Proposed Residential Development at Carley's Bridge, Enniscorthy: Traffic and Transport Assessment

For Torca Developments Limited

TRANSPORT INSIGHTS

Final Report

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7	Final TTA v1.23	EM	08/10/2021
8	Updated Draft TTA v2.2	EM	05/04/2022
9	Final TTA v2.3	EM	07/04/2022

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1. Introduction

1.1. Overview

Transport Insights has been commissioned by Torca Developments Limited to provide traffic engineering design support and to prepare a Traffic and Transport Assessment (TTA) in relation to a proposed residential development at Carley's Bridge, Enniscorthy, Co. Wexford.

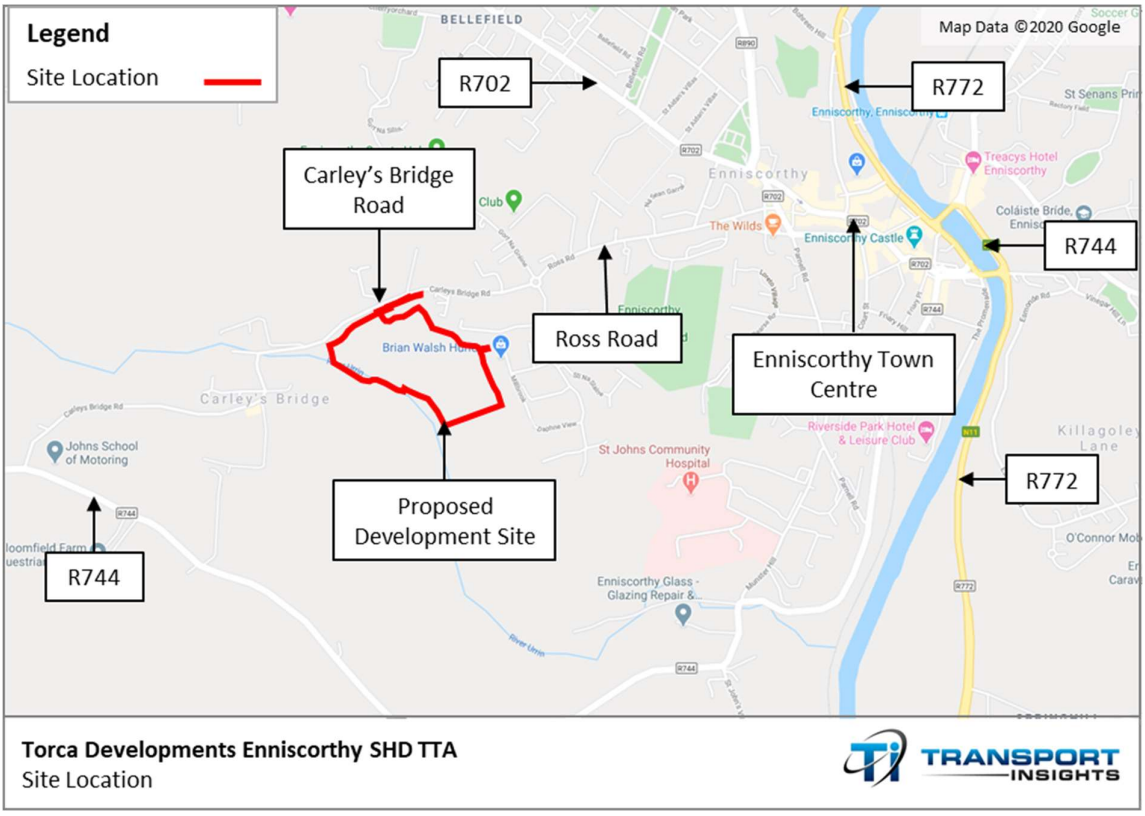
The scope of this TTA is consistent with Transport Infrastructure Ireland's *Traffic and Transport Assessment Guidelines* (May 2014).

1.2. Site Location and Overview of Proposed Development

Site Location

The following Figure 1.1 shows the site's location with respect to key road infrastructure within its vicinity.

Figure 1.1 Site Location



As illustrated in the preceding Figure 1.1, the ca. 8.7-hectare development site is located adjacent to Carley's Bridge Road, ca. 1 kilometre to the west of Enniscorthy Town Centre. The site is currently in agricultural use, with a single gated access onto Carley's Bridge Road.

Overview of Proposed Development

The proposed development, planning permission for which is sought via a Strategic Housing Development (SHD) planning application to ABP, comprises:

- a total of 233 no. residential units in the form of 53 no. houses, 90 no. duplex units, and 90 no. apartments;
- a ca. 290 sqm GFA creche;
- 352 no. car parking bays provided at surface level; and
- 497 no. secure, sheltered cycle parking spaces, also provided at surface level within the development.

Transport related components of the proposed development accord with national best practice, namely the *Design Manual for Urban Roads and Streets* (*DMURS*), *National Cycle Manual (NCM)* and the *Sustainable Urban Housing: Design Standards for New Apartment, Guidelines for Planning Authorities*. A more detailed description of the proposed development, including proposed site access arrangements and internal layout is provided within Section 5 of this Report.

1.3. Recent Planning History

Two planning applications for development of the site were submitted to Wexford County Council (WCC) in 2019, both of which were initially granted permission by the Council, however were subsequently refused by An Bord Pleanála (ABP) following appeal, with a fragmented approach to the development cited as the primary grounds for refusal (WCC Reg. Ref. 201808189, 01284120 ABP Ref 303797-19, 303839-19).

The current development site is effectively an amalgamation of the above two application sites, and an overview of the proposed development is provided below.

April 2022 Planning History Update

An application for 233 no. residential units in the form of 53 no. houses, 90 no. duplex units, and 90 no. apartments, a creche and associated works (i.e. a scheme identical internally to the current proposed development) was submitted to ABP in the form of a SHD planning application on 19 October 2021. Following consideration of the application, ABP refused permission for the scheme on 16 February 2022. One reason was cited for refusal and this reason is reproduced as follows:

Reasons and Considerations

It is considered that, having regard to the fundamental road safety concerns raised as a result of the proposed provision of a raised table on the Carley's Bridge Road, in place of a dedicated pedestrian footpath, and having regard to the limited forward visibility at the location of the proposed raised table, as a result of the variable horizontal and vertical alignment of the Carley's Bridge Road, and having regard to the proposed provision of a vehicle access and egress point close to the location of the existing rural speed limit zone (80 kilometre per hour), and the uncertainty in relation to the altering of same, the proposed development would endanger public safety by reason of traffic hazard.

A breakdown of how ABP's specified grounds for refusal are now addressed within the current application is set out within the following Table 1.1.

Table 1.1 Breakdown of Reason for Refusal and How Addressed in Updated Report

Topic	ABP Decision Breakdown	How Item Addressed in Report/ Elsewhere
Raised Table/ Crossing	"*having regard to the fundamental road safety concerns raised as a result of the proposed provision of a raised table on the Carley's Bridge Road, in place of a dedicated pedestrian footpath…*"	The previously proposed raised table was developed following discussions between WCC and Transport Insights. However, on foot of ABP's decision to refuse permission, this raised table has now been removed from the scheme. In its place is a raised crossing (set out in detail within Section 5.4 of this TTA). The raised crossing is understood to address concerns the Inspector had with respect to the raised table – specifically the length of the raised table which extended to ca. 39 metres along Carley's Bridge Road, and associated road safety concerns with pedestrians traversing such a long raised table. The ABP Inspector described an alternative layout (which was included as an appendix to the previously submitted TTA and which was very similar to what is now proposed) as being "*a far more preferable solution to the issue of connectivity along Carley's Bridge Road…*" (ABP Inspector's Report PP35). Furthermore, the raised crossing has been subject to an independent Road Safety Audit (RSA). Following receipt of a series of comments on the draft layout, the layout has now been amended and independently approved by the auditor. The final Stage 1 RSA for the raised crossing is included in full at Appendix J of this TTA.

Topic	ABP Decision Breakdown	How Item Addressed in Report/ Elsewhere
Raised Table/ Crossing	"*as a result of the variable horizontal and vertical alignment of the Carley's Bridge Road...*"	A full vertical and horizonal forward visibility assessment of vehicles approaching the proposed raised crossing in both directions along Carley's Bridge Road has been undertaken and illustrates the suitability of the proposals. An assessment of intervisibility between vehicles and pedestrians has also been undertaken. These drawings are included to-scale at Appendix I of this TTA.
Speed Limit	"*and having regard to the proposed provision of a vehicle access and egress point close to the location of the existing rural speed limit zone (80 kilometre per hour), and the uncertainty in relation to the altering of same, the proposed development would endanger public safety by reason of traffic hazard.*"	A traffic speed survey has been undertaken at the location of the proposed main vehicle access and egress point. The speed survey, which is set out in detail in Section 4.3 and Appendix B of this TTA, indicates that 85th percentile two-way vehicle speeds are 53.12 km/ h. Average vehicle speeds were recorded as 46.41 km/ h. The posted rural speed limit is therefore not reflective of actual vehicle speeds, or its design speed which has been determined from the speed survey to be 60 km/ h in the vicinity of the proposed site access junction. Changes to the speed limit at this location are academic as the speed of eastbound traffic on Carley's Bridge Road approaching the site access junction is limited due to Carley's Bridge Road alignment to the west of the proposed site access junction. Westbound traffic is limited by being with the existing urban speed limit, in addition to constraints associated with the alignment of the road. For the above reasons, and in order to provide a robust assessment, visibility splays for a 60 km/ h design speed are set out for the proposed site access junction at Figure 5.2, with a to-scale drawing at Appendix K of this TTA. In summary, the revised visibility splays reflecting a robust design speed based on actual traffic speed survey results and illustrate there are no safety concerns at the site access junction.

1.4. Pre-Application Consultation

WCC Pre-Planning Meeting

A pre-planning meeting between representatives of WCC's Planning Department and the Client's design team was held on 02 December 2019 (it should be noted that Transport Insights were not in attendance at this meeting). An extract from minutes of that meeting (relating to *Roads* considerations), issued by WCC on 10 December 2019, is reproduced as follows, with an overview of the response provided within the subsequent Table 1.2.

Roads:

- Details on a lighting design scheme for the proposed development should be included in any subsequent planning application.
- Car parking for each unit should be clearly identified.
- Road Safety Audit will be required with any subsequent planning application to inform the design of the access point.
- Please note that a minimum of a cycle path and footpath will be required.

Table 1.2 Local Authority Pre-Planning Scoping Comments and Response

Topic	WCC Feedback	How Item Addressed in Report/ Elsewhere
Lighting	"*Details on a lighting design scheme for the proposed development should be included in any subsequent planning application.*"	A lighting design scheme, prepared by Lighting Reality, is included within the overall planning pack.
Car Parking	*"Car parking for each unit should be clearly identified."*	Car parking is shared throughout the site in accordance with Section 4.4.9 of DMURS – "*on-street parking on public streets should not be allocated to individual dwellings*".
Road Safety	"*Road Safety Audit will be required with any subsequent planning application to inform the design of the access point.*"	A Stage 1 Road Safety Audit was prepared by an independent road safety auditor and informed the design of the access to the overall site. This RSA is included at Appendix E.
Footpath and cycle path provision	"*Please note that a minimum of a cycle path and footpath will be required.*"	Details of proposed footpaths and cycle paths are set out in Section 5.3 of this Report.

TTA Scoping

Supplementary pre-planning consultation took place with WCC's Roads Department during March/ April 2020, with a Traffic and Transport Assessment Scoping Note (included at Appendix A of this Report) issued to WCC on 05 March 2020, and its contents discussed by telephone on 02 April 2020. A follow up email was received from a representative of WCC's Roads Department also on 02 April 2020, where a requirement for an estimate of traffic at the western end of Carley's Bridge Road at the junction with R744 was outlined. However, it was accepted by WCC that new traffic surveys could not be undertaken at this time due to the impact of COVID-19 restrictions and impact on traffic demand, and that an estimate of traffic on Carley's Bridge Road towards R744 should instead be completed utilising existing traffic survey data collected to date.

WCC Transport Opinion

Following consideration of the Draft TTA (version 1.17 dated 28 May 2020) and other submitted documentation, WCC issued an Opinion dated 30 June 2020. Comments related to two categories – Access and Pedestrian Linkage, as set out in the following Table 1.3.

Table 1.3 Local Authority Transport Opinion and Response

Topic	WCC Opinion	How Item Addressed in Report/ Elsewhere
Access	"*Carley Bridge Road must be extended and upgraded to the proposed development entrance.*"	It is proposed to upgrade Carley's Bridge Road as part of the development proposals with significant pedestrian facilities now proposed (see Section 5.3 for further details).
	"*Full technical details of the upgraded road must accompany any planning application.*"	As above details of the upgrades to Carley's Bride Road as included at Section 5.3 with drawings included at Appendix I.
	"*There is no footpath connection to the lands at present although a path is proposed along the site boundary with the public road. However, there is a section of the road where no footpath is proposed. Design of this missing section is required and will require special development contribution.*"	An additional section of footpath is now proposed along the northern side of Carley's Bridge Road, with this footpath connecting with existing footpath which provides a direct link to Enniscorthy. An access to Millbrook is also proposed.
	"*The access road must be upgraded and footpaths provided prior to the commencement of development on the site.*"	Noted, with the Applicant content for this to be a Condition of planning permission.
Pedestrian Linkage (to Millbrook)	"*The proposed link would have to also provide walking connection for the future residents of the proposed development. However, this is not formalised on the adjoining estates (Millbrook) and the existing footpath routes do not encourage walking. The informality of taking short cuts over large grassed areas could add to antisocial behaviour. The preferred option would be to improve pedestrian permeability through the estates and reduce car dependency, however this would require new footpaths and lighting on the adjoining estates outside of the applicant's control to be effective.*"	A new pedestrian link to the Millbrook estate is included within the red line boundary of the application. Further footpath links and upgrades through Millbrook, the adjacent Andy Doyle Close, and through to Enniscorthy are set out as recommendations within the Quality Audit (Section 8) and it is envisaged that those recommendations/ upgrades would be implemented in agreement with the local authority following a grant of permission for the development.

ABP Section 5 Pre-Application Consultation Meeting

A Section 5 Pre-Application Consultation meeting took place on 03 December 2020. The meeting was attended by representatives of ABP, WCC, the Applicant, and the Applicant's planning and design team. Following the Pre-Application Consultation meeting, ABP issued an Opinion in relation to the application.

ABP Pre-Application Consultation Opinion

A summary of traffic and transport related items within the Opinion is included at Table 1.4 which follows.

Table 1.4 ABP Opinion and Response

Topic	ABP Opinion	How Item Addressed in Report/ Elsewhere
Pedestrian Linkage (to Millbrook)	"*Further consideration of the documents as they relate to the provision of pedestrian and cycle links from the proposed development through Millbrook Estate towards Enniscorthy town centre. The submitted documentation should be sufficient to show that proper links would be provided from the site through the Millbrook Estate upon the initial occupation of the proposed homes. The documents should provide details of necessary upgrade works required to facilitate the development to include, inter alia: a quality audit, plans and particulars and relevant third-party consent, as applicable.*"	As set out within Table 1.3 above, a new pedestrian link to the Millbrook estate is included within the red line boundary of the application, with further footpath links and upgrades through Millbrook, the adjacent Andy Doyle Close Valley, and through to Enniscorthy set out as recommendations within the Quality Audit (Section 8) and envisaged to be implemented in agreement with the local authority following a grant of permission for the development. A letter of consent from WCC in relation to the footpath link from the site to Millbrook is included at Appendix H.
	"*The submitted documentation should indicate how the proposed links can facilitate movement by pedestrians and cyclists after dark and whether such movement would be constrained. Cycle links should be designed in compliance with the National Cycle Manual issued by the NTA.*"	A description of how the proposed links facilitate pedestrian and cyclist movements after dark is set out within Section 5.3. Cycle links have been designed in accordance with the National Cycle Manual (see Sections 2.2 and 5.3 for more details).

Topic	ABP Opinion	How Item Addressed in Report/ Elsewhere
Road Improvements	Further consideration of the documents as they relate to upgrade works and the provision of a continuous footpath connection on Carley's Bridge Road from the north eastern site boundary over a distance of approx. 150m from the site boundary to the existing public footpath connecting the site to Enniscorthy town centre. The provision of appropriate connections and permeability into and out of the site is considered a necessary component of the development. The documents should provide details of necessary upgrade works required to facilitate the development in consultation with Wexford County Council to include, inter alia: plans and particulars and relevant third-party consent, as applicable. The justification should include, inter alia, alternatives considered/deliverable if applicable.	As set out within Table 1.3, a new pedestrian link is proposed along the northern side of Carley's Bridge Road, with this footpath connecting with an existing footpath which provides a direct link to Enniscorthy. In conjunction with the previously proposed footpath along the site's frontage, and a proposed raised table crossing, a continuous route to Enniscorthy is provided. It should be noted that the shortest route to Enniscorthy for most residents of the development shall remain the route through the Millbrook Estate. Improvements to Carley's Bridge Road are set out within Section 5.3, with pedestrian routes through Millbrook to Enniscorthy set out within the Quality Audit (Section 8). Drawings setting out these works are included at Appendix I and a letter of consent is included at Appendix H.
DMURS Compliance	A statement of compliance with the applicable standards set out in DMURS, and a mobility management plan which justified the proposed provision of parking for cars and bicycles	A DMURS Compliance Statement is included within Appendix D, with a Residential Travel Plan (i.e. Mobility Management Plan) included at Chapter 9.
TTA	Submission of a Traffic and Transport Assessment.	This document represents a full Traffic and Transport Assessment.

1.5. Report Structure

The remainder of this Report is structured as follows:

- **Chapter 2** provides an overview of the relevant local and national traffic and transport policy;
- **Chapter 3** describes the proposed development's receiving environment;
- **Chapter 4** provides an overview of traffic survey data collection and analysis;
- **Chapter 5** describes key transport related characteristics of the development proposal, including a DMURS Compliance Statement;
- **Chapter 6** provides details of 'do-nothing' and 'do-something' traffic forecasting;
- **Chapter 7** sets out the traffic modelling approach and its findings;
- **Chapter 8** includes a Quality Audit for the development;

- **Chapter 9** details the Framework Residential Travel Plan; and
- **Chapter 10** provides a summary and conclusion to the TTA.

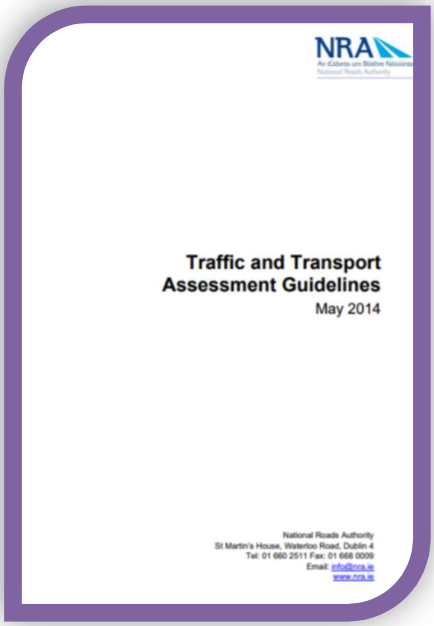
2. Policy Review

2.1. Introduction

This section of the TTA provides an overview of national and local planning policy and guidance deemed directly relevant to the proposed development and its assessment.

2.2. National Guidance

Traffic and Transport Assessment Guidelines (2014)



Transport Infrastructure Ireland's (TII's) *Traffic and Transport Assessment (TTA) Guidelines* (May 2014) provides guidelines for best practice in relation to the preparation of a Traffic and Transport Assessment.

In relation to scoping, the guidance states:

> *"The scoping study is a very important part of the TTA process. It is a precursor to the preparation of a TTA and should be undertaken at the earliest stages of planning for development. For a planning application, this phase may be the initial contact between the developer and the planning authority and, as such, the opportunity should be taken to emphasise the role of transport as both a possible asset and liability to the development. The planning authority should avail of such contact to address traffic and transport implications as an integral element of the development proposal."*

In relation to the Assessment:

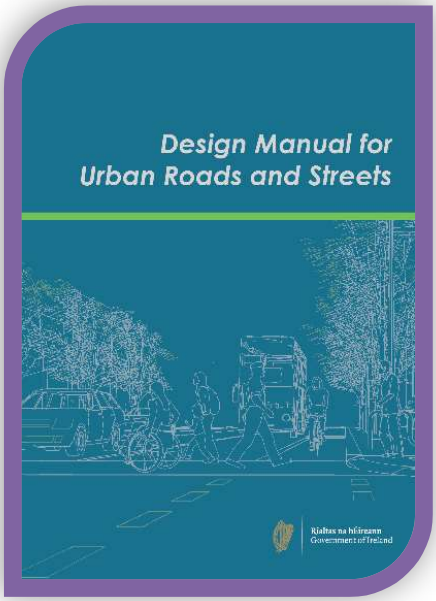
> *"The Traffic and Transport Assessment should be written as an impartial assessment of the traffic impacts of a scheme and it should not be seen to be a "best case" promotion of the development. All impacts, whether positive or negative, should be recorded. The level of detail to be included within the report should be sufficient to enable an experienced practitioner to be able to follow all stages of the assessment process and to reach a similar set of results and conclusions."*

Within Table 2.1 of the *TTA Guidelines*, the following thresholds are provided in relation to the requirement for a full TTA:

- *"Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road"*; and
- *"Residential Development in excess of 200 dwellings"*

It is noted that the threshold of 200 no. residential units contained within the preceding *Guidelines* is exceeded by the proposed development, and as such a TTA is required (i.e. this document).

Design Manual for Urban Roads and Streets (DMURS)



The *Design Manual for Urban Roads and Streets* (*DMURS*) was jointly published by the Department of Transport, Tourism and Sport and Department of Environment, Community and Local Government in 2013, and updated in 2019. The principles, approaches and standards set out in *DMURS* apply to the design of all urban roads and streets (with a speed limit of 60 km/ h or less).

Road Hierarchy

In terms of street hierarchy, *DMURS* categorises streets or roads into three distinct classifications:

- arterial streets;
- link streets; and
- local streets.

The main boulevard which passes in a northwest to southeast alignment through the development site is classified as a link street. All other streets internally within the development have been classified as local streets. Each street type has been designed in accordance with *DMURS* guidance, an overview of which is hereunder provided.

Sightlines and Visibility

DMURS provides comprehensive guidance in relation to stopping sight distances and visibility splay requirements at new accesses (Section 4.4.4 Forward Visibility and Section 4.4.5 Visibility Splays). For an access onto a road with a 50 km/ h design speed (i.e. Carley's Bridge Road adjacent to the site following the proposed extension of the urban speed limit zone ca. 50 metres to the west of its current termination point), the standard visibility splays required are 2.4 metres ('x' distance) * 45 metres ('y' distance). *DMURS* also recommends that *"priority junctions in urban areas should be designed as Stop junctions…."*

Carriageway Widths

DMURS (Section 4.4.1) specifies that carriageway widths for heavily-trafficked arterial and link streets, i.e. the boulevard, should be between 6-6.5m, and *"the standard carriageway width on Local streets should be between 5-5.5m…."* It further recommends that "*the total carriageway width on Local streets where a shared surface is provided should not exceed 4.8m.*" Furthermore, *DMURS* states that "w*here*

additional space on Local streets is needed to accommodate additional manoeuvrability for vehicles entering/leaving perpendicular parking spaces, this should be provided within the parking bay and not on the vehicle carriageway".

Corner Radii

Section 4.3.3 of *DMURS* provides guidance in relation to corner radii at junctions and site accesses, advising that *"reducing corner radii will significantly improve pedestrian and cyclist safety at junctions by lowering the speed at which vehicles can turn corners and by increasing inter-visibility between users (see Figure 4.42). Reduced corner radii also assist in the creation of more compact junctions that also align crossing points with desire lines and reduce crossing distances."* It also recommends that *"where design speeds are low and movements by larger vehicles are infrequent, such as on Local streets, a maximum corner radii of 1-3m should be applied."*

Corner radii advice is also given in relation to junctions between arterial/ link and local streets, recommending: *"where turning movements occur from an Arterial or Link street into a Local street corner radii may be reduced to 4.5m."* Such corner radii have been applied at junctions to local streets from the proposed main site access road (or boulevard). Finally, similar advice is given in relation to junctions between arterial and link streets, as in the case of Carley's Bridge Road, and the proposed site access junction, stating that "*in general, on junctions between Arterial and/or Link streets a maximum corner radii of 6m should be applied. 6m will generally allow larger vehicles, such as buses and rigid body trucks, to turn corners without crossing the centre line of the intersecting road."*

Car Parking

In relation to on-street car parking, *DMURS* (Section 4.4.9 On-Street Parking and Loading) states that *"On-street parking, when well designed can:*

- *Calm traffic by increasing driver caution, visually narrow the carriageway and reduce forward visibility.*
- *Contribute to pedestrian/cyclist comfort by providing a buffer between the vehicular carriageway and foot/cycle path."*

Furthermore, *DMURS* (Section 4.4.9 On-Street Parking and Loading) states: "*perpendicular parking should generally be restricted to one side of the street to encourage a greater sense of enclosure and ensure that parking does not dominate the streetscape*."

In relation to allocation of car parking, DMURS (Section 4.4.9 On-Street Parking and Loading) states*: "On-street parking on public streets should not be allocated to individual dwellings. This allows for a more efficient turnover of spaces and, as such, fewer spaces are needed overall."*

Traffic Calming

In relation to traffic calming, *DMURS* (Section 4.4.7 Horizontal and Vertical Deflections) states: "*raised tables, or platforms, may be placed strategically throughout a network to promote lower design speeds, slow turning vehicles at junctions and enable pedestrians to cross the street at grade.*"

National Cycle Manual

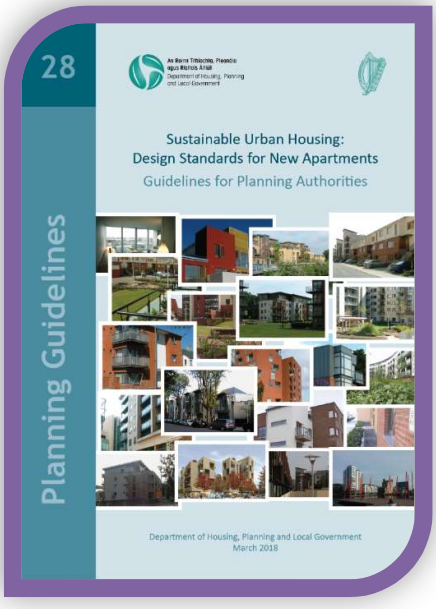
The *National Cycle Manual (NCM)*, published by the National Transport Authority in 2011, sets out detailed guidance on implementation of cyclist facilities for all road types and environments. NCM sets out the key considerations underpinning mixed versus segregated cycling environments, stating:

> *"Average urban commuter cycling speeds are up to 20km/h. Where weaving occurs, the Dutch advice (CROW) is to limit the speed differential between bicycle and traffic to 10km/h, in order that bicycles can weave in front of vehicles with relative comfort and safety etc.*
>
> *For this reason, the 30km/h speed limit (ensuring it is observed) becomes central to the concept of mixed traffic."*

In relation to shared pedestrian and cyclist facilities, the *NCM* states: "*shared facilities next to vehicular traffic should have a minimum combined width 3.0m.*"

Within the proposed development, all local roads have been designed to achieve low traffic speeds, thereby representing ideal mixed-traffic environment, with shared pedestrian and cycle facilities provided along the main site access road (or boulevard).

Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities, March 2018



Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities was published in March 2018 and provides guidance on different aspects of new residential developments, including cycle parking and car parking provision.

Car Parking Provision

According to Section 4.22 of the *Design Standards, "as a benchmark guideline for apartments in relatively peripheral or less accessible urban locations, one car parking space per unit, together with an element of visitor parking, such as one space for every 3-4 apartments, should generally be required.*"

Cycle Parking Provision

According to Section 4.17 of the *Design Standards*, *"the accessibility to, and secure storage of, bicycles is a key concern for apartment residents"*, with specific guidance provided in relation to the location, quantity, design and management of cycle parking facilities. In terms of cycle parking quantity, "*a general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units.*"

The above standards indicate that up to 446 no. cycle parking spaces could be required to meet the needs of the proposed residential component of the development, as outlined in Table 2.1 which follows.

Table 2.1 Design Standards for New Apartments, Cycle Parking Calculations

Land Use	No. Apartments	Bedrooms	No. Cycle Parking Spaces Required
Residents' Spaces: Studios and 1-Bedroom Apartments	72	72	72
Residents' Spaces: 2-Bedrooms Apartments	40	80	80
Residents' Spaces: 3-Bedrooms Apartments	68	204	204
Visitor Spaces (1 per 2 Units)	180	-	90
Total Cycle Parking Requirements			**446**

In terms of qualitative requirements, it is stressed that cycle storage/ parking facilities shall be sufficiently accessible, offer an adequate level of safety and security, be well-lit and properly maintained. It is further recommended that cycle parking is provided within *"a dedicated facility of permanent construction."*

Proposed development cycle parking provision (in terms of specification and quantum) for apartments within the development is consistent with the *Design Standards'* requirements.

2.3. Local Policy

Wexford County Development Plan 2013-2019

The *Wexford County Development Plan 2013-2019, as extended,* sets out the Council's policies and objectives for development in the County over the period from 2013 to present. According to the *Plan*, "*the delivery of the appropriate transport network for the County will be focused on an objective-based*

approach." Chapter 2.2, Sustainable Travel and Transportation of the *Plan* includes the following objectives (Section 2.2.3 Objectives):

- *"Objective T01 – To support the sustainable transport principles outlined in Smarter Travel: A Sustainable Transport Future (Department of Transport, 2009)."*
- *"Objective T02 – To integrate land use and transport in the development and application of land use planning objectives in a manner which reduces reliance on car-based travel and promotes more sustainable transport choices."*

Car Parking Standards

Car parking standards are set out in Table 39 section 18.29.7 the *Plan*, with standards relevant to the proposed development summarised in the following Table 2.2.

Table 2.2 Wexford County Development Plan Car Parking Standards (Source: Table 39 of the *Wexford County Development Plan 2013-2019, as extended*)

Land Use	Allocation	No. Units/ No. Staff & Children	No. Car Parking Spaces
Houses	2 Spaces per House	53	106
Apartments/ Flats	1.5 Spaces per Apartment/ Flat	180	270
Creche/Childcare	1 Space per 4 Child plus 1 Space per Employee	44 Children and 10 Staff	21
Total Car Parking			**397**

As can be seen from the preceding Table 2.2, based on the residential car parking standards set out within the current *Wexford County Development Plan*, up to 397 no. car parking spaces could be required to accommodate the proposed development's parking needs. Car parking standards for apartments within the proposed development have been superseded by the *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities*, summarised in the preceding Section 2.2 of this Report.

Section 18.29.6 of the *Plan* states *"The Council will require the provision of at least 1 electric vehicle charging point in a new car park for new development where 40 or more car parking spaces are provided."*

In relation to the creche land use, Section 18.29.7 of the *Plan* states *"schools and creche, recreational facilities and other such facilities will be required to make provision for adequate and safe vehicular drop off facilities, in addition to car parking requirements".*

In addition to above car parking provision, Table 40 of the Development Plan provides recommendations in relation to parking bay dimensions. Standard car parking bays are required to measure 5.0 metres x 2.5 metres and disabled car parking bays are required to measured 6.0 metres x 3.7 metres. In relation to the quantum of disabled spaces to be provided, Section 18.29.7 of the *Plan* states: "*Minimum one space of appropriate dimensions in every 25 standard spaces, up to the first 100 spaces; thereafter, one space per every 100 standard spaces or part thereof*." Based on the current *Wexford County Development Plan*'s requirements, 3 no. disabled car parking bays would therefore need to be included on-site.

Cycle Parking Provision

In relation to cycle parking, Section 18.29.5 of the *Development Plan* states: "*apartment complexes will be required to provide communal cycle storage facilities.*"

Enniscorthy Town and Environs Development Plan 2008-2014

The *Enniscorthy Town and Environs Development Plan 2008-2014,* as extended, sets out Wexford County Council's objectives for development in Enniscorthy (with the *Town and Environs Development Plan* yet to be superseded). The purpose of this *Plan* is to "*set out the overall strategy for the proper planning and sustainable development of Enniscorthy Town & Environs."*

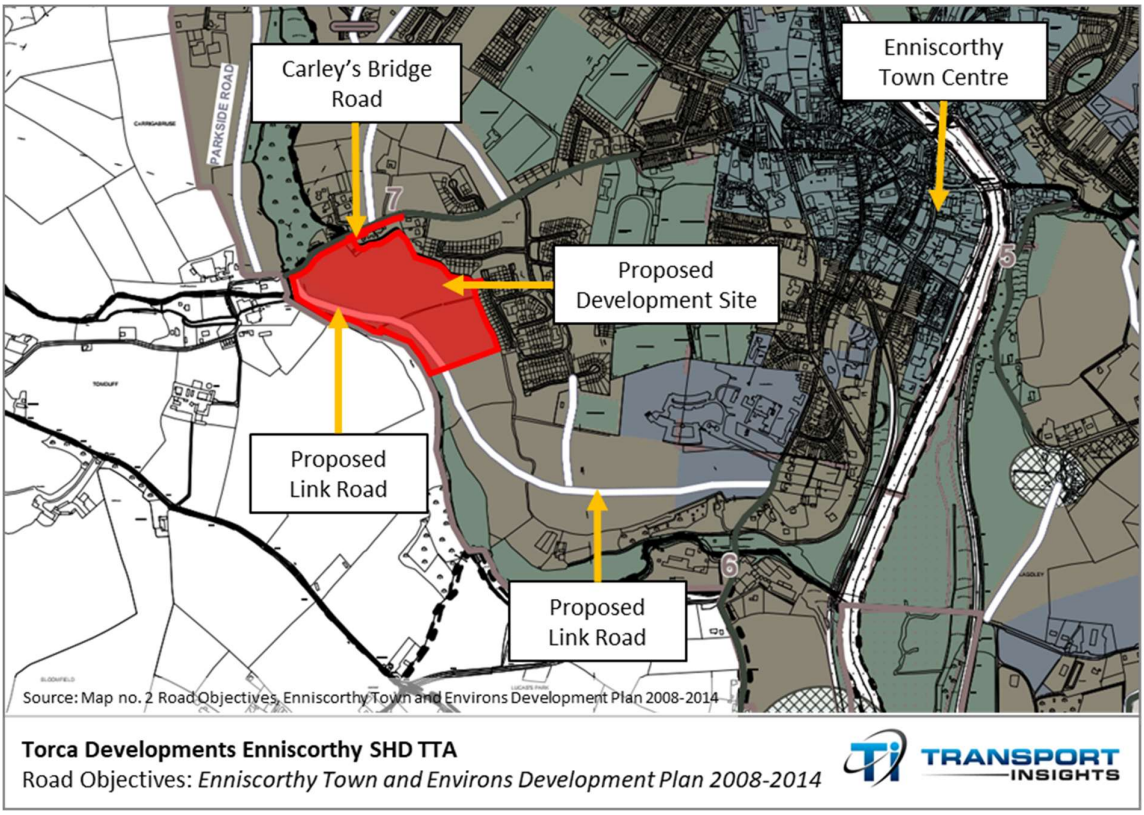
Chapter 5 of this *Plan* presents the strategies and objectives for the provision of housing within Enniscorthy. Relevant key policies and objectives within the chapter include:

- *"Policy HS1 – it is the policy statement of the Local authority to encourage the development of high-quality private housing with Enniscorthy Town and Environs".*
- *"Objective HS6 – aims to ensure the necessary infrastructural investment to facilitate the overall level of housing output required to meet the current and anticipated levels of demand in a planned and coherent fashion"*

Section 11.4 of the *Plan* sets out standards for car parking provision in new developments, which are noted to mirror the standards presented within the *Wexford County Development Plan 2013-2019*, as extended.

