068	35	0.1	7.645	A
C-ABD	13	593	0.022	13	0.0	6.338	A
C-D	19			19			
C-A	165			165			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	12	554	0.021	12	0.0	6.768	A
A-BCD	15	595	0.026	15	0.0	6.340	A
A-B	3			3			
A-C	121			121			
D-ABC	29	528	0.054	29	0.1	7.360	A
C-ABD	11	599	0.018	11	0.0	6.242	A
C-D	15			15			
C-A	135			135			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	10	562	0.017	10	0.0	6.648	A
A-BCD	13	600	0.021	13	0.0	6.250	A
A-B	2			2			
A-C	102			102			
D-ABC	24	537	0.045	24	0.0	7.163	A
C-ABD	9	604	0.015	9	0.0	6.171	A
C-D	13			13			
C-A	113			113			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2041 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Thornsbry Puttaghan Cl Junc Capacity
Report generation date: 30/01/2023 16:00:50

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2041							
Stream B-ACD	0.1	7.02	0.05	A	0.0	6.95	0.03	A
Stream A-BCD	0.0	6.22	0.02	A	0.0	6.50	0.03	A
Stream D-ABC	0.1	7.73	0.05	A	0.1	7.76	0.07	A
Stream C-ABD	0.0	6.65	0.02	A	0.0	6.38	0.02	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2041	AM	ONE HOUR	07:45	09:15	15
D2	2041	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2041, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Thornsb Est/L1014/Puttaghan Cl Crossroads	Crossroads	Two-way	1.09	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 North		Major
B	Puttaghan Close		Minor
C	L1024 South		Major
D	Thornsberry est		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			100.0	✓	1.00
C	6.00			100.0	✓	1.00

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	60	60
D	One lane	3.00	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	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
1	A-D	632	-	-	-	-	-	-	0.245	0.350	0.245	-	-	-
1	B-A	527	0.096	0.243	0.243	-	-	-	0.153	0.346	-	0.243	0.243	0.121
1	B-C	662	0.101	0.256	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	527	0.096	0.243	0.243	-	-	-	0.153	0.346	0.153	-	-	-
1	B-D, offside lane	527	0.096	0.243	0.243	-	-	-	0.153	0.346	0.153	-	-	-
1	C-B	632	0.245	0.245	0.350	-	-	-	-	-	-	-	-	-
1	D-A	662	-	-	-	-	-	-	0.256	-	0.101	-	-	-
1	D-B, nearside lane	527	0.153	0.153	0.346	-	-	-	0.243	0.243	0.096	-	-	-
1	D-B, offside lane	527	0.153	0.153	0.346	-	-	-	0.243	0.243	0.096	-	-	-
1	D-C	527	-	0.153	0.346	0.121	0.243	0.243	0.243	0.243	0.096	-	-	-

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)
D1	2041	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	268	100.000
B		✓	26	100.000
C		✓	126	100.000
D		✓	23	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	6	251	11
	B	3	0	21	2
	C	108	8	0	10
	D	9	0	14	0

Vehicle Mix

HV %s

		To			
		A	B	C	D
From	A	0	2	2	2
	B	2	0	2	2
	C	2	2	0	2
	D	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-ACD	0.05	7.02	0.1	A
A-BCD	0.02	6.22	0.0	A
A-B				
A-C				
D-ABC	0.05	7.73	0.1	A
C-ABD	0.02	6.65	0.0	A
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	20	577	0.034	19	0.0	6.589	A
A-BCD	8	611	0.014	8	0.0	6.093	A
A-B	5			5			
A-C	189			189			
D-ABC	17	524	0.033	17	0.0	7.249	A
C-ABD	6	583	0.010	6	0.0	6.367	A
C-D	8			8			
C-A	81			81			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	23	566	0.041	23	0.0	6.766	A
A-BCD	10	607	0.016	10	0.0	6.144	A
A-B	5			5			
A-C	226			226			
D-ABC	21	514	0.040	21	0.0	7.444	A
C-ABD	7	573	0.013	7	0.0	6.485	A
C-D	9			9			
C-A	97			97			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	29	551	0.052	29	0.1	7.024	A
A-BCD	12	603	0.020	12	0.0	6.213	A
A-B	7			7			
A-C	276			276			
D-ABC	25	500	0.051	25	0.1	7.728	A
C-ABD	9	561	0.016	9	0.0	6.654	A
C-D	11			11			
C-A	119			119			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	29	551	0.052	29	0.1	7.024	A
A-BCD	12	603	0.020	12	0.0	6.215	A
A-B	7			7			
A-C	276			276			
D-ABC	25	500	0.051	25	0.1	7.730	A
C-ABD	9	561	0.016	9	0.0	6.654	A
C-D	11			11			
C-A	119			119			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	23	566	0.041	23	0.0	6.770	A
A-BCD	10	607	0.016	10	0.0	6.145	A
A-B	5			5			
A-C	226			226			
D-ABC	21	514	0.040	21	0.0	7.446	A
C-ABD	7	573	0.013	7	0.0	6.486	A
C-D	9			9			
C-A	97			97			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	20	577	0.034	20	0.0	6.592	A
A-BCD	8	611	0.014	8	0.0	6.093	A
A-B	5			5			
A-C	189			189			
D-ABC	17	524	0.033	17	0.0	7.253	A
C-ABD	6	583	0.010	6	0.0	6.370	A
C-D	8			8			
C-A	81			81			

2041, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Thornsb Est/L1014/Puttaghan Cl Crossroads	Crossroads	Two-way	1.39	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)
D2	2041	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	168	100.000
B		✓	14	100.000
C		✓	189	100.000
D		✓	34	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	3	147	18
	B	3	0	9	2
	C	162	13	0	14
	D	16	3	15	0

Vehicle Mix

HV %s

		To			
		A	B	C	D
From	A	0	2	2	2
	B	2	0	2	2
	C	2	2	0	2
	D	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-ACD	0.03	6.95	0.0	A
A-BCD	0.03	6.50	0.0	A
A-B				
A-C				
D-ABC	0.07	7.76	0.1	A
C-ABD	0.02	6.38	0.0	A
C-D				
C-A				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	11	564	0.019	10	0.0	6.636	A
A-BCD	14	599	0.023	14	0.0	6.274	A
A-B	2			2			
A-C	111			111			
D-ABC	26	534	0.048	25	0.1	7.217	A
C-ABD	10	602	0.016	10	0.0	6.201	A
C-D	11			11			
C-A	122			122			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	13	555	0.023	13	0.0	6.764	A
A-BCD	16	593	0.027	16	0.0	6.366	A
A-B	3			3			
A-C	132			132			
D-ABC	31	524	0.058	31	0.1	7.438	A
C-ABD	12	597	0.020	12	0.0	6.278	A
C-D	13			13			
C-A	146			146			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	15	544	0.028	15	0.0	6.951	A
A-BCD	20	585	0.034	20	0.0	6.493	A
A-B	3			3			
A-C	162			162			
D-ABC	37	511	0.073	37	0.1	7.756	A
C-ABD	14	590	0.024	14	0.0	6.383	A
C-D	15			15			
C-A	178			178			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	15	544	0.028	15	0.0	6.951	A
A-BCD	20	585	0.034	20	0.0	6.496	A
A-B	3			3			
A-C	162			162			
D-ABC	37	511	0.073	37	0.1	7.758	A
C-ABD	14	590	0.024	14	0.0	6.383	A
C-D	15			15			
C-A	178			178			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	13	555	0.023	13	0.0	6.768	A
A-BCD	16	593	0.027	16	0.0	6.369	A
A-B	3			3			
A-C	132			132			
D-ABC	31	524	0.058	31	0.1	7.441	A
C-ABD	12	597	0.020	12	0.0	6.279	A
C-D	13			13			
C-A	146			146			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-ACD	11	564	0.019	11	0.0	6.637	A
A-BCD	14	599	0.023	14	0.0	6.275	A
A-B	2			2			
A-C	111			111			
D-ABC	26	534	0.048	26	0.1	7.229	A
C-ABD	10	602	0.016	10	0.0	6.205	A
C-D	11			11			
C-A	122			122			

APPENDIX I

PiCADY Model Output
(L1024 / Callary St Priority Junction)

Capacity Assessment With Subject Development Open and Occupied
Existing L1024 / Callary St Priority Controlled T-Junction

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.1	0.11
2026 Opening Year PM Peak Hr	0.1	0.08
2041 Design Year AM Peak Hr	0.1	0.12
2041 Design Year PM Peak Hr	0.1	0.08

All Results Above are WAY below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues

NB - Any Small Changes to Selected Opening Year 2026 or Design Year 2041, or indeed significantly higher traffic volumes experienced, as deductable from the positive results presented, will clearly have no significant implications in terms of the conclusions of the Study

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2026 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Callary St T Junction Capacity
Report generation date: 30/01/2023 14:22:30

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2026							
Stream B-AC	0.0	6.71	0.04	A	0.1	6.76	0.08	A
Stream C-AB	0.1	6.54	0.11	A	0.0	6.43	0.04	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2026	AM	ONE HOUR	07:45	09:15	15
D2	2026	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary St L1024 Junc	T-Junction	Two-way	1.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 South		Major
B	Callary St Minor Arm		Minor
C	L1024 North		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2026	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	113	100.000
B		✓	21	100.000
C		✓	283	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	110
	B	5	0	16
	C	224	59	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	2	0	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.04	6.71	0.0	A
C-AB	0.11	6.54	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	16	588	0.027	16	0.0	6.420	A
C-AB	45	624	0.073	45	0.1	6.340	A
C-A	168			168			
A-B	2			2			
A-C	83			83			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	19	580	0.033	19	0.0	6.538	A
C-AB	55	625	0.087	55	0.1	6.432	A
C-A	200			200			
A-B	3			3			
A-C	99			99			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	23	570	0.041	23	0.0	6.711	A
C-AB	68	629	0.108	68	0.1	6.541	A
C-A	244			244			
A-B	3			3			
A-C	121			121			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	23	570	0.041	23	0.0	6.711	A
C-AB	68	629	0.108	68	0.1	6.544	A
C-A	244			244			
A-B	3			3			
A-C	121			121			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	19	580	0.033	19	0.0	6.539	A
C-AB	55	625	0.087	55	0.1	6.437	A
C-A	200			200			
A-B	3			3			
A-C	99			99			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	16	588	0.027	16	0.0	6.423	A
C-AB	45	624	0.073	45	0.1	6.349	A
C-A	168			168			
A-B	2			2			
A-C	83			83			

2026, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary St L1024 Junc	T-Junction	Two-way	1.23	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)
D2	2026	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	153	100.000
B		✓	40	100.000
C		✓	154	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	2	151
	B	6	0	34
	C	130	24	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.08	6.76	0.1	A
C-AB	0.04	6.43	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	30	603	0.050	30	0.1	6.404	A
C-AB	18	607	0.030	18	0.0	6.234	A
C-A	98			98			
A-B	2			2			
A-C	114			114			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	36	596	0.060	36	0.1	6.550	A
C-AB	22	603	0.036	22	0.0	6.319	A
C-A	117			117			
A-B	2			2			
A-C	136			136			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	44	587	0.075	44	0.1	6.759	A
C-AB	27	597	0.045	27	0.0	6.433	A
C-A	143			143			
A-B	2			2			
A-C	166			166			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	44	587	0.075	44	0.1	6.759	A
C-AB	27	597	0.045	27	0.0	6.433	A
C-A	143			143			
A-B	2			2			
A-C	166			166			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	36	596	0.060	36	0.1	6.551	A
C-AB	22	603	0.036	22	0.0	6.323	A
C-A	117			117			
A-B	2			2			
A-C	136			136			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	30	603	0.050	30	0.1	6.408	A
C-AB	18	607	0.030	18	0.0	6.237	A
C-A	98			98			
A-B	2			2			
A-C	114			114			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2041 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Callary St T Junction Capacity
Report generation date: 30/01/2023 14:25:07

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2041							
Stream B-AC	0.1	6.85	0.05	A	0.1	6.89	0.08	A
Stream C-AB	0.1	6.58	0.12	A	0.1	6.48	0.05	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2041	AM	ONE HOUR	07:45	09:15	15
D2	2041	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2041, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary St L1024 Junc	T-Junction	Two-way	1.33	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 South		Major
B	Callary St Minor Arm		Minor
C	L1024 North		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2041	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	122	100.000
B		✓	24	100.000
C		✓	308	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	119
	B	6	0	18
	C	244	64	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	2	0	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.05	6.85	0.1	A
C-AB	0.12	6.58	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	18	582	0.031	18	0.0	6.506	A
C-AB	49	625	0.079	49	0.1	6.374	A
C-A	182			182			
A-B	2			2			
A-C	90			90			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	574	0.038	22	0.0	6.646	A
C-AB	60	627	0.095	60	0.1	6.472	A
C-A	217			217			
A-B	3			3			
A-C	107			107			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	26	563	0.047	26	0.0	6.846	A
C-AB	74	632	0.118	74	0.1	6.584	A
C-A	265			265			
A-B	3			3			
A-C	131			131			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	26	563	0.047	26	0.1	6.846	A
C-AB	74	632	0.118	74	0.1	6.585	A
C-A	265			265			
A-B	3			3			
A-C	131			131			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	22	574	0.038	22	0.0	6.647	A
C-AB	60	627	0.095	60	0.1	6.475	A
C-A	217			217			
A-B	3			3			
A-C	107			107			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	18	582	0.031	18	0.0	6.510	A
C-AB	49	625	0.079	49	0.1	6.387	A
C-A	182			182			
A-B	2			2			
A-C	90			90			

2041, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary St L1024 Junc	T-Junction	Two-way	1.26	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)
D2	2041	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	165	100.000
B		✓	44	100.000
C		✓	167	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	2	163
	B	7	0	37
	C	141	26	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.08	6.89	0.1	A
C-AB	0.05	6.48	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	33	599	0.055	33	0.1	6.486	A
C-AB	20	605	0.033	20	0.0	6.268	A
C-A	106			106			
A-B	2			2			
A-C	123			123			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40	591	0.067	40	0.1	6.653	A
C-AB	24	601	0.039	24	0.0	6.360	A
C-A	127			127			
A-B	2			2			
A-C	147			147			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	48	581	0.083	48	0.1	6.890	A
C-AB	29	595	0.049	29	0.1	6.482	A
C-A	155			155			
A-B	2			2			
A-C	179			179			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	48	581	0.083	48	0.1	6.890	A
C-AB	29	595	0.049	29	0.1	6.482	A
C-A	155			155			
A-B	2			2			
A-C	179			179			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40	591	0.067	40	0.1	6.654	A
C-AB	24	601	0.039	24	0.0	6.361	A
C-A	127			127			
A-B	2			2			
A-C	147			147			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	33	599	0.055	33	0.1	6.493	A
C-AB	20	605	0.033	20	0.0	6.271	A
C-A	106			106			
A-B	2			2			
A-C	123			123			

APPENDIX J

PiCADY Model Output
(L1024 / Callary St / Convent View Priority Junction)

Capacity Assessment With Subject Development Open and Occupied
Existing L1024 / Callary St / Convent View Priority Controlled T-Junction

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2026 Opening Year AM Peak Hr	0.0	0.01
2026 Opening Year PM Peak Hr	0.0	0.01
2041 Design Year AM Peak Hr	0.0	0.01
2041 Design Year PM Peak Hr	0.0	0.01

All Results Above are WAY below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues

NB - Any Small Changes to Selected Opening Year 2026 or Design Year 2041, or indeed significantly higher traffic volumes experienced, as deductable from the positive results presented, will clearly have no significant implications in terms of the conclusions of the Study

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2026 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Callary St Gr Canal Way Junc capacity
Report generation date: 30/01/2023 14:30:51

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2026							
Stream B-AC	0.0	6.93	0.01	A	0.0	0.00	0.00	A
Stream C-AB	0.0	6.45	0.00	A	0.0	6.20	0.01	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2026	AM	ONE HOUR	07:45	09:15	15
D2	2026	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary Gr Can Way Junc	T-Junction	Two-way	0.14	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 North Callary St		Major
B	Gr Canal Way		Minor
C	L1024 South Convent View		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2026	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	231	100.000
B		✓	6	100.000
C		✓	113	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	1	230
	B	2	0	4
	C	112	1	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	2	0	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.01	6.93	0.0	A
C-AB	0.00	6.45	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	5	560	0.008	4	0.0	6.613	A
C-AB	0.75	589	0.001	0.75	0.0	6.237	A
C-A	84			84			
A-B	0.75			0.75			
A-C	173			173			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	5	550	0.010	5	0.0	6.743	A
C-AB	0.90	581	0.002	0.90	0.0	6.326	A
C-A	101			101			
A-B	0.90			0.90			
A-C	207			207			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	7	536	0.012	7	0.0	6.931	A
C-AB	1	570	0.002	1	0.0	6.455	A
C-A	123			123			
A-B	1			1			
A-C	253			253			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	7	536	0.012	7	0.0	6.931	A
C-AB	1	570	0.002	1	0.0	6.455	A
C-A	123			123			
A-B	1			1			
A-C	253			253			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	5	550	0.010	5	0.0	6.746	A
C-AB	0.90	581	0.002	0.90	0.0	6.326	A
C-A	101			101			
A-B	0.90			0.90			
A-C	207			207			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	5	560	0.008	5	0.0	6.616	A
C-AB	0.75	589	0.001	0.75	0.0	6.237	A
C-A	84			84			
A-B	0.75			0.75			
A-C	173			173			