Road objectives within the *Plan* include a link road which shall connect Carley's Bridge Road to the northwest with Munster Hill to the southeast. Figure 2.1 (overleaf) illustrates the alignment to this link road in relation to the proposed development site. The proposed boulevard which passes in a northwest-southeast alignment through the development site shall partially deliver that objective of the *Plan*.

Figure 2.1 Road Objectives: *Enniscorthy Town and Environs Development Plan 2008-2014*



3. Site Context

3.1. Introduction

To assess the proposed development's potential traffic impacts, an appreciation of the existing situation first needs to be established. This section of the TTA describes the site's location and current access arrangements, the local road network, walking/ cycling accessibility, public transport facilities, and road safety statistics. The existing conditions presented here represents an evidence-based review, and have been informed by:

- a desktop review of the study area and its surrounding transport network, including general road infrastructure; and
- a site assessment, undertaken on Friday 06 March 2020 (between the hours of 10:00hrs and 12:00hrs) to confirm facilities and operating conditions for all road users on the adjoining road network (with an additional audit to inform the Quality Audit (Section 8) undertaken on 07 January 2021).

The above activities have been supplemented by analysis of classified junction turning count survey data collected on 25 February 2020 to determine existing background traffic conditions on the local road network – this is summarised separately within the subsequent Section 4 of this TTA.

3.2. Site Location and Existing Site Access

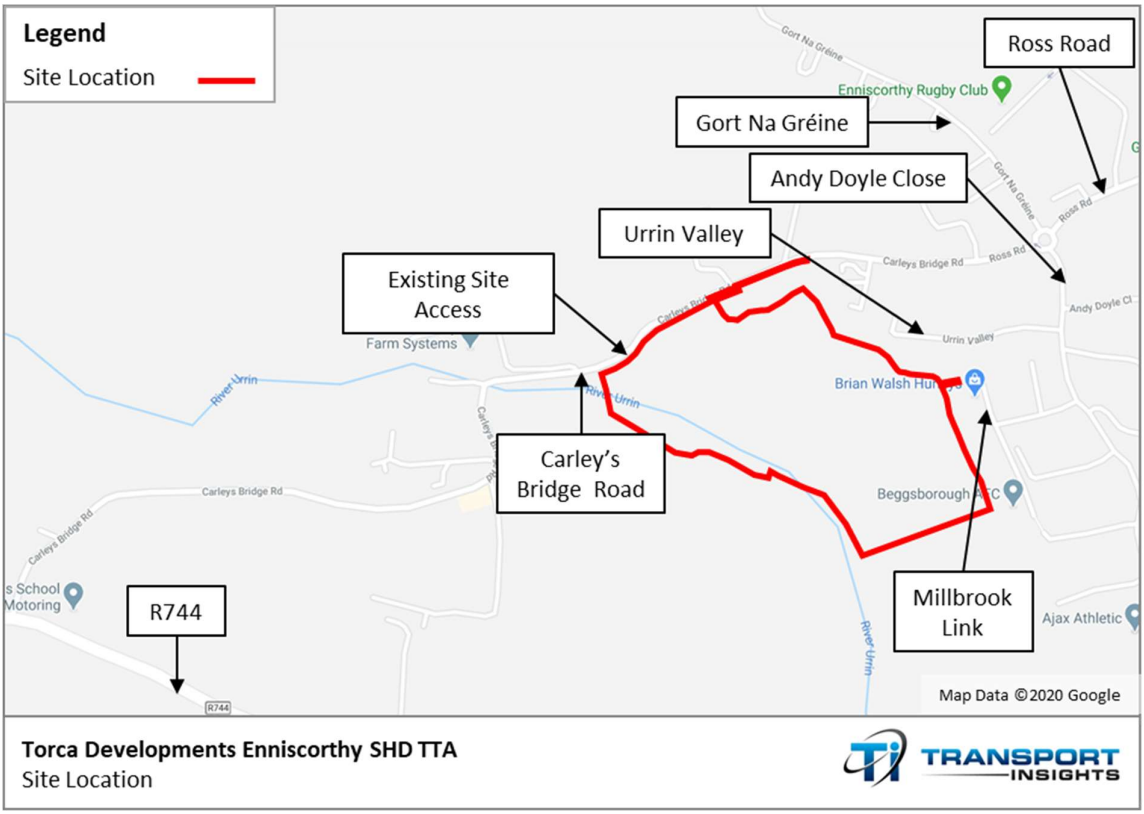
Site Location

As noted previously within Section 1.2 of this Report, the development site, which is currently in agricultural use, is located adjacent to Carley's Bridge Road, ca. 1 kilometre to the west of Enniscorthy Town Centre. The site is bordered by Carley's Bridge Road and residential dwellings to the north, by residential dwellings to the east, and by agricultural land and the River Urrin to the south and west.

Site Access Arrangements

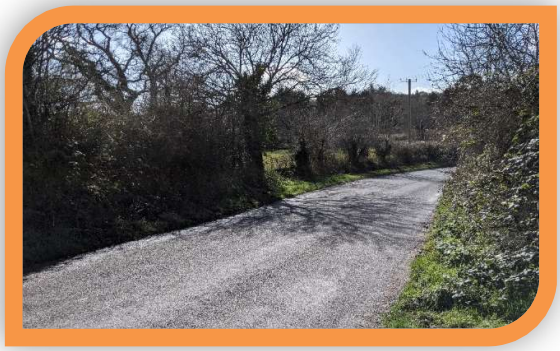
The site is currently accessed via a single gated access onto Carley's Bridge Road, located at the north-western corner of the site. Figure 3.1 (overleaf) shows the location of the existing site access in relation to local road infrastructure in the vicinity of the site.

Figure 3.1 Site Location and Access



3.3. Local Road Network

Carley's Bridge Road



The site is located adjacent to Carley's Bridge Road which is a two-way local road with one lane in each direction in the vicinity of the site. Carley's Bridge Road connects Gort Na Gréine/ Ross Road/ Andy Doyle Close (via a roundabout) to the east with the R744 (via a priority-controlled junction) to the west.

Carley's Bridge Road features notable changes to both its vertical and horizontal alignment throughout its length. Adjacent to the development site, Carley's Bridge Road is ca. 6.0 metres wide. A 50 km/ h speed limit is in operation on the road to the east of the site, with a 80 km/ h speed limit in operation to the west of the site (the transition between the 50 km/ h and 80 km/ h speed limit zones is located directly to the east of the existing site access junction).

Street lighting and ca. 1.5 metre wide footpath are present on the eastern end of Carley's Bridge Road, however are not currently provided adjacent to the application site. A traffic speed survey was undertaken on Carley's Bridge Road at the location of the proposed site access junction, and is detailed within Section 4.3 of this TTA, with full speed survey results included at Appendix B.

Ross Road

Ross Road is a two-way local road with one lane in each direction which connects Carley's Bridge Road to the west with Enniscorthy Town Centre to the east. Street lighting and ca. 1.5 metre wide footpaths are present on both sides of this road. A 50 km/ h speed limit is in operation on the road.

Gort Na Gréine

Gort Ná Gréine is located ca. 500 metres to the east of the proposed development site, and is a two-way local road with one lane in each direction. It connects the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout to the south with Cherryorchard to the north. Street lighting and ca. 1.5 metre wide footpaths are present on both sides of this road, and traffic calming in the form of speed ramps is also provided. A 50 km/ h speed limit is in operation on the road.

Andy Doyle Close

Andy Doyle Close is located ca. 500 metres to the east of the proposed development site. It is a cul-de-sac road which extends for ca. 400 metres from the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout, and is a two-way local road with one lane in each direction. A 30 km/ h speed limit is in operation on this road and footpaths and street lighting are provided.

Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout

Carley's Bridge Road intersects with Ross Road, Andy Doyle Close, and Gort Na Gréine via a priority-controlled roundabout. The junction is located ca. 500 metres to the east of the proposed development site. All junction arms feature one entry lane and one exit lane for general traffic. The roundabout has an Inscribed Circle Diameter (ICD) of ca. 30 metres.

Pedestrian crossing facilities, with dropped kerbs and tactile paving are provided on all arms of the junction, and footpaths of ca. 1.5 metres are also present. Certain uncontrolled pedestrian movements are restricted by guard rails at the junction. Street lighting is provided and a 50 km/ h speed limit is in operation on all approach arms.

A classified junction turning count survey was undertaken at this junction as an input to traffic impact analysis within this TTA. Details of the survey, and a summary of the results are included within Section 4 of this Report.

Carley's Bridge Road/ R744 Priority Controlled Junction

Carley's Bridge Road intersects with the R744 via a priority-controlled T-junction. The junction is located ca. 1 kilometre to the west of the proposed development site. All junction arms feature one entry lane and one exit lane for general traffic.

3.4. Walking and Cycling Accessibility

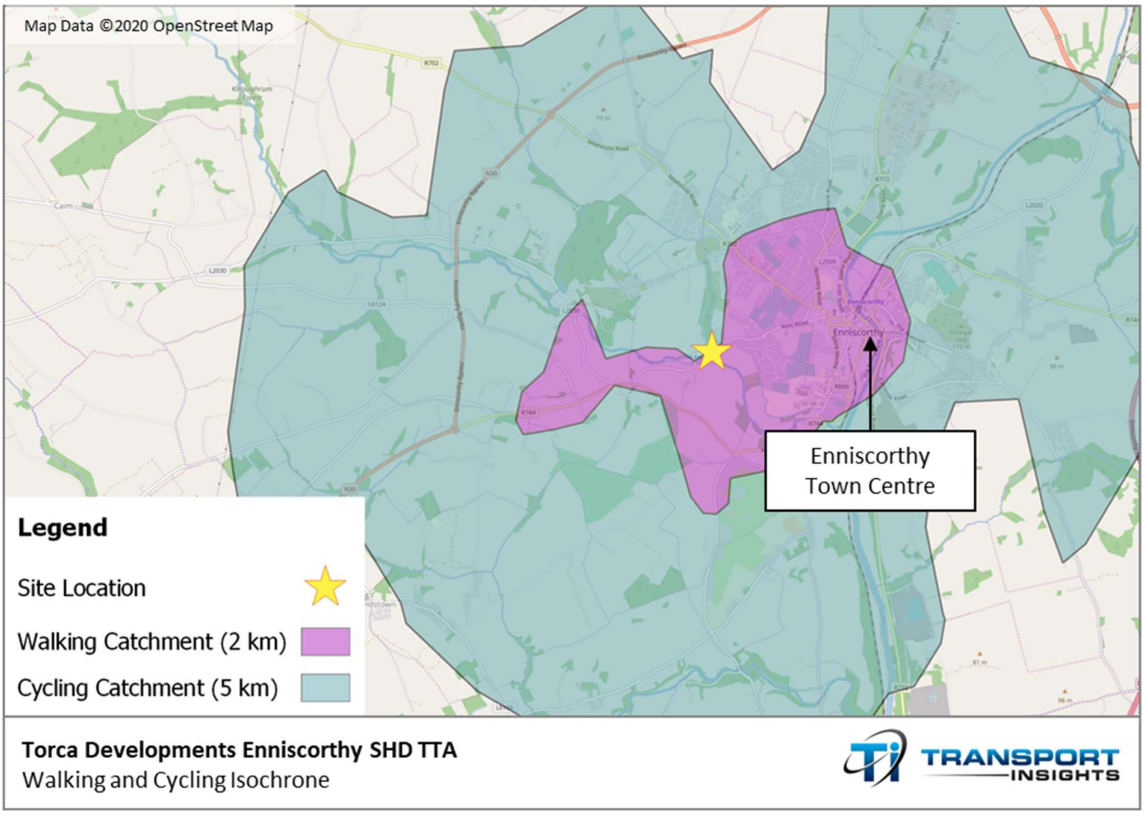
The application site's accessibility by walking and cycling has been assessed using geographic information systems (GIS) software. For purpose of the analysis, a walk catchment of 2.0 kilometres and cycle catchment of 5.0 kilometres has been assumed. Based on these assumptions and taking into account the available road network layout, these catchments have been mapped and are presented in Figure 3.2 (overleaf). The proposed development is located adjacent to an established residential area to east, through which it is proposed to provide a new pedestrian/ cyclist connection.

As per Figure 3.2, it is apparent that the site's walking catchment includes all of Enniscorthy Town Centre, including offices, supermarkets, restaurants, pubs, schools, churches, and sports centres. As such, there are multiple opportunities to satisfy the typical daily needs of the proposed development's residents, such as employment, education, leisure, and shopping. A pedestrian link will be provided from the proposed development site to the residential area directly to the east (at Millbrook) further enhancing the directness and attractiveness of walking to Enniscorthy Town Centre.

The cycle catchment extends to all areas within Enniscorthy providing access to the employment clusters available within Enniscorthy Town Centre and surroundings areas, such a Kilcannon Industrial Estate, in addition to various scenic and recreational areas.

As noted within the subsequent Section 3.5, the proposed development site is located within 2 kilometres of bus and rail services which accommodate travel to a range of local (within County Wexford) and national destinations.

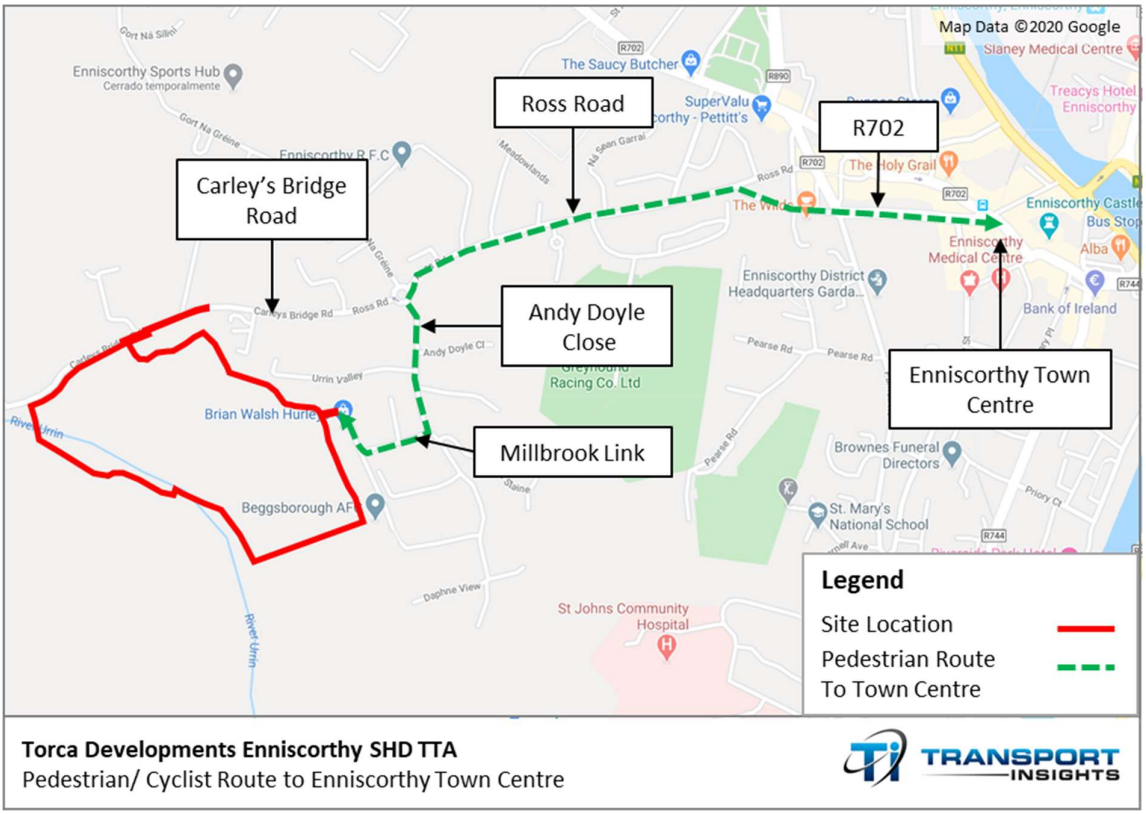
Figure 3.2 Application Site's Walking and Cycling Catchment



Pedestrian/ Cyclist Route from Site to Enniscorthy Town Centre

A pedestrian/ cyclist route to Enniscorthy Town Centre with continuous footpath connections from the application site is available through the adjacent Millbrook residential estate, and provides an alternative route for pedestrians and cyclists to Carley's Bridge Road which does not have footpath provision throughout its entire length and also provides for a safer and more appropriate cyclist route. Figure 3.3 which follows, illustrates the route from the site to Enniscorthy Town Centre along continuous footpaths and Figure 5.1 illustrates this connection in the context of the proposed site layout.

Figure 3.3 Pedestrian/ Cyclist Route to Enniscorthy Town Centre



3.5. Public Transport

Rail Services

The nearest rail connections to the site are available from Enniscorthy Railway Station, located approximately 2 kilometres to the east of the site. This station is on the Dublin Connolly to Rosslare Europort line and features 5 no. services towards Rosslare Europort and 4 no. services towards Dublin Connolly Station each weekday, with somewhat reduced service provision at weekends. Table 3.1 (overleaf) outlines scheduled rail services from Enniscorthy Railway Station.

Table 3.1 Enniscorthy Railway Station Timetable

Day	Departure Times	
	To Rosslare Europort	To Dublin Connolly
Monday to Friday	11:47	06:20
	15:47	08:04
	18:56	13:39
	19:56	18:13
	20:47	-
Saturday	10:13	08:06
	15:45	13:41
	20:46	18:40
Sunday	12:29	10:26
	15:52	15:08
	20:52	18:52

Bus Services

The nearest bus services to the site are bus routes 2, 740, 368 and 369 and operating from to/ from Enniscorthy Town Centre, approximately 1.7 kilometres to east of site. A summary of key local and long-distance bus routes serving Enniscorthy are provided with Table 3.2 which follows.

Table 3.2 Enniscorthy Bus Services

Route Number	Operator	Route	Services Per Day
2	Bus Éireann	Dublin – Arklow – Gorey – Camolin – Enniscorthy – Wexford	17 Monday-Friday*
740	Wexford Bus	Dublin – Foxrock – Arklow – Gorey – Camolin – Enniscorthy – Oylegate – Wexford	18 Monday-Friday*
368	Local Link Wexford	New Ross – Palace Crossroads –Enniscorthy – Bunclody – Kildavin- Ballon –Tullow	11 Monday-Friday*
369	Local Link Wexford	Wexford –Enniscorthy – Marshalstown – Craanrue- Kilmyshall –Bunclody	2 Monday-Friday*

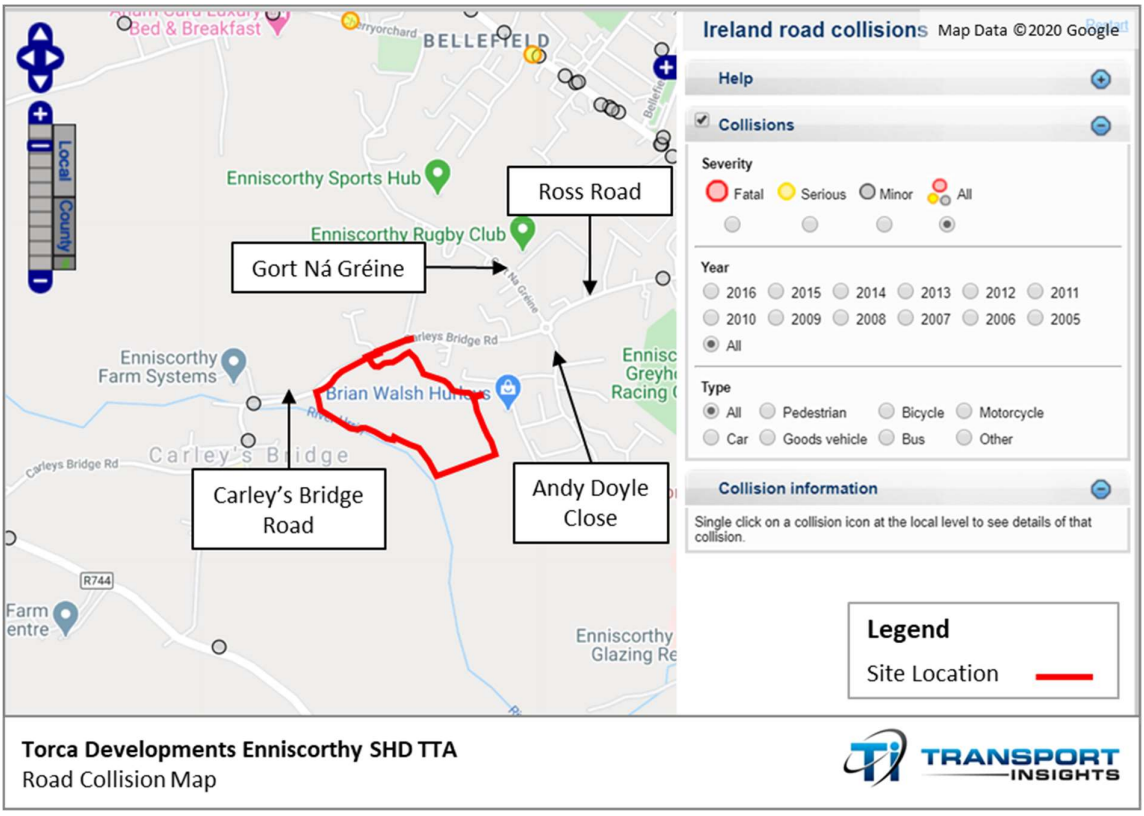
**Stops vary throughout the day*

3.6. Road Traffic Collision Data Analysis

Data from the Road Safety Authority (RSA) collision database was used to assess the safety performance characteristics of the local road network. The database contains information on all reported collisions by severity of injury incurred (i.e. fatal, serious or minor) and by year the collision

occurred. The following Figure 3.4 illustrates that no serious or fatal collisions have been recorded on the road network surrounding the site during the 12-year period from 2005 to 2016 inclusive.

Figure 3.4 Road Collision Data 2005-2016



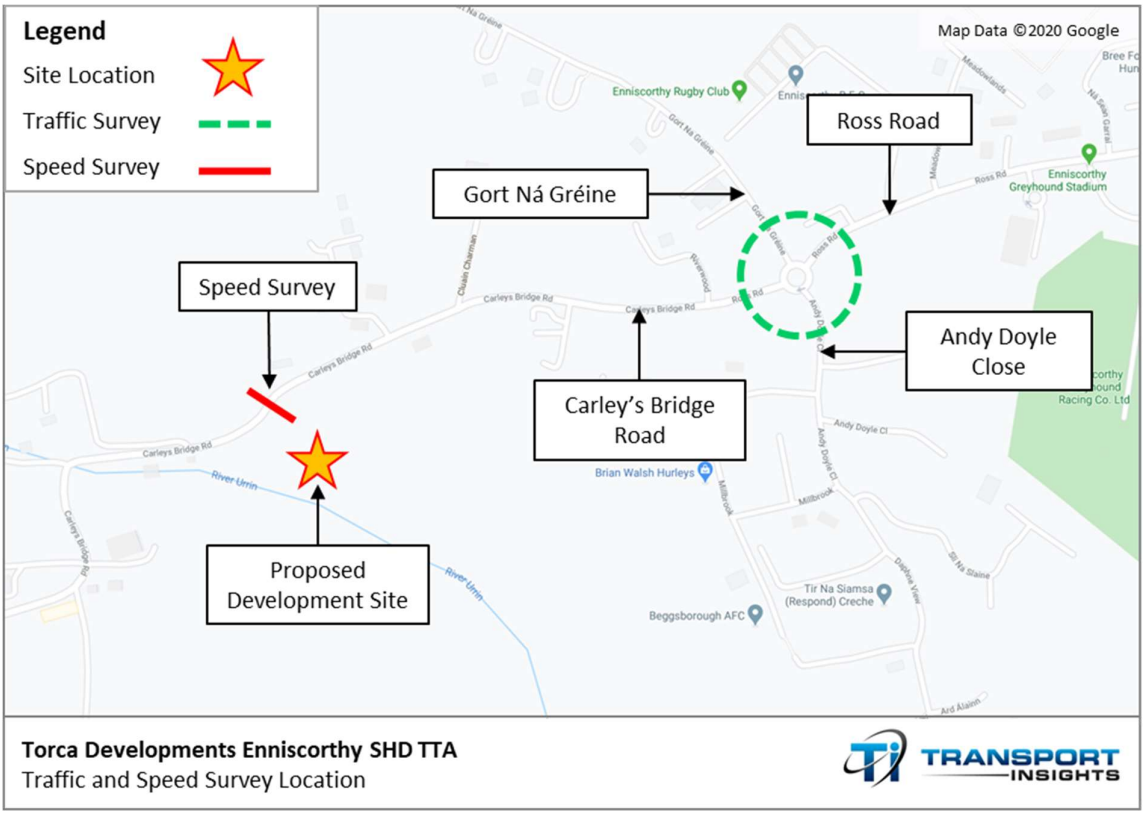
4. Traffic Survey Data Collection

4.1 Introduction

In order to determine baseline traffic conditions and provide a basis from which the future development's traffic impact can be measured, a classified junction turning count survey was undertaken at the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout, the location of which is illustrated in the following Figure 4.1. This survey were undertaken on Wednesday 25 February 2020 between 07:00hrs and 18:59hrs.

A supplemental traffic speed survey of Carley's Bridge Road at the location of the proposed site access junction over a 4-day period between the hours of 00:00hrs Thursday 10 March 2022 and 23:59hrs on Sunday 13 March 2022. The location of this survey is also illustrated in Figure 4.1.

Figure 4.1 Traffic and Speed Survey Location



Classified junction turning count and traffic speed survey results at the locations illustrated in the preceding Figure 4.1 are set out in the subsequent Sections 4.2 and 4.3 respectively of this Report.

4.2 Summary Traffic Survey Results

Ross Road/ Andy Doyle Close/Carley's Bridge Road/ Gort Na Gréine Roundabout

Following analysis of the traffic survey results for the junction illustrated in Figure 4.1, the AM peak hour was determined to be between 08:15hrs and 09:14hrs, with the PM peak hour determined to be

between 16:00hrs and 16:59hrs. The results of the surveys for the identified AM and PM peak hours, and the 12-hour survey period, are summarised in the following Table 4.1 for light vehicles (LVs) and heavy vehicles (HVs).

Table 4.1 Recorded Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout Traffic Volumes*

Approach Link	AM Peak Hour (08:15hrs-09:14hrs)		PM Peak Hour (16:00hrs-16:59hrs)		12-hour (07:00hrs-18:59hrs)	
	LVs	HVs	LVs	HVs	LVs	HVs
Ross Road	116	2	182	7	1,501	27
Andy Doyle Close	146	6	85	5	926	15
Carley's Bridge Road	100	4	77	2	751	8
Gort Ná Gréine	45	2	44	2	416	7
All Arms	**407**	**14**	**388**	**16**	**3,594**	**57**

**All traffic figures throughout this Report are in Passenger Car Units (PCUs) with the following factors assumed: motorcycles 0.4, medium goods vehicles 1.5, bus 2.0, and HGV 2.3* Source: *TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016)*

As can be seen from the preceding Table 4.1, overall traffic volumes through the roundabout during both the AM peak hour and PM peak hour were similar, with a total of 421 no. vehicles movements recorded during the AM peak hour and a total of 404 no. vehicle movements during the PM peak hour. A total of 3,651 no. vehicle movement were recorded at the junction during the 12-hour survey period.

Carley's Bridge Road

Recorded traffic volumes on the Carley's Bridge Road arm of the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout as per the preceding Table 4.1 have been used in subsequent sections of this Report to analyse the traffic impact of the proposed development at the new site access junction and the R744 junction. In doing so, it has been assumed that all traffic approaching from Carley's Bridge Road into the roundabout represents eastbound traffic on the road, and all traffic turning from the other arms of the roundabout onto Carley's Bridge Road represents westbound traffic (and that traffic volumes remain static along the road's length). Table 4.2 (overleaf) summarises the traffic volumes per direction on this arm of the junction.

Table 4.2 Recorded Carley's Bridge Road Traffic Volumes *

Approach Link	AM Peak Hour (08:15hrs-09:14hrs)		PM Peak Hour (16:00hrs-16:59hrs)		12-hour (07:00hrs-18:59hrs)	
	LVs	HVs	LVs	HVs	LVs	HVs
Carley's Bridge Road Eastbound	100	4	77	2	751	8
Carley's Bridge Road Westbound	43	0	96	3	726	9
Both Directions	**143**	**4**	**173**	**5**	**1,477**	**17**

**All traffic figures throughout this Report are in Passenger Car Units (PCUs) with the following factors assumed: motorcycles 0.4, medium goods vehicles 1.5, bus 2.0, and HGV 2.3* Source: *TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016)*

As can be seen from the preceding Table 4.2, during the AM peak hour a total of 104 no. eastbound vehicle movements (travelling towards Enniscorthy Town Centre) and 43 no. westbound vehicles (towards R744) were recorded on Carley's Bridge Road. During the PM peak hour a total of 79 no. eastbound vehicle movements and 99 no. westbound vehicle movements were recorded. The traffic volumes recorded during the full 12-hour survey period were similar, with 759 no. eastbound vehicle movements and 735 no. westbound vehicle movements recorded on the road. A total of 1,494 no. vehicles movements were recorded on the Carley's Bridge Road arm during the 12-hour survey period.

Full traffic survey results are included within Appendix B of this Report.

4.3 Traffic Speed Survey

A traffic speed survey, in the form of an Automatic Traffic Counter (ATC), was undertaken at the location of the proposed site access junction. Speeds were recorded over a 4-day period between the hours of 00:00hrs Thursday 10 March 2022 and 23:59hrs on Sunday 13 March 2022. A summary of the speed survey results is presented in Table 4.3 which follows.

Table 4.3 Carley's Bridge Road Traffic Speed Survey Results

Direction	Total Vehicles (HVs + LVs, No.)	Average Speed (km/ h)	Maximum Speed (km/ h)	Minimum Speed (km/ h)	85%ile Speed (km/ h)
Northbound*	2,615	46.63	79.39	16.53	53.67
Southbound**	2,529	46.17	76.64	9.36	52.23

* northbound refers to traffic travelling eastbound on Carley's Bridge Road (the survey was undertaken at a location where the alignment of the road takes a slight northbound-southbound alignment)

** southbound refers to traffic travelling westbound on Carley's Bridge Road (the survey was undertaken at a location where the alignment of the road takes a slight northbound-southbound alignment)

As can be seen from Table 4.3, 85th percentile vehicle speeds are noted to be significantly below the rural speed limit (80 km/ h) on Carley's Bridge Road (located immediately to the west of the proposed site access junction), however are very slightly (ca. 2 to 3 km/ h) above the urban speed limit (located immediately to the east of the proposed site access junction). Based on the traffic survey results, the effective speed limit (= design speed) of Carley's Bridge Road in the vicinity of the proposed development's site access has been determined to be 60 km/ h. This is consistent with its urban location, demonstrating the appropriateness of applying *DMURS* guidance to the assessment of visibility at the proposed site access junction.

5. Description of Proposed Development

5.1 Introduction

This section of the TTA describes key transport related attributes of the proposed development including site access and internal site layout arrangements, proposed car and cycle parking provision, and servicing arrangements. In accordance with best practice, the development's proposed layout has been guided by *DMURS*, with reference also made to the *NCM*, where appropriate (see Section 2.2 of this Report for an overview of both guidance documents).

5.2 Proposed Development

As outlined within Section 1.2, the proposed development comprises 233 no. residential units as follows:

- 53 no. houses in the form of 8 no. 4-bed units and 45 no. 3-bed units;
- 180 no. apartments (including duplexes) in the form of 63 no. 3-bed duplex units, 5 no. 3-bed units, 27 no. 2-bed duplex units, 13 no. 2-bed units, and 72 no. 1-bed units;
- a 290 sqm GFA creche;
- 352 no. residential car parking bays provided at surface level; and
- 497 no. secure, sheltered cycle parking spaces, also provided at surface level within the development.

Further information in relation to traffic and transport characteristics of the development proposal is provided in the remainder of this section of the TTA.

5.3 Proposed Site Layout and Access/ Egress Arrangements

Overview

The proposed site layout which includes pedestrian and vehicular access arrangements relative to local roads is shown in Figure 5.1 (overleaf) – image courtesy of Brian Dunlop Architects, with supplemental annotation by Transport Insights.

Site Layout Arrangements

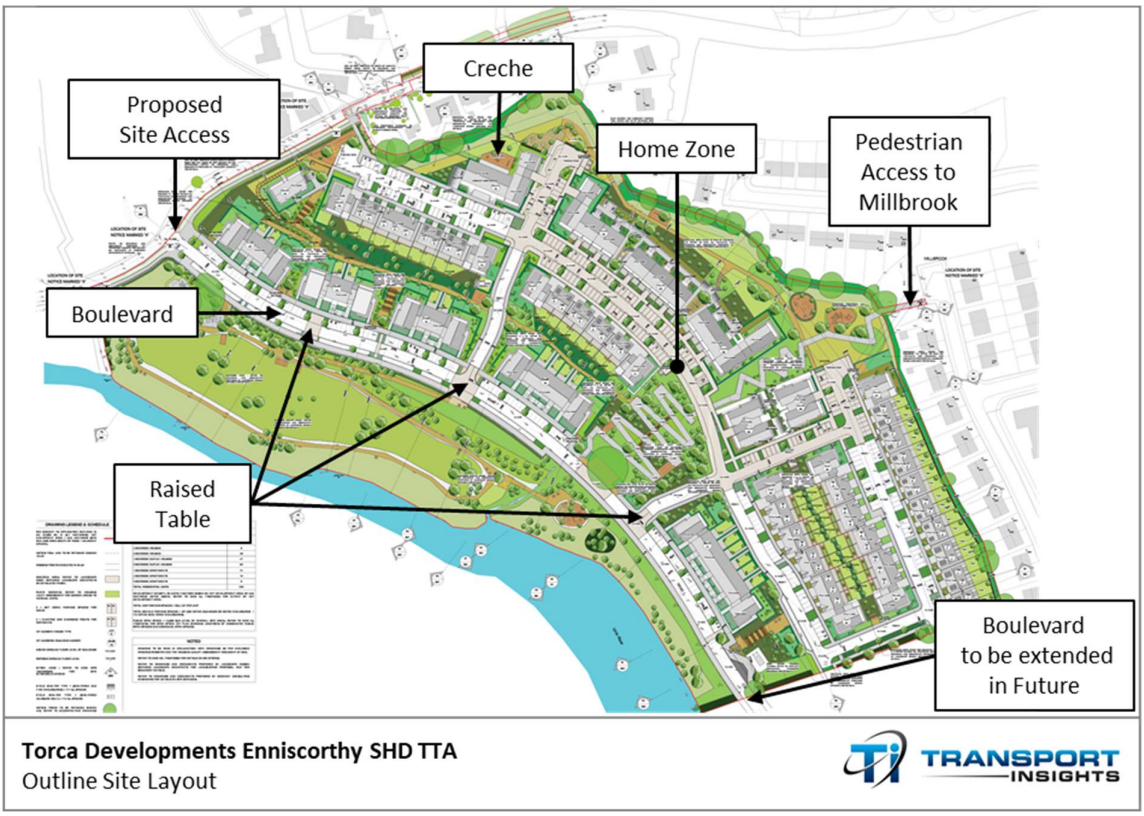
The proposed site is characterised by the following road hierarchy:

- A main boulevard which runs in a northwest-southeast alignment through the development, the carriageway of which is 6.0 metres wide. This corresponds to a "*link street*" in terms of *DMURS* classification and connects Carley's Bridge Road with Munster Hill (when fully completed in future).

- Local access roads, providing access to dwellings within the development and having a typical carriageway width of ca. 5.5 metres. This corresponds to a "*local street*" in terms of *DMURS* classification.
- Shared space (or '*homezone*') streets, providing an ultra-low speed environment adjacent to dwellings and the creche, with a 4.8 metre carriageway. These streets also correspond to a "*Local Street*" in terms of *DMURS* classification.

As outlined above, the main boulevard will connect Carley's Bridge Road to the north with Munster Hill to the east once the road is fully completed in future. In the short-term, the road will terminate at the development site's southern boundary. As shown in the following Figure 5.1, raised tables will be provided on all junctions along the road to actively manage traffic speeds and ensure pedestrian priority in accordance with *DMURS* (Section 4.4.7 Horizontal and Vertical Deflections). Apartment buildings will be located along the eastern side of this road and perpendicular car parking will be located adjacent to the eastern side of the road, with parallel car parking bays located adjacent to the western side of the road. This on-street car parking will help to "*calm traffic by increasing driver caution, visually narrow the carriageway and reduce forward visibility*" in accordance with *DMURS* guidance (Section 4.4.9 On-Street Parking and Loading).

Figure 5.1 Proposed Site Layout (Drawing Reference: 1768-P-010)*



*A to-scale architectural version of the preceding Figure 5.1 is included within the overall planning pack

Within the eastern side of the site, a mixture of houses and apartment will be provided, accessed via internal local access roads. The longest of these roads will be broken up by the inclusion of a 'homezone' area, which will actively discourage through traffic and calm traffic speeds via the use of different surface material and also its narrower carriageway (4.8 metres wide), compared to that provided elsewhere within the site. In order to accommodate perpendicular car parking within the 'homezone' area, car parking bays of 2.5 metres * 5.6 metres have been provided with allows vehicles to manoeuvre within the bay, in accordance with *DMURS* guidance.

Local access roads at the eastern side of the site will feature perpendicular car parking adjacent to the road frontage, with car parking bays broken up with landscape features between every ca. 5 no. bays. Turning heads will be provided at the end of any cul-de-sacs and small corner radii (3 metres) will ensure low traffic speeds at junctions between local roads.

A creche will be located at the northern corner of the site, with the 'homezone' area also extended into this area in order to ensure low vehicle speeds within its vicinity. Car parking will be provided close to the creche and a turning head will be provided to allow for the safe turning of vehicles.

Public lighting shall be provided throughout the development, with a lighting design scheme prepared by Lighting Reality included within the overall planning pack.

Pedestrian and Cyclist Access Arrangements

Pedestrian and cyclist access to the development site will initially be via two locations:

- the main site access junction onto Carley's Bridge Road; and
- a pedestrian/ cycle-only link to the adjacent Millbrook residential estate to the east.

Following future development of lands to the south of the site, the main boulevard which passes in a northwest-southeast alignment through the site shall be extended and pedestrian access will also be via this route. A 3.0 metre wide shared footpath/cycle track shall be provided on each side of boulevard, and 2.0 metre wide footpaths shall be provided on all other internal roads within the site. A new 2.0 metre wide footpath will also be provided along the site's frontage onto Carley's Bridge Road. As outlined within Section 2.2, all local roads within the proposed development have been designed to achieve low traffic speeds (30 km/ h), thereby representing ideal mixed-traffic environment (i.e. cyclists and vehicular traffic will share the carriageway in accordance with the *NCM* guidance). Lighting along pedestrian and cyclists routes throughout the site shall be provided as part of the proposed development.

Millbrook Pedestrian/ Cyclist Link

As outlined above, a shared pedestrian/ cycle link shall be provided to the adjacent Millbrook Estate along the eastern side of the site. The link shall be 3.0 metres wide and will connect into the residential

estate of Millbrook which in turns provides a short (ca. 1 kilometre) route to Enniscorthy Town Centre via Andy Doyle Close and Ross Road. A Quality Audit of this route is provided within Section 8 of this report, with recommendations to improvements to existing infrastructure (typically provision of drop kerbs and tactile paving) also provided. Public lighting is proposed within the red line boundary of the site, with existing public lighting then provided within the Millbrook Estate and beyond to Urrin Valley and to Enniscorthy Town Centre.

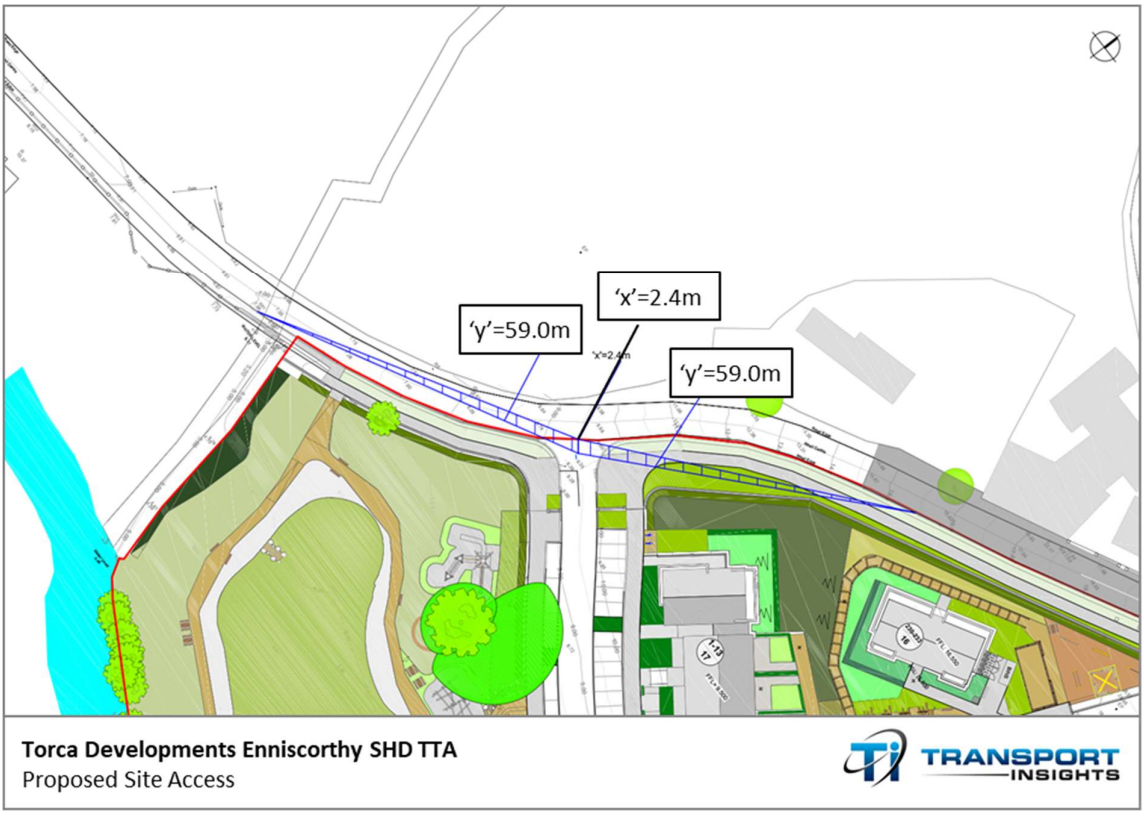
Vehicular Site Access/ Egress Arrangements

Vehicular access/ egress to/ from the application site will initially be exclusively via a new priority (stop) controlled access/ egress junction onto Carley's Bridge Road. The new access junction in the north-western part of the site is in close proximity to the existing site access which shall be extinguished as part of the development proposals. Corner radii of 6.0 metres will be provided between the site access road (the boulevard or link street) and Carley's Bridge Road (link street) in accordance with *DMURS* guidance.

Visibility splays at the new junction also accord with *DMURS* requirements, with updated 59 metres of sightlines (now reflecting a 60 km/ h design speed following the results of the traffic speed survey set out within Section 4.3) provided in each direction along Carley's Bridge Road, measured 2.4 metres from the edge of the carriageway along the centre of the boulevard. As visibility splays at the proposed site access junction are provided in accordance with the design speed of Carley's Bridge Road at this location, the proposed development's site access arrangements are not dependent on the extension of the urban speed limit to the west of its current location.

The proposed site access junction including sightlines in accordance with the design speed of Carley's Bridge Road are shown in Figure 5.2, which follows.

Figure 5.2 Proposed Site Access (Drawing Reference: 1768-P-010)*



* with additional annotation by Transport Insights

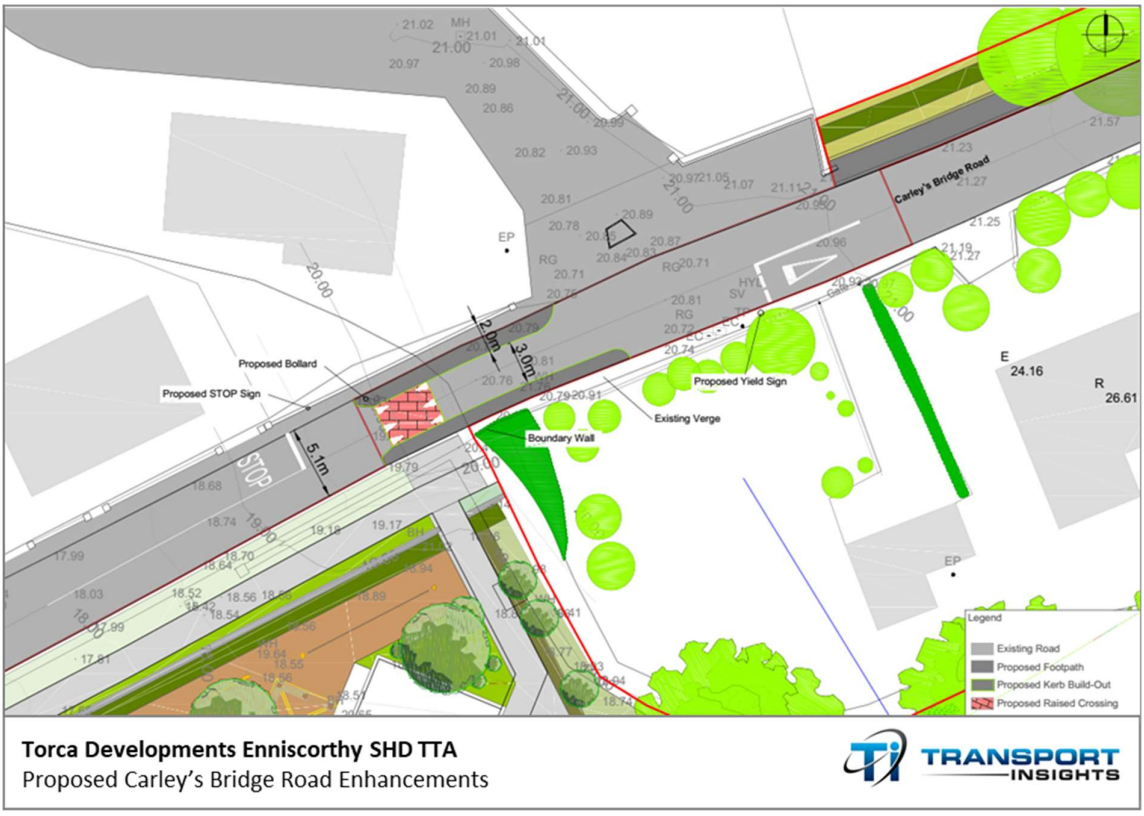
5.4 Carley's Bridge Road Enhancements

Enhancements to Carley's Bridge Road beyond the site boundary were included as part of the previously proposed development. However, following the decision by ABP to refuse permission for that development (see Section 1.3 and Table 1.1 for further details), revised road enhancements are now proposed. The 2.0 metre wide footpath adjacent to the site frontage on the southern side of Carley's Bridge Road outlined above shall terminate at a new raised crossing (as opposed to the long raised table previously proposed).

The raised crossing shall be located on the public carriageway adjacent to the entrance to a small residential development on the northern side of Carley's Bridge Road known as Potters Way. The raised crossing shall act to both calm traffic and allow for pedestrians to cross Carley's Bridge Road at this location, where it will tie into a proposed new ca. 100 metre-long, 2.0 metre wide pedestrian footpath on the northern side of Carley's Bridge Road. This new footpath shall in turn connect with an existing footpath on Carley's Bridge Road which currently terminates abruptly, thus providing a continuous pedestrian route connecting the development site to Enniscorthy Town Centre. It should be noted that the shortest route to Enniscorthy Town Centre for the majority of residents of the development is via the new pedestrian/cyclist link at Millbrook. The following Figure 5.3 illustrates the

proposed raised crossing on Carley's Bridge Road, with a to-scale preliminary layout design for the proposed raised crossing and footpath included at Appendix I.

Figure 5.3 Proposed Carley's Bridge Road Enhancements



As can be seen from Figure 5.3, the proposed raised crossing features a kerb build-out either side of the raised crossing, which results in single-file traffic along this section of Carley's Bridge Road operating via a line of sight arrangement. Eastbound traffic shall have a default 'STOP' arrangement, with motorists travelling in that direction required to come to halt before proceeding. Westbound traffic shall have a default 'YIELD' arrangement. 'STOP' and 'YIELD' road markings and signage are proposed as part of the scheme to provide adequate clarity to road users regarding priority arrangements.

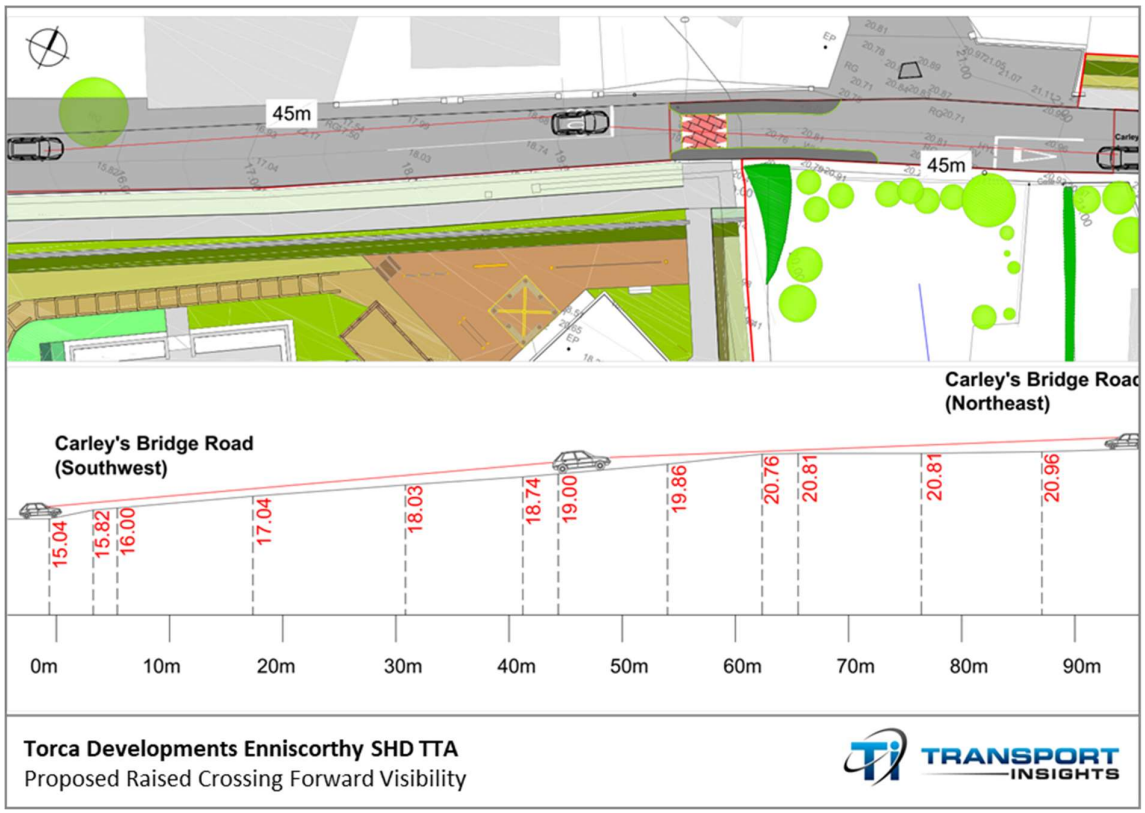
No third-party lands are affected by the crossing other than lands within the control of WCC (i.e. the public carriageway) and the proposed footpath on the northern side of Carley's Bridge Road. Relevant letters of consent are provided at Appendix H of this TTA.

Vehicular and Pedestrian Visibility Assessment

Visibility assessments have been undertaken at the proposed raised crossing in terms of both intervisibility between vehicles and also intervisibility between vehicles and pedestrians at the crossing.

The following Figure 5.4 illustrates forward visibility achievable at the proposed raised crossing in accordance with a 50 km/ h design speed (45 metres of visibility according to *DMURS*) i.e. reflecting the urban speed limit at this location, with a to-scale drawing included at Appendix I. It is noted that the Carley's Bridge Road speed survey (set out in Section 4.3) determined the effective speed limit of the road to be 60 km/ h – that survey was however 125 metres to the west of the proposed raised crossing, close to the proposed site access location and the interface between the urban and rural speed limit zones. Furthermore, *DMURS* (Section 4.4.1) advises that *"The design speed of a road or street must not be 'updesigned' so that it is higher than the posted speed limit."* For this reason, visibility attributes at the raised crossing have been assessed with respect to Carley's Bridge Road's design speed of 50 km/h (with the exception of a locally reduced design speed at the crossing itself noted below).

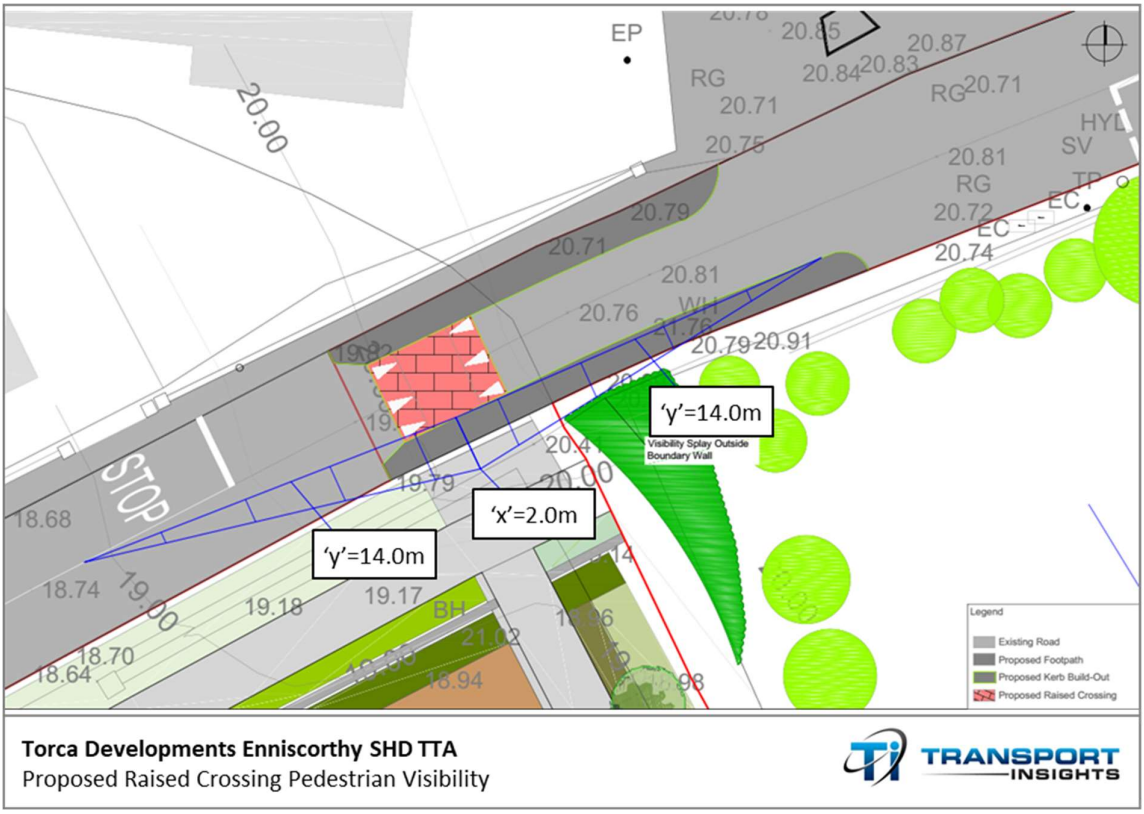
Figure 5.4 Proposed Raised Crossing Forward Visibility



As can be seen from Figure 5.4, full intervisibility of eastbound vehicles (at the 'STOP' location) approaching the raised table by westbound vehicles (approaching the 'YIELD' location), and vice versa, is achievable. This intervisibility is illustrated in Figure 5.4 from both a horizontal (top of drawing) and vertical (bottom of drawing) road alignment point of view. Furthermore, the required forward visibility of an eastbound vehicle waiting at the 'STOP' line from a vehicle approaching from the rear has also been demonstrated to be achievable.

The following Figure 5.5 illustrates intervisibility between pedestrians and vehicles at the proposed raised crossing in accordance with a 20 km/ h design speed, with a to-scale drawing included at Appendix I. The 20 km/ h design speed locally on Carley's Bridge Road represents the maximum speed a vehicle would traverse the raised crossing due to the vertical deflection incorporated into the raised crossing.

Figure 5.5 Proposed Raised Crossing Pedestrian Visibility



As can be seen from the preceding Figure 5.5, based on a design speed of 20 km/ h for the raised crossing and an associated 14 metres of visibility (in accordance with *DMURS* Table 4.2 SSD Standards) full visibility of oncoming vehicles by pedestrians is achievable, with full visibility of pedestrians for vehicles also achievable.

The proposed raised crossing's design has been subject to a Stage 1 Road Safety Audit, with a summary of its findings set out in Section 8.2 of this TTA and included in full within Appendix J.

5.5 Car Parking

Car Parking Provision

The development car parking arrangements will be accommodated at surface level, with the car park having a total of 352 no. car parking bays comprising the following:

- 301 no. standard car parking bays, measuring 2.5 metres * 5.0 metres (with those in '*homezone*' area, an additional 0.6 metre buffer at the end of the bay is provided for manoeuvring);
- 48 no. electric car charging bays, measuring 2.5 metres * 5.0 metres; and
- 3 no. disabled car parking bays, measuring 2.5 metres * 5.0 metres, with a 1.2 metres buffer provided either side and in front of the bays.

The proposed creche is envisaged to mainly serve a local/ walk-in catchment associated with the new residential units, and is therefore not envisaged to generate any significant additional car parking demand. Ample car parking is however provided within this section of the site to accommodate pick-up and drop-off activities. Furthermore, some staff would be envisaged to drive to the site, however this number (anticipated to be ca. 2 no. vehicles) is considered negligible in the context of the 352 no. car parking bays proposed (which would operate in a shared-use arrangement).

Appropriateness of Car Parking Provision

The quantum of car parking proposed (352 no. parking bays), representing a ratio of ca. 1.51 bays per dwelling, is noted to be below the *Wexford County Development Plan 2013-2019* standards, however it is in accordance with prevailing national policy as set out within *Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities* which states "*one car parking space per unit, together with an element of visitor parking, such as one space for every 3-4 apartments, should generally be required.*" As it is assumed that:

- 2 no. spaces would be used by each house, indicating a total of 106 no. spaces;
- 1 no. space would be used by each apartment (i.e. in accordance with the *Design Standards for New Apartments* outlined above and in Section 2.2), indicating a total of 180 no. spaces; and
- the remaining 66 no. spaces would be used for visitor parking and creche parking.

Furthermore, as car parking is not specifically allocated to each residential unit and is to be provided on a communal basis (in accordance with best practice), the proposed provision of car parking and allocation policy within the development is deemed appropriate to accommodate peak demand requirements, notwithstanding some additional visitor car parking needs and the extremely small no. of car parking bays required for the creche.

In addition, due to the site's favourable accessibility characteristic, including specifically its location ca. 1 kilometres from Enniscorthy Town Centre, with a wide range of employment, retail and amenity opportunities within its walking catchment, the proposed level of on-site car parking provision is considered appropriate. Finally, provision of high-quality cycle parking/ storage facilities (see subsequent Section 5.5) and proximity to Enniscorthy via bicycle (see Section 3.4), means cycling represents a realistic and viable alternative to travel by car for residents of the proposed development.

5.6 Cycle Parking

It is proposed to provide a total of 497 no. cycle parking spaces as part of the development, which although below the standards set out within the *Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities* (see Sections 2.2 of this TTA for further details), represents significantly more than 1 cycle parking spaces per apartment/ duplex unit. Furthermore, capacity exists within the development to provide additional cycle parking facilities should the need arise in future. Cycle parking facilities will be provided in the form of 407 no. long-stay cycle parking spaces (203 no. 'Sheffield' style stands) and 90 no. short-stay cycle parking spaces (45 no. 'Sheffield' style stands).

Long-stay cycle parking will be provided within dedicated bicycle stores located adjacent to each of the apartment buildings. These locations represent areas that are convenient and accessible for residents and their visitors. Each of the cycle stores will be lockable and sheltered, with the visitor cycle parking also sheltered (although not located within a locked compound). 'Sheffield' cycle stands provided within the compounds offer potential for added security.

All cycle parking/ storage facilities will have the benefit of excellent passive surveillance from passers-by and residents of the development.

5.7 Servicing

It is envisaged that refuse collection for both the residential and creche components of the development will be accommodated directly via the proposed network of internal roads. A swept path analysis showing a large refuse truck accessing all roads within the site is included at Appendix C.

5.8 DMURS Compliance Statement

DMURS represents an integrated design approach to urban roads and streets and provides practical advice in relation to the design of new and retrofitting of existing transport networks. In doing so, it seeks to achieve more sustainable communities, underpinned by the overarching design principle that "*well designed streets can create connected physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling and public transport.*"

DMURS contains design guidance to ensure *"cities and towns are pleasant, safe and healthy places to live."* In doing so, the following key design principles are defined and applied:

- *"Connectivity and permeability;*
- *Sustainability: Priority should be given to the needs of walking, cycling and public transport, and the need for car-borne trips should be minimised; and*
- *Safety: streets, paths and cycle routes should provide for safe access by users of all ages and degrees of personal mobility."*

The above key design criteria have been adhered to in the design of the proposed development. In addition, the following list summarises compliance of the proposed development with design guidance contained within *DMURS*:

- Street hierarchy – as set out within Section 2.2 of the TTA, in terms of street hierarchy, *DMURS* categorises streets or roads into three distinct classifications:
  - arterial streets;
  - link streets; and
  - local streets.
- Development site layout – the main boulevard which passes in a northwest to southeast alignment through the development is consistent with the *DMURS* link street classification and all other streets internally within the development have been classified as local streets.
- Each street type within the development has been designed in accordance with *DMURS* guidance, taking into account corner radii, carriageway width, and visibility splay dimensions:
  - Corner radii – corner radii at the main boulevard access road/ Carley's Bridge Road junction will be 6.0 metres, corner radii at junctions between site access road and internal roads will be 4.5 metres, and corner radii at junctions between internal roads will be 3.0 metres specifically to adhere to *DMURS* recommendations.
  - Carriageway width – the proposed site access road boulevard carriageway width measures 6.0 metres, internal roads carriageway widths are typically 5.5 metres, and carriageway widths within home-zone areas will be 4.8 metres, again all in accordance with specific *DMURS* recommendations.
  - Junction visibility splays – all junctions, including specifically the junction between the boulevard and Carley's Bridge Road have been designed to achieve *DMURS* (Section 4.4.5 Visibility Splays) recommended dimensions. This includes visibility splays of 59 metres * 2.4 metres at the proposed site access junction to reflect the design speed of Carley's Bridge Road, as informed by the traffic speed survey set out in Section 4.3 of this TTA.
- Pedestrian/ cycle facilities – 3.0 metre wide shared footpaths/cycle tracks shall be provided on each side of main boulevard road and 2.0 metres footpaths provided on all other internal roads within the site, providing access to all components of the development in accordance with *DMURS* and *NCM* guidance. Local streets within the development, with a lower design speed of 30 km/ h have been designed as mixed-traffic environments, with cyclists sharing the carriageway with general traffic. Furthermore, it is noted that the proposed development includes the provision of continuous pedestrian facilities from the site access junction to Enniscorthy Town Centre, with a new raised crossing facilitating pedestrians in crossing Carley's Bridge Road.

- Horizontal and vertical deflections – raised tables have been provided across the main boulevard access road at all junctions with internal roads and pedestrian links, and accords with *DMURS* (Section 4.4.7 Horizontal and Vertical Deflections) guidance.
- On-street car parking – *DMURS* (Section 4.4.9 On-Street Parking and Loading) states: "*perpendicular parking should generally be restricted to one side of the street to encourage a greater sense of enclosure and ensure that parking does not dominate the streetscape*." Furthermore, in relation to allocation of car parking, *DMURS* (Section 4.4.9 *On-Street Parking and Loading*) states*: "On-street parking on public streets should not be allocated to individual dwellings. This allows for a more efficient turnover of spaces and, as such, fewer spaces are needed overall."* The proposed development has been designed in accordance with both of the above *DMURS* recommendations.
- The proposed enhancements to Carley's Bridge Road, namely the raised crossing to the east of the development's site access junction, has also been undertaken in accordance with *DMURS* guidance, including forward visibility designed in accordance with Table 4.2 SSD Standards.

A standalone DMURS Compliance Statement is included at Appendix D of this Report.

6. 'Do-Nothing' and 'Do-Something' Traffic Forecasting

6.1 Introduction

This section of the TTA sets out the approach pursued and assumptions underpinning the estimation of traffic in the without development and with development scenarios, and how the latter traffic is assigned to the local road network. The outputs of this analysis represent key inputs to the ARCADY capacity assessment of the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout and the PICADY capacity assessment of the Site Access/ Carley's Bridge Road Junction (see Section 7).

6.2 Analysis Scope, Assessment Years, and Scenarios

Analysis Scope

Analysis has focused on assessing the impact of the development proposal on the:

- 3-arm priority-controlled Site Access/ Carley's Bridge Road Junction;
- 4-arm Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout; and
- 3-arm priority-controlled R744/ Carley's Bridge Road Junction.

Assessment Years

As recommended by TII's *TTA Guidelines*, three assessment years are considered, namely: base year 2020, year of opening (YoO) which is assumed to be 2022; and a horizon year (YoO+15), i.e. 2037.

Assessment Scenarios

The following scenarios have been developed in assessing the proposed development's traffic impacts:

- **'Do-Nothing' Scenario**: To assess the traffic impact of the development proposals on the local road network, it is first necessary to establish background traffic conditions without the proposed development, also referred to as the 'do-nothing' scenario. Such background traffic flows have been determined from the traffic survey detailed in Section 4.2 of this Report using relevant TII guidance.
- **'Do-Something' Scenario**: The with development or 'do-something' scenario represents traffic conditions following completion of the proposed development, i.e. 'do-nothing' plus additional traffic generated by the proposed development.

6.3 Do-Nothing Traffic Growth Forecasting

In order to establish the traffic impact of the development proposals on the local road network, it is first necessary to understand the without development or 'do-nothing' scenario for the base year 2020, year of opening 2022 (YoO), and year of opening +15 2037 (YoO+15). Traffic levels in the 'do-nothing' scenario comprises the forecast background traffic flows in each respective analysis year.

Forecast Background Traffic Growth Forecasting

Existing traffic flows on the surrounding road network, as determined via the traffic survey undertaken in February 2020, have been adjusted through application of appropriate growth factors to determine YoO and YoO+15 traffic flows. For this assessment, growth factors were determined from the Transport Infrastructure Ireland (TII) *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections*, May 2019. Information within these guidelines is provided for County Wexford from 2016-2030 and from 2030-2040 for low, central and high sensitivity growth scenarios.

This information is provided for LVs and HVs and was used to determine the future year 'do-nothing' traffic flows. Central growth factors were assumed for this assessment to determine future year background traffic flows on the surrounding road network. These factors are set out in Table 6.1, which follows.

Table 6.1 TII Traffic Growth Factors (Central) – Region 7 (County Wexford)

Year	Annual Growth Factor – LV	Annual Growth Factor – HV
2016-2030	1.0068	1.0211
2030-2040	1.0022	1.0116

Existing and Forecast Background Traffic Flows – Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout

Based on the TII central growth factors in the preceding Table 6.1, 2020 traffic volumes have been factored to 2022 and 2037 levels, to determine the assumed year of opening and horizon year traffic volumes, without the proposed development in place. Tables 6.2 and 6.3 which follow provide an overview of 'do-nothing' base year, year of opening (YoO) and year of opening + 15 years (YoO+15) AM and PM peak hour traffic volumes respectively.

Table 6.2 Existing and Forecast Background Approach Flow Traffic, AM Peak Hour (08:15hrs-09:14hrs)*

Road Link	Base Year (2020)		YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs	LVs	HVs
Ross Road	116	2	118	2	126	3
Andy Doyle Close	146	6	148	6	159	7
Carley's Bridge Road	100	4	101	4	109	5
Gort Ná Gréine	45	2	46	2	49	3

* all figures in PCUs

Table 6.3 Existing and Forecast Background Approach Flow Traffic, PM Peak Hour (16:00hrs-16:59hrs)* (16:00hrs-16:59hrs)*

Road Link	Base Year (2020)		YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs	LVs	HVs
Ross Road	182	7	185	7	198	9
Andy Doyle Close	85	5	86	5	92	7
Carley's Bridge Road	77	2	78	2	84	2
Gort Ná Gréine	44	2	45	2	48	2

* all figures in PCUs

Existing and Forecast Background Traffic Flows on Carley's Bridge Road

Based on the TII central growth factors in Table 6.1, 2020 traffic volumes on Carley's Bridge Road have been factored to 2022 and 2037 levels, to determine the assumed year of opening and horizon year traffic volumes, without the proposed development in place. Tables 6.4 and 6.5, which follow, provide an overview of 'do-nothing' base year, year of opening (YoO) and year of opening + 15 years (YoO+15) AM and PM peak hour traffic volumes on Carley's Bridge Road, respectively.