2026, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary Gr Can Way Junc	T-Junction	Two-way	0.09	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)
D2	2026	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	135	100.000
B		✓	4	100.000
C		✓	152	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	135
	B	1	0	3
	C	148	4	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.01	6.20	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	550	0.000	0	0.0	0.000	A
C-AB	3	608	0.005	3	0.0	6.072	A
C-A	111			111			
A-B	0			0			
A-C	102			102			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	542	0.000	0	0.0	0.000	A
C-AB	4	603	0.006	4	0.0	6.125	A
C-A	133			133			
A-B	0			0			
A-C	121			121			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	532	0.000	0	0.0	0.000	A
C-AB	4	597	0.007	4	0.0	6.197	A
C-A	163			163			
A-B	0			0			
A-C	149			149			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	532	0.000	0	0.0	0.000	A
C-AB	4	597	0.007	4	0.0	6.197	A
C-A	163			163			
A-B	0			0			
A-C	149			149			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	542	0.000	0	0.0	0.000	A
C-AB	4	603	0.006	4	0.0	6.125	A
C-A	133			133			
A-B	0			0			
A-C	121			121			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	550	0.000	0	0.0	0.000	A
C-AB	3	608	0.005	3	0.0	6.075	A
C-A	111			111			
A-B	0			0			
A-C	102			102			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2041 AM PM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2022\22-059 Flanagan Resi Tullamore\Calculations\Callary St Gr Canal Way Junc capacity
Report generation date: 30/01/2023 14:33:08

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2041							
Stream B-AC	0.0	6.92	0.01	A	0.0	0.00	0.00	A
Stream C-AB	0.0	6.52	0.00	A	0.0	6.24	0.01	A

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	30/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

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

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		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)
D1	2041	AM	ONE HOUR	07:45	09:15	15
D2	2041	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2041, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary Gr Can Way Junc	T-Junction	Two-way	0.14	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	L1024 North Callary St		Major
B	Gr Canal Way		Minor
C	L1024 South Convent View		Major

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)
C	6.00			100.0	✓	1.00

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	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	527	0.096	0.243	0.153	0.346
1	B-C	662	0.101	0.256	-	-
1	C-B	632	0.245	0.245	-	-

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)
D1	2041	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	251	100.000
B		✓	7	100.000
C		✓	122	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	1	250
	B	2	0	5
	C	121	1	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	2	0	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.01	6.92	0.0	A
C-AB	0.00	6.52	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	5	563	0.009	5	0.0	6.583	A
C-AB	0.75	586	0.001	0.75	0.0	6.276	A
C-A	91			91			
A-B	0.75			0.75			
A-C	188			188			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	6	552	0.011	6	0.0	6.722	A
C-AB	0.90	577	0.002	0.90	0.0	6.375	A
C-A	109			109			
A-B	0.90			0.90			
A-C	225			225			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	8	538	0.014	8	0.0	6.924	A
C-AB	1	565	0.002	1	0.0	6.516	A
C-A	133			133			
A-B	1			1			
A-C	275			275			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	8	538	0.014	8	0.0	6.924	A
C-AB	1	565	0.002	1	0.0	6.516	A
C-A	133			133			
A-B	1			1			
A-C	275			275			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	6	552	0.011	6	0.0	6.722	A
C-AB	0.90	577	0.002	0.90	0.0	6.375	A
C-A	109			109			
A-B	0.90			0.90			
A-C	225			225			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	5	563	0.009	5	0.0	6.586	A
C-AB	0.75	586	0.001	0.75	0.0	6.278	A
C-A	91			91			
A-B	0.75			0.75			
A-C	188			188			

2041, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Existing Callary Gr Can Way Junc	T-Junction	Two-way	0.10	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)
D2	2041	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	147	100.000
B		✓	4	100.000
C		✓	165	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	147
	B	1	0	3
	C	160	5	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	2	2
	B	2	0	2
	C	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.01	6.24	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	546	0.000	0	0.0	0.000	A
C-AB	4	606	0.006	4	0.0	6.100	A
C-A	120			120			
A-B	0			0			
A-C	111			111			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	538	0.000	0	0.0	0.000	A
C-AB	5	601	0.008	4	0.0	6.158	A
C-A	144			144			
A-B	0			0			
A-C	132			132			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	527	0.000	0	0.0	0.000	A
C-AB	6	594	0.009	6	0.0	6.238	A
C-A	176			176			
A-B	0			0			
A-C	162			162			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	527	0.000	0	0.0	0.000	A
C-AB	6	594	0.009	6	0.0	6.238	A
C-A	176			176			
A-B	0			0			
A-C	162			162			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	538	0.000	0	0.0	0.000	A
C-AB	5	601	0.008	5	0.0	6.160	A
C-A	144			144			
A-B	0			0			
A-C	132			132			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	0	546	0.000	0	0.0	0.000	A
C-AB	4	606	0.006	4	0.0	6.100	A
C-A	120			120			
A-B	0			0			
A-C	111			111			

NRB consulting engineers

APPENDIX K

Preliminary Planning Stage
Mobility Management Plan/Travel Plan

consulting engineers

NRB

Preliminary
Travel Plan
(Mobility Management Plan)

Appendix K

For

Large Scale Residential Development

at

Wellwood Housing Site, Tyrells Rd, Puttaghan, Tullamore.

FINAL ISSUE

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

Registered in Ireland No. 491679

Contents

1.0 INTRODUCTION

1.1 NRB Consulting Engineers have been commissioned to prepare a Preliminary Travel Plan (or Mobility Management Plan) for an application for a Large Scale Residential Development on lands at Puttaghan, Tullamore, Co Offaly, in order to explain the applicants commitment to the promotion of more sustainable and cost effective travel habits among the end occupiers/residents of the scheme.

1.2 ***As it needs to measure initial modal splits and set targets, it should be recognised that a Travel Plan/Mobility Management Plan prepared at planning application stage, when the development is un-built and unoccupied, can only highlight the current and proposed Alternative Transport initiatives in place at the site, and set out the applicant's commitment to the promotion of sustainable transport measures. It is intended that a working MMP will be prepared following completion and occupation, in the event of a grant of planning permission***.

What is a Travel Plan?

1.3 Originally and elsewhere called Mobility Management Plans (MMPs), they originated in the United States and the Netherlands in the late 1980s. In the US, employers over a certain size (generally over 100 employees) were required to implement 'Trip Reduction Plans' in order to reduce single-occupancy car commuting trips, and to increase car occupancy.

1.4 A MMP or Travel Plan (TP) consists of a package of measures put in place by an organisation to encourage and support more sustainable travel patterns among residents, staff and other visitors. Such a plan usually concentrates on commuting patterns. In essence, a TP is useful not only to reduce the attractiveness of private car use, but also for the ability to promote and support the use of more sustainable transport modes such as walking, cycling, shared transport and mass transit such as buses and trains.

Aims and Objectives of this Travel Plan

1.5 The package generally includes measures to promote and improve the attractiveness of using public transport, cycling, walking, car sharing, flexible working or a combination of these as alternatives to single-occupancy car journeys to work. A TP can consider all travel associated with the residential or work site, including business travel, fleet management, customer access and deliveries. It should be considered as a dynamic process where a package of measures and campaigns are identified, piloted and monitored on an on-going basis. This MMP recognises the fact that, for some people, car use is often essential as part of the home-work commute, as the work commute is often combined with other important trips, for example having to drop children to school or crèche on the way.

1.6 The changes which are being sought as part of any plan may be as simple as car sharing one-day per week, or walking on Wednesdays, or taking the bus on days which do not conflict with other commitments, leisure or work activities.

1.7 It is envisaged that once in place, the Travel Plan will enable the following benefits to be realised for the Residential Development:

- Reduced residential car parking demand and reduced congestion on the local road network due to lower demand for private transport and/or more efficient use of private motor vehicles,
- Improved safety for cyclists and pedestrians,
- Direct financial savings for those taking part in the developed initiatives, through higher than average vehicle occupancy rates,
- A reduction in car parking & car set-down demand, resulting in improved operational efficiency and safety for all,
- Improved social networking between all those participating in the shared initiatives,
- Improved environmental consideration and performance,
- Improved public image for the development, which sets an example to the broader community and may lead to residents making better travel decisions in the future,
- Improved health and well-being for those using active non-car transport modes,
- On-going liaison with the Local Authority and public transport providers to maintain, improve, and support transportation services to and from the site,
- Improved attractiveness of the development to prospective residents,
- Optimal levels of safety for all residents and visitors.

Methodology

1.8 As part of this Travel Plan, reference has been made to the following documents:

- Your Step By Step Guide To Travel Plans (NTA 2012);
- Achieving Effective Workplace Travel Plans (NTA 2011);
- Traffic and Transport Assessment Guidelines (TII);
- Traffic Management Guidelines (DoELG, 2003);
- Mobility Management Plans – DTO Advice Note (DTO, 2002);
- The Route to Sustainable Commuting (DTO 2001);
- Smarter Travel: A Sustainable Transport Future (DOT)

1.9 Consultation with key stakeholders is an essential part of any Travel plan. As discussed below, as part of the operational phase of this development, a Travel Plan Coordinator Role will be appointed from with the Development Management Company. Following on, once occupied, Residents will be asked to complete detailed questionnaires on essential data in relation to their existing travel patterns. This information will be used to inform the ongoing implementation, monitoring and review of the plan for this development.

1.10 This information will then be used as the basis for an assessment, drawing conclusions and recommendations.

2.0 ACCESS TO THE SITE - BY MODE

2.1 The development consists of a total of 90 residential houses, 20 private residential apartments, 38 age-friendly assisted living units plus an ancillary Crèche, all on appropriately zoned lands at Puttaghan, Tullamore, Co Offaly. A location plan is shown below as ***Figure 2.1***.

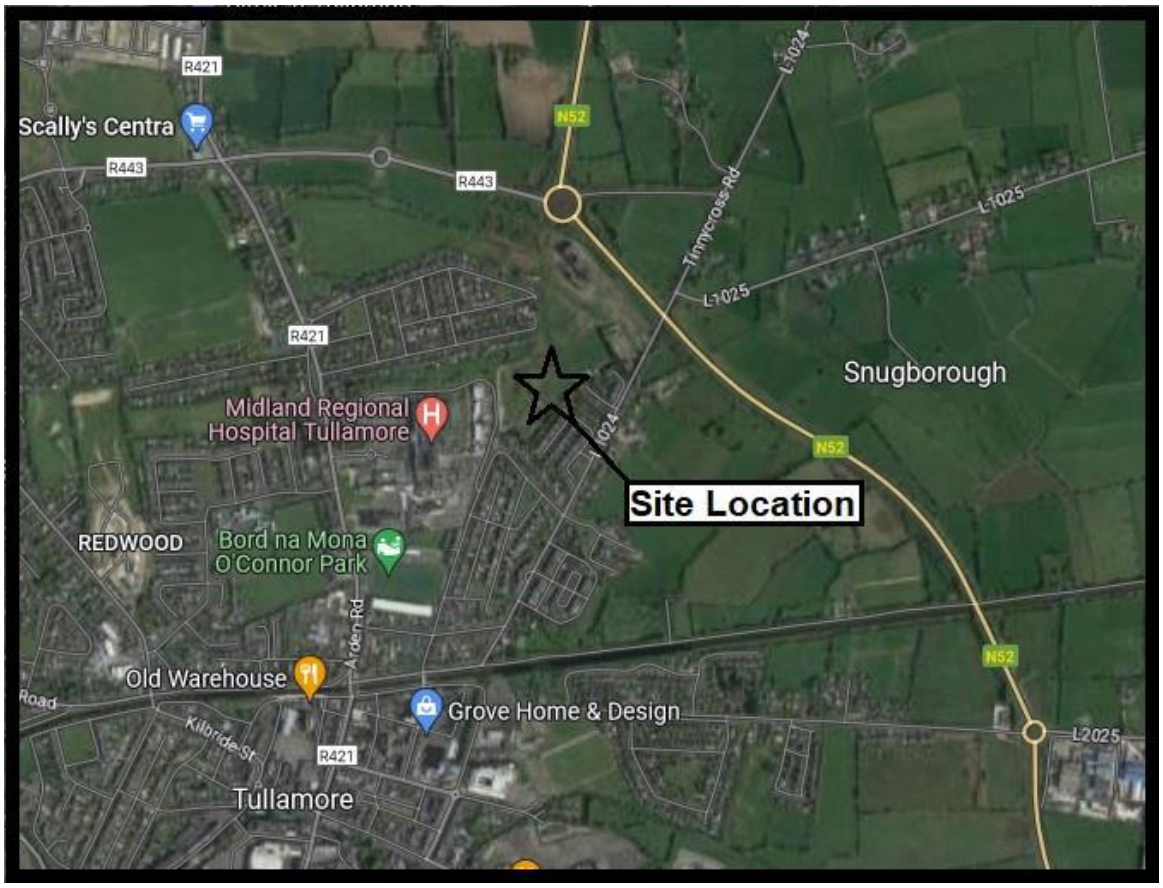


Figure 2.1 – Site Location Map

2.2 When implemented, it is essential for successful Travel Planning to concentrate on journeys associated with work & school commuting patterns. These are the groups which can most practically be encouraged to use modes of transport other than the car.

2.3 Notwithstanding this, the development is located in the heart of Tullamore urban area and is in very close proximity to the range of services in the town.

Cycling & Pedestrian Facilities

2.4 As part of 'Cycle Connects', the National Transport Authority (NTA) has produced a future Cycle Network Plan for Offaly and for the urban area of Tullamore. An extract is provided below as ***Figure 2.2*** showing the high quality network of cycle links connecting the site with the Tullamore urban area and beyond. The Plan key extract for the network is included as ***Figure 2.3***

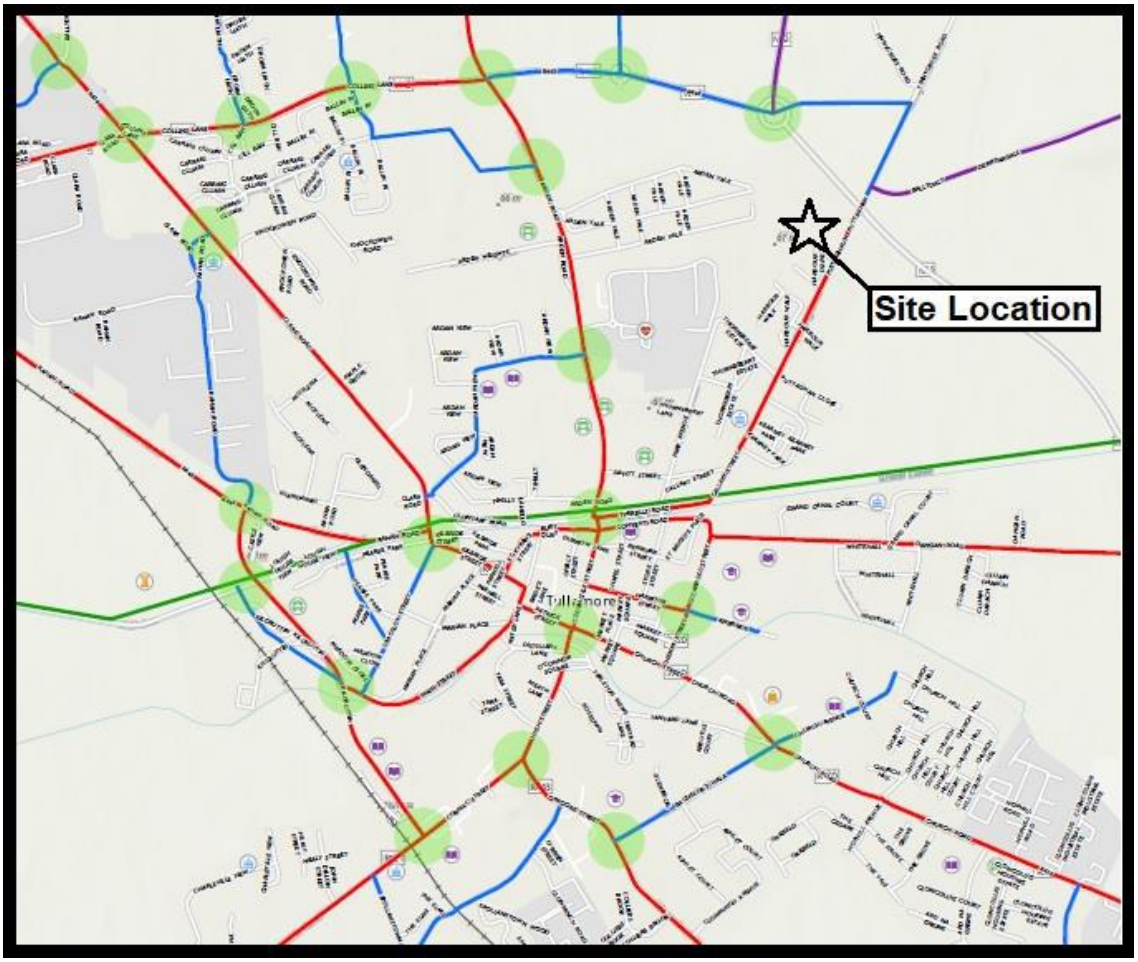


Figure 2.3 – 'Cycle Connects' Plan for Tullamore

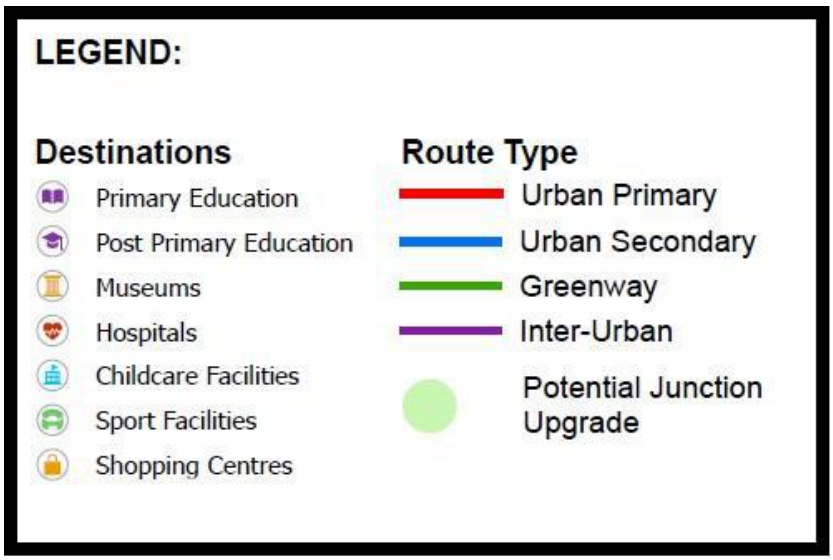


Figure 2.4 – 'Cycle Connects' Key for Plan

2.5 The plans include an Urban Primary Route running immediately adjacent the site in the N-S orientation along the L1024. This links to the Urban Secondary Route to the north and the Greenway along the Canal to the south. The site is therefore clearly ideally located to benefit from and contribute to the cycle facilities for the town.

2.6 The Urban Cycle Network links into the overall Offaly County Cycle Network Plan, an annotated extract from which is included below as ***Figure 2.5***

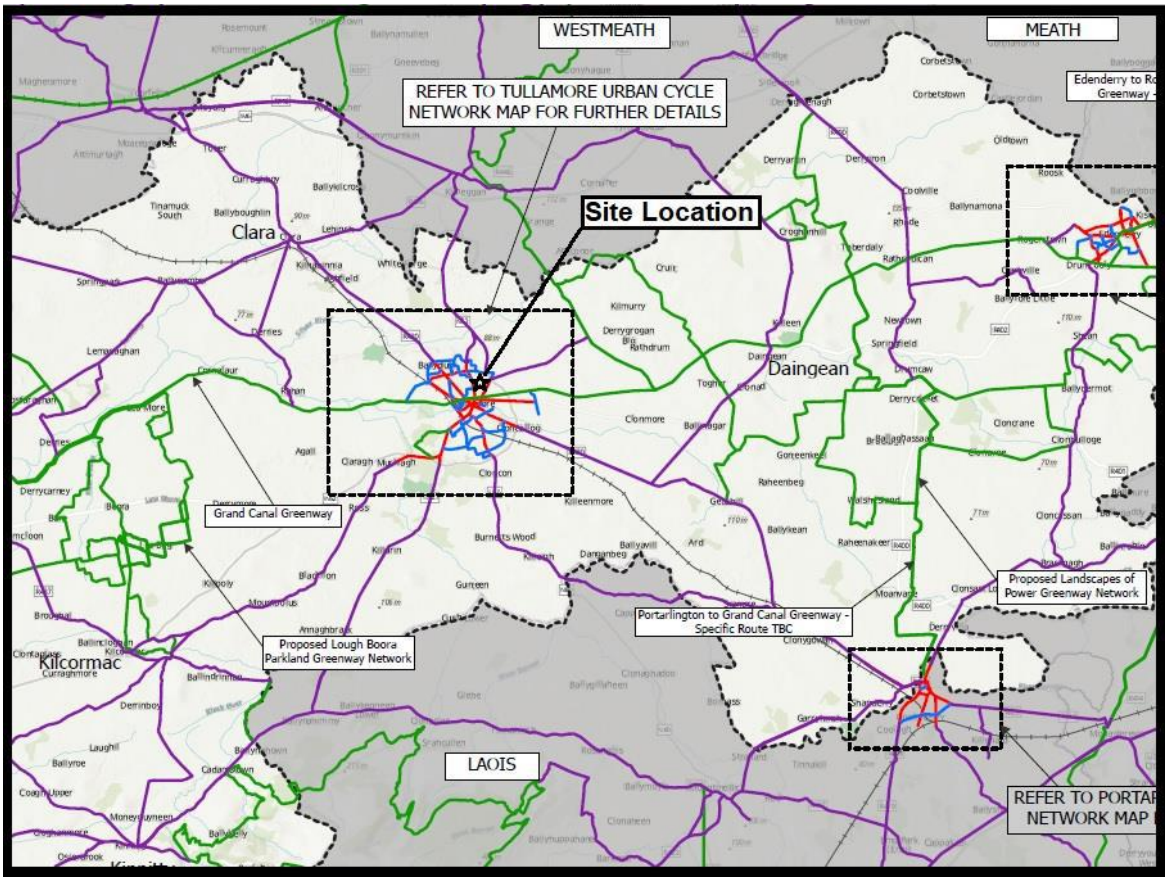


Figure 2.5 – Offaly County 'Cycle Connects' Network Plan Extract

2.7 The use and viability of the local improved cycle network services will therefore be enhanced through the encouragement of the use of bicycles and through the demand management control of controlled car parking provision on the site.

2.8 It is clear from ***Figure 2.3*** and ***Figure 2.5*** above that the site will be bounded by primary, secondary and Greenway routes linked to the development along the L1024.

2.9 The location of the proposed development is ideal in terms of encouraging **walking**. The proximity to the town centre and local employment hubs means that walking will be an attractive alternative option for the vast majority of residents. In addition, being located within easy walk distance of the town centre shops reduces the need to travel by car and will assist in encouraging walking and cycling. The proximity to the town centre is illustrated in the annotated Google Streetview extract below as ***Figure 2.6*** which confirms a 19min walk distance to O'Connor Square (considered to be the heart of the town centre).

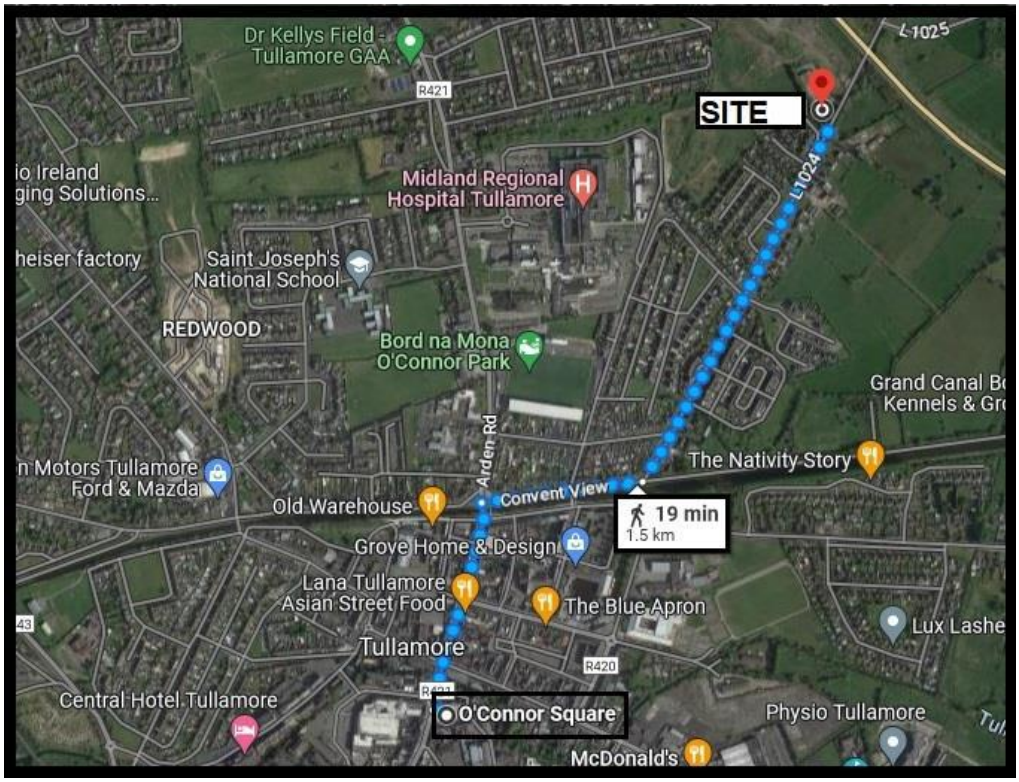


Figure 2.6 – 19 Min Walk Distance to O'Connor Square

2.10 The national objective is to cultivate a walking and cycling culture, through the implementation of appropriate infrastructure and promotional measures, which positively encourages all members of the community to walk or cycle at all life stages and abilities, as modes of sustainable transport that delivers environmental, health and economic benefits to both the individual and the community.

2.11 To help meet the target set in Ireland's first National Cycle Policy Framework launched in April 2009 (that 10% of all journeys will be by bike), the following will assist:

- Improve cycling conditions on primary cycle routes locally as per the enclosed details,
- Develop new cycle route/ greenways through parks and open spaces,
- Improve connectivity/permeability from cycle routes to key destinations,
- Provide 30kph zones within residential areas and other suitable locations,
- Provide new secure cycle parking,
- Continue cycle training in schools,
- Ensure that cycling is a key element of all development, and,
- Monitor trends in cycle numbers using cycle counter data.

2.12 The local infrastructure plans support the specific objectives in the National Cycle Policy Framework. The proposed residential development on the subject site, through good design, will assist in the promotion of cycling and walking as primary modes of travel.

2.13 For journeys greater than 8km, it is recognised that a modal shift to cycling could be achievable for some, but not all, and options such as public transport and car sharing should be considered. Journeys up to 8km could be undertaken by bicycle and journeys up to 3-4km could be undertaken by walking or cycling.

2.14 We include below a simple annotated Google Streetview image showing both the 2km and 8km iso-distance radii from the site.

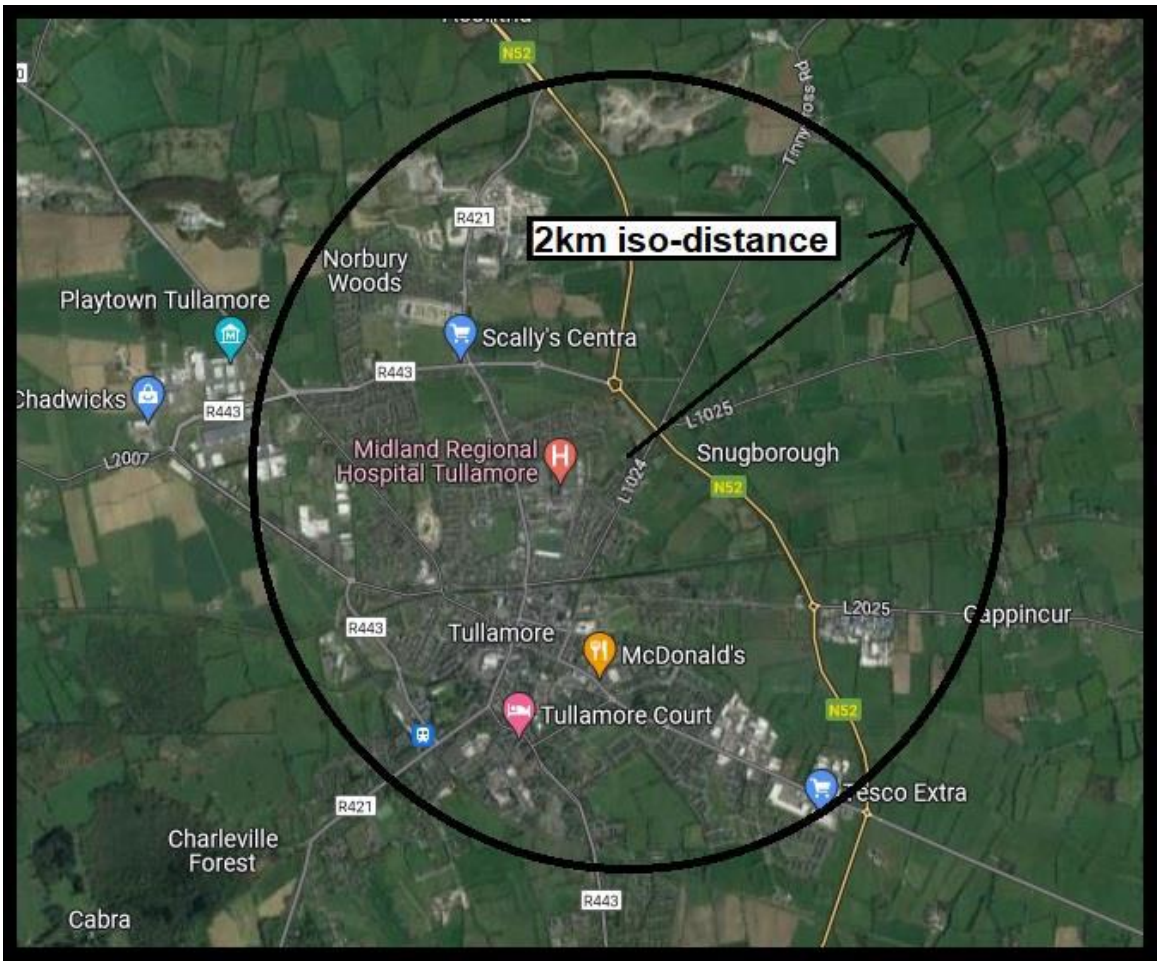


Figure 2.7 – Approximate 2km Iso-Distance of Site (Walk/Cycle)

Figure 2.8 – Approx 8km Iso-Distance of Site (Cycle)

BUS

2.15 The site is immediately adjacent Bus Stops with local town services connecting with the Puttaghan area. The proximity of the site to the bus stops is depicted on ***Figure 2.9*** below.

Figure 2.9 – Walk Distance to Local Bus Stops/Services

2.16 The local bus services provides a link to the town centre, the railway station and to other local and regional bus services connecting to Tullamore.

Train Services

2.17 Tullamore Train Station is located on the edge of the town centre, within easy access to the subject site. The daily commuter service to Dublin is popular. The journey from Tullamore to Dublin by Train is 83 km and takes 1 hour 49 min. There are 48 connections per day, with the first departure at 05:44 and the last at 20:14.

2.18 With the number of transport alternatives easily available to Residents, it is considered that the proposed development site is therefore **highly sustainable** in terms of public and alternative transport accessibility. The proximity of the development to these services means that all residents will have viable alternatives to the private car for accessing the site and will not be reliant upon the car as a primary mode of travel.

Car & Cycle Parking

2.19 The residential housing will have secure cycle parking provided within their own private demise, as per normal practice. For the Apartments elements, the Residential Apartment Guidelines recommends a high cycle parking requirement. The Guidelines recommend 1 cycle parking space per bedroom plus 1 visitor space per 2 residential units, and therefore it is proposed to provide secure cycle parking spaces along with secure surface level cycle parking within the development consistent with the Guidelines.