Table 6.4 Existing and Forecast Background Approach Flow Traffic on Carley's Bridge Road, AM Peak Hour (08:15hrs-09:14hrs)*

Approach Link	Base Year (2020)		YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs	LVs	HVs
Carley's Bridge Road Eastbound	100	4	101	4	109	5
Carley's Bridge Road Westbound	43	0	44	0	47	0

* all figures in PCUs

Table 6.5 Existing and Forecast Background Approach Flow Traffic on Carley's Bridge Road, PM Peak Hour (16:00hrs-16:59hrs)*

Approach Link	Base Year (2020)		YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	LVs	HVs	LVs
Carley's Bridge Road Eastbound	77	2	78	2	84	2

Approach Link	Base Year (2020)		YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	LVs	HVs	LVs
Carley's Bridge Road Westbound	96	3	98	3	105	4

* all figures in PCUs

Committed Developments

A review of committed developments (developments with planning permission, but not yet delivered) in the vicinity of the development site has not identified any of sufficient proximity/ scale to be deemed relevant to this assessment.

6.4 Development Traffic Generation

The proposed development will generate additional traffic to and from the site, and as such an estimation of its trip generation potential is deemed essential. Traffic generation data has been derived from the industry standard TRICS database for the following relevant land uses:

- *03 Residential C – Flats Privately Owned;*
- *03 Residential A - Houses Privately Owned, and*
- *04 Education D – Nursery.*

A range of comparable site locations have been selected from the TRICS database to reflect the nature of the proposed development, namely suburban and edge of town locations.

Based on the draft schedule of development available at the time of undertaking this analysis[1], the following Table 6.6 indicates the expected AM and PM peak hour development traffic generation derived from the TRICS data outputs.

Table 6.6 Forecast Development Traffic Generation (PCUs)

Land Use	AM Peak (08:15-09:14hrs)		PM Peak (16:00-16:59hrs)	
	Inbound	Outbound	Inbound	Outbound
Houses	21	56	47	30
Apartments	6	24	13	7
Creche	12	10	5	5

[1] The scale of development has subsequently been reduced from 269 no. residential units to 233 no. residential units, thus providing a highly robust assessment.

Land Use	AM Peak (08:15-09:14hrs)		PM Peak (16:00-16:59hrs)	
	Inbound	Outbound	Inbound	Outbound
Total Traffic	**39**	**90**	**65**	**42**

* all figures in PCUs

As can be seen from the preceding Table 6.6, it is estimated that the development proposal would generate 129 no. additional two-way vehicle trips (PCUs) during the weekday AM peak hour; and 107 no. additional two-way vehicle trips (PCUs) during the weekday PM peak hour. Full TRICS trip generation data is included at Appendix F.

6.5 Outline Traffic Impacts on Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout

Trip Distribution and Assignment

Due to the residential character of existing developments in the vicinity of the site, it has been assumed that development traffic generation will follow the existing turning proportions informed by the traffic survey presented in Chapter 4 of this TTA. Furthermore, in order to provide a robust assessment of the worst case scenario, it has been assumed that 100% of traffic egressing the site will head to/ come from the east on Carley's Bridge Road in both assessment time periods, i.e. the AM peak hour and PM peak hour. Once traffic egressing the site reaches the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout, 75% of traffic will head straight onto Ross Road towards Enniscorthy Town Centre, 11% of traffic will turn right towards Andy Doyle Close, with the remaining 14% turning left onto Gort Na Gréine as per existing traffic patterns.

'Do-Something' Traffic Flows

The 'do-something' or with proposed development scenario, represents the sum of the year of opening background traffic and traffic from the proposed development. The following Tables 6.7 and 6.8 provide an overview of, respectively, the year of opening and year of opening + 15 years AM and PM peak hour 'do-something' traffic flow on the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout.

Table 6.7 YoO (2022) and YoO+15 (2037) 'Do-Something' Approach Flow Traffic, AM Peak Hour (08:15hrs-09:14hrs)*

Road Link	YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs
Ross Road	149	2	158	3

Road Link	YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs
Andy Doyle Close	152	6	163	7
Carley's Bridge Road	191	4	199	5
Gort Ná Gréine	49	2	53	3

* all figures in PCUs

As can be seen from the preceding Table 6.7, the 'do-something' traffic flows for the AM peak hour represent a moderate increase in traffic compared to the 'do-nothing' scenario through the most critical junction in the vicinity of the site, i.e. the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Ná Gréine Roundabout. The largest approach flow increase noted above is at the Carley's Bridge Road link of the junction, with LV approaching traffic increasing from 101 PCUs in the 'do-nothing' scenario to 191 PCUs in the 'do-something' scenario in the year of opening, an increase of 90 PCUs (reflecting outbound AM peak traffic in Table 6.7. Increases on all other approach arms of the junction are considerably smaller, ranging from increases of between 3 and 30 PCUs compared to the 'do-nothing' scenario.

Table 6.8 YoO (2022) and YoO+15 (2037) 'Do-Something' Approach Flow Traffic, PM Peak Hour (16:00hrs-16:59hrs)*

Road Link	YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs
Ross Road	236	7	250	9
Andy Doyle Close	93	5	99	7
Carley's Bridge Road	121	2	126	2
Gort Ná Gréine	52	2	55	2

As can be seen from the preceding Tables 6.8, the 'do-something' traffic flows for the PM peak hour represent a moderate increase in traffic compared to the 'do-nothing' scenario through the most critical junction in the vicinity of the site, i.e. the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Ná Gréine Roundabout. The largest approach flow increase noted above is at the Ross Road approach arm of the junction, with LV traffic increasing from 185 PCUs in the 'do-nothing' scenario to 236 PCUs in the 'do-something' scenario in the year of opening, an increase of 51 PCUs. Increases on the approaches to all other arms of the junction are considerably smaller, ranging from increases of

between 7 and 43 PCUs compared to the 'do-nothing' scenario. The suitability of this junction to accommodate the moderate increase in traffic is determined within chapter 7 of the TTA.

6.6 Outline Traffic Impacts on Carley's Bridge Road/ R744 Junction

Trip Distribution and Assignment

Due to the ongoing global COVID-19 pandemic and related restrictions implemented by the Irish Government in March 2020, it was not feasible to undertake a traffic survey on the R744/ Carley's Bridge Road Junction (following an identification by WCC's Roads Department of a requirement to assess development traffic impacts at that location in early April 2020). Therefore, the proposed development traffic impacts have been estimated for the Carley's Bridge Road arm of the junction using existing traffic survey data, relevant outputs for which are presented in Table 4.2 (Section 4.2) of this Report. In order to provide a robust assessment of the worst case scenario for this junction, it has been assumed that 15% of the development traffic generation will depart towards/ arrive from the R744 in both assessment time periods, i.e. the AM peak hour and PM peak hour.

'Do-Something' Traffic Flows

The 'do-something' or with proposed development scenario, represents the sum of the year of opening background traffic and traffic from the proposed development. The following Tables 6.9 and 6.10 provide an overview of, respectively, the year of opening and year of opening + 15 years AM and PM peak hour 'do-something' traffic flow on Carley's Bridge Road.

Table 6.9 YoO (2022) and YoO+15 (2037) 'Do-Something' Carley's Bridge Road Traffic Flows, AM Peak Hour (08:15hrs-09:14hrs)*

Approach Link	YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs
Carley's Bridge Eastbound	107	4	115	5
Carley's Bridge Westbound	58	0	61	0

As can be seen from the preceding Table 6.9, the 'do-something' traffic flows for the AM peak hour represent a moderate increase in traffic on Carley's Bridge Road compared to the 'do-nothing' scenario. The largest traffic flow increase noted above is on the westbound approach to the R744, with LV approaching traffic increasing from 44 PCUs in the 'do-nothing' scenario to 58 PCUs in the 'do-something' scenario in the year of opening, an increase of 14 PCUs (reflecting 15% outbound AM peak hour traffic in Table 6.6). The eastbound approach is estimated to increase from 101 PCUs in the 'do-

nothing' scenario to 107 PCUs in the 'do-something' scenario in the year of opening, an increase of 6 PCUs (reflecting 15% inbound AM peak hour traffic in Table 6.6). Overall, the proposed development is forecast to result in a total increase of 20 PCUs in Carley's Bridge Road traffic flows during the AM peak hour, which represents a 12% increase in traffic in the assumed year of opening (2022), when compared to the do-nothing scenario.

Table 6.10 YoO (2022) and YoO+15 (2037) 'Do-Something' Carley's Bridge Road Traffic Flows, PM Peak Hour (16:00hrs-16:59hrs)*

Approach Link	YoO (2022)		YoO+15 (2037)	
	LVs	HVs	LVs	HVs
Carley's Bridge Eastbound	88	2	94	2
Carley's Bridge Westbound	104	3	111	4

As can be seen from the preceding Table 6.10, the largest traffic flow increase for the PM peak is noted on the eastbound approach, with LV approaching traffic increasing from 78 PCUs in the 'do-nothing' scenario to 88 PCUs in the 'do-something' scenario in the year of opening, an increase of 10 PCUs (reflecting 15% outbound PM peak hour traffic in Table 6.6). The westbound approach to the R744 is estimated to increase from 98 PCUs in the 'do-nothing' scenario to 104 PCUs in the 'do-something' scenario in the year of opening, an increase of 6 PCUs (reflecting 15% inbound PM peak hour traffic in Table 6.6). Overall, the proposed development is forecast to result in a total increase of 16 PCUs in Carley's Bridge Road traffic flows during the PM peak hour, which represents a 9% increase in traffic in the assumed year of opening (2022), when compared to the do-nothing scenario.

7. Traffic Impact Analysis – PICADY/ ARCADY Junction Modelling

7.1 Introduction

Assessment Years and Scenarios

This section of the TTA presents the capacity analysis of the priority-controlled Site Access/ Carley's Bridge Road Junction and the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Ná Gréine Roundabout. As noted within Section 6.2, three assessment years are considered, namely: base year 2020, year of opening which is assumed to be 2022; and a horizon year, 2037. Two scenarios are assessed, i.e. without development or 'do-nothing', and with development or 'do-something'. Weekday AM and PM peak hours are assessed, i.e. 08:15-09:14hrs and 16:00-16:59hrs respectively.

Traffic Modelling Software

The industry standard traffic modelling software package PICADY has been used for predicting capacities, queues, and delays at the priority-controlled Site Access/ Carley's Bridge Road Junction. For the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout, the industry standard ARCADY modelling software has been used. The models analyse the junctions in relation to their geometry and traffic flows and calculate the capacity on each approach. The average queue length on each approach and the average delay per vehicle are also calculated.

7.2 Do-Nothing Scenario

Site Access/ Carley's Bridge Road Priority-Controlled Junction

Do-nothing scenarios for the priority-controlled Site Access/ Carley's Bridge Road Junction has not been developed as junction shall only be created in the context of the current proposed development's delivery.

Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout

The following Table 7.1 presents the ARCADY traffic modelling outputs for the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout in the without development or 'do-nothing' scenario for the AM and PM peak hours, i.e. 08:15-09:14hrs and 16:00-16:59hrs respectively.

Table 7.1 Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Ná Gréine Roundabout Capacity Analysis Summary – Do-Nothing Scenario

Year	Assessment Peak Hour	Maximum Queue Length (PCU)	Maximum Delay per Vehicle (Seconds)	Maximum Ratio of Flow to Capacity (RFC)	Level of Service (LOS)
Base Year (2020)	AM	0.2	4.02	0.14	A
	PM	0.2	3.76	0.16	A

Year	Assessment Peak Hour	Maximum Queue Length (PCU)	Maximum Delay per Vehicle (Seconds)	Maximum Ratio of Flow to Capacity (RFC)	Level of Service (LOS)
Year of Opening (2022)	AM	0.2	4.04	0.14	A
	PM	0.2	3.78	0.17	A
Year of Opening + 15 (2037)	AM	0.2	4.13	0.15	A
	PM	0.2	3.84	0.18	A

The results of the ARCADY modelling analysis for the 'do-nothing' scenario presented in the preceding Table 7.1 confirms that the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Ná Gréine Roundabout's maximum queue lengths values in the AM and PM peak hours are forecast to remain the same in all modelling years, with a maximum estimated queue length of 0.2 in all modelling scenarios. The modelling results show minor changes in the maximum delay per vehicle across the modelling years, however the junction level of service is expected to remained at 'A' in all 'do-nothing' scenarios. The maximum delay per vehicle in the YoO+15 years scenario is estimated to be 4.13 seconds in the AM peak hour and 3.84 seconds in the PM peak. The junction's maximum Ratio of Flow to Capacity (RFC) values are forecast to be 0.15 and 0.18 for the AM and PM hours respectively. In summary, the junction has ample reserve capacity to accommodate forecast future traffic demand in both peak hours.

Detailed modelling results for the 'do-nothing' scenarios are included as Appendix G of this Report.

7.3 'Do-Something' Scenario

Site Access/ Carley's Bridge Road Priority-Controlled Junction

The following Table 7.2 presents the PICADY traffic modelling outputs for the priority-controlled Site Access/ Carley's Bridge Road Junction in the with development or 'do-something' scenario for the AM and PM peak hours, i.e. 08:15-09:15hrs and 16:00-17:00hrs respectively.

Table 7.2 Site Access/ Carley's Bridge Road Junction Capacity Analysis Summary – 'Do-Something' Scenarios

Year	Assessment Peak Hour	Maximum Queue Length (PCU)	Maximum Delay per Vehicle (Seconds)	Maximum Ratio of Flow to Capacity (RFC)	Level of Service (LOS)
	AM	0.3	9.20	0.20	A

Year	Assessment Peak Hour	Maximum Queue Length (PCU)	Maximum Delay per Vehicle (Seconds)	Maximum Ratio of Flow to Capacity (RFC)	Level of Service (LOS)
Year of Opening (2022)	PM	0.1	8.37	0.10	A
Year of Opening + 15 (2037)	AM	0.3	9.25	0.20	A
	PM	0.1	8.44	0.10	A

The results of the PICADY modelling analysis for the 'do-something' scenario presented in Table 7.2 above confirms that the proposed new priority-controlled Site Access/ Carley's Bridge Road Junction can accommodate the proposed development traffic generation in all future years assessed. The maximum queue lengths in the YoO+15 years scenario are estimated to be 0.3 in the AM peak hour and 0.1 in the PM peak hour. The modelling results show very minor changes in the maximum delay per vehicle across the modelling years, increasing from 9.20 seconds to 9.25 seconds in the AM peak hour, and from 8.37 seconds to 8.44 seconds in the PM hour (comparing YoO to YoO+15 year scenarios). Note – this estimated delay corresponds only to the site access arm of the junction. The junction's maximum RFC for all modelling years are 0.20 and 0.10 for the AM and PM hours respectively. The junction's level of service is expected to remain at 'A' in all 'do-something' scenarios, and as such it has been demonstrated to operate satisfactorily with no material delay or impact expected to background traffic on the adjoining Carley's Bridge Road.

Detailed modelling results for the 'do-something' scenarios are included as Appendix G of this Report.

Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout

The following Table 7.3 presents the ARCADY traffic modelling outputs for the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout in the with development or 'do-something' scenario for the AM and PM peak hours, i.e. 08:15-09:14hrs and 16:00-16:59hrs respectively.

Table 7.3 Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout Capacity Analysis Summary – 'Do-Something' Scenarios

Year	Assessment Peak Hour	Maximum Queue Length (PCU)	Maximum Delay per Vehicle (Seconds)	Maximum Ratio of Flow to Capacity (RFC)	Level of Service (LOS)
	AM	0.2	4.27	0.19	A

Year	Assessment Peak Hour	Maximum Queue Length (PCU)	Maximum Delay per Vehicle (Seconds)	Maximum Ratio of Flow to Capacity (RFC)	Level of Service (LOS)
Year of Opening (2022)	PM	0.3	3.88	0.21	A
Year of Opening + 15 (2037)	AM	0.3	4.37	0.20	A
	PM	0.3	3.94	0.23	A

The results of the analysis presented in the preceding Table 7.3 demonstrate that the proposed development will not have a material impact in the operation of the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout. The maximum estimated queue length in the 'do-something' scenarios is 0.3 in both the AM and PM peak hours in the YoO+15 years. This compares to 0.2 in both peak hours in the equivalent 'do-nothing YoO+15 years' scenarios, which represents a slight increase.

The YoO+15 years' maximum delay per vehicle is 4.37 seconds in the AM peak hour and 3.94 seconds in the PM peak hour, which compares to 4.13 seconds and 3.84 seconds in the equivelent 'do-nothing' scenarios.

The junction's YoO+15 years' maximum 'do-something' RFC values are 0.20 and 0.23 for the AM and PM hours respectively, compared to 0.15 and 0.18 in the equivalent 'do-nothing' scenarios. The junction's level of service is expected to remain at 'A' in all modelling scenarios, and as such it has been demonstrated to operate satisfactorily with no material delay or impact expected to background traffic using the roundabout.

Detailed modelling results for the 'do-something' scenarios are included as Appendix G of this Report.

8. Quality Audit

8.1 Introduction

Overview

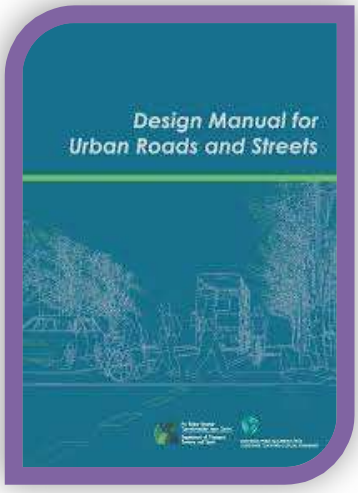
Item no. 3 of the Pre-Application Consultation Opinion issued by ABP (summarised in Table 1.4 within Section 1.4 of this TTA) outlines a requirement for a Quality Audit "*from the proposed development through Millbrook Estate towards Enniscorthy town centre*". This Section of the TTA seeks to satisfy that requirement, with the Quality Audit (QA) comprised of:

- Access Audit (Section 8.3);
- Walking Audit (Section 8.4); and
- Cycling Audit (Section 8.5).

A Stage 1 Road Safety Audit (RSA) requested at the pre-planning stage of the project to inform the design of the main access to the site (see Section 1.3), is summarised in Section 8.2 and included in full within Appendix E. The main access junction has remained fundamentally the same as at that stage of the project and hence the RSA is still valid. An additional Stage 1 RSA undertaken for the proposed raised crossing on Carley's Bridge Road (set out within Section 5.4 of this TTA), is summarised in Section 8.2 and included in full within Appendix J.

Best Practice Guidance

The overall QA has been guided by DMURS (5.4.2 Quality Audits), which recommends that:



> *"Quality Audits generally consist of a number of individual and overlapping audits that may include: … an access audit; a walking audit; a cycle audit……the extent to which these processes are undertaken will vary according to the scale and scope of any given project.*
>
> *The intention of a Quality Audit is not to 'pass' or 'fail' a design. Rather it is intended as an assessment tool that highlights the strengths and weaknesses of a design and a documented process of how decisions were made."*

DMURS also refers to guidance relating to QAs as per *"The UK Department for Transport Traffic Advisory Leaflet 5/11"* (November 2011), which states that a *"Quality Audit (QA) is a process, applied to highway, traffic management or development schemes, which systematically reviews projects using a series of discrete but linked evaluations and ensures that the broad objectives of place, functionality,*

maintenance and safety are achieved.", and that *"the aim should be a QA report with a set of clear, agreed outcomes and recommendations that are fed back into the design process through discussion and agreement with the design team."*

The Stage 1 Road Safety Audit (RSA) was undertaken in accordance with national best practice, namely Transport Infrastructure Ireland's Road Safety Audit, GE-STY-01024 (December 2017).

Audit Teams

The QA has been undertaken by Transport Insights' project team, with the Site Access Stage 1 RSA undertaken by an independent, fully qualified road safety auditor – Road Safety Matters. The Carley's Bridge Road Enhancements Stage 1 RSA was also undertaken by an independent, fully qualified road safety auditor – Bruton Consulting Engineers.

Audit Approach and Scope

The QA has been informed by a site assessment (as set out in Section 3.1 of this Report) during which existing transport-related infrastructure and local road network serving the proposed development were audited. The QA provides an overview of strengths, issues and recommendations associated with walking, cycling and accessibility to/ from the proposed development and its environs.

The Access Audit provides an overview of accessibility to/ from the proposed development, focusing on those items located externally from the site boundary, and linking the site to key points of attraction i.e. Enniscorthy Town Centre, by active travel modes; whereas the Walking and Cycling Audits provide an overview of the proposed development site itself, and the site's direct connections with the adjoining road network.

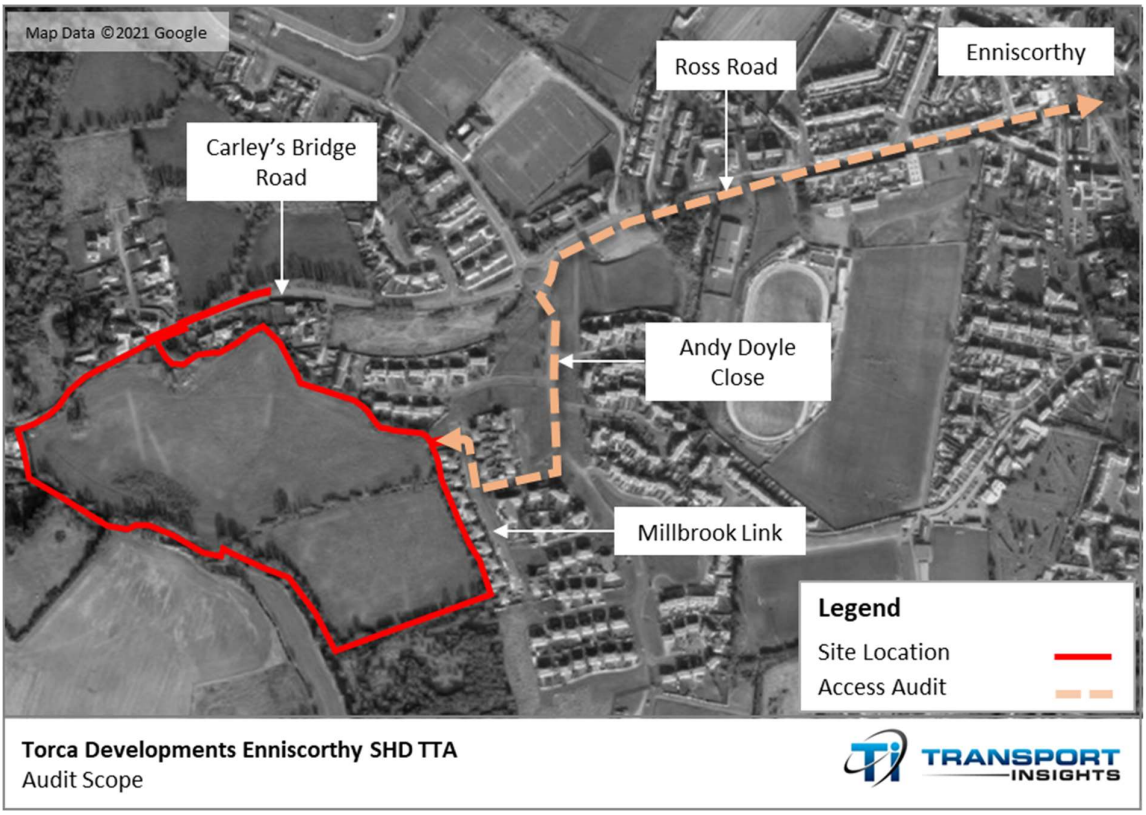
The QA provides an independent audit of the draft proposed internal site layouts developed by Brian Dunlop Architects, in addition to relevant external road network characteristics. Draft proposed site layouts plans have been updated to reflect recommendations emerging from the QA (incl. the Stage 1 RSA), as have recommendations set out within the Stage 1 RSA for the raised crossing been incorporated into the final proposed crossing layout on Carley's Bridge Road with such changes included as part of the planning application. Further recommendations shall be developed at the detailed design stage, i.e. following a grant of planning permission for the proposed development.

The scope of the QA is defined as follows:

- the Access Audit (AA) provides an overview of accessibility to/ from the proposed development, focusing on those items located externally from the site boundary, and linking the site to key points of attraction by active travel modes (i.e. Enniscorthy Town Centre); and
- the Walking Audit (WA) and Cycling Audit (CA) provide an overview the site's direct connections with the adjoining road network.

The scope of the QA is illustrated within Figure 8.1 (overleaf), with the WA and CA confined internally within the site's red line boundary.

Figure 8.1 QA Audit Scope



As set out within Section 8.1 above, the extent of the QA was defined by the Pre-Application Consultation Opinion issued by ABP which outlined a requirement for a Quality Audit "*from the proposed development through Millbrook Estate towards Enniscorthy town centre*".

As it can be seen in the above Figure 8.1, the access audit extends for ca. 880 metres along Millbrook, Andy Doyle Close, and Ross Road.

8.2 Road Safety Audits

Site Access Stage 1 Road Safety Audit

The Stage 1 RSA has been undertaken by a certified independent auditor (Lead Auditor: Miriam O'Brien, Road Safety Matters (RSM)). The purpose of this Stage 1 RSA is to examine the road safety implications associated with access to the proposed development. The full Stage 1 RSA Report is included as Appendix E to this Report.

The Stage 1 RSA was undertaken in March and April 2020, with the RSA being informed by draft proposed layout plan drawings available at that time (19 no. drawings prepared by Brian Dunlop Architects and traffic survey information from Transport Insights).

The RSA comprised of a site assessment (undertaken on Monday 08 March 2020 during daylight hours), and a review of the proposed site layout plans. Thereafter the RSM Audit Team compiled a report outlining issues identified in the Stage 1 RSA together with accompanying recommendations across 11 categories to be considered, summarised as follows:

- 2.1.4 problem/ recommendation – Speeds Generally;
- 2.1.5 problem/ recommendation – Drainage;
- 2.1.6 problem/ recommendation – Landscaping and Boundary Treatment;
- 2.1.7 problem/ recommendation – Traffic Volumes;
- 2.1.8 problem/ recommendation – Parking;
- 2.2.1 problem/ recommendation – Access Junction/ Link Geometry;
- 2.2.2 problem/ recommendation – Ambiguous Form of Control and Layout;
- 2.3.1 problem/ recommendation – Pedestrian Provision;
- 2.3.2 problem/ recommendation – Cyclist Provision;
- 2.4.1 problem / recommendation – Lighting; and
- 2.4.2 problem / recommendation – Signing and Lining.

The issues and recommendations raised were then considered by Transport Insights, with all recommendations made by the Auditor accepted by Transport Insights as per the Designer's Response contained within Appendix D of the Stage 1 RSA (Appendix E of this TTA).

Audit recommendations have prompted the following response from Transport Insights, with some minor changes made to the development as a result:

- 2.1.7 Traffic Volumes – see traffic modelling results for this junction outlined within Section 7 of this TTA, indicating the appropriateness of the proposed junction for all future year scenarios.
- 2.2.1 Access Junction/ Link Geometry – a swept path analysis has been undertaken for this junction (included at Appendix C of this TTA), demonstrating that the junction operates satisfactorily.
- 2.2.2 Ambiguous Form of Control and Layout – the updated site layout plan (shown in Figure 5.2 of this TTA) indicates the form of control at this junction (a stop-controlled priority junction, as per *DMURS* guidance).
- 2.3.1 Pedestrian Provision – a description of the route for pedestrians between the site and Enniscorthy Town Centre is shown at Figure 3.3.

- 2.3.2 Cyclist Provision – as per the response to 2.3.1 above, the Figure 3.3 illustrates the route for cyclists between the site and Enniscorthy Town Centre. Shared off road facilities with a minimum 3 metres width have been provided where necessary along the main 'Boulevard' as shown in Figure 5.1. Cyclists use on local access roads deemed appropriate as per *DMURS* guidance.

In addition to the items outlined above resolved following further updates to the site layout plan, a number of other issues and recommendations relate to items that will be addressed at the detailed design stage following a successful planning application. The Stage 1 RSA was signed off in full by the Road Safety Matters' Audit Team on 01 May 2020, with Transport Insights also signing off on that date.

Carley's Bridge Road Enhancements Stage 1 Road Safey Audit

A Stage 1 RSA has also been undertaken for the proposed raised crossing on Carley's Bridge Road by a certified independent auditor (Lead Auditor: Norman Bruton, Bruton Consulting Engineers (BCE)). The purpose of this Stage 1 RSA is to examine the road safety implications specifically associated with the raised crossing and its immediate environs. The full road enhancements Stage 1 RSA Report is included as Appendix J to this Report.

The Stage 1 RSA was undertaken during March 2022, with the RSA being informed by a draft proposed road enhancement layout plan drawings available at that time (1 no. drawing prepared by Transport Insights).

The RSA comprised of a site assessment (undertaken on Friday 11 March 2022 during daylight hours), and a review of the proposed site scheme plan. Thereafter the BCE Audit Team compiled a report outlining issues identified in the Stage 1 RSA together with accompanying recommendations across 4 no. categories to be considered, summarised as follows:

- 3.1 problem/ recommendation – Steep Gradient on Carley's Bridge Road;
- 3.2 problem/ recommendation – Intervisibility;
- 3.3 problem / recommendation – Priority/ Yield Shuttle System; and
- 3.4 problem / recommendation – Carriageway Width.

The issues and recommendations raised were then considered by Transport Insights, with all recommendations made by the Auditor accepted by Transport Insights as per the Designer's Response contained within Appendix B of the Stage 1 RSA (Appendix I of this TTA).

Audit recommendations have prompted the following response from Transport Insights, with some minor changes made to the proposed raised crossing's layout as a result:

- 3.1 Steep Gradient on Carley's Bridge Road – a full forward visibility assessment taking into account the road's vertical and horizontal alignment characteristics has been undertaken by Transport Insights and issued to BCE. The detailed assessment confirms there is no issue with forward visibility in both directions and is included at Appendix I.
- 3.2 Intervisibility – The proposed raised crossing layout has now been amended to address this concern with a kerb build-out introduced along the southern side of Carley's Bridge Road, and the kerb build-out along the northern side of the road reduced, whilst still maintaining a 2.0 metre wide footpath at that location.
- 3.3 Priority/ Yield Shuttle System – Auditor recommendations accepted and updated drawing approved by Auditor.
- 3.4 Carriageway Width – The road immediately to the west of the 'shuttle system' measures between 5.13 and 5.45 metres wide. According to *DMURS* (Section 4.4.1 Carriageway Widths) *"The standard carriageway width on Local streets should be between 5-5.5m"*. As such, it is not proposed to widen the road further, as doing so would result in the road no longer being in compliance with *DMURS* guidance. Auditor subsequently accepted response to this item.

The Carley's Bridge Road Enhancements Stage 1 RSA was signed off in full by the Bruton Consulting Engineers' Audit Team on 22 March 2022, with Transport Insights and the Applicant having signed off on 21 March 2022.

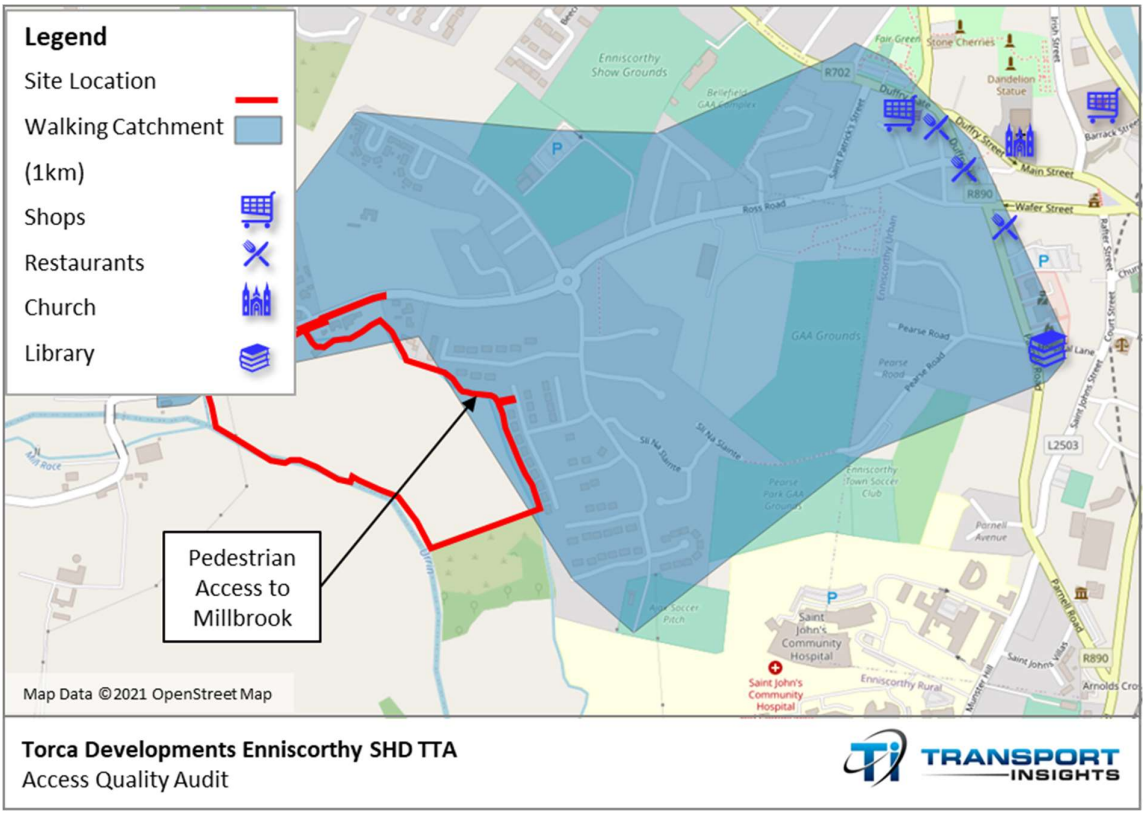
8.3 Access Audit (AA)

The AA for the site has considered provision for active travel modes (including mobility impaired access) to/ from the site to key local trip attractors (shops, amenities, etc. – all located within Enniscorthy Town Centre), and is detailed below. Roads referred to within the AA are shown at Figure 1.3 and the scope of the AA is illustrated within Figure 8.1.

Walk and Cycle Accessibility

The application site's accessibility by walking and cycling has been assessed with respect to each respective catchment. For purpose of the analysis, it has been assumed that these modes are considered feasible for all residents' trips up to a distance of approximately 1.0 kilometres for walking (i.e. Enniscorthy Town Centre) and 5.0 kilometres by cycling.

Figure 8.2 Services and Amenities Within Walking Distance From Site



The preceding Figure 8.2 demonstrates that the site's walking catchment spans over areas containing various services and amenities, including supermarkets such as SuperValu Enniscorthy, in addition to restaurants, pubs, schools, and leisure clubs. As such, there are multiple opportunities to satisfy typical daily needs of the development's residents, such as education, leisure, and shopping. Figure 8.2 illustrates the location of key services and amenities found within 1 kilometre walking distance from the site.

The cycle catchment (illustrated in Figure 3.2) extends to Kilcannon (industrial estate) in the north, St. John's in the south, Monart Spa in the west, and beyond Vinegar Hill to the east, and includes all urban areas within Enniscorthy. It can therefore be concluded that there are ample employment, leisure, and retail destinations within a sustainable commute by bicycle.

Pedestrian Access To/ From Application Site

It should be noted that the focus of the pedestrian access to the site has been on route through Millbrook as per Item no. 3 of the Pre-Application Consultation Opinion issued by ABP (summarised in Table 1.4 within Section 1.4 of this TTA) i.e. through the Millbrook residential estate towards Enniscorthy Town Centre.