2.20 It is expected that a very significant number of residents will be willing to cycle to work or school, if safe links and secure parking are in place, and that is reflected in the provision of large number of dedicated cycle parking spaces. Once occupied, advice can be provided on routes by the appointed Travel Plan Coordinator, possibly with the help of a bicycle user group. This can be further facilitated in consultation with OCC, as the ongoing provision of local cycle infrastructure and facilities is fully implemented.

2.21 It is acknowledged that cyclists need to be confident that their cycles will not be tampered with while they are in storage. With this in mind, it is proposed to install the cycle parking with racks which allow both frame and wheels to be secured. These cycle racks are located in an active, well lit & security monitored place or where they can be seen by passive surveillance, either directly, or by closed circuit television.

2.22 Public transport maps and timetables can be provided in prominent locations on site and the information will be kept up to date by the appointed Travel Plan Coordinator, a role for the Management Company.

2.23 Working Residents are generally now offered the opportunity to purchase public transport commuter tickets under the current ‘Employer Pass’ and ‘TaxSaver’ programmes, by individual Employers. Under these schemes the employer applies to Iarnród Éireann / Bus Éireann for tax free public transport tickets for their employees as an incentive for them to use public transport to travel to work.

2.24 With this in mind, the main focus of this Travel Plan will be to promote and support the use of alternative modes to the private car.

3.0 COLLECTION OF BASELINE INFORMATION

Possible Travel Pattern Questionnaires

3.1 The development comprises a mix of private residential accommodation, age friendly living and a creche, which will have a relatively small element of staffing.

3.2 Once occupied and operating, and when the Travel Plan Coordinator is appointed, the occupiers of the proposed development will be encouraged to continually monitor the Travel Plan initiatives in order to maximise on their success.

3.3 Shortly after occupation of the new development, a detailed travel-questionnaire will be compiled and distributed to Residents for completion. The aim of the travel questionnaire will be to establish travel patterns between work and home and school travel demand. The information gathered from this survey will be used to inform the further development of the Travel Plan.

3.4 The Baseline Survey information will also allow the Travel Plan Coordinator for the development to set realistic modal-split targets for the development.

3.5 It is anticipated that, given the sustainable location and good transport links at this development, combined with the limited car parking on site, there will be a high percentage of use accessing via public and alternative transport. The Travel Plan will need to maintain this positive modal split and improve it, where possible. It is informative to note that the "Smarter Travel: A Sustainable Transport Future" (DOT) Objective for 2020 is to achieve a reduced work related commuting by car modal share of 65% to 45%.

3.6 The Travel Plan is not seeking a radical change in terms of a modal shift; it is recognised that the use of the car is often essential for many users. Instead, the Plan seeks small but consistent increments of change in our approach to, and the use of, alternatives to the car.

4.0 THE TRAVEL PLAN

4.1 The successful implementation of a Travel Plan will ensure that, in-so-far-as-possible, the impacts of this traffic are reduced and minimised where practical, while providing a number of environmental and economic advantages detailed below.

4.2 The following sub-sections detail the available initiatives which will serve to better manage travel demand, and therefore the traffic impact of work-related journeys, focused on the movement of residents during peak times.

Walking

Walking - Key Information	
Approx Zone of Influence	3.5km
Percentage of Residents working in area of influence	TBC in each survey when occupied
Percentage of Residents interested in Walking	TBC in each survey when occupied

Table 4.1 – Key Information: Walking

4.4 There are many local, global, and personal benefits to walking to work, a few of which are listed following:

- **W** - Wake Up! - Studies have shown that people who walk to work are more awake and find it easier to concentrate.
- **A** - Always one step ahead - Walking makes people more aware of road safety issues and helps them develop stronger personal safety skills.
- **L** - Less congestion - If you leave the car at home and walk, there are fewer cars on the road which makes it safer for those who walk and cycle.
- **K** - Kinder to the environment - By leaving the car at home you are reducing the amount of CO 2 produced and helping to reduce the effects of climate change and air pollution.
- **I** - Interpersonal skills - Walking to work or school can be a great way to meet other walkers, share the experience, and develop personal skills.
- **N** - New adventures - Walking to work or school is a great way to learn about your local environment and community. It's also a fun way to learn about the weather, landscape, and local ecosystems.
- **G** - Get fit and stay active - Walking to and from work or school helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.

4.5 Most adults will consider walking a maximum of 3.5 km (Approx 30/40 minutes) to work. Residents working within a 3.5 km radius of the site will be encouraged to walk to work as often as their schedule permits. Similarly school trips can be encouraged on foot.

4.6 The following initiatives and incentives can be used to encourage walking to work or school:

- Take part in a 'Pedometer Challenge' which is organised through the Irish Heart Foundation or Smarter Travel Workplaces;
- Organise special events such as a 'Walk to work/school on Wednesdays' where participants are rewarded for their participation;
- Keep umbrellas in public areas on a deposit system for use when raining;
- Display Smarter Travel Workplaces Accessibility Walking maps on notice boards areas so Residents can plan journeys;
- Organise lunch time or afternoon walks as part of a health and well-being programme;
- Highlight the direct savings gained due to reduced use of private vehicles.

Cycling

Cycling – Key Information	
Approx. zone of influence	10km
Percentage of Residents Surveyed known to Work within the area of influence	TBC in each survey when occupied
Percentage of Residents interested in cycling	TBC in each survey when occupied

Table 4.2 : Key Information - Cycling

4.7 Research suggests that cycling is a viable mode of transport for people who live up to 10 km from work or school.

4.8 Cycling is a great way to travel. It helps foster independence, raises awareness of road safety, and helps the environment.

4.9 Some positive aspects of cycling to work or school are listed following:

- **C** - Cycling is fun! - Cycling is a great form of transport but it's also a great recreational activity. Cycling is a skill that stays with you for life and it's a fantastic way to explore your local community.
- **Y** - You save time & money - cycling to work reduces the need to travel by car thus reducing fuel costs and freeing up road space for more cyclists;
- **C** - Confidence building - travelling to work as an independent cyclist can give

people increased confidence proving beneficial in all aspects of life;

- **L** - Less congestion - If you leave the car at home and cycle to work there are fewer cars on the road which makes it safer for those who cycle and walk to work or school;
- **I** - Interpersonal skills - Cycling to work or to school can be a great way to meet other cyclists and share the experience;
- **N** - New adventures - Cycling to work or school is a great way to learn about your local environment and community. It helps people to understand where they live and how their actions affect their local environment;
- **G** - Get fit and stay active - cycling to and from work or school helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.

4.10 The provision of enhanced and attractive cycle parking facilities at the site will clearly play a critical role in promoting journeys by bicycle.

4.11 The following initiatives and incentives can be used to encourage cycling to work and school:

- New cycle parking installed within the development, secure and well lit;
- It will publicise cycle parking availability by way of signage and on notice boards;
- It will display maps on notice boards areas so people can plan journeys;
- The development can provide free cycle accessories (panniers, lights, visi-vests, helmets) in periodic draws for cyclists,
- The Travel Plan Coordinator can organise cycle training sessions on site on the rules of the road and the specific risks associated with the locality;
- The Travel Plan Coordinator can invite bike suppliers on site for a ‘Green Day’ or ‘Green Week’ so that people can try bikes before buying;
- The Travel Plan Coordinator can set up a Bicycle User Group (BUG) to promote cycling;
- The Travel Plan Coordinator can highlight the direct savings gained due to reduced use of private vehicles;
- The Travel Plan Coordinator can encourage residents to take part in National Bike Week, see www.bikeweek.ie.

Public Transport

Public Transport – Key Information	
Approx. zone of influence	All Residents
Percentage of Residents in area of influence	100%
Percentage of Residents using Public Transport	TBC in each survey when occupied

Table 4.3: Key Information: Public Transport

4.12 There are many benefits to taking public transport, some of which include:

- Personal Opportunities – Public transportation provides personal mobility and freedom;
- Saving fuel – Every full standard bus can take more than 50 cars off the road, resulting in fuel savings from reduced congestion;
- Reducing congestion – The more people who travel to work or to school on public transport, especially during peak periods, the less people travelling by private car;
- Saving money – Taking public transport to and from work or school is a lot cheaper than travelling by car and saves the cost of buying, maintaining and running a vehicle;
- Reducing fuel consumption – A full standard bus uses significantly less fuel per passenger than the average car;
- Reducing carbon footprint – Public transport is at least twice as energy efficient as private cars. Buses produce less than half the CO2 emissions per passenger kilometre compared to cars and a full bus produces 377 times less carbon monoxide than a full car;
- Get fit and stay active - Walking to and from work or school to public transport helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.
- Less stress – Using public transport can be less stressful than driving yourself, allowing you to relax, read, or listen to music.

4.13 The following initiatives and incentives can be used to encourage people to take public transport:

- Publicise Employee Tax Saver Commuter tickets, which offer savings to employers in PSRI per ticket sold and significant savings to employees in marginal tax rate and levies on the price of their ticket;
- Encourage public transport use for travel by promoting smart cards, advertising the availability of these tickets to Residents;
- Publicise the availability of Real Time Information. Real Time Information shows when your bus is due to arrive at your bus stop so you can plan your journey

more accurately;

- Provide maps of local bus routes and the nearest bus stops, LUAS Timetables and Frequencies, and the length of time it takes to walk to them;
- Contact local providers about issues such as location of existing and new bus stops, timing of routes, or where you have market information about a potential new route.

Go-Car/Car Sharing

Car Sharing – Key Information	
Approx. zone of influence	All Residents
Percentage of Residents in area of influence	100%
Percentage of Residents Car Sharing	TBC in each survey when occupied

Table 4.4: Key Information - Go-Car/Car Sharing

4.14 Every day thousands of commuters drive to work or to school on the same routes to the same destinations, at the same time as their colleagues. By car sharing just once a week, a commuter's fuel costs can be reduced by 20%, and in a similar fashion, the demand for work place parking can be reduced by 20%. If every single-occupancy driver carried another driver, there would be 50% less cars on the road at peak times.

4.15 Although use of the car to get to work or to school is essential for a large proportion of people, car sharing schemes have the potential to deliver a significant reduction in private vehicle trips by promoting higher than average occupancy rates for each vehicle.

4.16 A locally run car sharing scheme relies on a database containing workplace information, working hours, and peoples preferences such as gender/driver/passenger and their preferred route to and from work. The car-sharing database can be a map showing where Residents work, a database of car-sharers' details hosted on an organisations intranet site, or an on map-based matching website.

4.17 Car sharing often happens informally, however some participants often prefer a formal scheme such as a Go Car facility which will normally generate a higher take-up for car sharing, and more efficiency in terms of increased occupancy rates. Car sharing is much easier promoted within a community such as is proposed here.

4.18 Encouraging more Residents to share car journeys to work rather than driving alone as well as encouraging more to set up and take part in car sharing/pooling would prove a very effective means of reducing daily car trips to and from the site.

4.19 The following initiatives and incentives can be used to encourage car sharing:

- Provide incentives to sign up to a car sharing scheme with preferential parking spaces in the most convenient location;
- Draw up a car-sharing policy for how the scheme will operate, and issue car-sharing permits to those qualifying to use the car-sharing spaces;
- Highlight to drivers that they do not have to share with a person that doesn't suit them – allow choice based on gender, route, smoking or non-smoking;
- Clarify the financial implications of the scheme – those accepting a lift could contribute towards fuel costs.
- Use existing online databases for car sharing. For example, the development could set up its own private car sharing site using www.carsharing.ie.
- Allocate parking spaces for use solely by car sharers, for example near to building entrances.

Action Plan Summary Table

4.25 The Summary Action Plan is described in the Table below. Modal Split Targets will be determined following on from the first Residential survey shortly after full occupation, typically within the first six months. This will be part of the role of the Travel Plan Coordinator. This will show existing travel patterns with realistic targets set to improve the modal split of Residents.

	Initiative	Impact on Delivery	Difficulty Delivering	Current Modal Split	Target MS
Residents Initiatives	Walking	Medium	Low	TBC	TBC
	Cycling	Medium	Medium	TBC	TBC
	Public Transport	High	Low	TBC	TBC
	Other	Medium	Medium	TBC	TBC
	Car - Sharing	Medium	Medium	TBC	TBC
	Cars - 1 Passenger Only	High - Negative	High	TBC	TBC
Promoting the TP	Marketing the Plan	High	Low	Driven By TP Coordinator	
	Measuring Success	High	Medium	Annual Surveys	

Action Plan Summary Table

5.0 IMPLEMENTING THE PLAN

Background

5.1 Setting realistic targets and a sustained approach to the promotion of the Travel Plan is important if the measures are to be successful. The objectives and benefits of the Plan will be made clear and broadcast during the full lifecycle of the Plan.

5.2 The implementation of a successful Travel plan will require the upfront investment of resources. As well as reviewing objectives and initiatives regularly, it is equally important to measure results. This provides an indication of any Plan's success, and ensures that the targets remain realistic.

The Travel Plan Coordinator

5.4 The key objective of this Travel Plan is to ensure that the traffic impacts and car usage associated with the operation are minimised. Achieving this objective will result in a wide array of benefits for the development and its stakeholders.

5.5 To ensure the plan is effective it is essential for a Travel Plan Coordinator to be appointed for the Development upon near 100% occupation.

5.6 It is envisaged that the Coordinator will work closely with residents to enthusiastically promote and market the Travel Plan. As Residents will be the focus of the plan; their involvement must be sought from the outset.

5.7 To support the Travel Plan Coordinator's efforts, the Management Company must ensure that they have sufficient time to carry out their duties. In addition, it is essential that the powers of decision making are bestowed upon him/her, along with a suitable budget and programme for implementation.

Promoting the Travel Plan

5.9 Active promotion and marketing is needed if the Travel Plan is to have a positive impact on stakeholder travel patterns to and from the site.

5.10 All marketing initiatives should be focused on areas where there is willingness to change. Such information has been extracted from the questionnaires and has been described in Section 3 of this Plan.

- **Identify the Aim** – e.g. to reduce low occupancy car commuting, school, and business travel & to promote active travel, public transport & alternatives to travelling by car.

- **Brand the Plan** – as part of communicating the Travel Plan, visually brand all work relating to it with a consistent look, slogan, identity or logo.

- **Identify the Target Audience** – 'segment the audience' (e.g. shift workers, school travel, sedentary workers, people travelling long/ short distances, mode used, members of a walking club or green team) so you can target the message and events towards these different groups.

5.11 As part of the marketing process, the Travel Plan coordinator can personalise a plan for the Development, drawing attention to the benefits of participation and support for its implementation.

5.12 The Coordinator can identify communication tools and networks used by the different audiences in the Residences, and use these to communicate about travel.

5.13 Promotional material regardless of its quality is only as good as its distribution network; material incentives assist greatly in introducing people to alternative modes of commuting.

5.14 The plan should not be anti-car - it should be about promoting equity among modes and offering choice and accessibility.

5.15 The Coordinator can promote positive messages associated with a plan, for example, reduced tax/PRSI payments, getting fit and active, reducing congestion, reducing CO2 emissions and so on, and encourage people to start small – changing one day per week for example, to explore their options.

5.16 Marketing drives which feature individual Residents who have reduced their car use can carry a strong message. This will serve to raise not only the profile of the Plan, but also send a clear message in relation to the Residents commitment to the Plan.

6.0 MONITORING AND REVIEW

6.1 The development forming the subject of this application accords with the principles of sustainable development, being located within clear and easy access to alternative non-car modes of travel as clearly illustrated in Section 2. With the levels of car parking provided, this will also act as a demand-management measure in the promotion of alternatives to the car as a first choice mode of travel. The Management Company, once the development is occupied, will utilise pragmatic measures that encourage safe and viable alternatives to the private car for accessing the development.

6.2 Good Travel Planning is not a one-off event, it is instead an on-going iterative process requiring continued effort. This Preliminary Report assists these efforts by forming an outline framework and providing guidance for its success through identifying the current & future connections that are available. Monitoring and reviewing the initiatives set out within the plan will form a far greater part of the Final Travel Plan itself.

6.3 The key to the Plans success will be the appointment of a ***Travel Plan Coordinator*** for the development, once occupied. They will be vested with total responsibility for implementing the plan. They should be granted the authority and time to execute the Plan, and be provided with sufficient resources to realise the Plans success.

6.4 As Residents are the focus of the plan; their involvement should be sought from the outset following occupation. To this end, the Plan Coordinator should be assisted and supported by the Management Company and Residents. This will serve to spread the work load, and also give the Residents a valuable input into the operation of the Plan.