Millbrook

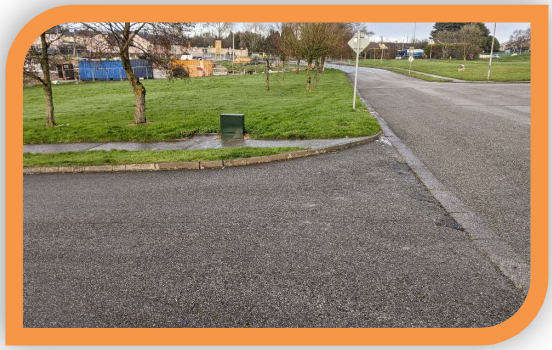
Pedestrian access to/ from the site via Millbrook is as follows:

- Adjacent to the application site, on the western side of the road, a ca. 2.0 metres wide footpath is provided for a distance of ca. 190 metres.
- However, after ca. 70 metres, there is a priority-controlled junction and Millbrook also continues in an east-west alignment for an additional ca. 100 metres, also with the benefit of a ca. 2.0 metre wide footpath on both sides of the road.
- On the eastern side of the road, a ca. 2.0 metres wide footpath is also provided., linking up to the abovementioned east-west section of road.

Pedestrian infrastructure along Millbook is convenient and safe access however there is an absence of crossings at junctions and an absence of drop kerbs and tactile paving.

Andy Doyle Close

The following observations were made in relation to Andy Doyle Close:



- Andy Doyle Close features a ca. 2.0 metre wide footpath along its eastern side, however does not feature a footpath along the western side of the road.
- No pedestrian connections are provided at junctions along the western side of the road, including at Millbrook and Urrin Valley, causing pedestrians to have to cross over grassed areas to join the existing footpath on Andy Doyle Close.
- In addition, there is an absence of drop kerbs and tactile paving throughout Andy Doyle Close, making navigation by the mobility impaired highly challenging.

Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout Roundabout

All arms of the roundabout junction have drop kerbs and tactile paving, at uncontrolled pedestrian crossing points. Guardrails are provided to encourage pedestrians to cross at these crossing points and pedestrian refuge/ traffic splitter island are located on all arms of the roundabout.

Ross Road

Ross Road connects Enniscorthy Town Centre with the abovementioned Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout and has the following characteristics:

- On the southern side of the road, ca. 1.3-2.0 metres wide footpath are provided for ca. 480 metres until the junction with Weafer Street.
- On the northern side of the road, ca 1.4-20 metres wide footpaths are provided for ca. 560 metres until the junction with Duffy Hill.
- Drop kerbs are typically provided where pedestrians cross accesses on Ross Road, however the quality of these vary significantly with some considered poor.

- Furthermore, tactile paving is generally not provided at pedestrian crossing points on Ross Road

Mobility Impaired and Disabled (MID) Access

Given that mobility impaired users will use the same infrastructure as pedestrians, i.e. the local footpath network as described above, it is deemed that access to/ from the site and its local environment is satisfactory.

Cycling Access To/ From Application Site

Millbrook

Dedicated cycling infrastructure is not currently provided on this road however as a lightly trafficked local road, Millbrook is considered suitable for cyclists, with dedicated facilities not required as per DMURS.

Andy Doyle Close

As with Millbrook, as a series of lightly trafficked local roads, dedicated cyclist facilities are not required on Andy Doyle Close.

Ross Road

Ross Road carries more traffic than either Millbrook or Andy Doyle Close. Dedicated cycling infrastructure is not currently provided on this road however as it has a limited road width (along the middle and eastern sections of the road) and traffic is calmed by on street car parking (middle and eastern end), Ross Road is generally considered

Design Strengths

- Footpaths generally provided along both sides of roads along routes to Enniscorthy from the site, with the exception of Andy Doyle Close.
- Dropped kerbs, tactile paving, and pedestrian islands provided at the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout.

Design Issues

- Narrow footpaths provided along some sections of Ross Road, particularly along middle and eastern section of road.
- Pedestrian crossing facilities absent from key junctions including the Millbrook/ Andy Doyle Close junction and across junctions on Andy Doyle Close.
- Missing drop kerbs and tactile paving across some junctions in Andy Doyle Close.
- Poor drop kerbs at pedestrian crossings on Ross Road. Tactile paving also absent.
- No dedicated cyclist facilities on roads generally in Enniscorthy.

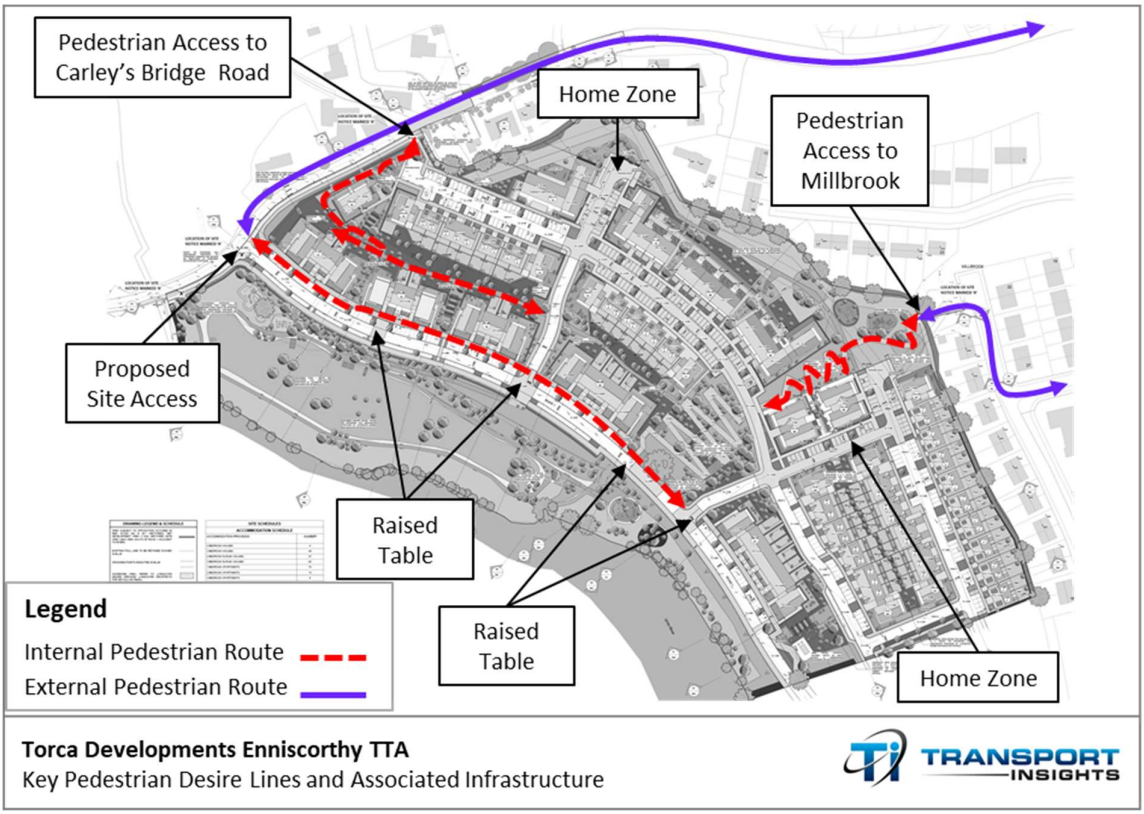
Recommendation

Opportunities for future enhancements to pedestrian facilities should be considered as part of any future planned enhancements to these roads by WCC.

8.4 Walking Audit (WA)

Building upon the externally focused AA, the WA for the development has focused on the proposed internal site layout design and its interfaces with the surrounding road network with respect to walking permeability, movement and safety. Key pedestrian desire lines, related facilities and associated infrastructure within the layout is detailed in Figure 8.3 (overleaf).

Figure 8.3 Key Pedestrian Desire Lines and Associated Infrastructure



Internal Layout Walking Routes

As can be seen in the preceding Figure 8.3, the surface level on the proposed layout will be a predominantly pedestrianised zone. The proposed development will accommodate 3 no. pedestrian accesses, 2 no. from Carley's Bridge Road and 1 no. from Millbrook estate. A 2.0 metres-wide footpath on Carley's Bridge Road adjacent to the site frontage shall be provided and shall connect with a new raised crossing and new footpath on Carley's Bridge Road (see Section 5.3). The accesses will allow pedestrian circulation from/ to the courtyard, the apartment entrances, and the creche areas of the development.

A *'Home Zone'* shall be located to the east of the proposed main '*boulevard*' road. The *'Home Zone'* is a shared space for motorists, pedestrians, and cyclists. Additional circulation routes will be provided to the east and north of the site to connect the Pedestrian Access to Millbrook and Carley's Bridge Road to the proposed internal roads.

Design Strengths

- Infrastructure provides for calmed interaction between pedestrians, cyclist, and vehicular traffic.
- Footpath widths and alignment are consistent with best practice (DMURS).
- Additional circulation spaces provided to the north and to the east of the site minimise potential for conflict with pedestrians on the public footpath.

- Access points integrated within the design.

Design Issues

None identified.

Recommendations

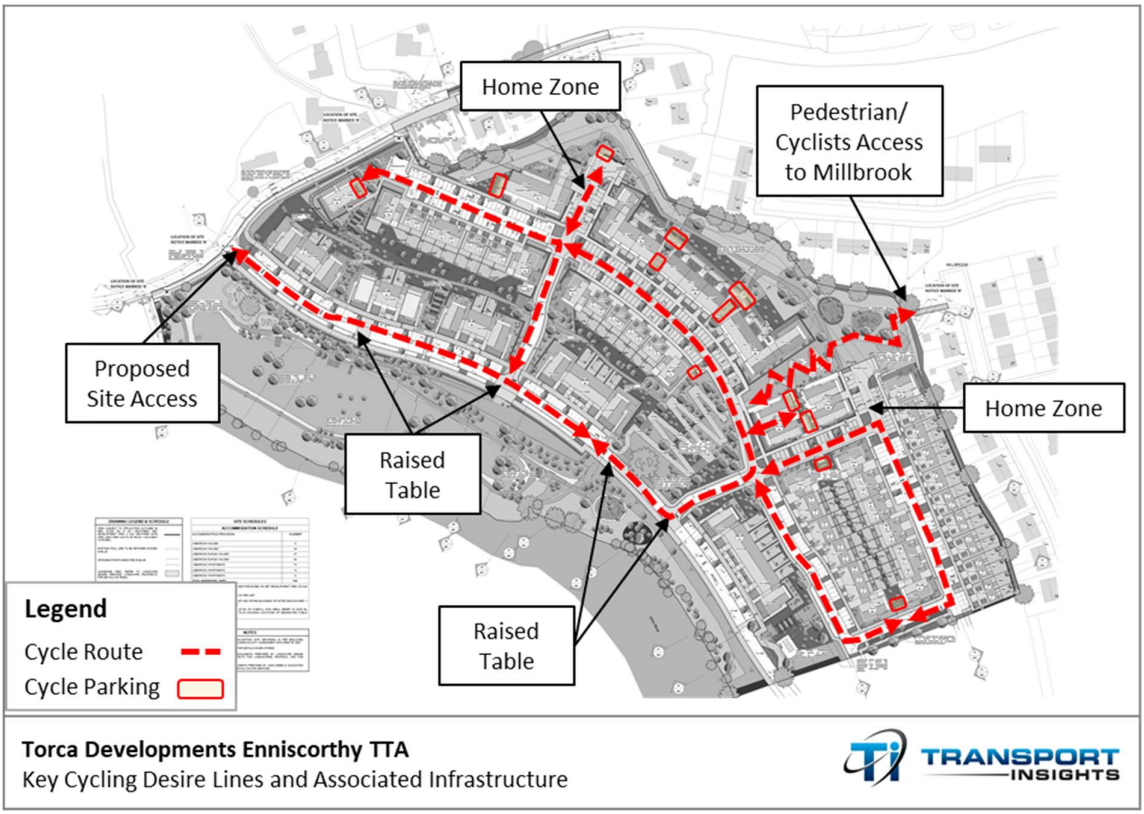
- N/a.

8.5 Cycling Audit (CA)

As with the WA, the CA for the proposed development has focused on the internal site layout design and its interfaces with the immediate surrounding road network with respect to accessibility for cyclists. As can be seen from the following Figure 8.4, cycle access/ egress to the development will be made through the main access onto Carley's Bridge Road and through Millbrook. Cyclists can access the site from these points to the cycle parking spaces within the courtyard and commercial areas of the development. Cycle routes within the proposed layout will be shared spaces with pedestrians (main boulevard and link through Millbrook) or shared with cars (minor roads within site).

The proposed site layout plan indicates provision of 383 no. cycle spaces within buildings or gated enclosures adjacent to building and 114 no. external cycle spaces. Cycle parking will be provided in the form of Sheffield stands, with external cycle parking covered.

Figure 8.4 Key Cyclist Desire Lines and Associated Infrastructure



Design Strengths

- Infrastructure provides for segregated cyclists and vehicular circulation on the main '*boulevard*' and shared facilities for cyclists and cars on quieter minor roads in the development.
- Existing and proposed cycle parking follow best practise – *DMURS* and *National Cycle Manual*.
- Short-stay and long-stay cycle parking are located in highly visible areas with good passive surveillance, easy to access and well-lit.

Design Issues

- None.

Recommendations

- N/A.

8.6 QA Summary

A summary of the recommendations of the QA and associated recommended actions taken to address them are presented within Table 8.1 which follows:

Table 8.1 Summary QA Recommendations and Associated Actions

Reference	Recommendation	Associated Actions
Road Safety Audit	Various.	All recommendations shall be addressed at detailed design stage.
Access Audit	• Provide pedestrian crossing at Millbrook/ Andy Doyle Close junction. • Consider providing a footpath along the western side of Andy Doyle Close. • Provide drop kerbs and tactile paving at junctions along Andy Doyle Close. • Improve drop kerbs and provide tactile paving at pedestrian crossings along Ross Road.	Enhancements to pedestrian facilities should be considered by WCC as part of future enhancement schemes.
Walking Audit	• None.	• n/a
Cycle Audit	• None.	• N/A

In undertaking the QA, the proposed development has been examined from the perspective of active travel users, i.e. those travelling to and from the site by foot and bicycle. The QA has sought to address

any unsatisfactory items pertaining to the proposed design and the site's surrounds and identify recommendations associated with the improved performance of facilities for both pedestrians and cyclists.

It can be concluded that infrastructure to, from and within the proposed development site is satisfactory in accommodating the needs of both pedestrians and cyclists. The QA has informed updates to the proposed site layout plans forming part of the current planning application, with other specific design recommendations to be addressed at detailed design stage following a grant of planning permission from ABP.

9. Framework Residential Travel Plan

9.1 Introduction

This section of the Report sets out the objectives, mode share targets and measures for the Residential Travel Plan (RTP). These are accompanied by a Monitoring and Management Strategy, to ensure the Action Plan remains relevant in meeting the future needs of residents of the proposed development.

9.2 Travel Plan Status

As the site is not currently developed, the RTP has been developed in 'framework' format.

9.3 Reference Guide

To date, no relevant national (Irish) guidance has been published in relation to the development of RTP. Therefore, its development has been guided by best practice as set out within the Transport for London's (UK) *Guidance for Residential Travel Planning*. This guidance document provides a holistic approach to behavioural change within residential settlements by incorporating both the 'hard' engineering measures and the 'soft' marketing and management measures necessary to address the transport needs of new residential developments.

9.4 Objectives

The overarching objectives of the RTP are to:

- promote sustainable travel choices (walking, cycling and public transport); and
- reduce car dependency, car use and car ownership among residents of the development.

9.5 Modal Split Targets

To establish performance indicators for the RTP, modal split targets for the proposed development have been set. Achieving a sustainable modal split for commuting is of key importance, therefore the modal split targets relate to work commuting only. However, the actions (Section 9.7) aim to influence all residents' trip making needs, including education, social and retail trips.

The modal split targets have been set based on the site's accessibility characteristics. The modal split characteristics of Enniscorthy Rural Electoral Division (i.e. Enniscorthy but excluding the town centre), as per Census 2016, is deemed to represent an appropriate baseline for establishing modal split targets for the current proposed development. Table 9.1 (overleaf) presents the identified modal split in Enniscorthy Rural (baseline), alongside the mode share targets for the proposed development for the opening year.

Table 9.1 Baseline and Proposed Modal Split Targets

Mode	Walking	Cycling	Public Transport	Motorcycle / Scooter	Car (Driver)	Car (Passenger)	Other *
Baseline	18%	0%	6%	0%	40%	25%	11%
Target	22%	10%	6%	0%	31%	20%	11%

**Other includes: Van, Lorry, Work mainly at/from home, not stated.*

As can be seen in the preceding Table 9.1 approximately 65% of trips to work by Enniscorthy residents are undertaken by car, of which 40% are as driver and 25% as passenger. A significant share of walking is noted at 18%, however cycling does not play any role, with 0% modal share. In summary sustainable modes of travel to work, school or college account for 24% of all commuting trips.

In developing this RTP, it is intended to achieve the following modal split:

- higher walking modal share (22% vs 18%);
- much higher cycling modal share (10% vs 0%); and
- reduction in car driver and passenger modal share (51% vs 65%).

While no specific mode share targets have been set for site's visitors due to the more limited scope to influence their travel behaviour, the site's ample provision of high quality visitor bicycle parking spaces is expected to encourage sustainable mode choices.

9.6 Key RTP Measures

To achieve the modal split targets, the following measures are aimed at encouraging walking, cycling and using public transport. These measures compliment the proposed bicycle and car parking provision aimed at reducing the car (driver) modal share, and residents' car ownership needs.

Appointment of a Travel Plan Coordinator

Encouraging a sustainable modal split is an ongoing behavioural change initiative. Therefore, effective management is critical to the implementation and ongoing success of the travel plan. A Travel Plan Coordinator (TPC) will be appointed to oversee the ongoing development and implementation of the RTP, including development of mobility related strategies and identification of newly available opportunities for residents as they emerge.

Residential Sales/ Letting Staff Training

Training shall be provided to staff responsible for meeting with prospective residents of the proposed development. The training will focus on ensuring all staff are familiar with the objectives of the RTP

and are able to communicate both the limited on-site car parking provision and available local sustainable travel opportunities to prospective buyers or tenants.

Sustainable Travel Information Pack

A Sustainable Travel Information Pack will be issued to each apartment upon first occupation. The aim of the Pack is to raise awareness of local amenities around the site and the available sustainable travel options available to get there. The Pack will include the following promotional materials and leaflets:

- overview of benefits of sustainable travel to individuals, the community and the environment;
- information on available sustainable travel schemes and pricing, including Leap Card (incl. TaxSaver offer), Bike to Work scheme, etc.;
- walking and cycling maps of the site's surroundings, detailing local education, shopping, health, sports, and leisure facilities in addition to public transport stops, and car sharing stations;
- public transport map covering bus services available in site's vicinity, presenting their routes' and typical frequency; and
- contact details of the TPC, to discuss transport or travel problems, or potential new ideas.

Residential Travel Survey

Six months after the development is operational, it is proposed that a residential travel survey be undertaken to establish the development's baseline modal split and identify measures to promote travel by sustainable modes. This will allow future modal split targets to be set and actions to be identified to achieve these targets. The survey is also a forum for residents to identify any issues relating to mobility.

Following this, it is envisaged that a travel survey should be carried every two years, enabling changes in travel patterns to be monitored and any issues to be addressed on a regular basis.

9.7 Actions

To assign responsibilities involved in the implementation of the RTP and set out the proposed measures in a systematic manner, the Action Plan is set out in a tabular form and is presented in Table 9.2 (overleaf).

Table 9.2 Framework Travel Plan Actions

Action	Why	Who	When	Target: Residents/ Visitors
Coordination				
Appoint a Travel Plan Co-Ordinator (TPC)	To assign responsibility for managing the Travel Plan implementation and ensuring that all actions are completed on time	Torca Developments Limited	Following planning approval	All
Public Transport				
Promote availability of public transport TaxSaver scheme	To alert residents to possibility and opportunity to engage with their respective employers	TPC	Upon site occupation	Residents
• Sustainable Transport Information Pack to be provided to new residents commencement of lease to include details of public transport services and stop locations, along with information about the Transport for Ireland journey planner website • Travel information on resident's noticeboard (Travel Plan Information Board) to include public transport service details and stop locations	To inform residents of public transport options and opportunities	TPC	Prior to site occupation	Residents
Cycling (Hard Measures Promoting Behavioural Change)				
Provide 407 no. secure resident cycle parking spaces	• To reduce residents' car use and associated car parking demand • To facilitate cycle use	Torca Developments Limited	Prior to site occupation	Residents

Action	Why	Who	When	Target: Residents/ Visitors
Provide 90 no. covered/ sheltered cycle parking spaces for visitors, and for shared bicycle parking	• To reduce visitors' car use and associated car parking demand • To facilitate cycle use	Torca Developments Limited	Prior to site occupation	Visitors
Cycling (Soft Measures Promoting Behavioural Change)				
Promote availability of Cycle to Work scheme	To alert residents to possibility and opportunity to engage with their respective employers	TPC	Upon site occupation	Residents
• Arrange tours of cycling facilities for new residents • Include information about the on-site cycling facilities in residents' Sustainable Transport Information Pack	To establish an active cycling culture and raise awareness of in-house cycle facilities	TPC	Upon site occupation	Residents
Have a bicycle repair kit and pump available for use by residents and visitors	To support cycling	TPC	Upon site occupation	All
Walking				
Promote walking as active travel in residents Sustainable Transport Information Pack	To promote fitness, well-being and reduce car dependency	TPC	Upon site occupation	Residents
Taxi				
Include information on local taxi rank facilities and phone numbers for local taxi companies on the residents' noticeboard	To accommodate residents and visitors access requirements	TPC	As relevant in the future	All

9.8 Monitoring and Update Strategy

It is important to monitor and update the RTP to ensure the actions are being implemented and that actions are sustained over time. It also provides an opportunity for the effectiveness of actions to be

assessed, and if required, new actions identified. The following steps are recommended to monitor progress:

- Informed by a residents and visitors travel survey, the RTP should be updated within six months of site occupation; and the Action Plan tailored to meet the specific requirements of its residents and visitors.
- A residents and visitors travel survey should be carried out every two years thereafter, forming the baseline from which the RTP's future performance is measured and additional/ amended interventions identified. This information should be disseminated among residents.
- A quarterly review of the actions carried out or due should be undertaken by the TPC. This should take the form of a memo to the apartment scheme's management company, documenting actions implemented, residents' feedback etc.

Monitoring of bicycle parking facilities should be carried out on a regular basis to determine their level of use and maintenance required.

10. Summary and Conclusion

10.1 Summary

Overview and Scope

Transport Insights has been commissioned by Torca Developments Limited to provide traffic engineering design support and to prepare a Traffic and Transport Assessment (TTA) for a proposed residential development at Carley's Bridge, Enniscorthy, Co. Wexford. The assessment approach underpinning this TTA is consistent with Transport Infrastructure Ireland's *Traffic and Transport Assessment Guidelines* (May 2014).

Planning permission is sought via a Strategic Housing Development (SHD) planning application directly to An Bord Pleanála (ABP), with the design of the overall scheme according with national best practice, namely the "*Design Manual for Urban Roads and Streets* (*DMURS*)", the "*Design Standards for New Apartment, Guidelines for Planning Authorities*" and the *National Cycle Manual* (*NCM*).

Site Context

The ca. 8.7-hectare development site is located adjacent to Carley's Bridge Road, ca. 1 kilometre to the west of Enniscorthy Town Centre. The site is currently in agricultural use, with a single gated access onto Carley's Bridge Road.

Development Proposals

The proposed development consists of:

- a total of 233 no. residential units in the form of 53 no. houses, 90 no. duplex units, and 90 no. apartments;
- a ca. 290 sqm GFA creche;
- 352 no. car parking bays provided at surface level; and
- 497 no. secure, sheltered cycle parking spaces, also provided at surface level within the development.

Vehicular access/ egress at the application site will be via a new access/ egress point onto Carley's Bridge Road, located adjacent to the north-western corner of the site. This new junction shall provide access to a proposed boulevard which provides a connection to remaining internal roads within the site and fulfils WCC's objective for a new link road to connect Carley's Bridge Road to Munster Hill as set out within the *Enniscorthy Town and Environs Development Plan 2008-2014* as extended.

New external road improvements are also proposed as part of the development and include a new footpath and raised crossing on Carley's Bridge Road and a new shared pedestrian/ cyclist access into the adjacent Millbrook residential estate.

Design Standards for New Apartments

The proposed development has been designed in accordance with guidance set out within the *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities*, 2018. Specifically, proposed development cycle parking provision (in terms of quantum and specification) for apartments within the development is consistent with the *Design Standards'* requirements.

DMURS Compliance

The development's street layout and design accords with DMURS guidance, and comprises a single link street (or boulevard) and a series of local streets. It also comprises a 'homezone' area within the centre of the development, which seeks to actively discourage through traffic and manage traffic speeds.

Traffic Impact Findings

The assessment of the proposed development's traffic impacts has been informed by the industry standards TRICS database, and a robust traffic survey of the local road network. These inputs have been utilised to develop traffic models for the priority-controlled Site Access/ Carley's Bridge Road Junction and the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout using the industry standard PICADY and ARCADY traffic modelling software packages respectively.

Priority-Controlled Site Access/ Carley's Bridge Road Junction

The results of the PICADY modelling analysis confirms that the priority-controlled Site Access/ Carley's Bridge Road Junction can successfully accommodate the proposed development's traffic generation in all future years assessed. Maximum queue lengths in the development's assumed year of opening + 15 (YoO+15) years are estimated to be 0.3 PCUs in the AM peak hour and 0.1 PCUs in the PM peak hour. The results show very minor changes in the maximum delay per vehicle across the modelling years, increasing from 9.20 seconds to 9.25 seconds in the AM peak hour and from 8.37 seconds to 8.44 seconds in the PM hour (comparing YoO with YoO+15 years). Note – this estimated delay corresponds only to the site access arm of the junction. The junction's level of service is expected to remain at 'A' in all 'do-something' scenarios.

Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout

The ARCADY modelling results demonstrate that the development traffic generation will not have a material impact in the operation of the Ross Road/ Andy Doyle Close/ Carley's Bridge Road/ Gort Na Gréine Roundabout. The maximum estimated queue length in the YoO+15 years 'do-something' scenarios is 0.3 PCUs for the AM peak hour and 0.3 PCUs for the PM peak hour, which compares to 0.2 PCUs in both peak hours in the equivalent 'do-nothing' scenarios. In the YoO+15 years 'do-something' scenario, maximum delay per vehicle of 4.37 seconds in the AM peak hour and 3.94 seconds in the PM

peak hour is forecast, which compares to 4.13 seconds and 3.84 seconds in the equivalent 'do-nothing' scenario. The junction's level of service is expected to remain at level 'A' in all modelling scenarios.

The proposed development shall therefore have **no material impact on the operation of the local road network in all future assessment years**.

Addressing Previous Reason for Refusal

On foot of ABP's decision to refuse permission, this raised table on Carley's Bridge Road has now been removed from the scheme. In its place is a raised crossing (set out in detail within Section 5.4 of this TTA). The raised crossing is understood to address concerns the Inspector had with the raised table – specifically its length, effectiveness in reducing traffic speeds, visibility attributes, and related suitability in accommodating pedestrian needs. The raised crossing has been subject to an independent Stage 1 Road Safety Audit (RSA), with the layout of the table revised following receipt of recommendations from the auditor and subsequently approved by the auditor.

Furthermore, a full vertical and horizonal forward visibility assessment of the revised crossing on Carley's Bridge Road has been undertaken and robustly demonstrates the suitability of the proposals in accordance with the road's posted 50 km/ h speed limit.

A traffic speed survey has been undertaken at the location of the proposed main vehicle access and egress junction. The speed survey demonstrates that vehicles speeds in the vicinity of the proposed site access are low and not reflective of the posted maximum rural speed limit. Informed by the speed survey findings, and in order to provide a robust assessment, visibility splays for a 60 km/ h design speed on Carley's Bridge Road have been assessed and demonstrated to be achievable. In summary, the revised visibility splays reflecting a robust design speed based on actual traffic speed survey results and illustrate there are no safety concerns at the site access junction.

10.2 Conclusions

The proposed residential development at Carley's Bridge, Enniscorthy, Co. Wexford has been subject to a comprehensive Traffic and Transport Assessment set out in this Report. The assessment has been underpinned by traffic survey data collection for the local road network, and development traffic generation analysis using the industry standard TRICS database. A detailed capacity assessment of this identified junction, and of the proposed priority-controlled Site Access / Carley's Bridge Road Junction has been undertaken using modelling software ARCADY and PICADY respectively. The assessment has demonstrated that the proposed development will have a no material impact on the operation of the local road network. The proposed development has also been demonstrated to be in compliance with *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities*, *DMURS* and *NCM*, and as such, in accordance with best practice guidance.

Appendix A TTA Scoping Note

Strategic Housing Development – Traffic and Transport Assessment Scoping Note

Contract Number	C543 2019
Topic	Traffic and Transport Assessment Scoping Note for Proposed Strategic Housing Development at Carley's Bridge, Enniscorthy, Co. Wexford
Version Number	v1.4
Status	Draft for Issue to Wexford County Council's Roads Department
Author	Carol Diaz Rosario
Reviewer	Eoin Munn
Date	05 March 2020

1. Introduction

Transport Insights has been commissioned by Torca Developments Limited to provide traffic engineering design support and to prepare a Traffic and Transport Assessment (TTA) in support of a proposed residential development at Carley's Bridge, Enniscorthy, Co. Wexford. This Scoping Note provides an overview of the proposed development and the analytical approach and assumptions underpinning the assessment of its traffic impacts. It is issued to the Roads Department of Wexford County Council (WCC) for comment, and represents an opportunity for it to clarify local road network constraints and requirements in relation to the planning application for development of the site.

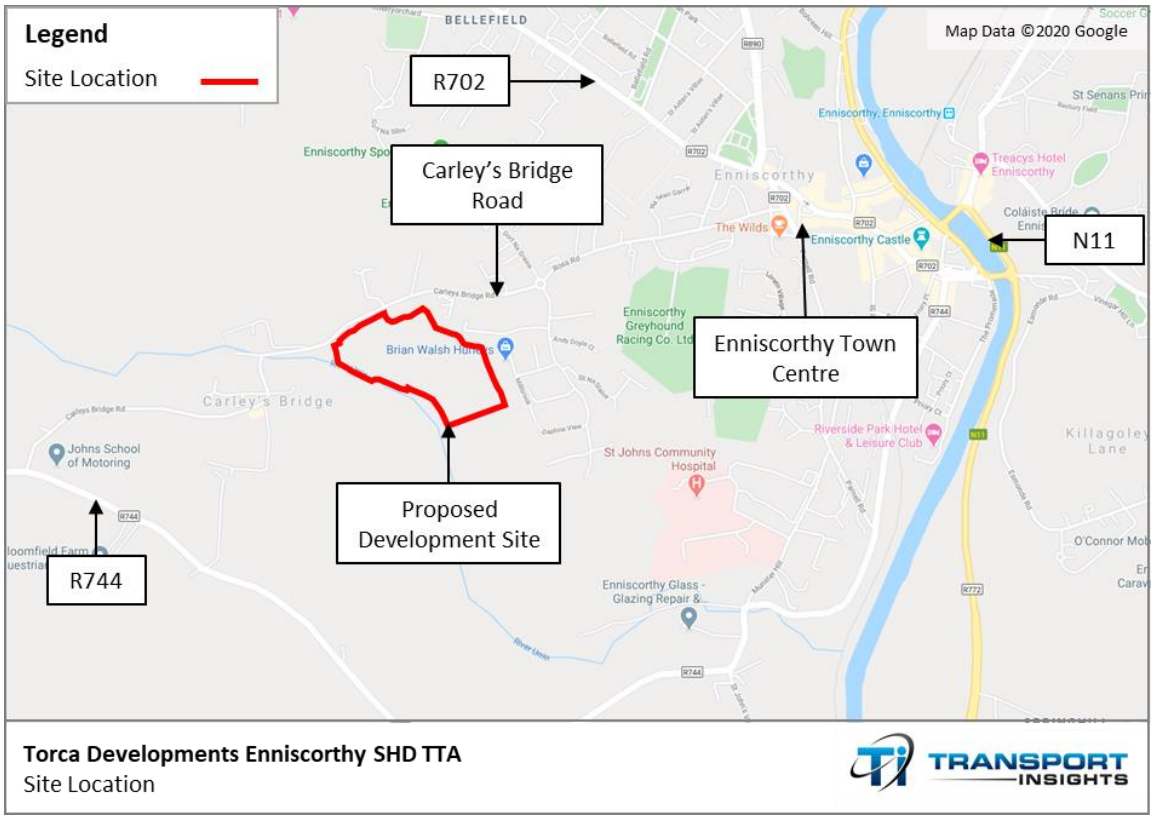
The proposed development shall comprise ca. 142 no. houses and 104 no. apartments i.e. a total of ca. 246 no. residential units, with planning permission sought via a Strategic Housing Development (SHD) planning application directly to An Bord Pleanála (ABP).

2. Background/ Development Proposal

Two planning applications for development of the site were submitted to WCC in 2019, both of which were initially granted permission by the Council, however were subsequently refused by ABP following appeal, with a fragmented approach to the development cited as part of the reason for refusal.

The current proposed development, which is effectively an amalgamation of the two previous application sites, now comprises ca. 246 no. residential units and ca. 345 no. associated residential car parking bays. Secure, sheltered cycle parking spaces shall also be provided in accordance with requirements set out within *Sustainable Urban Housing Design Standards for New Apartments* (March 2018). The site's location is shown at Figure 2.1 (below) and the current draft proposed layout is shown at Figure 2.2 (overleaf).