6.5 Successful Travel Plans require extensive marketing **and** regular review. The measures set out in the Action Plan Summary Table (Chapter 4) should form the basis of a sound, realistic Plan and should be clearly set out and be fully transparent to all users.

6.6 Residents also have an essential responsibility in terms of co-operating with, and taking an active part in the plan. They are, after all, the plan's primary focus.

6.7 It is recommended that the Final Travel Plan be set in motion at full occupation. The plan should evolve and develop with the development, taking into account changing Residents and their travel preferences and needs.

6.8 Annual reviews of the Plan should include a full stakeholder survey, providing valuable information for target setting and marketing target groups. It is emphasised that failing to meet initial targets should not be seen as failure, as the preliminary 12 to 18 months of the plan should be viewed as a calibration exercise for target setting.

consulting engineers

NRB

Preliminary
Travel Plan
(Mobility Management Plan)

Appendix K

For

Large Scale Residential Development

at

Wellwood Housing Site, Tyrells Rd, Puttaghan, Tullamore.

FINAL ISSUE

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

Registered in Ireland No. 491679

Contents

1.0 INTRODUCTION

1.1 NRB Consulting Engineers have been commissioned to prepare a Preliminary Travel Plan (or Mobility Management Plan) for an application for a Large Scale Residential Development on lands at Puttaghan, Tullamore, Co Offaly, in order to explain the applicants commitment to the promotion of more sustainable and cost effective travel habits among the end occupiers/residents of the scheme.

1.2 ***As it needs to measure initial modal splits and set targets, it should be recognised that a Travel Plan/Mobility Management Plan prepared at planning application stage, when the development is un-built and unoccupied, can only highlight the current and proposed Alternative Transport initiatives in place at the site, and set out the applicant's commitment to the promotion of sustainable transport measures. It is intended that a working MMP will be prepared following completion and occupation, in the event of a grant of planning permission***.

What is a Travel Plan?

1.3 Originally and elsewhere called Mobility Management Plans (MMPs), they originated in the United States and the Netherlands in the late 1980s. In the US, employers over a certain size (generally over 100 employees) were required to implement 'Trip Reduction Plans' in order to reduce single-occupancy car commuting trips, and to increase car occupancy.

1.4 A MMP or Travel Plan (TP) consists of a package of measures put in place by an organisation to encourage and support more sustainable travel patterns among residents, staff and other visitors. Such a plan usually concentrates on commuting patterns. In essence, a TP is useful not only to reduce the attractiveness of private car use, but also for the ability to promote and support the use of more sustainable transport modes such as walking, cycling, shared transport and mass transit such as buses and trains.

Aims and Objectives of this Travel Plan

1.5 The package generally includes measures to promote and improve the attractiveness of using public transport, cycling, walking, car sharing, flexible working or a combination of these as alternatives to single-occupancy car journeys to work. A TP can consider all travel associated with the residential or work site, including business travel, fleet management, customer access and deliveries. It should be considered as a dynamic process where a package of measures and campaigns are identified, piloted and monitored on an on-going basis. This MMP recognises the fact that, for some people, car use is often essential as part of the home-work commute, as the work commute is often combined with other important trips, for example having to drop children to school or crèche on the way.

1.6 The changes which are being sought as part of any plan may be as simple as car sharing one-day per week, or walking on Wednesdays, or taking the bus on days which do not conflict with other commitments, leisure or work activities.

1.7 It is envisaged that once in place, the Travel Plan will enable the following benefits to be realised for the Residential Development:

- Reduced residential car parking demand and reduced congestion on the local road network due to lower demand for private transport and/or more efficient use of private motor vehicles,
- Improved safety for cyclists and pedestrians,
- Direct financial savings for those taking part in the developed initiatives, through higher than average vehicle occupancy rates,
- A reduction in car parking & car set-down demand, resulting in improved operational efficiency and safety for all,
- Improved social networking between all those participating in the shared initiatives,
- Improved environmental consideration and performance,
- Improved public image for the development, which sets an example to the broader community and may lead to residents making better travel decisions in the future,
- Improved health and well-being for those using active non-car transport modes,
- On-going liaison with the Local Authority and public transport providers to maintain, improve, and support transportation services to and from the site,
- Improved attractiveness of the development to prospective residents,
- Optimal levels of safety for all residents and visitors.

Methodology

1.8 As part of this Travel Plan, reference has been made to the following documents:

- Your Step By Step Guide To Travel Plans (NTA 2012);
- Achieving Effective Workplace Travel Plans (NTA 2011);
- Traffic and Transport Assessment Guidelines (TII);
- Traffic Management Guidelines (DoELG, 2003);
- Mobility Management Plans – DTO Advice Note (DTO, 2002);
- The Route to Sustainable Commuting (DTO 2001);
- Smarter Travel: A Sustainable Transport Future (DOT)

1.9 Consultation with key stakeholders is an essential part of any Travel plan. As discussed below, as part of the operational phase of this development, a Travel Plan Coordinator Role will be appointed from with the Development Management Company. Following on, once occupied, Residents will be asked to complete detailed questionnaires on essential data in relation to their existing travel patterns. This information will be used to inform the ongoing implementation, monitoring and review of the plan for this development.

1.10 This information will then be used as the basis for an assessment, drawing conclusions and recommendations.

2.0 ACCESS TO THE SITE - BY MODE

2.1 The development consists of a total of 90 residential houses, 20 private residential apartments, 38 age-friendly assisted living units plus an ancillary Crèche, all on appropriately zoned lands at Puttaghan, Tullamore, Co Offaly. A location plan is shown below as ***Figure 2.1***.

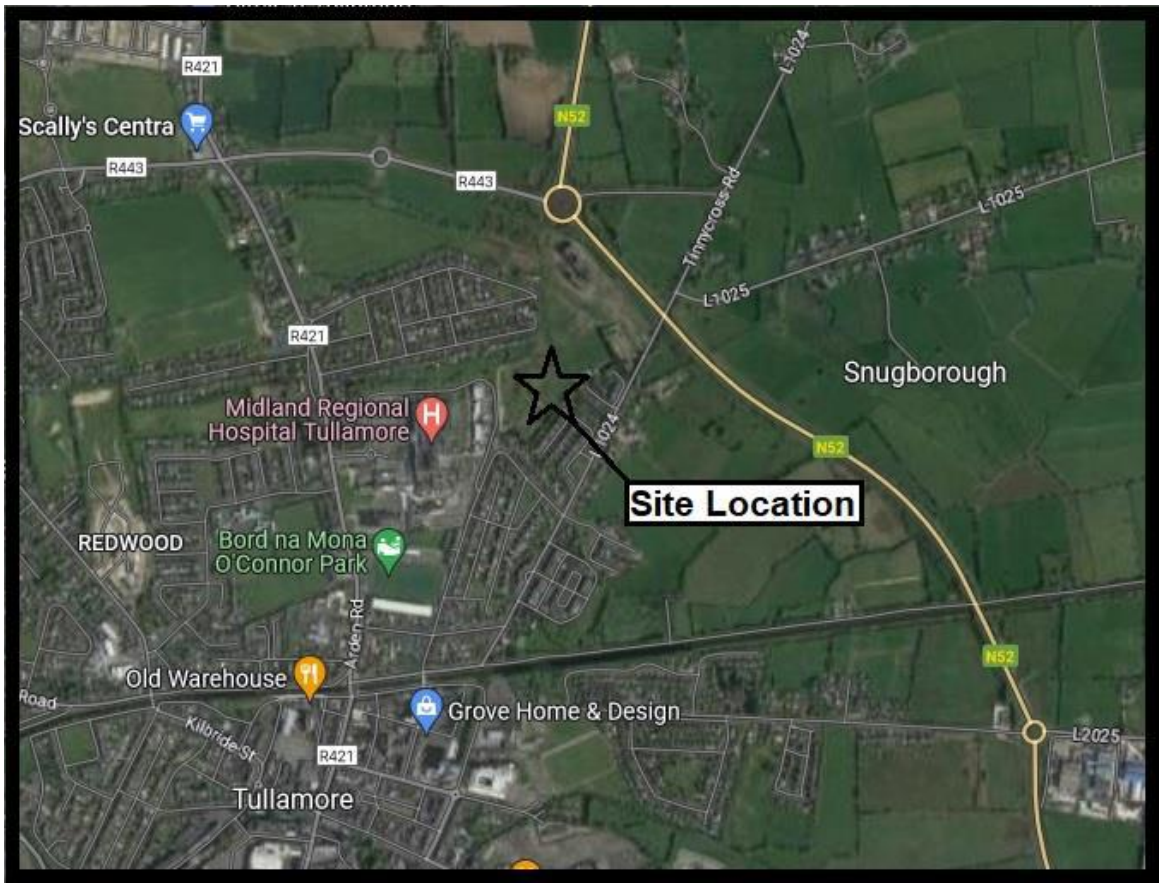


Figure 2.1 – Site Location Map

2.2 When implemented, it is essential for successful Travel Planning to concentrate on journeys associated with work & school commuting patterns. These are the groups which can most practically be encouraged to use modes of transport other than the car.

2.3 Notwithstanding this, the development is located in the heart of Tullamore urban area and is in very close proximity to the range of services in the town.

Cycling & Pedestrian Facilities

2.4 As part of 'Cycle Connects', the National Transport Authority (NTA) has produced a future Cycle Network Plan for Offaly and for the urban area of Tullamore. An extract is provided below as ***Figure 2.2*** showing the high quality network of cycle links connecting the site with the Tullamore urban area and beyond. The Plan key extract for the network is included as ***Figure 2.3***

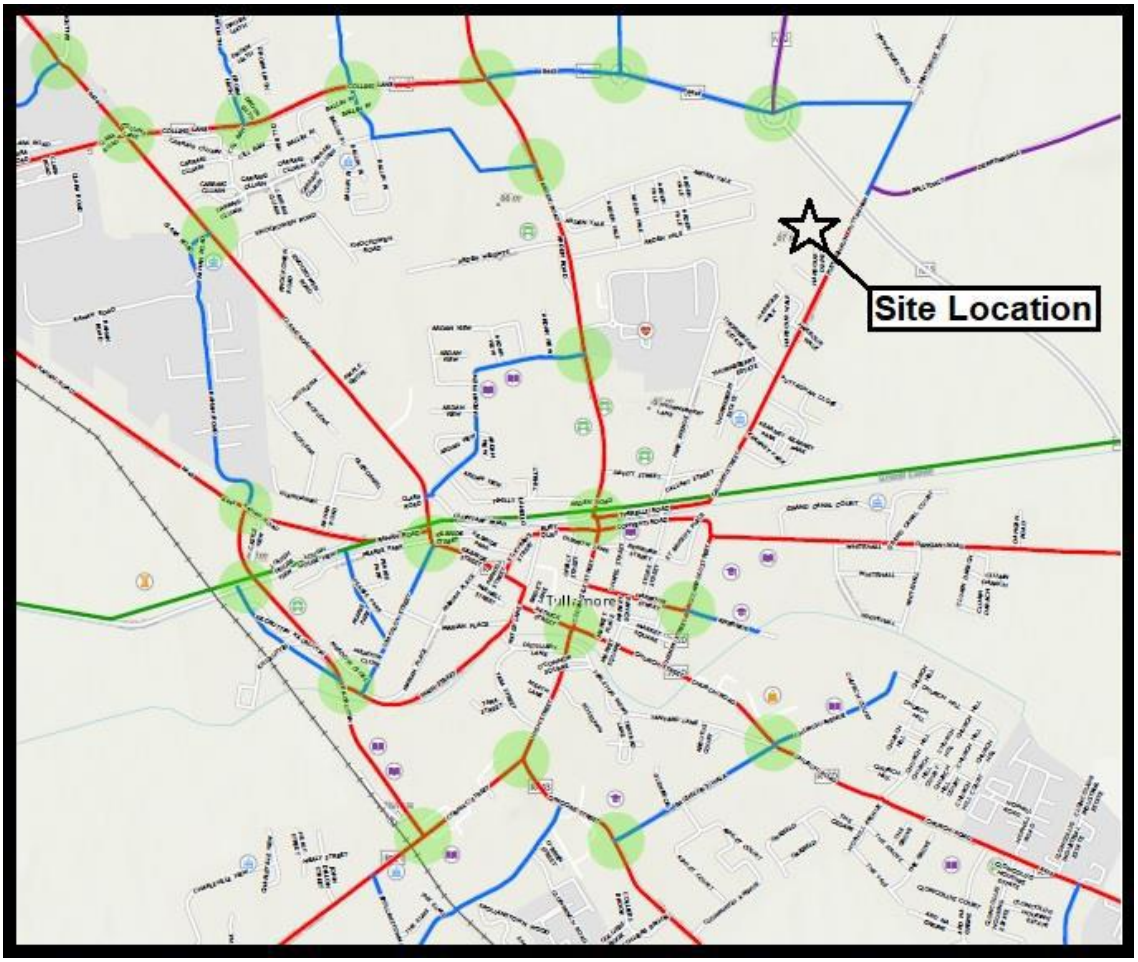


Figure 2.3 – 'Cycle Connects' Plan for Tullamore

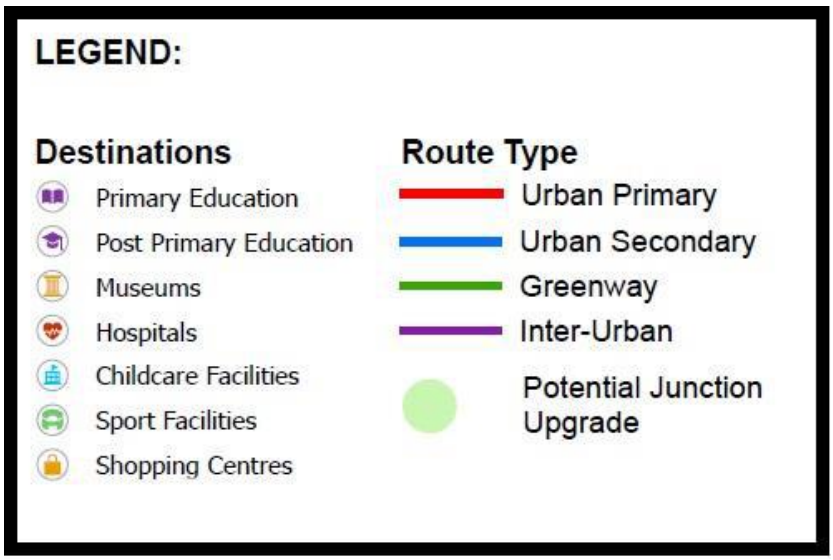


Figure 2.4 – 'Cycle Connects' Key for Plan

2.5 The plans include an Urban Primary Route running immediately adjacent the site in the N-S orientation along the L1024. This links to the Urban Secondary Route to the north and the Greenway along the Canal to the south. The site is therefore clearly ideally located to benefit from and contribute to the cycle facilities for the town.