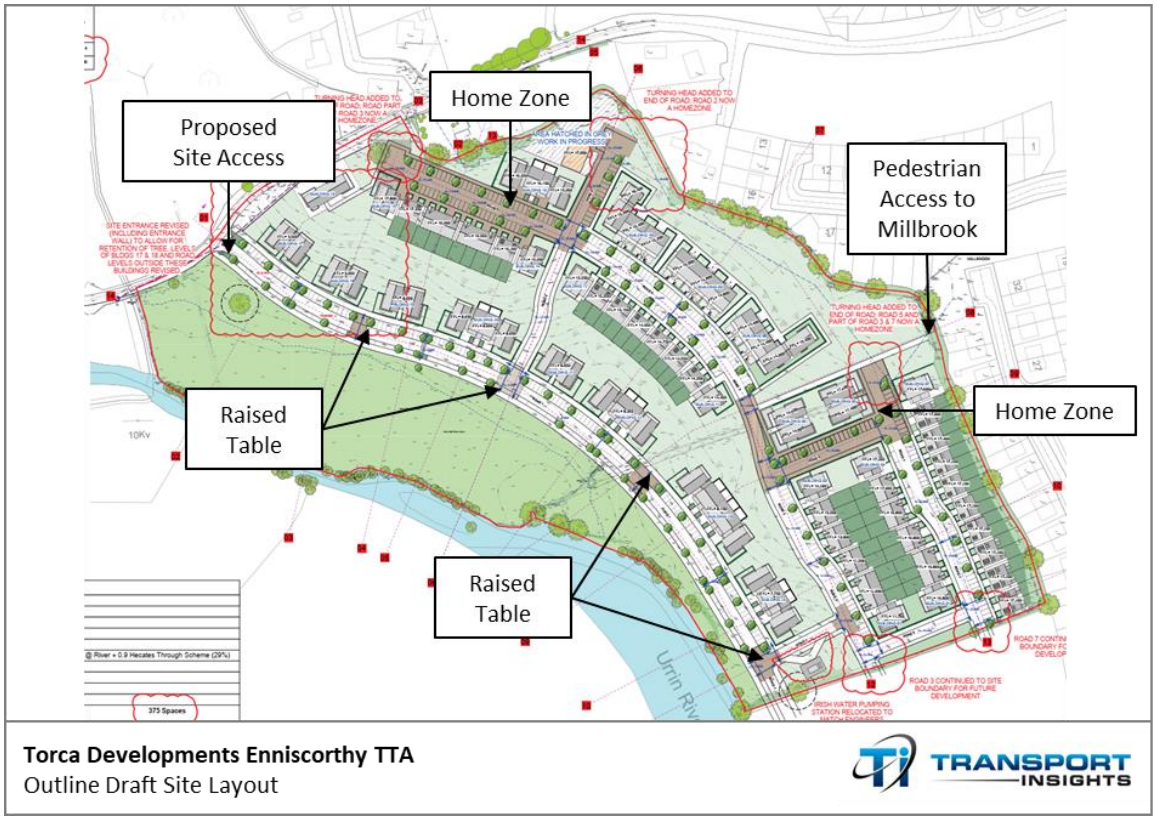
Figure 2.1 Site Location Plan



As illustrated in the preceding Figure 2.1, the circa 8.7-hectare development site is located adjacent to Carley's Bridge Road, 1 kilometre to the west of Enniscorthy Town Centre. The greenfield site is currently in agricultural use.

The current draft proposed site layout plan within Figure 2.2 (overleaf) illustrates that a new priority-controlled site access junction shall be created from the adjoining Carley's Bridge Road (with an existing agricultural access at this approximate location to be extinguished as part of the proposals).

Figure 2.2 Outline Draft Site Layout Plan*



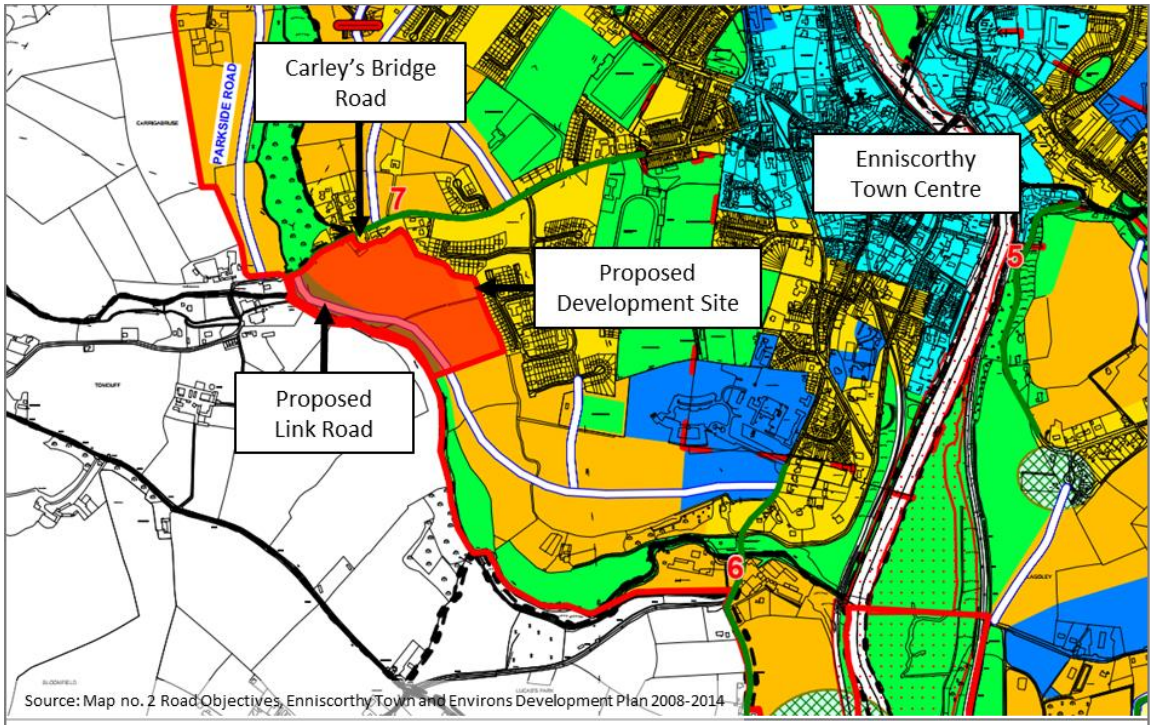
* Site layout draft and for discussion purposes only.

A new site access road running along the southwestern side of the site shall provide access to other local roads within the development. This road has been provided in accordance with the proposed link road identified as a road objective within the *Enniscorthy Town and Environs Development Plan 2008-2014*, which shall connect Carley's Bridge Road to the northwest with the R744 to the southeast. The following Figure 2.3 illustrates the location of the site in relation to this road proposal.

The abovementioned new access road will be classified and designed as a 'link' road as defined within the *Design Manual for Urban Roads and Streets* (*DMURS*). The remaining roads within the site will be classified as 'local' roads. Pedestrian access to the site will also be via Carley's Bridge Road, with a second pedestrian connection to Millbrook (an existing residential development located to the east of the site) also proposed to enhance local permeability.

Traffic engineering design advice in relation to further development of the internal site layout and site access junction layout shall be provided by Transport Insights' project team in accordance with '*DMURS*' guidance – see Task 8 (Section 4 of this Note) for further details.

Figure 2.3 Road Objectives: Enniscorthy Town and Environs Development Plan 2008-2014



3. Purpose of Scoping Note

Transport Infrastructure Ireland's '*Traffic and Transport Assessment Guidelines*', May 2014 recommends that local authority scoping be undertaken at the earliest stages of planning for development. The primary objective of this Scoping Note is to outline the methodology and assumptions underpinning the TTA.

4. Assessment Methodology

Task 1 Scoping

At the transport scoping stage, the proposed approach is set out (within this Scoping Note) and will be followed by engagement with WCC's Roads Department. At the scoping stage, it is also intended to clarify relevant committed developments within the site's vicinity and any proposed upgrades to the layout of roads or junctions in the vicinity of the site that may affect the proposed development.

A pre-planning meeting in relation to this planning application was held on 02 December 2019 with representatives of WCC's Planning Department and Torca Developments Limited, in addition

to other representatives of the design team. Minutes of this meeting were issued by WCC on 10 December 2019 with the following comments relating to roads:

- *"Detailed on a lighting design scheme for the proposed development should be included in any subsequent planning application.*
- *Car parking for each unit should be clearly identified.*
- *Road Safety Audit will be required with any subsequent planning application to inform the design of the access point.*
- *Please note that a minimum of a cycle path and footpath will be required."*

Traffic engineering Client representatives were not in attendance at this pre-planning meeting, and due to this, Transport Insights now intends to scope roads and traffic aspects of the proposed development directly with WCC's Roads Department.

Task 2 Transport Planning Policy Review

To ensure the assessment is undertaken with appropriate consideration of national, regional and local transport policy and guidance, relevant documentation shall be reviewed, including *the Wexford County Development Plan 2013-2019, as extended,* and the *Enniscorthy Local Area Plan 2008-2014, as extended*. An overview of relevant transport planning and policy documentation shall be provided within the TTA.

Task 3 Site Assessment

A comprehensive site assessment will be undertaken to gather a range of information, including layout of adjacent roads (road width, horizontal and vertical alignment), presence of road markings and signage, speed limits and traffic management or calming measures etc.

Observations of general level and nature of traffic on local roads and location, layout and operational performance of key junctions in close proximity to the site shall also be undertaken as part of the site assessment.

Task 4 Baseline Traffic Data

A classified junction turning count survey shall be undertaken over a 12-hour period (07:00hrs-19:00hrs) on a neutral weekday at the four-arm Carley's Bridge Road/ Ross Road Roundabout in order to determine baseline traffic conditions on the local road network in the vicinity of the site.

To ensure its suitability for use in subsequent tasks, traffic survey data shall be checked, analysed and formatted to present base year traffic levels through that junction, from which the proposed development's traffic impact will be assessed (traffic flows passing by the proposed development site access junction shall also be determined from this survey data). The traffic survey at the

junction outlined above shall also facilitate an identification of network peak hours on the local road network.

Task 5 Traffic Growth Forecasting

Base year traffic data from the preceding Task 4 shall be factored in accordance with national guidance (Transport Infrastructure Ireland's '*Project Appraisal Guidelines for National Roads Unit 5.3 Travel Demand Projections'*, 2019) to determine traffic volumes for the development's assumed year of opening and year of opening + 15 years. The traffic generation impact of committed development schemes (as ascertained from engagement with WCC within Task 1) shall also be considered, if necessary.

Task 6 Development Traffic Generation and Assignment

Traffic generated by the proposed development during the critical peak periods will be estimated using national travel survey and local Central Statistics Office (CSO) Census 2016 data, supplemented where appropriate with data from the TRICS trip generation database. Generated traffic shall be assigned to the local road network, with such trips presented in the same format as background traffic flows on the local road network, to enable direct comparisons between do-nothing and do-something scenarios.

Task 7 Junction Traffic Modelling

Traffic modelling of the proposed development's impacts on the local road network will include the site access junction with Carley's Bridge Road and the Carley's Bridge Road/ Ross Road Roundabout. The priority-controlled site access junction shall be modelled using the industry standard PICADY traffic modelling software package, with the roundabout modelled using the industry standard ARCADY software package.

The following scenarios would be developed to assess the traffic impact of the proposed development for both morning and evening weekday peak hours (determined following analysis of traffic survey data):

- base year (without development – not applicable to site access junction);
- year of opening (without development and with development); and
- year of opening +15 years (without development and with development).

The traffic impact of the development proposal shall be determined by comparing the above traffic modelling outputs, i.e. with development versus without development scenarios. Specifically, it will seek to determine if the development has the potential to adversely impact on the local road network's operational performance.

Task 8 Traffic Engineering Design Support

Traffic engineering design advice in relation to the development layout and proposed site access arrangements shall be provided by Transport Insights' project team in accordance with *DMURS* guidance. Design advice provided shall include access junction geometry, carriageway and parking aisle widths, footpath widths, parking capacity and parking bay dimensions etc.

A visibility splay analysis shall be undertaken for the proposed new Carley's Bridge Road/ site access junction and a to-scale drawing produced to demonstrate that satisfactory sightlines from the new site access onto the adjoining Carley's Bridge Road are achieved. Finally, a swept path analysis of the proposed site layout shall be undertaken and a to-scale drawing produced to demonstrate that the site layout can accommodate the largest vehicle types that would be anticipated to typically access the site following completion of the proposed development.

A *DMURS* compliance statement shall be produced, summarising the proposed development's consistency with prevailing national guidance.

Task 9 Road Safety Audit

As noted within Task 1 of this Scoping Note, the provision of an RSA emerged as a requirement of WCC at the pre-planning meeting held on 02 December 2019. As such, a Stage 1 Road Safety Audit (RSA) will be conducted by a qualified third-party (independent) road safety auditor to examine the road safety implications associated with the provision of the new vehicular access onto Carley's Bridge Road.

Works undertaken will include a desktop Audit of the preliminary design plans for the site, a visit to the site during daylight hours, and preparation and production of a Stage 1 RSA report in accordance with TII GE-STY-01024 Dec 2017. Transport Insights shall produce a designer's response in relation to the Stage 1 RSA's recommendations, seeking to ensure identified risks are appropriately addressed.

Task 10 Reporting

A TTA report will be prepared, summarising the approach pursued in undertaking the assessment, and its findings.

5. Summary

This Scoping Note sets out the current proposed residential development at Carley's Bridge, Enniscorthy, Co. Wexford, and summarises the proposed methodology to be pursued in assessing its traffic and transport impacts. It is issued to WCC's Roads Department for comment.

Appendix B Traffic and Speed Survey Data

IDASO

Survey Name: 035 20026 Enniscorthy
Site: Site 1
Location: Ross Rd / Andy Doyle Cl / Gort Na Gréine
Date: Tue 25-Feb-2020

	A => A										A => B									
TIME	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2
07:30	0	0	1	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	2	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	8	8
H/TOT	0	0	1	0	0	0	0	0	1	1	0	0	11	0	3	0	0	0	14	14
08:00	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	8	8
08:15	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	1	15	16
08:30	0	0	0	0	0	0	0	0	0	0	0	0	11	0	1	0	0	0	12	12
08:45	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	17	17
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	50	0	1	0	0	1	52	53
09:00	0	0	1	0	0	0	0	0	1	1	0	0	21	0	2	0	0	0	23	23
09:15	0	0	0	0	0	0	0	0	0	0	0	0	15	0	1	0	0	0	16	16
09:30	0	0	0	0	0	1	0	0	1	1.5	0	0	15	0	2	0	0	0	17	17
09:45	0	0	0	0	0	0	0	0	0	0	0	0	16	0	2	0	0	0	18	18
H/TOT	0	0	1	0	0	1	0	0	2	2.5	0	0	67	0	7	0	0	0	74	74
10:00	0	0	0	0	0	0	0	0	0	0	0	0	12	0	1	1	0	0	14	14.5
10:15	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	8	8
10:30	0	0	0	0	0	0	0	0	0	0	0	0	11	0	1	0	0	0	12	12
10:45	0	0	0	0	0	0	0	0	0	0	0	0	7	0	2	0	0	0	9	9
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	38	0	4	1	0	0	43	43.5
11:00	0	0	1	0	0	0	0	0	1	1	0	0	10	0	3	0	0	0	13	13
11:15	0	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0	0	12	12
11:30	0	0	0	0	0	0	0	0	0	0	0	0	5	0	4	0	0	0	9	9
11:45	0	0	1	0	0	0	0	0	1	1	0	0	12	0	1	2	0	0	15	16
H/TOT	0	0	2	0	0	0	0	0	2	2	0	0	37	0	10	2	0	0	49	50
12:00	0	0	1	0	1	0	0	0	2	2	0	0	7	0	3	1	0	0	11	11.5
12:15	0	0	0	0	0	0	0	0	0	0	0	0	9	0	2	1	0	0	12	12.5
12:30	0	0	0	0	1	0	0	0	1	1	0	0	11	0	4	0	0	0	15	15
12:45	0	0	2	0	0	0	0	0	2	2	0	0	12	0	2	0	0	0	14	14
H/TOT	0	0	3	0	2	0	0	0	5	5	0	0	39	0	11	2	0	0	52	53
13:00	0	0	1	0	0	0	0	0	1	1	0	0	11	0	0	0	0	0	11	11
13:15	0	0	0	0	0	0	0	0	0	0	0	0	11	0	1	1	0	0	13	13.5
13:30	0	0	0	0	0	0	0	0	0	0	0	0	13	0	4	1	0	0	18	18.5
13:45	0	0	0	0	0	0	0	0	0	0	0	0	20	0	1	0	0	0	21	21
H/TOT	0	0	1	0	0	0	0	0	1	1	0	0	55	0	6	2	0	0	63	64
14:00	0	0	0	0	0	0	0	0	0	0	0	0	10	0	1	0	0	0	11	11
14:15	0	0	0	0	0	0	0	0	0	0	0	0	11	0	2	1	0	0	14	14.5
14:30	0	0	1	0	0	0	0	0	1	1	0	1	15	0	3	0	0	0	19	18.4
14:45	0	0	0	0	0	0	0	0	0	0	0	0	17	0	2	0	0	1	20	21
H/TOT	0	0	1	0	0	0	0	0	1	1	0	1	53	0	8	1	0	1	64	64.9
15:00	0	0	0	0	0	0	0	0	0	0	0	0	11	0	3	0	0	0	14	14
15:15	0	0	0	0	2	0	1	0	3	4.3	0	0	13	0	2	0	0	1	16	17
15:30	0	0	2	0	0	0	0	0	2	2	0	0	15	0	2	0	0	0	17	17
15:45	0	0	1	0	0	0	0	0	1	1	0	0	23	0	2	0	0	1	26	27
H/TOT	0	0	3	0	2	0	1	0	6	7.3	0	0	62	0	9	0	0	2	73	75
16:00	0	0	1	0	0	0	0	0	1	1	0	0	12	0	3	1	0	1	17	18.5
16:15	0	0	0	0	0	0	0	0	0	0	0	0	14	0	1	0	0	0	15	15
16:30	0	0	0	0	0	0	0	0	0	0	0	0	16	0	2	0	0	0	18	18
16:45	0	0	0	0	0	0	0	0	0	0	0	0	21	0	3	1	0	0	25	25.5
H/TOT	0	0	1	0	0	0	0	0	1	1	0	0	63	0	9	2	0	1	75	77
17:00	0	0	0	0	0	0	0	0	0	0	0	0	17	0	2	0	0	0	19	19
17:15	0	0	1	0	0	0	0	0	1	1	0	0	9	0	1	0	0	0	10	10
17:30	0	0	0	0	0	0	0	0	0	0	0	0	19	0	2	0	0	0	21	21
17:45	0	0	0	0	0	0	0	0	0	0	0	0	22	0	5	0	0	0	27	27

H/TOT	0	0	1	0	0	0	0	0	1	1	0	0	67	0	10	0	0	0	77	77
18:00	0	0	1	0	0	0	0	0	1	1	0	0	17	0	3	0	0	0	20	20
18:15	0	0	1	0	0	0	0	0	1	1	0	0	16	0	2	0	0	0	18	18
18:30	0	0	1	0	1	0	0	0	2	2	0	0	23	0	1	0	0	0	24	24
18:45	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	13	13
H/TOT	0	0	3	0	1	0	0	0	4	4	0	0	69	0	6	0	0	0	75	75
12 TOT	0	0	17	0	5	1	1	0	24	25.8	0	1	611	0	84	10	0	5	711	720.4

A => C										A => D										
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C
0	0	5	0	2	0	0	0	7	7	0	0	1	0	1	0	0	0	2	2	0
0	0	10	0	0	1	0	0	11	11.5	0	0	0	0	0	0	0	0	0	0	0
0	0	6	0	1	0	0	0	7	7	0	0	2	0	0	0	0	0	2	2	0
0	0	5	0	3	0	0	0	8	8	0	0	1	0	0	0	0	0	1	1	0
0	0	26	0	6	1	0	0	33	33.5	0	0	4	0	1	0	0	0	5	5	0
0	0	8	0	3	0	0	0	11	11	0	0	2	0	0	0	0	0	2	2	0
0	0	6	0	2	0	0	0	8	8	0	0	1	0	0	0	0	0	1	1	0
0	0	8	0	1	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0
0	0	4	0	6	0	0	0	10	10	0	0	6	0	1	0	0	0	7	7	0
0	0	26	0	12	0	0	0	38	38	0	0	9	0	1	0	0	0	10	10	0
0	0	6	0	2	0	0	0	8	8	0	0	6	0	0	0	0	0	6	6	0
0	0	8	0	2	0	0	0	10	10	0	0	3	0	0	0	0	0	3	3	1
0	0	9	0	1	0	0	0	10	10	0	0	3	0	1	0	0	0	4	4	0
0	0	3	0	0	0	0	0	3	3	0	0	5	0	0	0	0	0	5	5	0
0	0	26	0	5	0	0	0	31	31	0	0	17	0	1	0	0	0	18	18	1
0	0	9	0	3	0	0	0	12	12	0	0	3	0	0	0	0	0	3	3	0
0	0	3	0	2	2	0	0	7	8	0	0	3	0	1	0	0	0	4	4	0
0	0	2	0	0	0	0	0	2	2	0	0	5	0	1	0	0	0	6	6	0
0	0	6	0	2	0	0	0	8	8	0	0	2	0	1	0	0	0	3	3	0
0	0	20	0	7	2	0	0	29	30	0	0	13	0	3	0	0	0	16	16	0
0	0	7	0	3	0	0	0	10	10	0	0	2	0	1	1	0	0	4	4.5	0
0	0	8	0	3	0	0	0	11	11	0	0	7	0	0	0	0	0	7	7	0
0	0	5	0	1	1	0	0	7	7.5	0	0	1	0	0	0	0	0	1	1	0
0	0	9	0	0	0	0	0	9	9	0	0	4	0	0	0	0	0	4	4	0
0	0	29	0	7	1	0	0	37	37.5	0	0	14	0	1	1	0	0	16	16.5	0
0	0	11	0	3	0	0	0	14	14	0	0	4	0	0	0	0	0	4	4	0
0	0	7	0	1	0	0	0	8	8	0	0	4	0	1	0	0	0	5	5	0
0	0	7	0	3	1	0	0	11	11.5	0	0	1	0	1	0	0	0	2	2	0
0	0	9	0	0	0	0	0	9	9	0	0	3	0	0	0	0	0	3	3	0
0	0	34	0	7	1	0	0	42	42.5	0	0	12	0	2	0	0	0	14	14	0
0	0	17	0	0	0	0	0	17	17	0	0	2	0	0	0	0	0	2	2	0
0	0	12	0	1	0	0	0	13	13	0	0	3	0	1	0	0	0	4	4	0
0	0	15	0	0	0	0	0	15	15	0	0	4	0	0	0	0	0	4	4	0
0	0	14	0	1	0	0	0	15	15	0	0	6	0	0	0	0	0	6	6	0
0	0	58	0	2	0	0	0	60	60	0	0	15	0	1	0	0	0	16	16	0
0	0	11	0	0	0	0	0	11	11	0	0	6	0	0	0	0	0	6	6	0
0	0	10	0	3	0	0	0	13	13	0	0	3	0	0	1	0	0	4	4.5	0
0	0	11	0	2	1	0	0	14	14.5	0	0	1	0	1	0	0	0	2	2	0
0	0	16	0	1	1	0	0	18	18.5	0	0	5	0	1	0	0	0	6	6	0
0	0	48	0	6	2	0	0	56	57	0	0	15	0	2	1	0	0	18	18.5	0
0	0	12	0	2	0	0	0	14	14	0	0	8	0	0	0	0	0	8	8	0
0	0	10	0	0	0	0	0	10	10	0	0	4	0	1	0	0	0	5	5	0
0	0	12	0	1	0	0	0	13	13	0	0	3	0	1	0	0	0	4	4	0
0	0	18	0	1	0	0	0	19	19	0	0	9	0	0	0	0	0	9	9	0
0	0	52	0	4	0	0	0	56	56	0	0	24	0	2	0	0	0	26	26	0
0	0	21	0	1	0	0	0	22	22	0	0	9	0	3	0	0	0	12	12	0
0	0	16	0	0	0	0	0	16	16	0	0	2	0	1	0	0	0	3	3	0
0	0	18	0	1	0	0	0	19	19	0	0	5	0	1	0	0	0	6	6	0
1	0	17	0	2	1	0	0	21	20.7	0	0	11	0	1	0	0	0	12	12	0
1	0	72	0	4	1	0	0	78	77.7	0	0	27	0	6	0	0	0	33	33	0
0	0	12	0	2	0	0	0	14	14	0	0	5	0	0	0	0	0	5	5	0
0	0	11	0	3	0	0	0	14	14	0	0	8	0	1	0	0	0	9	9	0
0	0	18	0	3	0	0	0	21	21	0	0	7	0	0	0	0	0	7	7	0
0	0	11	0	5	0	0	0	16	16	0	0	2	0	0	0	0	0	2	2	0

0	0	52	0	13	0	0	0	65	65	0	0	22	0	1	0	0	0	23	23	0
0	0	8	0	2	0	0	0	10	10	0	0	11	0	2	0	0	0	13	13	0
0	0	12	0	0	0	0	0	12	12	0	0	1	0	2	0	0	0	3	3	0
0	0	6	0	2	0	0	0	8	8	0	0	5	0	3	0	0	0	8	8	0
0	0	12	0	0	0	0	0	12	12	0	0	9	0	0	0	0	0	9	9	0
0	0	38	0	4	0	0	0	42	42	0	0	26	0	7	0	0	0	33	33	0
1	0	481	0	77	8	0	0	567	570.2	0	0	198	0	28	2	0	0	228	229	1

B => A									B => B											
M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C
0	3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	3	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0
0	10	0	2	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0
0	12	0	1	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0
0	33	0	6	0	0	0	39	39	0	0	0	0	0	0	0	0	0	0	0	0
0	17	0	3	0	0	0	20	20	0	0	0	0	0	0	0	0	0	0	0	0
0	18	0	1	1	0	1	21	22.5	0	0	0	0	0	0	0	0	0	0	0	0
1	35	0	2	0	0	0	38	37.4	0	0	0	0	0	0	0	0	0	0	0	0
0	37	0	0	0	0	1	38	39	0	0	0	0	0	0	0	0	0	0	0	0
1	107	0	6	1	0	2	117	118.9	0	0	0	0	0	0	0	0	0	0	0	0
0	25	0	2	0	0	0	27	27	0	0	0	0	0	0	0	0	0	0	0	0
0	16	0	1	0	0	0	18	17.2	0	0	0	0	0	0	0	0	0	0	0	0
0	14	0	2	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0
0	15	0	2	0	0	0	17	17	0	0	0	0	0	0	0	0	0	0	0	0
0	70	0	7	0	0	0	78	77.2	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	3	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0
0	11	0	0	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	3	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0
0	11	0	2	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0
0	38	0	8	0	0	0	46	46	0	0	0	0	0	0	0	0	0	0	0	0
0	10	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
0	6	0	4	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	1	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0
0	6	0	1	1	0	0	8	8.5	0	0	0	0	0	0	0	0	0	0	0	0
0	26	0	6	1	0	0	33	33.5	0	0	0	0	0	0	0	0	0	0	0	0
0	11	1	1	1	0	0	14	14.5	0	0	0	0	0	0	0	0	0	0	0	0
0	7	0	3	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
0	10	1	3	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0
0	11	0	0	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0
0	39	2	7	1	0	0	49	49.5	0	0	0	0	0	0	0	0	0	0	0	0
0	12	0	1	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0
0	12	0	2	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0
0	14	0	2	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0
0	12	0	0	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0
0	50	0	5	0	0	0	55	55	0	0	0	0	0	0	0	0	0	0	0	0
0	18	0	2	0	0	0	20	20	0	0	0	0	0	0	0	0	0	0	0	0
0	9	0	1	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
0	16	0	3	1	0	0	20	20.5	0	0	0	0	0	0	0	0	0	0	0	0
0	9	0	3	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0
0	52	0	9	1	0	0	62	62.5	0	0	0	0	0	0	0	0	0	0	0	0
0	10	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
0	17	0	3	0	0	0	20	20	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	2	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	1	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0
0	43	0	6	0	0	0	49	49	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	4	0	0	1	13	14	0	0	0	0	0	0	0	0	0	0	0	0
0	10	0	3	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0
0	14	0	3	0	0	0	17	17	0	0	0	0	0	0	0	0	0	0	0	0
0	13	0	1	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0
0	45	0	11	0	0	1	57	58	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	1	1	0	0	10	10.5	0	0	0	0	0	0	0	0	0	0	0	0
0	10	0	1	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0
0	20	0	1	0	0	0	21	21	0	0	0	0	0	0	0	0	0	0	0	0
0	22	0	0	0	0	0	22	22	0	0	0	0	0	0	0	0	0	0	0	0

0	60	0	3	1	0	0	64	64.5	0	0	0	0	0	0	0	0	0	0	0	0	0
0	13	0	0	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0
0	12	0	1	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0
0	15	0	0	0	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0
0	11	0	0	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0
0	51	0	1	0	0	0	52	52	0	0	0	0	0	0	0	0	0	0	0	0	0
1	614	2	75	5	0	3	701	705.1	0	0	0	0	0	0	0	0	0	0	0	0	0

B => C								B => D												
CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR
2	0	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	1
3	0	1	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	9
0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	3	0	0	2
0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	5	5	0	0	6
5	0	2	0	0	0	7	7	0	0	6	0	2	0	0	0	8	8	0	0	18
1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2	2	0	0	14
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	0	0	19
2	0	0	0	0	0	2	2	0	0	10	0	1	0	0	0	11	11	0	0	11
0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6	0	0	21
3	0	0	0	0	0	3	3	0	0	20	0	1	0	0	0	21	21	0	0	65
2	0	0	0	0	0	2	2	0	0	3	0	0	0	0	0	3	3	0	0	13
0	0	1	0	0	0	1	1	0	0	3	0	0	0	0	0	3	3	0	0	7
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	0	0	16
3	0	0	0	0	0	3	3	0	0	5	0	0	0	0	0	5	5	0	0	17
5	0	1	0	0	0	6	6	0	0	13	0	0	0	0	0	13	13	0	0	53
3	0	0	0	0	0	3	3	0	0	2	0	0	0	0	0	2	2	0	0	10
2	0	0	0	0	0	2	2	0	0	2	0	1	0	0	0	3	3	0	0	6
1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2	2	0	0	7
0	0	1	0	0	0	1	1	0	0	3	0	0	0	0	0	3	3	0	0	8
6	0	1	0	0	0	7	7	0	0	9	0	1	0	0	0	10	10	0	0	31
3	0	0	0	0	0	3	3	0	0	1	0	1	0	0	0	2	2	0	0	12
1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6
3	0	0	0	0	0	3	3	0	0	3	0	1	0	0	0	4	4	0	0	10
2	0	0	0	0	0	2	2	0	0	4	0	1	0	0	0	5	5	0	0	11
9	0	0	0	0	0	9	9	0	0	8	0	3	0	0	0	11	11	0	0	39
1	0	0	0	0	0	1	1	0	0	5	0	1	1	0	0	7	7.5	0	0	8
3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	11
2	0	0	0	0	0	2	2	0	0	1	0	0	0	0	0	1	1	0	0	12
0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	3	0	0	8
6	0	0	0	0	0	6	6	0	0	8	0	2	1	0	0	11	11.5	0	0	39
1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	7
2	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	4	4	0	0	6
0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	0	0	8
0	0	0	0	0	0	0	0	0	0	2	0	1	1	0	0	4	4.5	0	0	14
3	0	0	0	0	0	3	3	0	0	9	0	1	1	0	0	11	11.5	0	0	35
0	0	2	0	0	0	2	2	0	0	3	0	1	0	0	0	4	4	0	0	11
2	0	0	0	0	0	2	2	0	0	1	0	0	0	0	0	1	1	0	0	14
3	0	1	0	0	0	4	4	0	0	3	0	0	0	0	0	3	3	0	0	9
1	0	0	0	0	0	1	1	0	0	3	0	0	0	0	1	4	5	0	0	7
6	0	3	0	0	0	9	9	0	0	10	0	1	0	0	1	12	13	0	0	41
1	0	0	0	0	0	1	1	1	0	4	0	0	0	0	0	5	4.2	0	0	6
3	0	0	0	0	0	3	3	0	0	4	0	1	0	0	1	6	7	0	0	13
0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	1	0	12
1	0	0	0	0	0	1	1	0	0	6	0	0	0	0	1	7	8	0	0	9
5	0	0	0	0	0	5	5	1	0	17	0	1	0	0	2	21	22.2	1	0	40
2	0	1	1	0	0	4	4.5	0	0	7	0	0	0	0	0	7	7	0	0	11
1	0	0	0	0	0	1	1	0	0	5	0	1	1	0	0	7	7.5	0	0	12
3	0	0	0	0	0	3	3	0	0	6	0	1	0	0	0	7	7	0	0	13
2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	16
8	0	1	1	0	0	10	10.5	0	0	18	0	2	1	0	0	21	21.5	0	0	52
2	0	1	0	0	0	3	3	0	0	1	0	0	0	0	0	1	1	0	0	15
2	0	0	0	0	0	2	2	0	0	3	0	0	0	0	0	3	3	0	0	15
1	0	0	0	0	0	1	1	0	0	2	0	1	0	0	0	3	3	0	0	9
2	0	1	0	0	0	3	3	0	0	8	0	2	0	0	0	10	10	0	0	16

7	0	2	0	0	0	9	9	0	0	14	0	3	0	0	0	17	17	0	0	55
3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	14
1	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	18
2	0	0	0	0	0	2	2	0	0	2	0	0	0	0	0	2	2	0	0	8
0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	0	0	14
6	0	1	0	0	0	7	7	0	0	6	0	0	0	0	0	6	6	0	0	54
69	0	11	1	0	0	81	81.5	1	0	138	0	17	3	0	3	162	165.7	1	0	522

C => A							C => B										C =			
TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI
0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	3	3	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	3	0	0	0	9	9	0	0	2	0	0	0	0	0	2	2	0	0	0	0
0	7	0	0	0	25	25	0	0	3	0	0	0	0	0	3	3	0	0	0	0
0	3	0	0	0	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	5	0	0	0	24	24	0	0	4	0	0	0	0	0	4	4	0	0	0	0
0	1	1	0	0	13	13.5	0	0	4	0	0	0	0	0	4	4	0	0	0	0
0	4	0	0	0	25	25	0	0	3	0	0	0	0	0	3	3	0	0	0	0
0	13	1	0	0	79	79.5	0	0	11	0	0	0	0	0	11	11	0	0	0	0
0	2	0	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	0	0	0	18	18	0	0	0	0	1	0	0	0	1	1	0	0	0	0
0	1	0	0	0	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	7	0	0	0	61	61	0	0	0	0	1	0	0	0	1	1	0	0	0	0
0	3	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	10	10	0	0	2	0	1	0	0	0	3	3	0	0	0	0
0	1	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	0	0	39	39	0	0	2	0	1	0	0	0	3	3	0	0	0	0
0	1	0	0	0	13	13	0	0	2	0	1	0	0	0	3	3	0	0	0	0
0	1	0	0	0	7	7	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	0	1	0	0	11	11.5	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	2	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	1	0	0	44	44.5	0	0	4	0	1	0	0	0	5	5	0	0	0	0
0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	8	8	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	2	0	0	0	41	41	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	1	1	0	0	9	9.5	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	4	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	15	15	0	0	3	0	0	0	0	0	3	3	0	0	0	0
0	7	1	0	0	43	43.5	0	0	4	0	0	0	0	0	4	4	0	0	0	0
0	1	1	0	0	13	13.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	14	14	0	0	2	0	0	0	0	0	2	2	0	0	0	0
0	3	0	0	0	12	12	0	0	1	0	1	0	0	0	2	2	0	0	0	0
0	2	0	0	0	9	9	0	0	2	0	0	0	0	0	2	2	0	0	0	0
0	6	1	0	0	48	48.5	0	0	5	0	1	0	0	0	6	6	0	0	0	0
0	2	0	0	0	8	8	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	5	1	0	0	19	19.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	16	15.2	0	0	3	0	1	0	0	0	4	4	0	0	0	0
0	1	1	0	0	11	11.5	0	0	2	0	0	0	0	0	2	2	0	0	0	0
0	11	2	0	0	54	54.2	0	0	6	0	1	0	0	0	7	7	0	0	0	0
0	2	0	0	0	13	13	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	1	1	0	0	14	14.5	0	0	3	0	0	0	0	0	3	3	0	0	0	0
0	1	0	0	0	14	14	0	0	2	0	0	0	0	0	2	2	0	0	0	0
0	3	0	0	0	19	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	7	1	0	0	60	60.5	0	0	6	0	0	0	0	0	6	6	0	0	0	0
0	2	0	0	0	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	19	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	12	12	0	0	4	0	0	0	0	0	4	4	0	0	0	0
0	2	0	0	0	18	18	0	0	3	0	0	0	0	0	3	3	0	0	0	0