2.6 The Urban Cycle Network links into the overall Offaly County Cycle Network Plan, an annotated extract from which is included below as ***Figure 2.5***

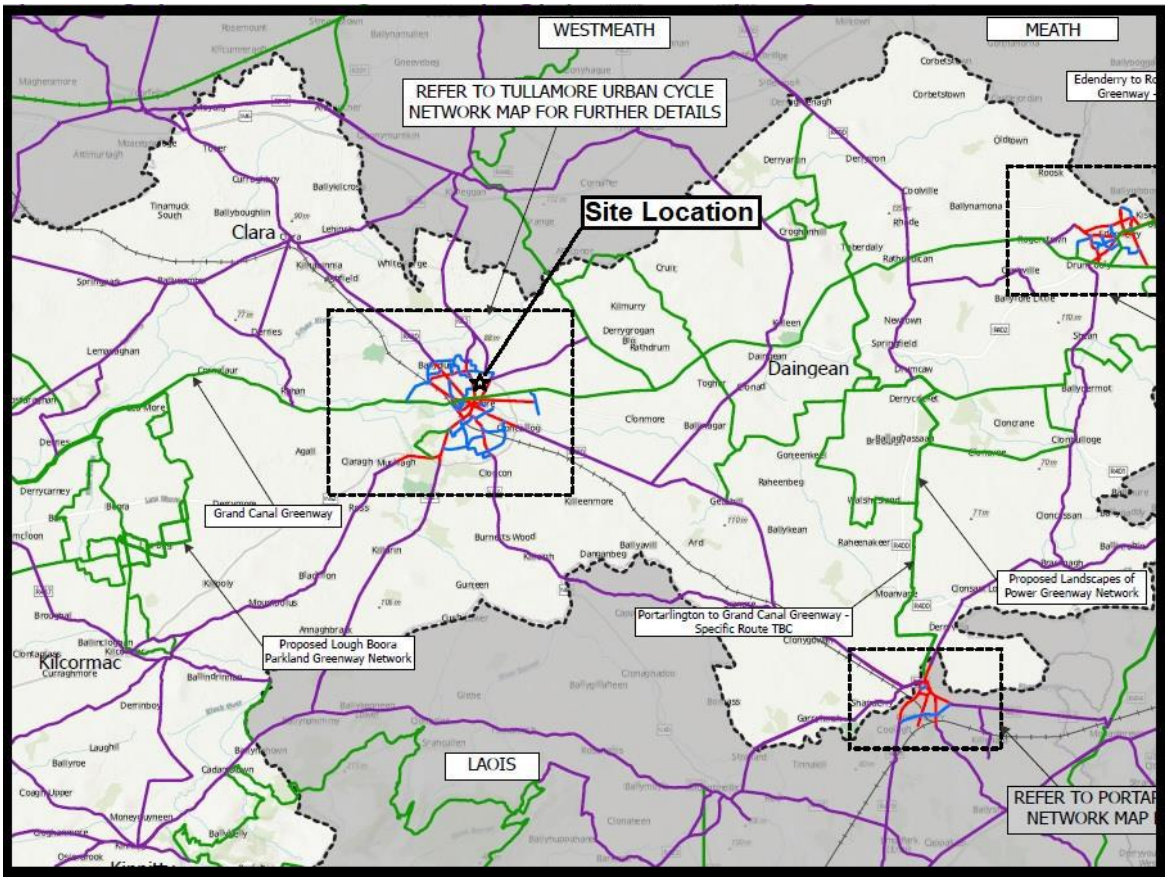


Figure 2.5 – Offaly County 'Cycle Connects' Network Plan Extract

2.7 The use and viability of the local improved cycle network services will therefore be enhanced through the encouragement of the use of bicycles and through the demand management control of controlled car parking provision on the site.

2.8 It is clear from ***Figure 2.3*** and ***Figure 2.5*** above that the site will be bounded by primary, secondary and Greenway routes linked to the development along the L1024.

2.9 The location of the proposed development is ideal in terms of encouraging **walking**. The proximity to the town centre and local employment hubs means that walking will be an attractive alternative option for the vast majority of residents. In addition, being located within easy walk distance of the town centre shops reduces the need to travel by car and will assist in encouraging walking and cycling. The proximity to the town centre is illustrated in the annotated Google Streetview extract below as ***Figure 2.6*** which confirms a 19min walk distance to O'Connor Square (considered to be the heart of the town centre).

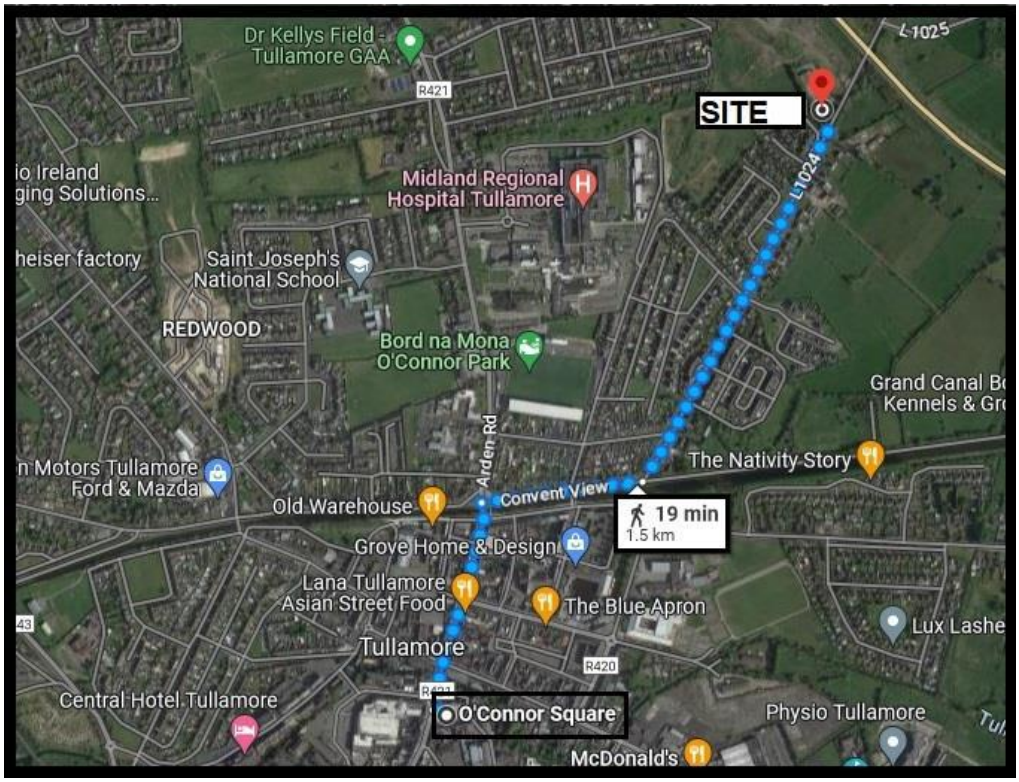


Figure 2.6 – 19 Min Walk Distance to O'Connor Square

2.10 The national objective is to cultivate a walking and cycling culture, through the implementation of appropriate infrastructure and promotional measures, which positively encourages all members of the community to walk or cycle at all life stages and abilities, as modes of sustainable transport that delivers environmental, health and economic benefits to both the individual and the community.

2.11 To help meet the target set in Ireland's first National Cycle Policy Framework launched in April 2009 (that 10% of all journeys will be by bike), the following will assist:

- Improve cycling conditions on primary cycle routes locally as per the enclosed details,
- Develop new cycle route/ greenways through parks and open spaces,
- Improve connectivity/permeability from cycle routes to key destinations,
- Provide 30kph zones within residential areas and other suitable locations,
- Provide new secure cycle parking,
- Continue cycle training in schools,
- Ensure that cycling is a key element of all development, and,
- Monitor trends in cycle numbers using cycle counter data.

2.12 The local infrastructure plans support the specific objectives in the National Cycle Policy Framework. The proposed residential development on the subject site, through good design, will assist in the promotion of cycling and walking as primary modes of travel.

2.13 For journeys greater than 8km, it is recognised that a modal shift to cycling could be achievable for some, but not all, and options such as public transport and car sharing should be considered. Journeys up to 8km could be undertaken by bicycle and journeys up to 3-4km could be undertaken by walking or cycling.

2.14 We include below a simple annotated Google Streetview image showing both the 2km and 8km iso-distance radii from the site.

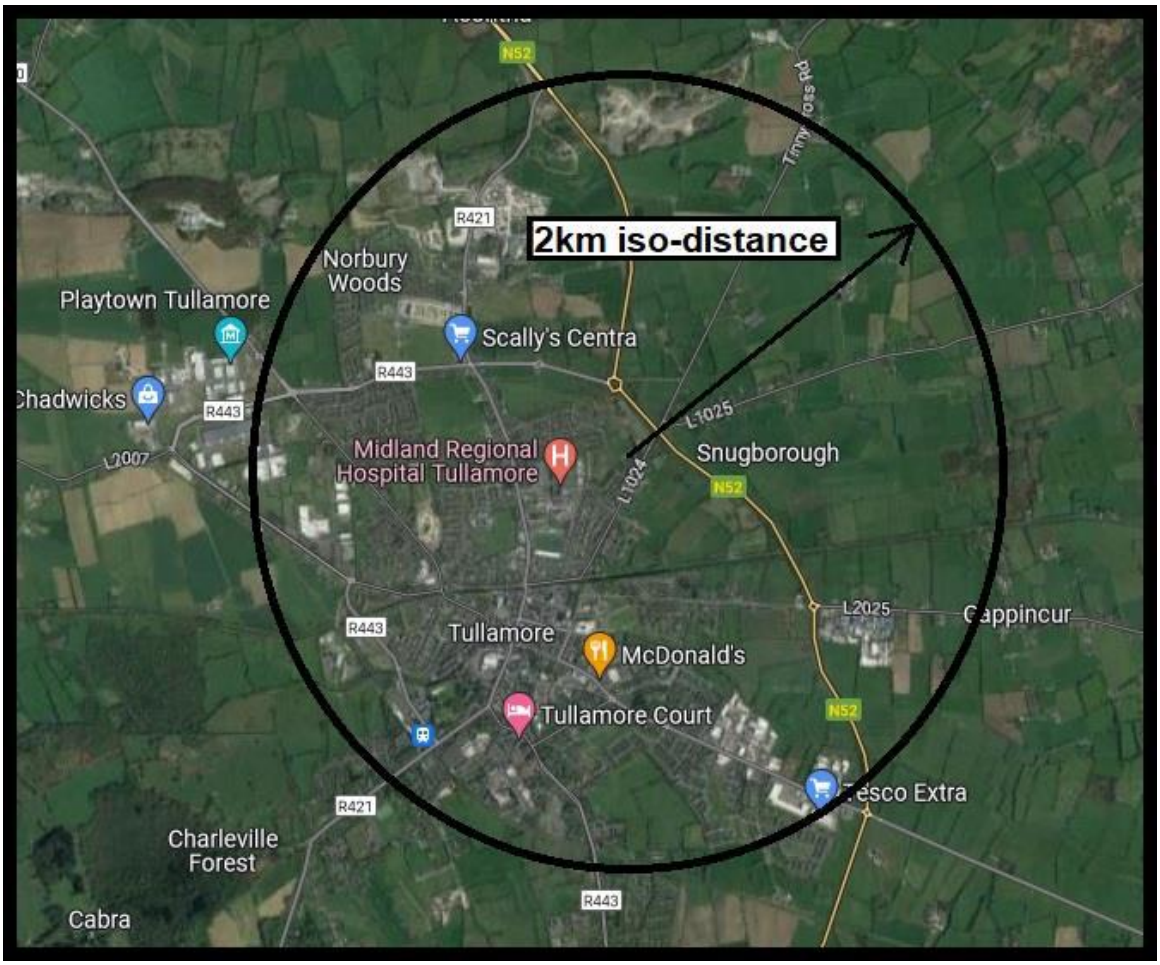


Figure 2.7 – Approximate 2km Iso-Distance of Site (Walk/Cycle)

Figure 2.8 – Approx 8km Iso-Distance of Site (Cycle)

BUS

2.15 The site is immediately adjacent Bus Stops with local town services connecting with the Puttaghan area. The proximity of the site to the bus stops is depicted on ***Figure 2.9*** below.

Figure 2.9 – Walk Distance to Local Bus Stops/Services

2.16 The local bus services provides a link to the town centre, the railway station and to other local and regional bus services connecting to Tullamore.

Train Services

2.17 Tullamore Train Station is located on the edge of the town centre, within easy access to the subject site. The daily commuter service to Dublin is popular. The journey from Tullamore to Dublin by Train is 83 km and takes 1 hour 49 min. There are 48 connections per day, with the first departure at 05:44 and the last at 20:14.

2.18 With the number of transport alternatives easily available to Residents, it is considered that the proposed development site is therefore **highly sustainable** in terms of public and alternative transport accessibility. The proximity of the development to these services means that all residents will have viable alternatives to the private car for accessing the site and will not be reliant upon the car as a primary mode of travel.

Car & Cycle Parking

2.19 The residential housing will have secure cycle parking provided within their own private demise, as per normal practice. For the Apartments elements, the Residential Apartment Guidelines recommends a high cycle parking requirement. The Guidelines recommend 1 cycle parking space per bedroom plus 1 visitor space per 2 residential units, and therefore it is proposed to provide secure cycle parking spaces along with secure surface level cycle parking within the development consistent with the Guidelines.

2.20 It is expected that a very significant number of residents will be willing to cycle to work or school, if safe links and secure parking are in place, and that is reflected in the provision of large number of dedicated cycle parking spaces. Once occupied, advice can be provided on routes by the appointed Travel Plan Coordinator, possibly with the help of a bicycle user group. This can be further facilitated in consultation with OCC, as the ongoing provision of local cycle infrastructure and facilities is fully implemented.

2.21 It is acknowledged that cyclists need to be confident that their cycles will not be tampered with while they are in storage. With this in mind, it is proposed to install the cycle parking with racks which allow both frame and wheels to be secured. These cycle racks are located in an active, well lit & security monitored place or where they can be seen by passive surveillance, either directly, or by closed circuit television.

2.22 Public transport maps and timetables can be provided in prominent locations on site and the information will be kept up to date by the appointed Travel Plan Coordinator, a role for the Management Company.

2.23 Working Residents are generally now offered the opportunity to purchase public transport commuter tickets under the current ‘Employer Pass’ and ‘TaxSaver’ programmes, by individual Employers. Under these schemes the employer applies to Iarnród Éireann / Bus Éireann for tax free public transport tickets for their employees as an incentive for them to use public transport to travel to work.

2.24 With this in mind, the main focus of this Travel Plan will be to promote and support the use of alternative modes to the private car.

3.0 COLLECTION OF BASELINE INFORMATION

Possible Travel Pattern Questionnaires

3.1 The development comprises a mix of private residential accommodation, age friendly living and a creche, which will have a relatively small element of staffing.

3.2 Once occupied and operating, and when the Travel Plan Coordinator is appointed, the occupiers of the proposed development will be encouraged to continually monitor the Travel Plan initiatives in order to maximise on their success.

3.3 Shortly after occupation of the new development, a detailed travel-questionnaire will be compiled and distributed to Residents for completion. The aim of the travel questionnaire will be to establish travel patterns between work and home and school travel demand. The information gathered from this survey will be used to inform the further development of the Travel Plan.

3.4 The Baseline Survey information will also allow the Travel Plan Coordinator for the development to set realistic modal-split targets for the development.

3.5 It is anticipated that, given the sustainable location and good transport links at this development, combined with the limited car parking on site, there will be a high percentage of use accessing via public and alternative transport. The Travel Plan will need to maintain this positive modal split and improve it, where possible. It is informative to note that the "Smarter Travel: A Sustainable Transport Future" (DOT) Objective for 2020 is to achieve a reduced work related commuting by car modal share of 65% to 45%.

3.6 The Travel Plan is not seeking a radical change in terms of a modal shift; it is recognised that the use of the car is often essential for many users. Instead, the Plan seeks small but consistent increments of change in our approach to, and the use of, alternatives to the car.

4.0 THE TRAVEL PLAN

4.1 The successful implementation of a Travel Plan will ensure that, in-so-far-as-possible, the impacts of this traffic are reduced and minimised where practical, while providing a number of environmental and economic advantages detailed below.

4.2 The following sub-sections detail the available initiatives which will serve to better manage travel demand, and therefore the traffic impact of work-related journeys, focused on the movement of residents during peak times.

Walking

Walking - Key Information	
Approx Zone of Influence	3.5km
Percentage of Residents working in area of influence	TBC in each survey when occupied
Percentage of Residents interested in Walking	TBC in each survey when occupied

Table 4.1 – Key Information: Walking

4.4 There are many local, global, and personal benefits to walking to work, a few of which are listed following:

- **W** - Wake Up! - Studies have shown that people who walk to work are more awake and find it easier to concentrate.
- **A** - Always one step ahead - Walking makes people more aware of road safety issues and helps them develop stronger personal safety skills.
- **L** - Less congestion - If you leave the car at home and walk, there are fewer cars on the road which makes it safer for those who walk and cycle.
- **K** - Kinder to the environment - By leaving the car at home you are reducing the amount of CO 2 produced and helping to reduce the effects of climate change and air pollution.
- **I** - Interpersonal skills - Walking to work or school can be a great way to meet other walkers, share the experience, and develop personal skills.
- **N** - New adventures - Walking to work or school is a great way to learn about your local environment and community. It's also a fun way to learn about the weather, landscape, and local ecosystems.
- **G** - Get fit and stay active - Walking to and from work or school helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.

4.5 Most adults will consider walking a maximum of 3.5 km (Approx 30/40 minutes) to work. Residents working within a 3.5 km radius of the site will be encouraged to walk to work as often as their schedule permits. Similarly school trips can be encouraged on foot.

4.6 The following initiatives and incentives can be used to encourage walking to work or school:

- Take part in a 'Pedometer Challenge' which is organised through the Irish Heart Foundation or Smarter Travel Workplaces;
- Organise special events such as a 'Walk to work/school on Wednesdays' where participants are rewarded for their participation;
- Keep umbrellas in public areas on a deposit system for use when raining;
- Display Smarter Travel Workplaces Accessibility Walking maps on notice boards areas so Residents can plan journeys;
- Organise lunch time or afternoon walks as part of a health and well-being programme;
- Highlight the direct savings gained due to reduced use of private vehicles.