0	11	0	0	0	66	66	0	0	7	0	0	0	0	0	7	7	0	0	0	0
0	2	0	0	0	16	16	0	0	2	0	0	0	0	0	2	2	0	0	0	0
0	3	0	0	0	21	21	0	0	0	0	1	0	0	0	1	1	0	0	0	0
0	3	0	0	0	11	11	0	0	3	0	0	0	0	0	3	3	0	0	0	0
0	3	0	0	0	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	11	0	0	0	65	65	0	0	5	0	1	0	0	0	6	6	0	0	0	0
1	94	7	0	0	625	627.7	0	0	54	0	6	0	0	0	60	60	0	0	0	0

> C						C => D										D => A				
LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	4	0	0
0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2	0	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0
0	0	0	0	0	0	0	0	2	0	2	0	0	0	4	4	0	0	8	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	3	0	0	2	0	1
0	0	0	0	0	0	0	0	3	0	1	0	0	0	4	4	0	0	4	0	1
0	0	0	0	0	0	0	0	5	0	0	0	0	1	6	7	0	0	10	0	0
0	0	0	0	0	0	0	0	10	0	2	0	0	1	13	14	0	0	20	0	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	9	0	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	0	0	4	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	0	0	19	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	5	0	0
0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	0	0	2	0	1
0	0	0	0	0	0	0	0	5	0	0	0	0	0	5	5	0	0	14	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0
0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	0	0	5	0	0
0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	0	0	12	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	1.2	0	0	2	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0	2	0	0	0	0	0	3	2.2	0	0	5	0	1
0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	6	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	0	0	17	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	3	0	0
0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2	0	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	3	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0
0	0	0	0	0	0	0	0	3	0	2	0	0	0	5	5	0	0	8	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
0	0	0	0	0	0	0	0	5	0	0	0	0	0	5	5	0	0	2	0	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	0	0	7	0	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	0	0	3	0	1
0	0	0	0	0	0	0	0	9	0	0	0	0	0	9	9	0	0	17	0	1
0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	5	0	2
0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	0	0	4	0	0
0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	0	0	2	0	0
0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	0	0	2	0	0
0	0	0	0	0	0	0	0	11	0	1	0	0	0	12	12	0	0	13	0	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	3	0	0
0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2	0	0	3	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	0	0	6	0	1

0	0	0	0	0	0	0	0	6	0	1	0	0	0	7	7	0	0	16	0	1
0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	0	0	6	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	7	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	3	0	0	5	0	0
0	0	0	0	0	0	0	0	7	0	1	0	0	0	8	8	0	0	20	0	1
0	0	0	0	0	0	1	0	65	0	9	0	0	1	76	76.2	0	0	169	0	9

					D => B										D => C					
OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1
0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0
0	0	0	2	2	0	0	2	0	0	0	0	0	2	2	0	0	0	0	0	0
0	0	0	8	8	0	0	2	0	0	0	0	0	2	2	0	0	2	0	1	0
0	0	1	5	6	0	0	4	0	0	0	0	0	4	4	0	0	2	0	0	0
0	0	0	3	3	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0
0	0	0	5	5	0	0	5	0	0	0	0	0	5	5	0	0	0	0	0	0
0	0	0	10	10	0	0	3	0	0	0	0	0	3	3	0	0	1	0	2	0
0	0	1	23	24	0	0	13	0	0	0	0	0	13	13	0	0	3	0	2	0
0	0	0	9	9	0	0	4	0	0	0	0	1	5	6	0	0	1	0	0	0
0	0	0	4	4	0	0	2	0	0	0	0	0	2	2	0	0	2	0	0	0
0	0	0	4	4	0	0	4	0	1	0	0	0	5	5	0	0	2	0	1	0
0	0	0	2	2	0	0	3	0	0	0	0	0	3	3	0	0	1	0	0	0
0	0	0	19	19	0	0	13	0	1	0	0	1	15	16	0	0	6	0	1	0
0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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3	0	1	182	184.5	1	0	138	0	11	2	0	1	153	154.2	0	0	81	0	7	0

D => D													
OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU
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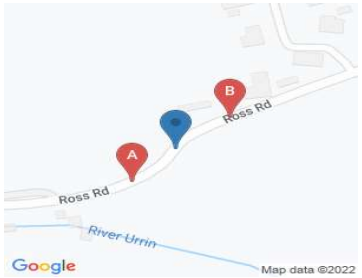


IDASO

Survey Name: 058 22126 Enniscorthy ATC
Site: ATC 1
Location: Carleys Bridge Rd
Date: Thu 10 Mar 2022 — Sun 13 Mar 2022

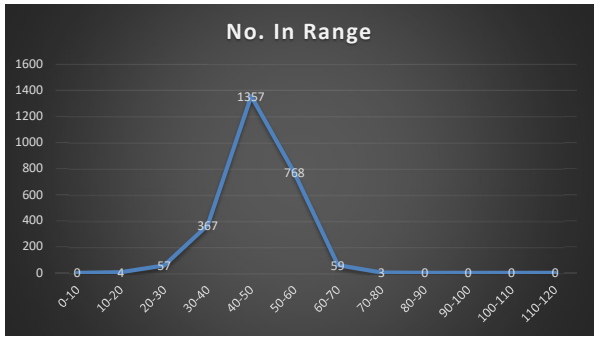
Speed Survey

Cummulative 85% Speed	53.12 KPH
Cummulative Minimum Speed	9.36 KPH
Cummulative Maximum Speed	79.39 KPH
Cummulative Average Speed	46.41 KPH

Northbound (A => B)

No. of Vehicles	2615
85% Speed	53.67 KPH
Minimum Speed	16.53 KPH
Maximum Speed	79.39 KPH
Average Speed	46.63 KPH

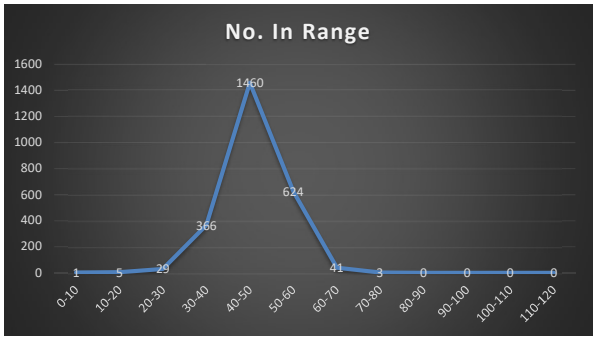
Speed KPH	No. In Range
0-10	0
10-20	4
20-30	57
30-40	367
40-50	1357
50-60	768
60-70	59
70-80	3
80-90	0
90-100	0
100-110	0
110-120	0



Southbound (B => A)

No. of Vehicles	2529
85% Speed	52.23 KPH
Minimum Speed	9.36 KPH
Maximum Speed	76.64 KPH
Average Speed	46.17 KPH

Speed KPH	No. In Range
0-10	1
10-20	5
20-30	29
30-40	366
40-50	1460
50-60	624
60-70	41
70-80	3
80-90	0
90-100	0
100-110	0
110-120	0



Appendix C Swept Path Analysis

SEE SHEET 2

SEE SHEET 4

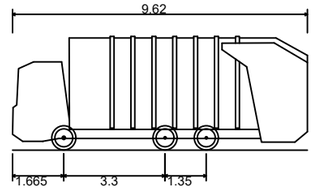
SEE SHEET 3

SEE SHEET 6

SEE SHEET 5

Unm River

Phoenix 2-15N (with Elite 2 6x2 RS chassis)



Overall Length	9.620m
Overall Width	2.250m
Overall Body Height	3.707m
Min Body Ground Clearance	0.260m
Track Width	2.250m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	7.100m

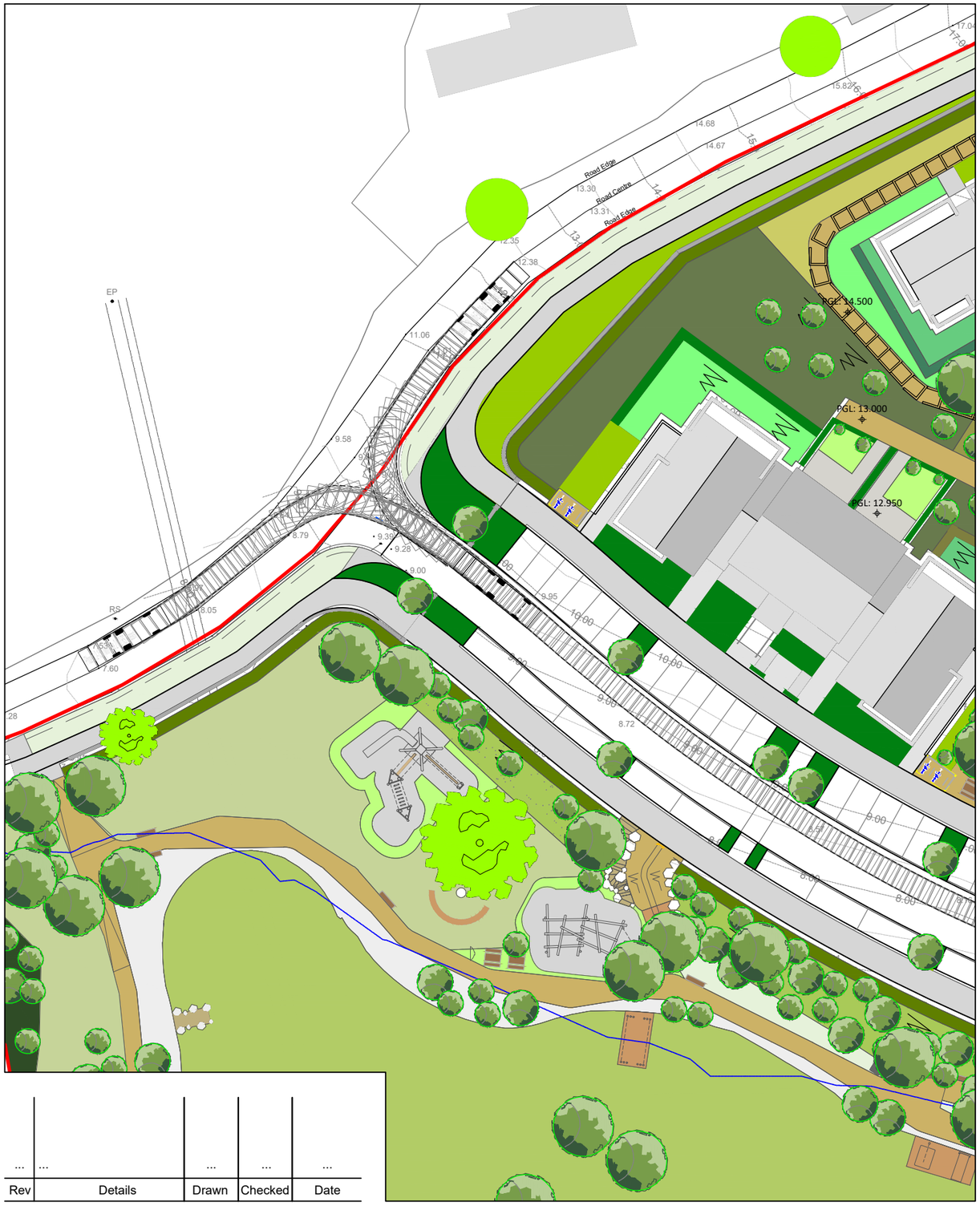
	FORWARD MOVEMENTS *(design speed - 5kph)*
	REVERSE MOVEMENTS *(design speed - 2.5kph)*

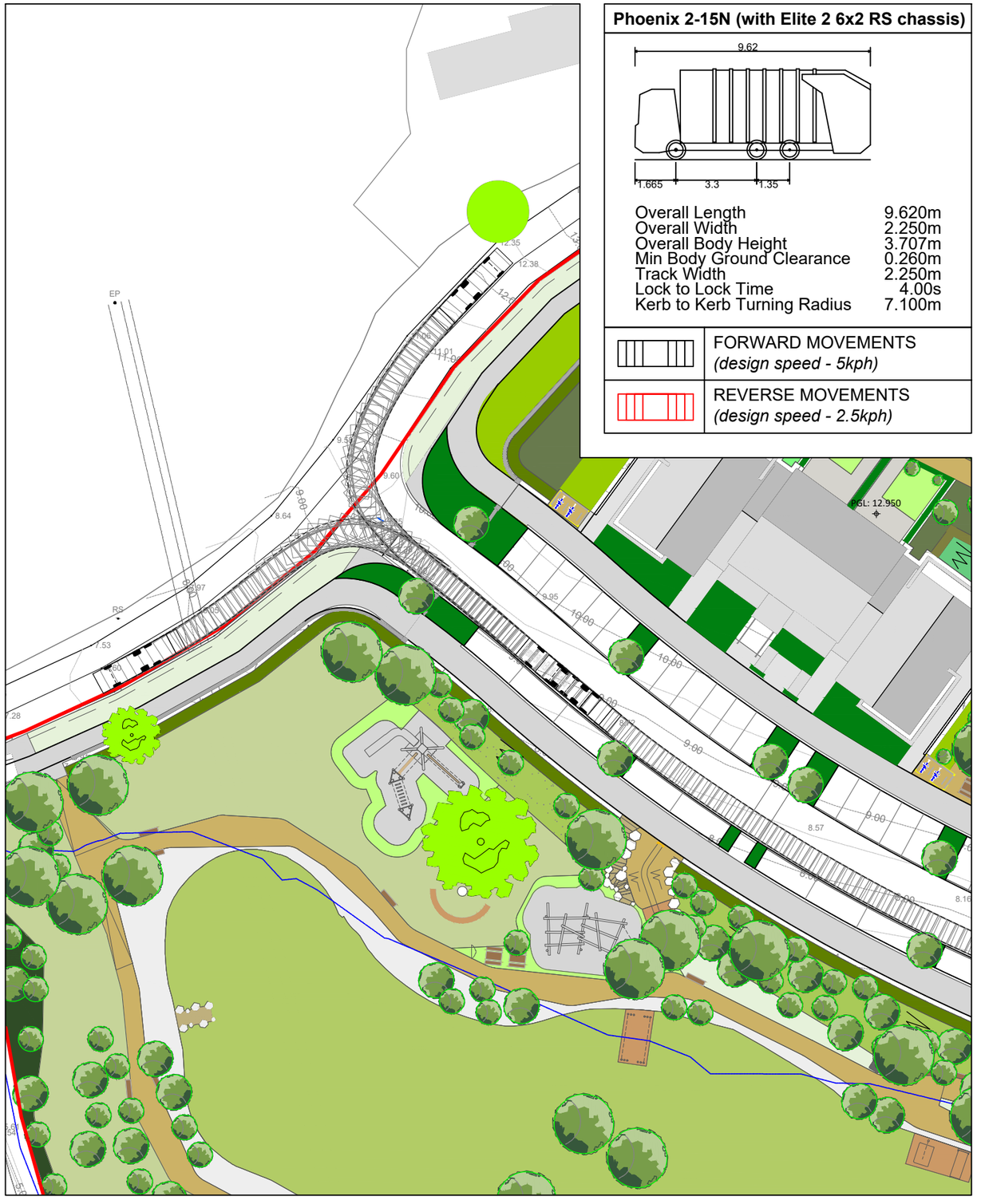
Rev	Details	Drawn	Checked	Date
...	...	...	...	...

NOTES :
1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

Drawn	DW	Drawing No.	C543 2020 TR02	Project	TORCA DEVS E-CORTHY SHD TRAFFIC SPT
Checked	EM	Sheet	1 of 6	Scale	1:1,250 @ A3
Date	04.10.2021	Status	PRELIM. DESIGN	Title	VEHICULAR SWEPT PATHS ANALYSIS USING LARGE REFUSE VEHICLE WITH A REAR STEERING CHASSIS
Rev	...	Client	TORCA DEVELOPMENTS LIMITED		

TRANSPORT INSIGHTS





Phoenix 2-15N (with Elite 2 6x2 RS chassis)

Overall Length	9.620m
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	FORWARD MOVEMENTS *(design speed - 5kph)*
	REVERSE MOVEMENTS *(design speed - 2.5kph)*

Rev	Details	Drawn	Checked	Date
...	...	...	...	...

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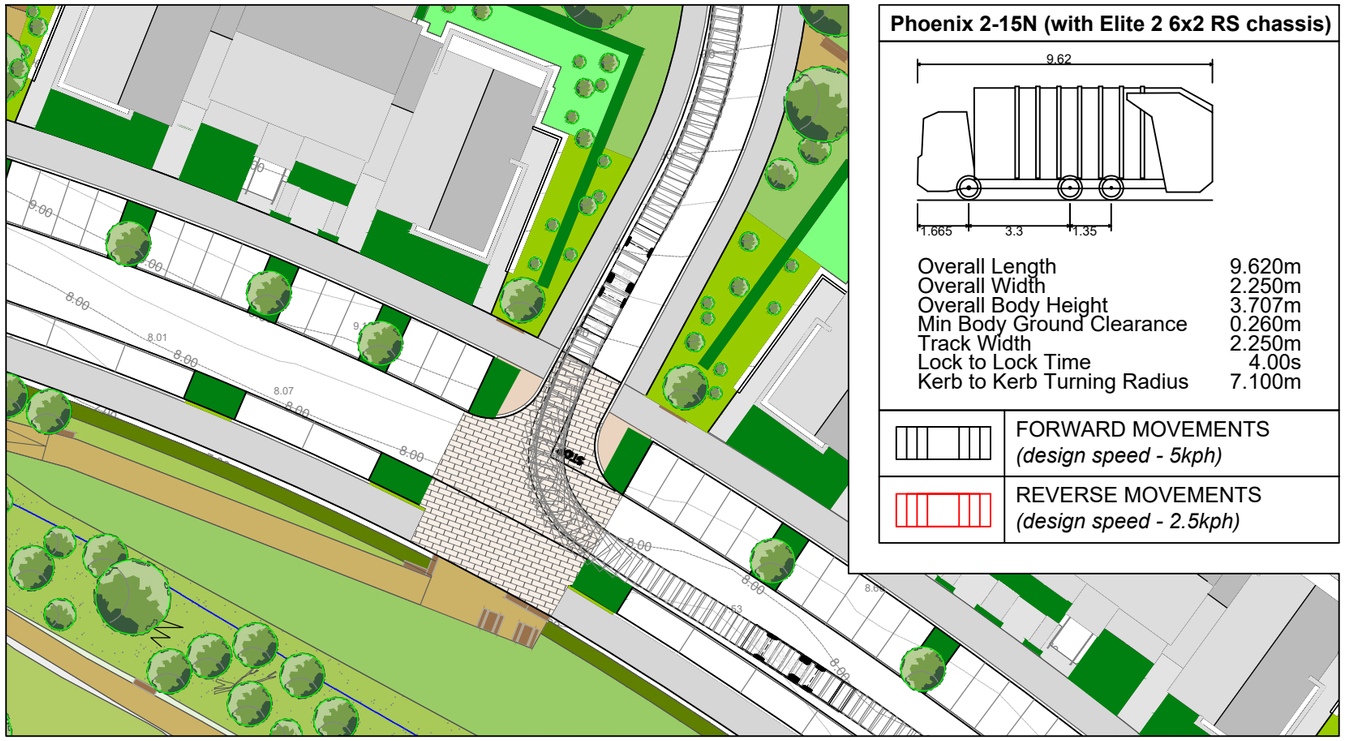
Drawn	DW	Drawing No.	C543 2020 TR02	Project	TORCA DEVS E-CORTHY SHD TRAFFIC SPT
Checked	EM	Sheet	2 of 6	Scale	1:500 @ A3
Date	04.10.2021	Status	PRELIM. DESIGN	Title	VEHICULAR SWEPT PATHS ANALYSIS USING LARGE REFUSE VEHICLE WITH A REAR STEERING CHASSIS
Rev	...	Client	TORCA DEVELOPMENTS LIMITED		

TRANSPORT INSIGHTS



Phoenix 2-15N (with Elite 2 6x2 RS chassis)

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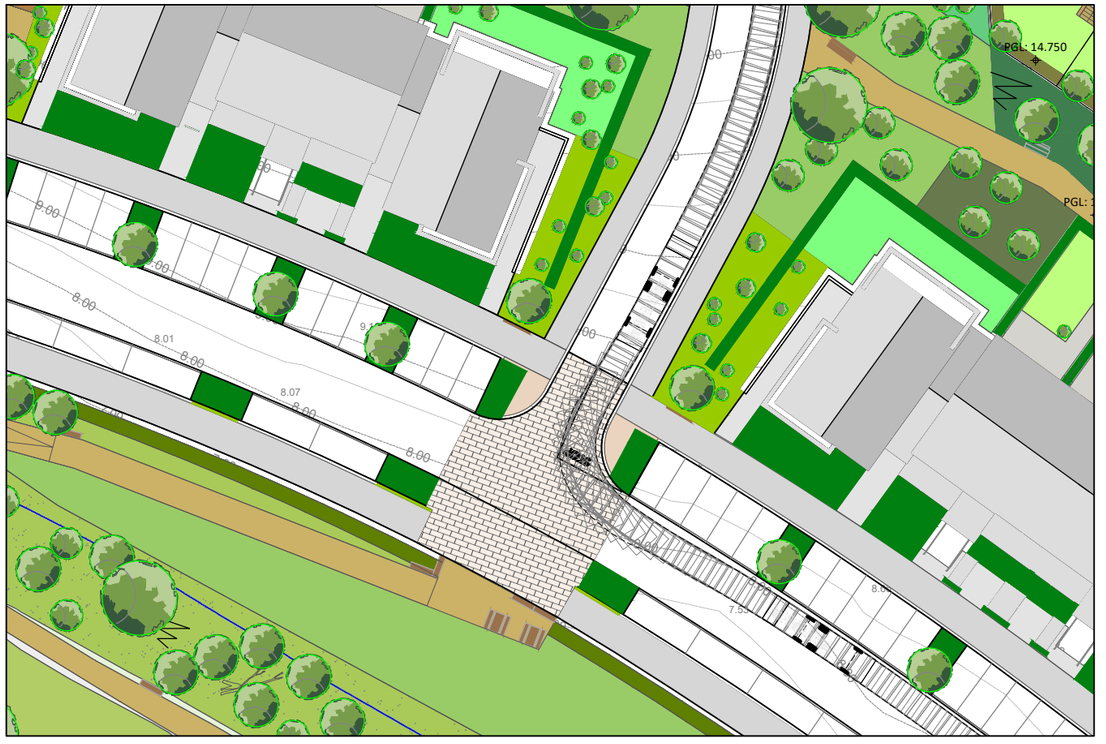
	FORWARD MOVEMENTS *(design speed - 5kph)*
	REVERSE MOVEMENTS *(design speed - 2.5kph)*



...	...	...	...	...
Rev	Details	Drawn	Checked	Date

NOTES :
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3. This drawing is to be read and printed in colour.

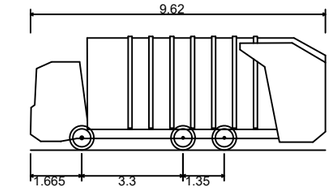
Drawn	DW
Checked	EM
Date	04.10.2021
Rev	...

Drawing No.	C543 2020 TR02
Sheet	3 of 6
Status	PRELIM. DESIGN
Client	TORCA DEVELOPMENTS LIMITED

Project	TORCA DEVS E-CORTHY SHD TRAFFIC SPT
Scale	1:500 @ A3
Title	VEHICULAR SWEPT PATHS ANALYSIS USING LARGE REFUSE VEHICLE WITH A REAR STEERING CHASSIS

TRANSPORT INSIGHTS

Phoenix 2-15N (with Elite 2 6x2 RS chassis)



Overall Length	9.620m
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Kerb to Kerb Turning Radius	7.100m

FORWARD MOVEMENTS
(design speed - 5kph)

REVERSE MOVEMENTS
(design speed - 2.5kph)

Rev	Details	Drawn	Checked	Date
...	...	...	...	...

NOTES :
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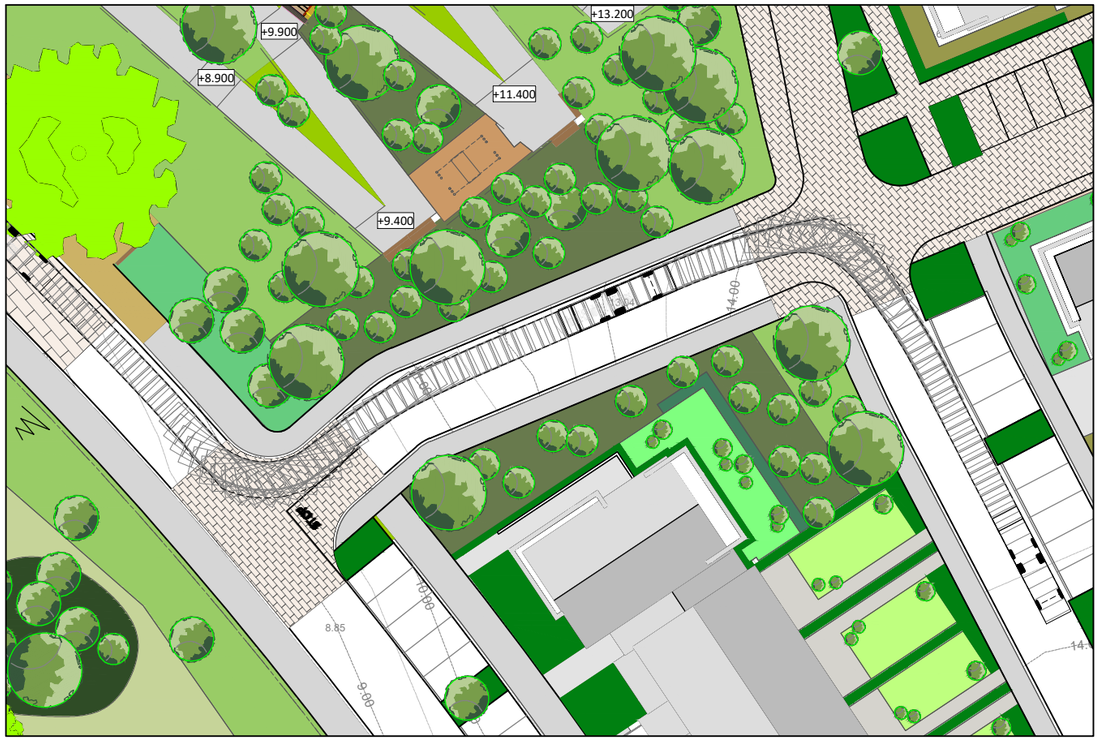
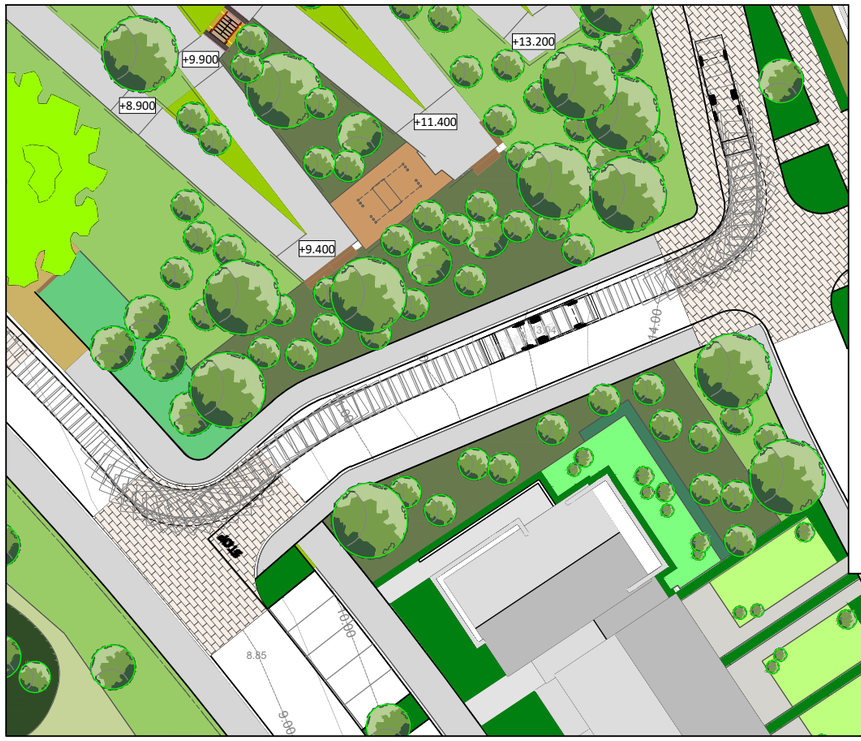
Drawn	DW
Checked	EM
Date	04.10.2021
Rev	...

Drawing No.	C543 2020 TR02
Sheet	4 of 6
Status	PRELIM. DESIGN
Client	TORCA DEVELOPMENTS LIMITED

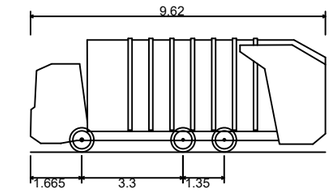
Project	TORCA DEVS E-CORTHY SHD TRAFFIC SPT
Scale	1:500 @ A3
Title	VEHICULAR SWEPT PATHS ANALYSIS USING LARGE REFUSE VEHICLE WITH A REAR STEERING CHASSIS

TRANSPORT INSIGHTS





Phoenix 2-15N (with Elite 2 6x2 RS chassis)



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	FORWARD MOVEMENTS *(design speed - 5kph)*
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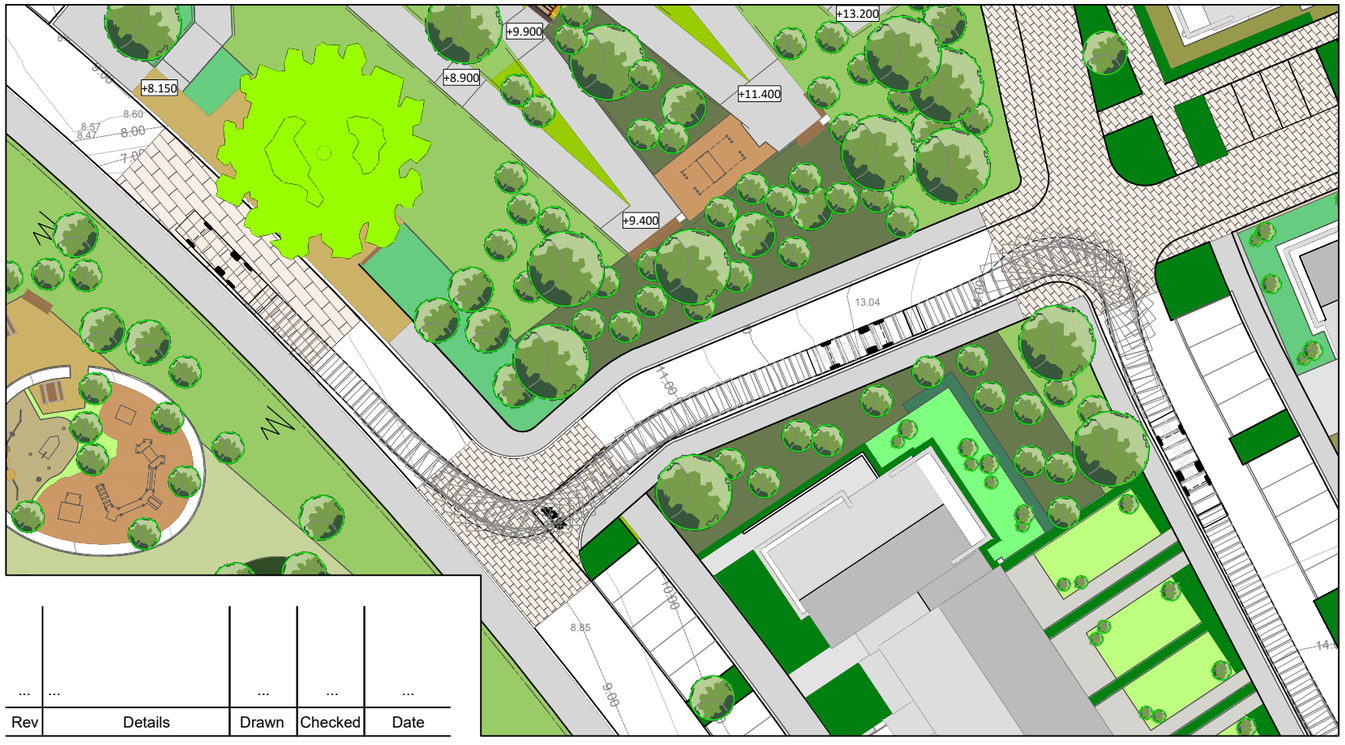

...	...	...	...	...
Rev	Details	Drawn	Checked	Date

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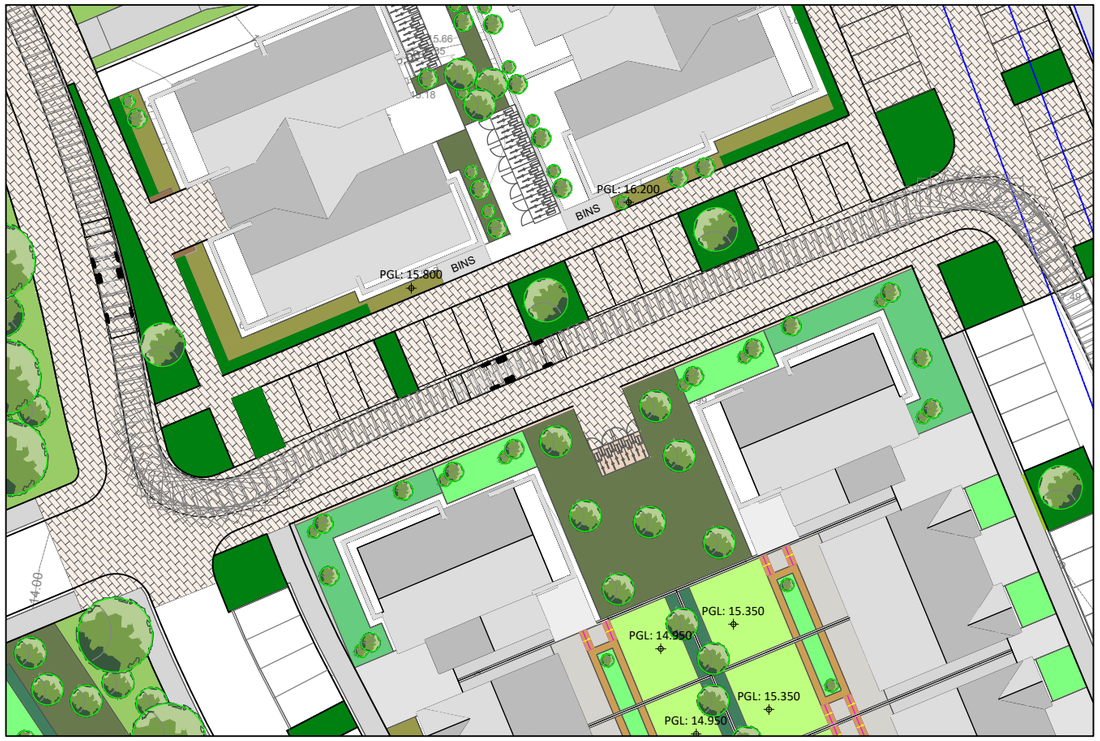
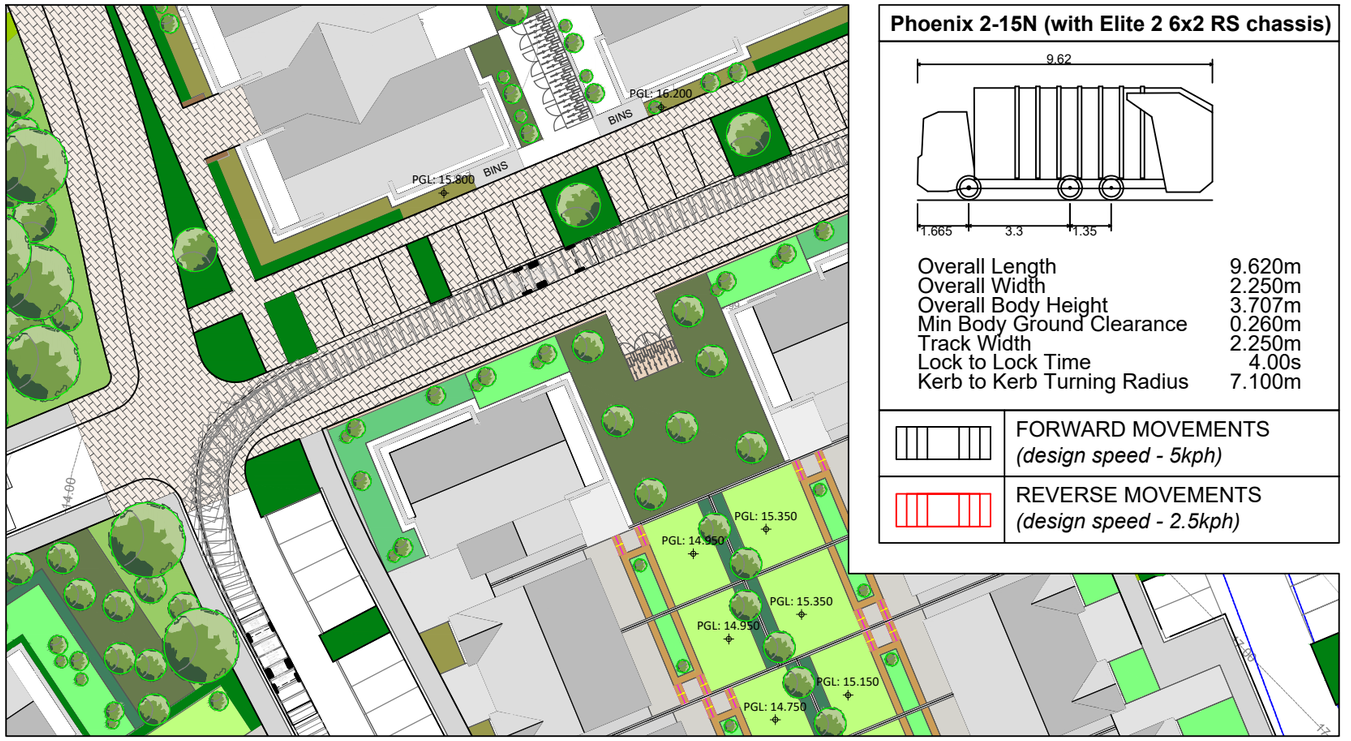
Drawn	DW
Checked	EM
Date	04.10.2021
Rev	...