Cycling

Cycling – Key Information	
Approx. zone of influence	10km
Percentage of Residents Surveyed known to Work within the area of influence	TBC in each survey when occupied
Percentage of Residents interested in cycling	TBC in each survey when occupied

Table 4.2 : Key Information - Cycling

4.7 Research suggests that cycling is a viable mode of transport for people who live up to 10 km from work or school.

4.8 Cycling is a great way to travel. It helps foster independence, raises awareness of road safety, and helps the environment.

4.9 Some positive aspects of cycling to work or school are listed following:

- **C** - Cycling is fun! - Cycling is a great form of transport but it's also a great recreational activity. Cycling is a skill that stays with you for life and it's a fantastic way to explore your local community.
- **Y** - You save time & money - cycling to work reduces the need to travel by car thus reducing fuel costs and freeing up road space for more cyclists;
- **C** - Confidence building - travelling to work as an independent cyclist can give

people increased confidence proving beneficial in all aspects of life;

- **L** - Less congestion - If you leave the car at home and cycle to work there are fewer cars on the road which makes it safer for those who cycle and walk to work or school;
- **I** - Interpersonal skills - Cycling to work or to school can be a great way to meet other cyclists and share the experience;
- **N** - New adventures - Cycling to work or school is a great way to learn about your local environment and community. It helps people to understand where they live and how their actions affect their local environment;
- **G** - Get fit and stay active - cycling to and from work or school helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.

4.10 The provision of enhanced and attractive cycle parking facilities at the site will clearly play a critical role in promoting journeys by bicycle.

4.11 The following initiatives and incentives can be used to encourage cycling to work and school:

- New cycle parking installed within the development, secure and well lit;
- It will publicise cycle parking availability by way of signage and on notice boards;
- It will display maps on notice boards areas so people can plan journeys;
- The development can provide free cycle accessories (panniers, lights, visi-vests, helmets) in periodic draws for cyclists,
- The Travel Plan Coordinator can organise cycle training sessions on site on the rules of the road and the specific risks associated with the locality;
- The Travel Plan Coordinator can invite bike suppliers on site for a ‘Green Day’ or ‘Green Week’ so that people can try bikes before buying;
- The Travel Plan Coordinator can set up a Bicycle User Group (BUG) to promote cycling;
- The Travel Plan Coordinator can highlight the direct savings gained due to reduced use of private vehicles;
- The Travel Plan Coordinator can encourage residents to take part in National Bike Week, see www.bikeweek.ie.

Public Transport

Public Transport – Key Information	
Approx. zone of influence	All Residents
Percentage of Residents in area of influence	100%
Percentage of Residents using Public Transport	TBC in each survey when occupied

Table 4.3: Key Information: Public Transport

4.12 There are many benefits to taking public transport, some of which include:

- Personal Opportunities – Public transportation provides personal mobility and freedom;
- Saving fuel – Every full standard bus can take more than 50 cars off the road, resulting in fuel savings from reduced congestion;
- Reducing congestion – The more people who travel to work or to school on public transport, especially during peak periods, the less people travelling by private car;
- Saving money – Taking public transport to and from work or school is a lot cheaper than travelling by car and saves the cost of buying, maintaining and running a vehicle;
- Reducing fuel consumption – A full standard bus uses significantly less fuel per passenger than the average car;
- Reducing carbon footprint – Public transport is at least twice as energy efficient as private cars. Buses produce less than half the CO2 emissions per passenger kilometre compared to cars and a full bus produces 377 times less carbon monoxide than a full car;
- Get fit and stay active - Walking to and from work or school to public transport helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.
- Less stress – Using public transport can be less stressful than driving yourself, allowing you to relax, read, or listen to music.

4.13 The following initiatives and incentives can be used to encourage people to take public transport:

- Publicise Employee Tax Saver Commuter tickets, which offer savings to employers in PSRI per ticket sold and significant savings to employees in marginal tax rate and levies on the price of their ticket;
- Encourage public transport use for travel by promoting smart cards, advertising the availability of these tickets to Residents;
- Publicise the availability of Real Time Information. Real Time Information shows when your bus is due to arrive at your bus stop so you can plan your journey

more accurately;

- Provide maps of local bus routes and the nearest bus stops, LUAS Timetables and Frequencies, and the length of time it takes to walk to them;
- Contact local providers about issues such as location of existing and new bus stops, timing of routes, or where you have market information about a potential new route.

Go-Car/Car Sharing

Car Sharing – Key Information	
Approx. zone of influence	All Residents
Percentage of Residents in area of influence	100%
Percentage of Residents Car Sharing	TBC in each survey when occupied

Table 4.4: Key Information - Go-Car/Car Sharing

4.14 Every day thousands of commuters drive to work or to school on the same routes to the same destinations, at the same time as their colleagues. By car sharing just once a week, a commuter's fuel costs can be reduced by 20%, and in a similar fashion, the demand for work place parking can be reduced by 20%. If every single-occupancy driver carried another driver, there would be 50% less cars on the road at peak times.

4.15 Although use of the car to get to work or to school is essential for a large proportion of people, car sharing schemes have the potential to deliver a significant reduction in private vehicle trips by promoting higher than average occupancy rates for each vehicle.

4.16 A locally run car sharing scheme relies on a database containing workplace information, working hours, and peoples preferences such as gender/driver/passenger and their preferred route to and from work. The car-sharing database can be a map showing where Residents work, a database of car-sharers' details hosted on an organisations intranet site, or an on map-based matching website.

4.17 Car sharing often happens informally, however some participants often prefer a formal scheme such as a Go Car facility which will normally generate a higher take-up for car sharing, and more efficiency in terms of increased occupancy rates. Car sharing is much easier promoted within a community such as is proposed here.

4.18 Encouraging more Residents to share car journeys to work rather than driving alone as well as encouraging more to set up and take part in car sharing/pooling would prove a very effective means of reducing daily car trips to and from the site.

4.19 The following initiatives and incentives can be used to encourage car sharing:

- Provide incentives to sign up to a car sharing scheme with preferential parking spaces in the most convenient location;
- Draw up a car-sharing policy for how the scheme will operate, and issue car-sharing permits to those qualifying to use the car-sharing spaces;
- Highlight to drivers that they do not have to share with a person that doesn't suit them – allow choice based on gender, route, smoking or non-smoking;
- Clarify the financial implications of the scheme – those accepting a lift could contribute towards fuel costs.
- Use existing online databases for car sharing. For example, the development could set up its own private car sharing site using www.carsharing.ie.
- Allocate parking spaces for use solely by car sharers, for example near to building entrances.

Action Plan Summary Table

4.25 The Summary Action Plan is described in the Table below. Modal Split Targets will be determined following on from the first Residential survey shortly after full occupation, typically within the first six months. This will be part of the role of the Travel Plan Coordinator. This will show existing travel patterns with realistic targets set to improve the modal split of Residents.

	Initiative	Impact on Delivery	Difficulty Delivering	Current Modal Split	Target MS
Residents Initiatives	Walking	Medium	Low	TBC	TBC
	Cycling	Medium	Medium	TBC	TBC
	Public Transport	High	Low	TBC	TBC
	Other	Medium	Medium	TBC	TBC
	Car - Sharing	Medium	Medium	TBC	TBC
	Cars - 1 Passenger Only	High - Negative	High	TBC	TBC
Promoting the TP	Marketing the Plan	High	Low	Driven By TP Coordinator	
	Measuring Success	High	Medium	Annual Surveys	

Action Plan Summary Table

5.0 IMPLEMENTING THE PLAN

Background

5.1 Setting realistic targets and a sustained approach to the promotion of the Travel Plan is important if the measures are to be successful. The objectives and benefits of the Plan will be made clear and broadcast during the full lifecycle of the Plan.

5.2 The implementation of a successful Travel plan will require the upfront investment of resources. As well as reviewing objectives and initiatives regularly, it is equally important to measure results. This provides an indication of any Plan's success, and ensures that the targets remain realistic.

The Travel Plan Coordinator

5.4 The key objective of this Travel Plan is to ensure that the traffic impacts and car usage associated with the operation are minimised. Achieving this objective will result in a wide array of benefits for the development and its stakeholders.

5.5 To ensure the plan is effective it is essential for a Travel Plan Coordinator to be appointed for the Development upon near 100% occupation.

5.6 It is envisaged that the Coordinator will work closely with residents to enthusiastically promote and market the Travel Plan. As Residents will be the focus of the plan; their involvement must be sought from the outset.

5.7 To support the Travel Plan Coordinator's efforts, the Management Company must ensure that they have sufficient time to carry out their duties. In addition, it is essential that the powers of decision making are bestowed upon him/her, along with a suitable budget and programme for implementation.

Promoting the Travel Plan

5.9 Active promotion and marketing is needed if the Travel Plan is to have a positive impact on stakeholder travel patterns to and from the site.

5.10 All marketing initiatives should be focused on areas where there is willingness to change. Such information has been extracted from the questionnaires and has been described in Section 3 of this Plan.

- **Identify the Aim** – e.g. to reduce low occupancy car commuting, school, and business travel & to promote active travel, public transport & alternatives to travelling by car.

- **Brand the Plan** – as part of communicating the Travel Plan, visually brand all work relating to it with a consistent look, slogan, identity or logo.

- **Identify the Target Audience** – 'segment the audience' (e.g. shift workers, school travel, sedentary workers, people travelling long/ short distances, mode used, members of a walking club or green team) so you can target the message and events towards these different groups.

5.11 As part of the marketing process, the Travel Plan coordinator can personalise a plan for the Development, drawing attention to the benefits of participation and support for its implementation.

5.12 The Coordinator can identify communication tools and networks used by the different audiences in the Residences, and use these to communicate about travel.

5.13 Promotional material regardless of its quality is only as good as its distribution network; material incentives assist greatly in introducing people to alternative modes of commuting.

5.14 The plan should not be anti-car - it should be about promoting equity among modes and offering choice and accessibility.

5.15 The Coordinator can promote positive messages associated with a plan, for example, reduced tax/PRSI payments, getting fit and active, reducing congestion, reducing CO2 emissions and so on, and encourage people to start small – changing one day per week for example, to explore their options.

5.16 Marketing drives which feature individual Residents who have reduced their car use can carry a strong message. This will serve to raise not only the profile of the Plan, but also send a clear message in relation to the Residents commitment to the Plan.

6.0 MONITORING AND REVIEW

6.1 The development forming the subject of this application accords with the principles of sustainable development, being located within clear and easy access to alternative non-car modes of travel as clearly illustrated in Section 2. With the levels of car parking provided, this will also act as a demand-management measure in the promotion of alternatives to the car as a first choice mode of travel. The Management Company, once the development is occupied, will utilise pragmatic measures that encourage safe and viable alternatives to the private car for accessing the development.

6.2 Good Travel Planning is not a one-off event, it is instead an on-going iterative process requiring continued effort. This Preliminary Report assists these efforts by forming an outline framework and providing guidance for its success through identifying the current & future connections that are available. Monitoring and reviewing the initiatives set out within the plan will form a far greater part of the Final Travel Plan itself.

6.3 The key to the Plans success will be the appointment of a ***Travel Plan Coordinator*** for the development, once occupied. They will be vested with total responsibility for implementing the plan. They should be granted the authority and time to execute the Plan, and be provided with sufficient resources to realise the Plans success.

6.4 As Residents are the focus of the plan; their involvement should be sought from the outset following occupation. To this end, the Plan Coordinator should be assisted and supported by the Management Company and Residents. This will serve to spread the work load, and also give the Residents a valuable input into the operation of the Plan.

6.5 Successful Travel Plans require extensive marketing **and** regular review. The measures set out in the Action Plan Summary Table (Chapter 4) should form the basis of a sound, realistic Plan and should be clearly set out and be fully transparent to all users.

6.6 Residents also have an essential responsibility in terms of co-operating with, and taking an active part in the plan. They are, after all, the plan's primary focus.

6.7 It is recommended that the Final Travel Plan be set in motion at full occupation. The plan should evolve and develop with the development, taking into account changing Residents and their travel preferences and needs.

6.8 Annual reviews of the Plan should include a full stakeholder survey, providing valuable information for target setting and marketing target groups. It is emphasised that failing to meet initial targets should not be seen as failure, as the preliminary 12 to 18 months of the plan should be viewed as a calibration exercise for target setting.

APPENDIX L

Stage 1 Independent Road Safety/Quality Audit & Designer Feedback Form

Title: **QUALITY AUDIT**

INCLUDING

Stage 1 Road Safety Audit, Access Audit, Cycle Audit, Walking Audit & Non Motorised User Audit.

For;

Proposed Residential Development, Wellwood Housing Site, Tyrells Road, Puttaghan, Tullamore Co. Offaly.

Client: **NRB Consulting Engineers**

Date: **February 2023**

Report reference: **1750R01**

VERSION: **FINAL**

Prepared By:

Bruton Consulting Engineers Ltd

Glaspistol
Clogherhead
Drogheda
Co. Louth.

Tel: 041 9881456
Mob: 086 8067075
E: admin@brutonceng.ie
W: www.brutonceng.ie

CONTENTS SHEET

Contents

1.0 Introduction

This report was prepared in response to a request from Mr. Eoin Reynolds, NRB Consulting Engineers, for a Quality Audit of the proposed large scale residential development at Wellwood Housing Site, Tyrells Road, Puttaghan, Tullamore, Co. Offaly. Kilgallen & Partners are Designer for the scheme and have therefore completed the feedback form.

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

This portion of the Quality Audit is a design stage audit and includes a Stage 1 Road Safety Audit (in accordance with TII Publication GE-DTY-01024, dated December 2017), an access audit, a walking audit, a cycling audit and a non motorised user audit. (i.e. aspects of a quality Audit carried out independent of the Design Team and generally included as appendices to the overall Audit)

The Road Safety and Quality Audit Team comprised of;

Team Leader:	**Norman Bruton,** BE CEng FIEI, Cert Comp RSA.
	TII Road safety Auditor approval number: NB 168446
Team Member:	**Owen O'Reilly**, B.SC. Eng Dip Struct. Eng NCEA Civil Dip Civil. Eng CEng MIEI
	TII Auditor Approval no. OO 1291756

This portion of the Quality Audit involved the examination of drawings and other material and a site visit by the Audit Team, on the 9th of February 2023. The weather at the time of the site visit was dry and the road surface was damp.

The problems raised in this Quality Audit may belong to more than one of the categories of Audit named above. A table has been provided at the start of Section 3 of this report detailing which category of audit each problem is associated with.

Recommendations have been provided to help improve the quality of the design with regard to the areas described above. A feedback form has also been provided for the designer to complete indicating whether or not he/she will accept those recommendations or provide alternative recommendations for implementation.

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

The feedback form is contained in **Appendix B.**

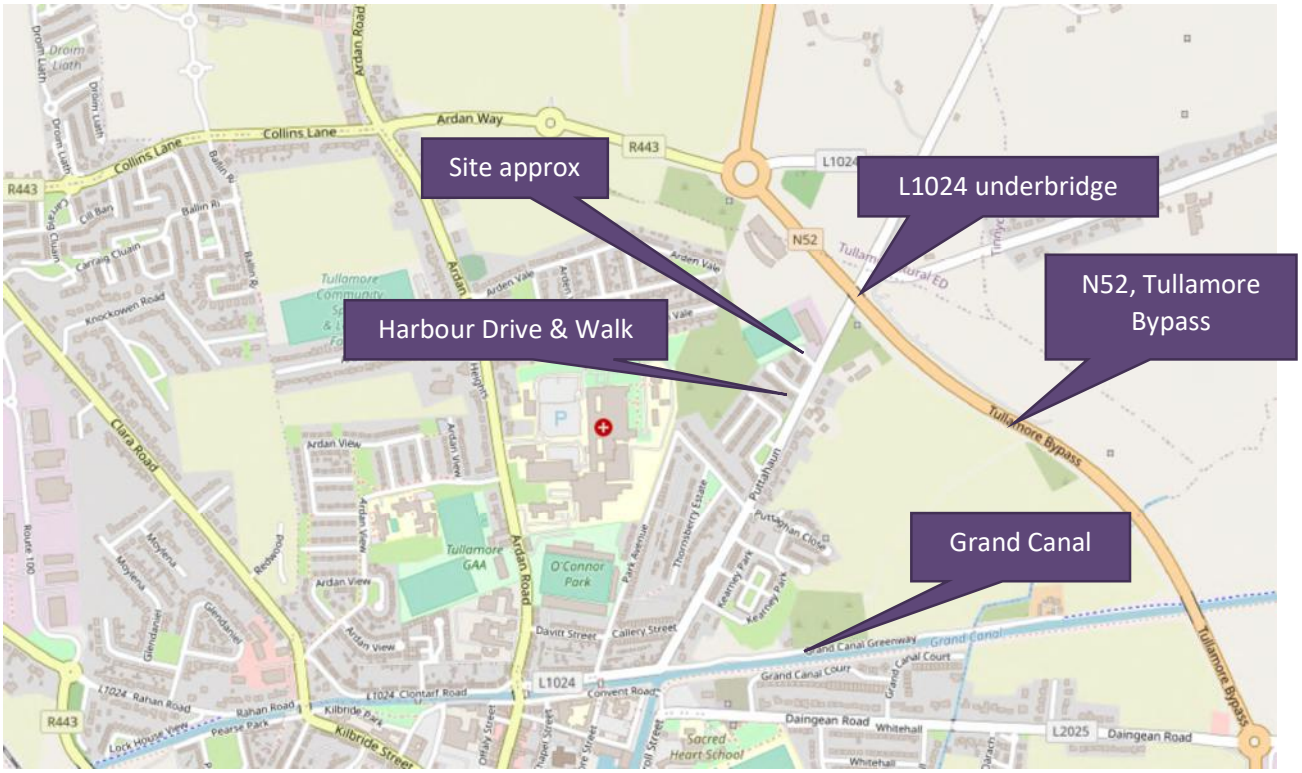
A plan drawing showing the problem locations is contained in **Appendix C**.

2.0 Background

It is proposed to develop a 148unit residential development at the Wellwood lands in Tullamore. Access to the development would be via a simple priority junction onto the L1024 Tinnycross Road.
Tinnycross Road is a relatively straight, flat, single carriageway road and the speed limit is 50km/hr at the location of the proposed junction.
There are proposed pedestrian/cycle links to the existing Harbour Drive, Harbour Walk and Thornsbury Estate/Park Avenue residential developments at the end of the cul-de-sacs and to the rear of the Regional hospital.
Footpaths are proposed on both side of the spine internal road. Raised tables are proposed to provide traffic calming. Shared use homezones are also proposed.

The speed limit within the development will be 30km/hr.

The site location map is shown below.



Site Location Map – image courtesy of openstreetmap.org

The Road Safety Authority's website did not provide collision data at the time of writing of this report due to an ongoing review of policy with regard to making such information available publicly.

3.0 Issues Identified in this Quality Audit

Summary Table of Problem Categories

Problem Reference	Access Audit	Walking Audit	Cycling Audit	Non-Motorised User Audit	Road Safety Audit	Quality Audit
3.1		✓		✓	✓	✓
3.2	✓	✓		✓	✓	✓
3.3	✓	✓		✓	✓	✓
3.4	✓			✓		✓
3.5	✓	✓		✓		✓
3.6	✓	✓		✓	✓	✓
3.7	✓	✓		✓	✓	✓

3.1 Problem

LOCATION

Drawing NRB- TA-001, L1024

ISSUE

There is a utility pole in the existing footpath on the town centre side of the development. This footpath will have greater use when the development is occupied and the pole will be a hazard for pedestrians who may not see it if they are looking down (e.g. looking at a hand held device) or are blind or partially sighted.

RECOMMENDATION

It is recommended that the pole be relocated to the rear of the footpath.

3.2 Problem

LOCATION

Drawing NRB- TA-001, car parking at units 64 & 65.

ISSUE

The car parking spaces outside units 64 and 65 would result in reversing onto a pedestrian crossing and possible collisions with small children who could not be easily seen in rear view mirrors. It could also lead to cracking of the tactile paving resulting in future trip hazards.

RECOMMENDATION

Relocate the parking spaces for these units.

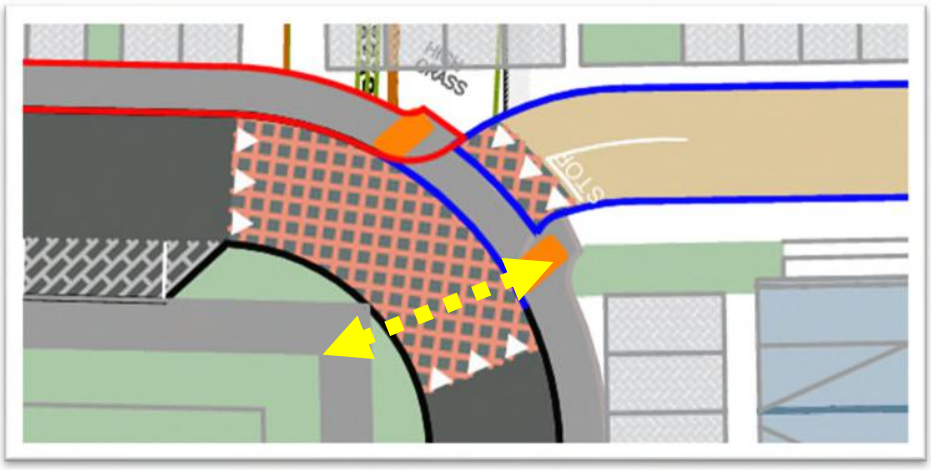
3.3 Problem

LOCATION

Drawing NRB- TA-001, Pedestrian desire line at unit 64.

ISSUE

There will be a pedestrian desire line to cross the internal carriageway adjacent to unit no. 64. There is however a grass verge and possible high kerbs to be crossed which could lead to slips, trips and falls



RECOMMENDATION

It is recommended that an uncontrolled crossing be provided with suitable continuous footpath, suitable height kerbs and tactile paving.

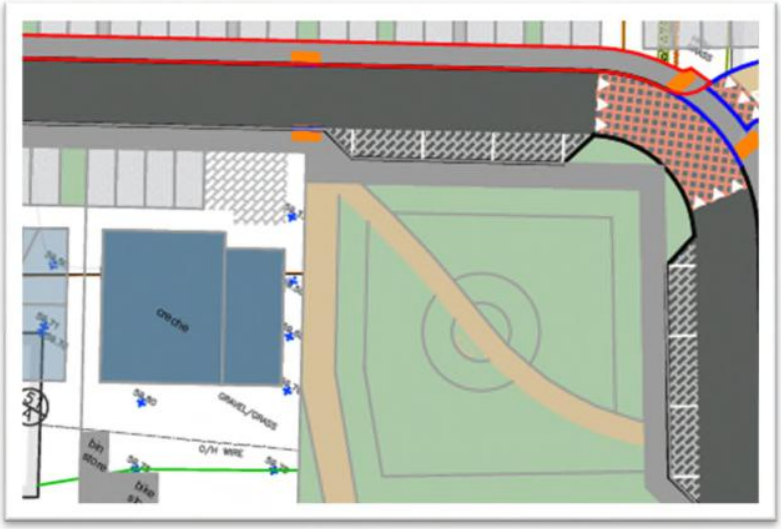
3.4 Problem

LOCATION

Drawing NRB- TA-001, Creche.

ISSUE

There is no proposed disabled parking space provided at the creche. This may lead to inaccessibility for some users.



RECOMMENDATION

It is recommended that a disabled parking bay be provided at the creche site.

3.5 Problem

LOCATION

Drawing NRB- TA-001, Apartments.

ISSUE

It is unclear if there are any routes for pedestrians from parked vehicles on the opposite side of the carriageway at the apartments to access the building without having to cross landscaped areas or high kerbs if all the parking spaces are occupied.

RECOMMENDATION

It is recommended a clear route without obstruction and with hard standing be provided for such users.

3.6 Problem

LOCATION

Drawing NRB- TA-001, Disabled parking spaces.

ISSUE

It is unclear if the disabled parking spaces associated with the apartments are sufficiently sized to have the required buffer zones and if accessibility to the footpath is provided by means of suitable height kerbs.

RECOMMENDATION

Ensure that the disabled parking spaces are readily accessible, have suitable buffer zones and there is flush access to the footpath.

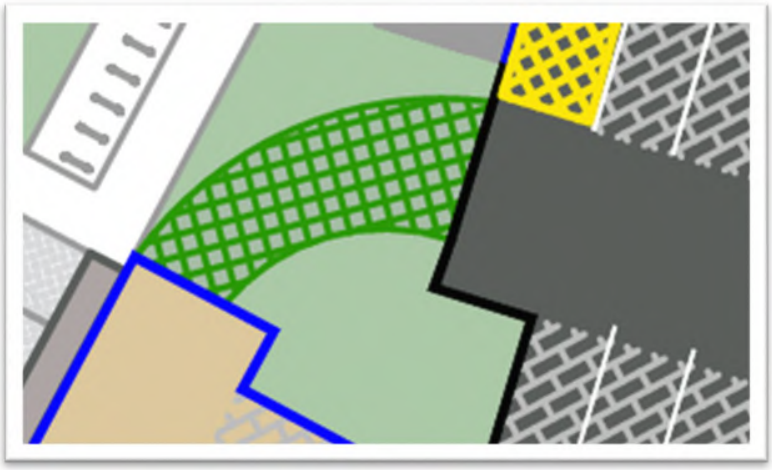
3.7 Problem

LOCATION

Drawing NRB- TA-001, Refuse Vehicles

ISSUE

The swept path analysis for refuse vehicles has not been shown. Given the use of narrow carriageways and tight corner radii on raised tables, there is a risk that the refuse vehicles will overrun the tactile paving resulting to risks to pedestrians and future trip hazards. It is also unclear if refuse vehicles are to use the 'grasscrete' area beside unit no. 1. This may not be designed to take such heavy loading. Lastly it is unclear where the bins associated with the apartments will be left on collection day so that they do not cause a hazard for pedestrians.



RECOMMENDATION

Provide the swept path analysis for the refuse vehicle and shown where bins will be stored on collection day for the apartments ensuring that sufficient space is available.

4.0 Observations

4.1 Observation.

The swept path analysis for emergency and refuse vehicles, drainage details, lighting proposals, details of connections with the adjoining estates and carriageway widths have not been provided to the Audit Team.

5.0 Quality Audit Statement

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

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

Norman Bruton **Signed:** 

(Quality Audit Team Leader) **Dated: 11-4-2023**

Owen O'Reilly **Signed:** 

(Quality Audit Team Member) **Dated: 11-4-2023**

Appendix A

List of Material Supplied for this Quality Audit;

- NRB-TA-001
- NRB-TA-002
- NRB-TA-003

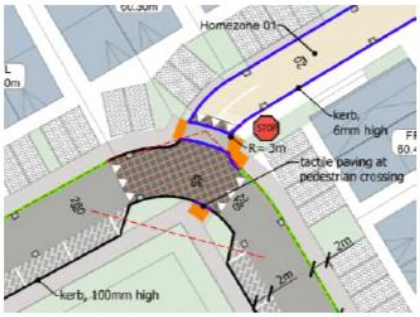
Appendix B

Feedback Form

BRUTON CONSULTING ENGINEERS

QUALITY AUDIT FORM – FEEDBACK ON QUALITY AUDIT REPORT

Scheme: LRD Tullamore
Quality Audit
Date Audit (site visit) Completed, 9-2-2023

Paragraph No. in Quality Audit Report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measures (describe)	Alternative measures accepted by Auditors (Yes/No)
3.1	Yes	Yes	Relocation of Pole will be agreed with Local Authority and Utilities Providers	Yes
3.2	Yes	Yes		
3.3	Yes	Partly	Uncontrolled crossing provided. Footway not continued across raised table over concern that pedestrians may assume they have priority. 	Yes
3.4	Yes	Yes		
3.5	Yes	Yes		
3.6	Yes	Yes		
3.7	Yes	Yes		

Signed..... Date 6th April 2023

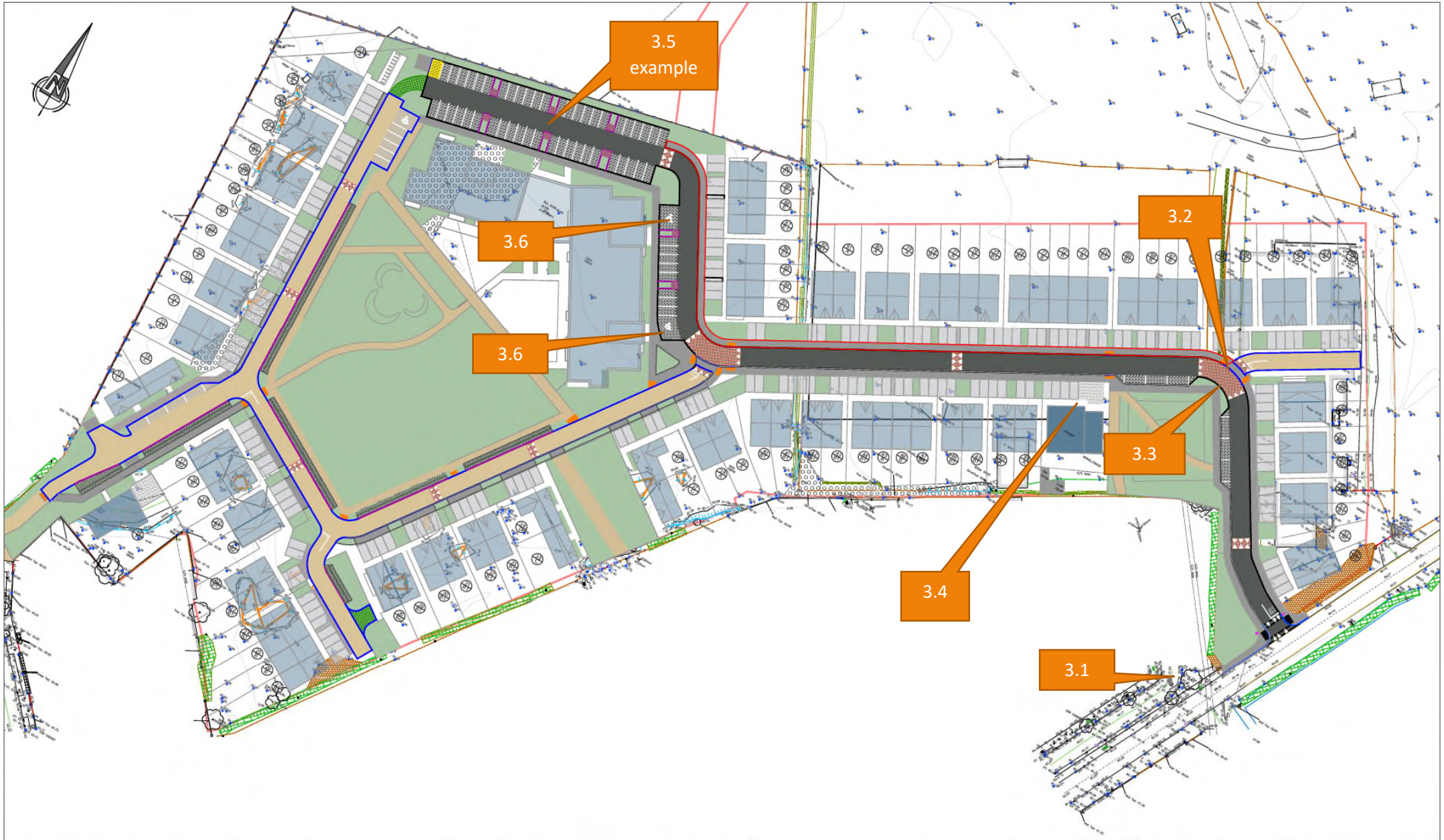
Design Team Leader

Signed..... Date: 11-4-2023

Audit Team Leader

Appendix C

Problem Location Plan.



NRB Consulting Engineers Ltd recommend that Road and land ownership boundaries are verified through Legal & Land searches by the Client.

This drawing is based upon Architects drawing XR 22009 Site Layout_23-02-03, received 13/01/23. NRB Consulting Engineers Ltd shall not be liable for any inaccuracies or deficiencies.

REV	DATE	AMENDMENTS	DRAWN	CHK	APP

NRB Consulting Engineers Ltd
1st Floor, Apollo Building
Dundrum Road
Dundrum
Dublin 14

Phone/Fax: +353 1 292 1941
Email: info@nrb.ie
Web: www.nrb.ie
Registered in Ireland No. 491679

Client

Project: Tullamore Residential Offaly

Title: Proposed Site Layout

Project No.	Drawing No.
22-059	NRB-TA-001

Drawn	Checked	Approved
PB	ER 03/02/23	ER 03/02/23

Date	Scale @ A3	Rev
3-Feb-23	1:1000	A

Purpose of Issue: ☐ Draft ☐ As Built ☐ Information ☐ Tender ☐ Approval ☐ Construction