Drawing No.	C543 2020 TR02
Sheet	5 of 6
Status	PRELIM. DESIGN
Client	TORCA DEVELOPMENTS LIMITED

Project	TORCA DEVS E-CORTHY SHD TRAFFIC SPT
Scale	1:500 @ A3
Title	VEHICULAR SWEPT PATHS ANALYSIS USING LARGE REFUSE VEHICLE WITH A REAR STEERING CHASSIS

TRANSPORT INSIGHTS





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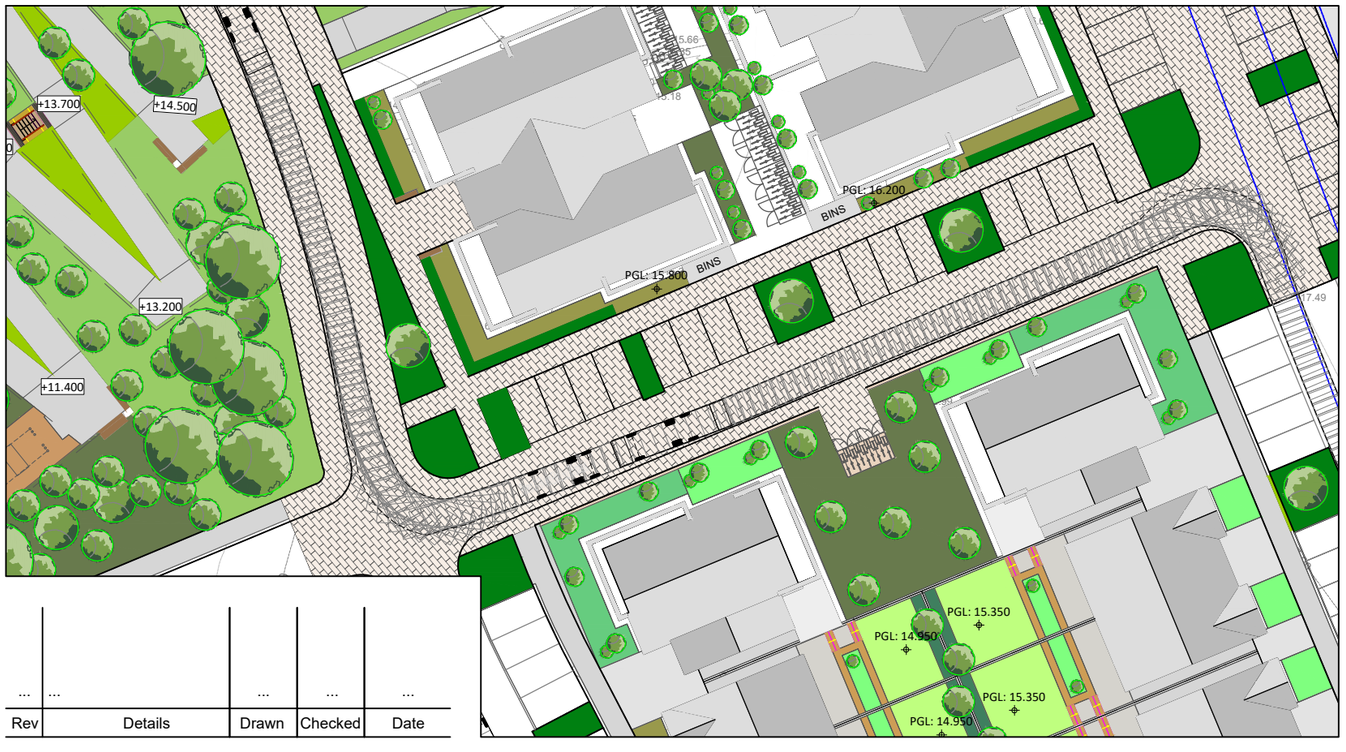
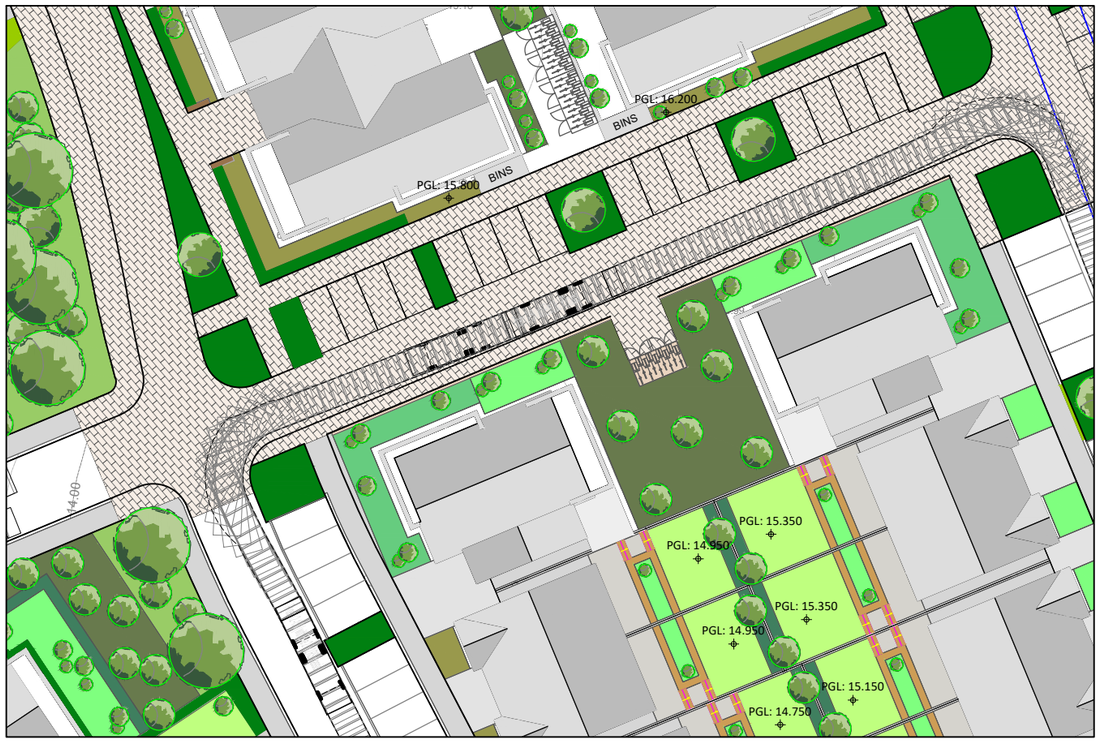
FORWARD MOVEMENTS *(design speed - 5kph)*

REVERSE MOVEMENTS *(design speed - 2.5kph)*





...	...	...	...	...
Rev	Details	Drawn	Checked	Date

NOTES :
1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

Drawn	DW	Drawing No.	C543 2020 TR02	Project	TORCA DEVS E-CORTHY SHD TRAFFIC SPT
Checked	EM	Sheet	6 of 6	Scale	1:500 @ A3
Date	04.10.2021	Status	PRELIM. DESIGN	Title	VEHICULAR SWEPT PATHS ANALYSIS USING LARGE REFUSE VEHICLE WITH A REAR STEERING CHASSIS
Rev	...	Client	TORCA DEVELOPMENTS LIMITED		

TRANSPORT INSIGHTS

Appendix D DMURS Compliance Statement

DMURS Compliance Statement

Contract Number	C543 2020
Topic	DMURS Compliance Statement for Proposed Residential Development at Carley's Bridge, Enniscorthy, Co. Wexford.
Version Number	v1.3
Status	Final
Author	Carol Diaz Rosario
Reviewer	Eoin Munn
Date	07 April 2022

1. Introduction

Transport Insights has been commissioned by Torca Developments Limited to provide transport engineering design support in relation to the proposed residential development at Carley's Bridge, Enniscorthy, Co. Wexford. As the proposed development site is located within urban area, its proposed layout shall be consistent with the guidelines set in the Design Manual for Urban Roads and Streets (DMURS).

This Compliance Statement represents a review of the proposed development's layout and its compliance with DMURS.

2. DMURS Objectives and Design Rationale

DMURS represents an integrated design approach to urban roads and streets and provides practical advice in relation to the design of new and retrofitting of existing transport networks. In doing so, it seeks to achieve more sustainable communities, underpinned by the overarching design principle that "*well designed streets can create connected physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling and public transport.*"

DMURS sets out design guidance to ensure *"cities and towns are pleasant, safe and healthy places to live."* In doing so, the following key design principles are defined and applied:

- *"Connectivity and permeability;*

- *Sustainability: Priority should be given to the needs of walking, cycling and public transport, and the need for car-borne trips should be minimised; and*
- *Safety: streets, paths and cycle routes should provide for safe access by users of all ages and degrees of personal mobility."*

3. DMURS Design Parameters – Compliance Statement

The above key design criteria have been adhered to in the design of the proposed development. In addition, the following list summarises compliance of the proposed development with design guidance contained within *DMURS*:

- Street hierarchy – as set out within Section 2.2 of the TTA, in terms of street hierarchy, *DMURS* categorises streets or roads into three distinct classifications:
  - arterial streets;
  - link streets; and
  - local streets.
- Development site layout – the main boulevard which passes in a northwest to southeast alignment through the development is consistent with the *DMURS* link street classification and all other streets internally within the development have been classified as local streets.
- Each street type within the development has been designed in accordance with *DMURS* guidance, taking into account corner radii, carriageway width, and visibility splay dimensions:
  - Corner radii – corner radii at the main boulevard access road/ Carley's Bridge Road junction will be 6.0 metres, corner radii at junctions between site access road and internal roads will be 4.5 metres, and corner radii at junctions between internal roads will be 3.0 metres specifically to adhere to *DMURS* recommendations.
  - Carriageway width – the proposed site access road boulevard carriageway width measures 6.0 metres, all internal roads' carriageway widths will be 5.5 metres, and carriageway widths within home-zone areas will be 4.8 metres, again all in accordance with specific *DMURS* recommendations.
  - Junction visibility splays – all junctions, including specifically the junction between the boulevard and Carley's Bridge Road have been designed to achieve *DMURS* (Section 4.4.5 Visibility Splays) recommended dimensions. This includes visibility splays of 59 metres * 2.4 metres at the proposed site access junction to reflect the design speed of Carley's Bridge Road, as informed by the traffic speed survey set out in Section 4.3 of this TTA.

- Pedestrian/ cycle facilities – 3.0 metre wide shared footpaths/cycle tracks shall be provided on each side of main boulevard road and 2.0 metres footpaths provided on all other internal roads within the site, providing access to all components of the development in accordance with *DMURS* and *NCM* guidance. Local streets within the development, with a lower design speed of 30 km/ h have been designed as mixed-traffic environments, with cyclists sharing the carriageway with general traffic.
- Horizontal and vertical deflections – raised tables have been provided across the main boulevard access road at all junctions with internal roads and pedestrian links, and accords with *DMURS* (Section 4.4.7 Horizontal and Vertical Deflections) guidance.
- On-street car parking – *DMURS* (Section 4.4.9 On-Street Parking and Loading) states: "*perpendicular parking should generally be restricted to one side of the street to encourage a greater sense of enclosure and ensure that parking does not dominate the streetscape*." Furthermore, in relation to allocation of car parking, *DMURS* (Section 4.4.9 *On-Street Parking and Loading*) states*: "On-street parking on public streets should not be allocated to individual dwellings. This allows for a more efficient turnover of spaces and, as such, fewer spaces are needed overall."* The proposed development has been designed in accordance with both of the above *DMURS* recommendations.
- The proposed enhancements to Carley's Bridge Road, namely the raised crossing to the east of the development's site access junction, has also been undertaken in accordance with *DMURS* guidance, including forward visibility designed in accordance with Table 4.2 SSD Standards

Appendix E Site Access Stage 1 Road Safety Audit

Road Safety Matters

Road Safety Audit

Stage 1

for

ACCESS TO PROPOSED DEVELOPMENT

AT

CARLEY'S BRIDGE ROAD

ENNISCORTHY, Co WEXFORD

Date: May 2020

Report produced for: Transport Insights Limited

Report produced by: Road Safety Matters Ltd

Reference: RSM/MOB/090320/ENNISCORTHY RSA1

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Company Registration No 657952 VAT No IE 3649269UH

DOCUMENT CONTROL SHEET

Client	Transport Insights Limited
Project Title	Access to proposed Development, Enniscorthy, Co Wexford
Document Title	Stage 1 Road Safety Audit
Document Ref.	RSM/MOB/090320/ENNISCORTHY RSA1
Status	FINAL

Record of Issue

Rev	Originator	Team Member	Date	Distribution
DRAFT 1	M O' B	AJS	9/4/20	Eoin Munn, Transport Insights Ltd
FINAL	M O' B	AJS	1/5/20	Eoin Munn, Transport Insights Ltd

BACKGROUND INFORMATION

The report which follows is the Road Safety Audit - Stage 1 for the proposed access to development site off Carley's Bridge Road in Enniscorthy, Co Wexford, based on the information supplied to the RSA Team as detailed below. The development will involve construction of 266 residential units. This Audit has been prepared for the design of the access point only, in accordance with the requirements of Wexford County Council (WCC), and does not include an audit of the internal site layout.

Table 1: Information Supplied

Item		Supplied	Comment
A	Plans / Drawings	Y	1768-W-010E (Proposed Masterplan Site Layout Plan)
B	Traffic Volume Information	Y	035 20026 Enniscorthy — Report
C	Speed Count Data	N	
D	Collision Data	N	
E	Departures from Standards	N	
F	Audit Brief	Y	RSA 1 – Preliminary Design Stage Audit for access point
G	Other Data / Documents	N	

TABLE OF CONTENTS

1. INTRODUCTION

1.1 This report results from a Stage 1 Road Safety Audit (RSA) of the proposed access to a new residential development off Carley's Bridge Road in Enniscorthy, Co Wexford, carried out at the request of Transport Insights Limited. The Carley's Bridge Road is a relatively narrow single carriageway local road (L2039) with no road markings, footways, drainage or street lighting, and narrow or absent verges, hence is rural in characteristic. The site will be accessed via a priority controlled T junction at the location shown in figure 1, and the site development will involve construction of 266 residential units. This Audit examines the road safety implications associated with the proposed access to the development only, as highlighted in figure 2, and does not include an audit of the internal site layout.

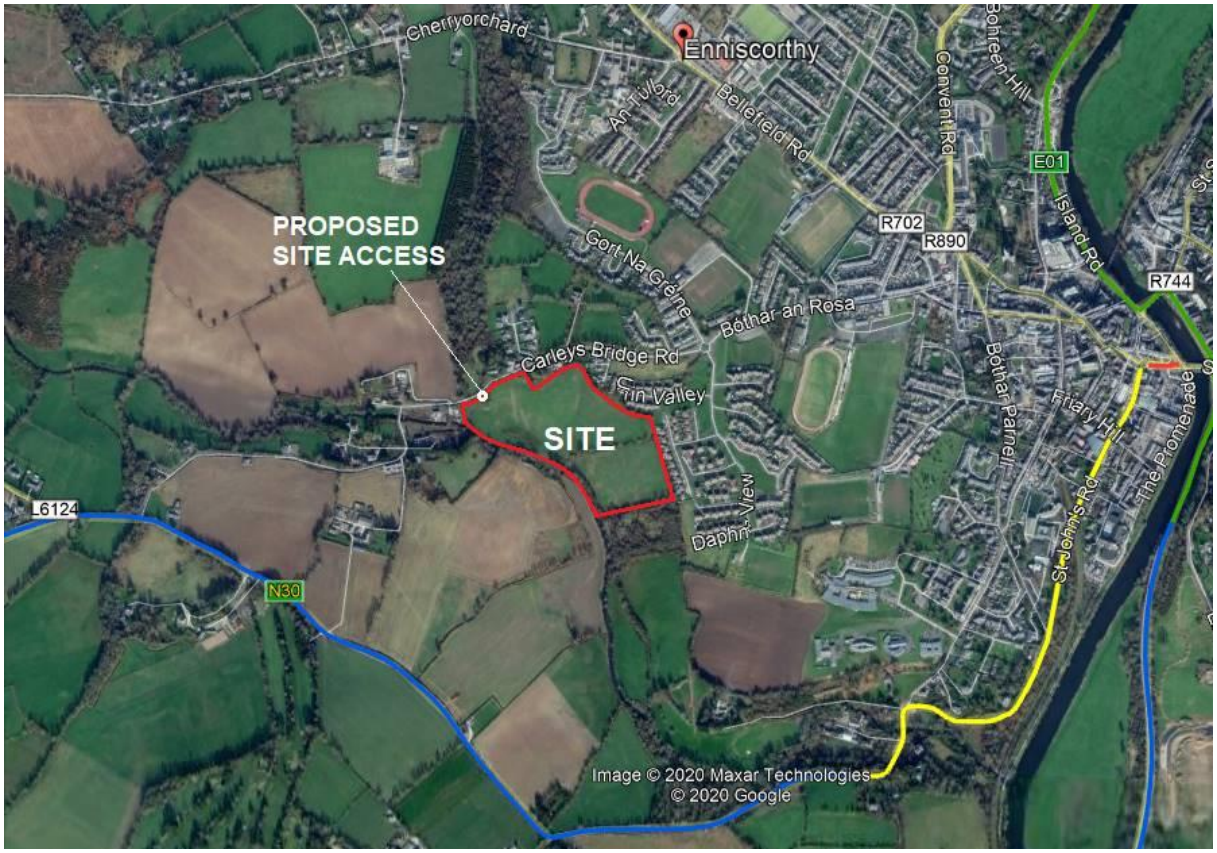


Figure 1: Site Location Plan

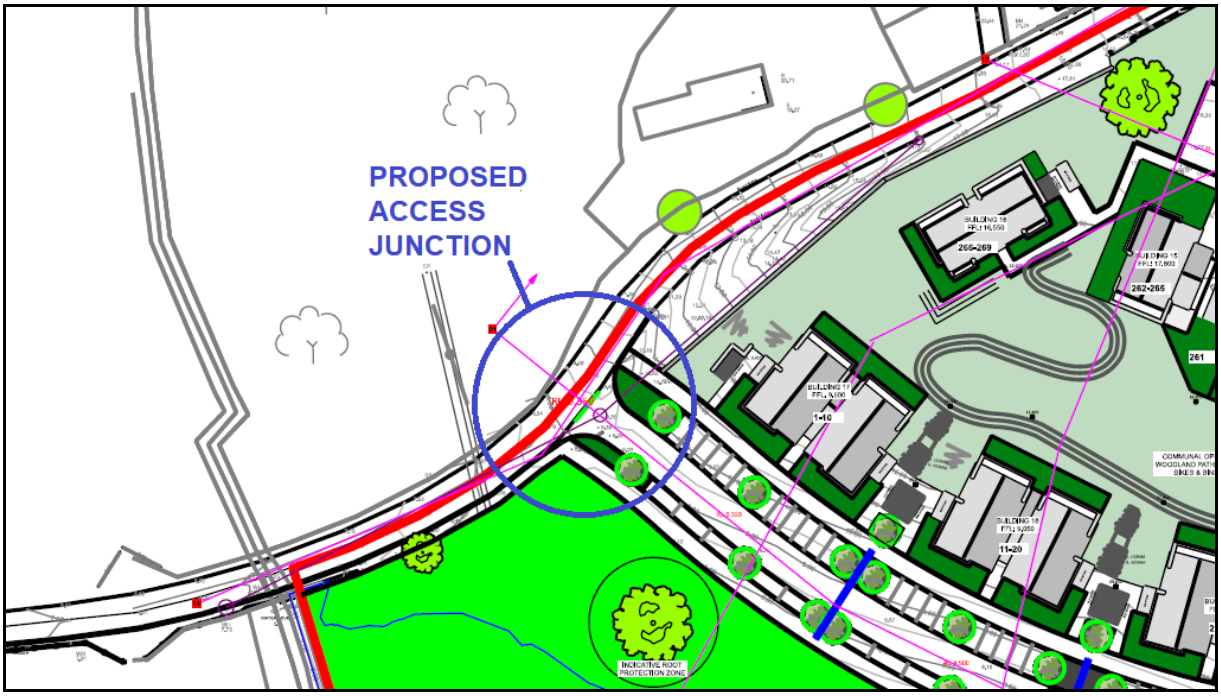


Figure 2: Proposed Site Access and Scope of Audit

1.2 The RSA was carried out during March and April 2020 and included a site visit by the Audit Team on Monday 8th March 2020 during daylight hours. The weather at the time of the site visit was dull and dry, and the surface of the road was dry. Traffic conditions were light, and the posted speed on the L2039 Local Road adjacent to the site was 80 km/hr and 50 km/hr.

1.3 The Audit Team Membership was as follows;

Team Leader:	Miriam O'Brien – BE (Civil) FIHE MIEI MCIHT SoRSA CoC
Team Member:	Anthony Sumner – HNC Civil Eng, AEng, MIEI, MCIHT

1.4 The Audit took place at the offices of Road Safety Matters Ltd following the site visit by the Audit Team. The Audit was undertaken in accordance with the Design Team's Audit Brief, and comprised an examination of the plans provided by the Design Team, as listed in Background Information, Table 1.

1.5 The terms of reference of the Audit are as described in TII GE-STY-01024 Dec 2017. The team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria.

1.6 Section 2 of this report contains issues raised by the Stage 1 RSA together with recommendations to be considered. Section 3 contains the Auditor Team Statement. Most issues raised in Section 2 can be cross-referenced with the scheme drawing (**Appendix C)** and photographs taken on the site visit which are included in **Appendix B** & within the Body of the Report where necessary.

2. ISSUES RAISED BY THE STAGE 1 ROAD SAFETY AUDIT

2.1 GENERAL

2.1.1 The designers have not advised of any departures from standard.

2.1.2 There was no information provided relating to long sections or cross sections for the proposed roads to determine crossfall and gradients.

2.1.3 No information was provided on any existing collision statistics in the vicinity of the site. A review of the Road Safety Authority (RSA) online collision database indicates that there were two minor collisions recorded on L2039 to the west of the proposed development site between 2005 and 2016 inclusive, as shown in figure 3. Both collisions involved a head on conflict, which is likely to be reflective of the narrow carriageway and poor stopping sight distance (SSD) arising from back to back curvature on the link at present.

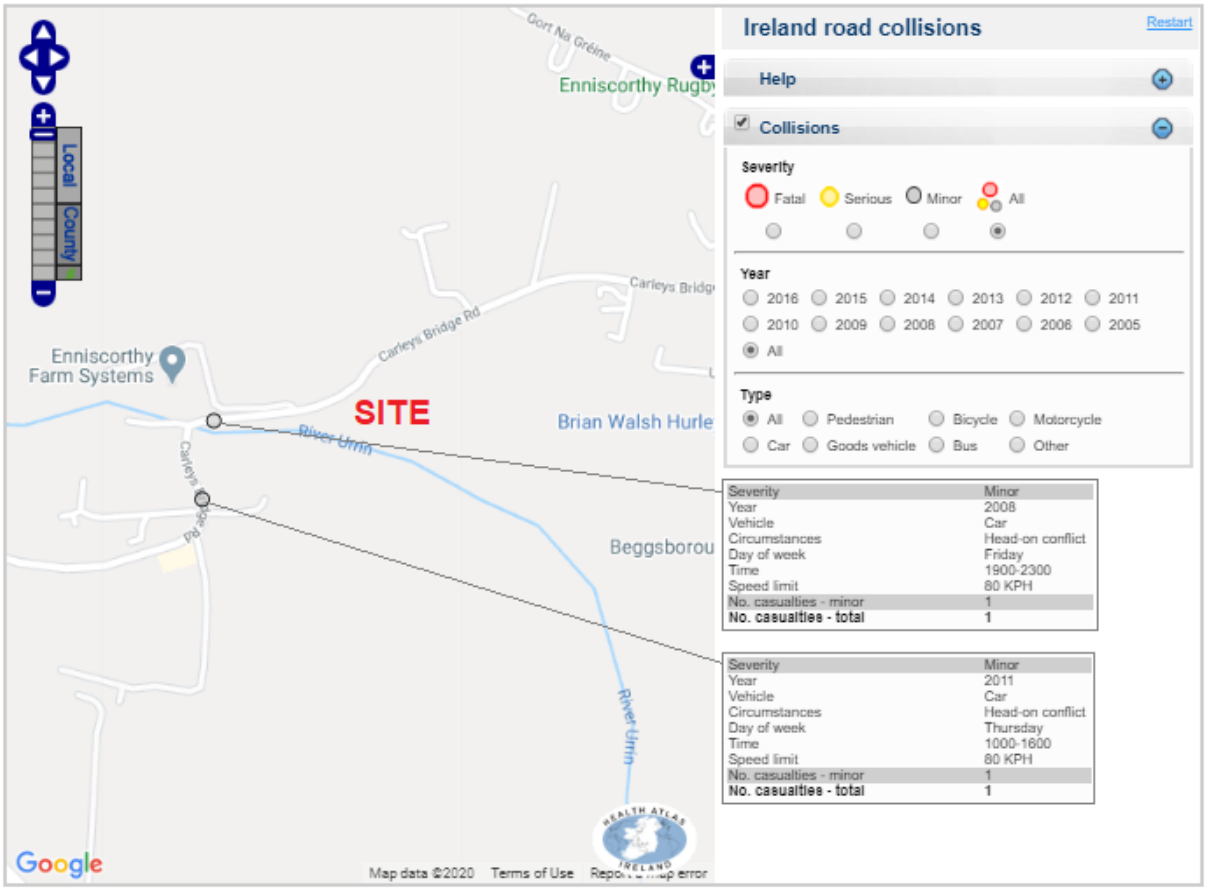


Figure 3: Collision Plot for Road network adjacent to site

It should be noted that the RSA database is not a comprehensive record of collisions, and does not include damage only collisions or any collisions recorded since 2016 (or before 2005), hence should be reviewed in conjunction with the Local Authority / Gardaí records for the network surrounding the site.

2.1.4 Problem – Speeds Generally

The speed limit on the local road adjacent to the site is split between the 80 km/hr rural speed limit and the 50 km/hr urban speed limit, with the proposed site access located approximately 20m east of the speed limit changeover, as shown in figure 4.

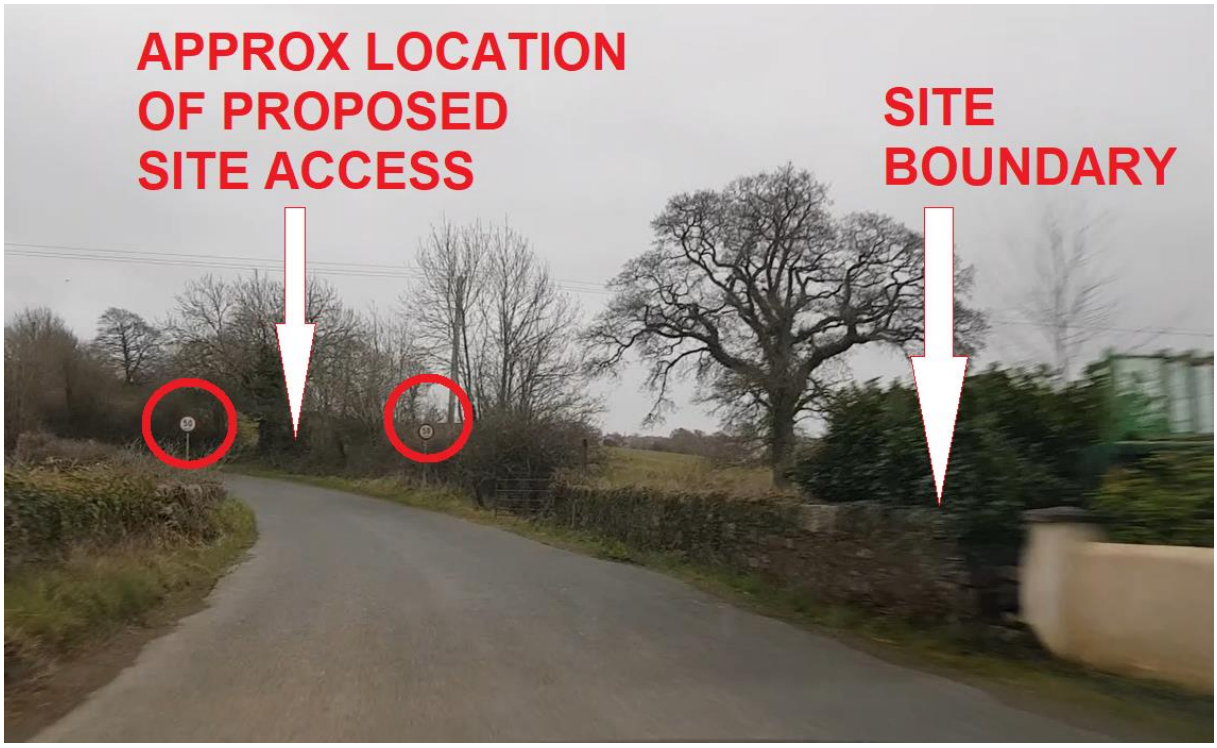


Figure 4: Eastbound approach to site access showing speed limit changeover

There is no 60 km/hr transition zone at present between the rural and urban speed limit. There is no provision for reduced speed limit signage within the site. The posted speed limit of 50 km/hr on the L2039 would be inappropriately high for the internal roads in a residential urban environment, where relatively high proportions of VRUs (Vulnerable Road Users – including

pedestrians and cyclists) should be anticipated, and where inappropriate speeds would increase risks to these road users in particular.

Recommendations

The extent of the current urban speed limit zone should be extended to take into account the extension of development into the rural fringe, with provision for a suitable length transition zone as necessary. Reduced speed limit or slow zone signage should be provided on entry to the site at a safe suitable location.

2.1.5 Problem – Drainage

Provision for surface water drainage at the proposed access junction is unclear. Insufficient drainage of surface water can lead to ponding which can create hazards for all road users. and it was noted that the proposed access will be located on a significant downhill gradient westbound, which may lead to an increased risk of skidding and loss of control on approach to the junction in wet and icy conditions.

Recommendations

The new access junction will need to be adequately drained to minimise the risk of ponding and excess surface water, and to minimise the risk of skidding and loss of control. The detailed design for the site should include all drainage details to address surface water runoff, to include details of gradients and crossfalls on proposed roads to determine likely drainage paths. All gullies or drainage channels should be flush with the surrounding pavement, and placed in a location which is outside the desire line for pedestrians and two-wheeled vehicles.

2.1.6 Problem – Landscaping and Boundary Treatment

There were no details provided regarding proposed landscaping and boundary treatment on the preliminary design layout for the site. The current boundary is characterised by dense hedging and mature overhanging trees immediately adjacent to the carriageway on both sides of the local road, which restricts forward visibility and SSD, and is likely to contribute towards dark and slippy

conditions. Current visibility westbound towards the proposed site access is shown in figure 5. Inappropriately located landscaping or boundaries exceeding 1.05m in height can present obstructions in visibility splays and compromise intervisibility between motorists and VRUs, as well as compromising conspicuity of the proposed site access on approaches from each direction. Obstructions in visibility splays can increase the risk of right angled collisions and pulling out type incidents. Convex mirrors were noted at a number of dwellings and access points along the link at present to assist motorists with visibility towards approaching motorists, and to counteract the reduced SSD arising from the link sinuosity.

Figure 5: Existing boundary treatment along Site Frontage

Recommendations

Visibility should be clear and unobstructed at all times in accordance with traffic speeds. Proposals for landscaping and boundary treatment along the site boundary and on approaches to the site on both sides of the carriageway should be clarified at detailed design stage, with all trees, hedgerow and landscaping to be located outside the visibility splay, and away from

positions which could increase the risk of conflict for all road users. All boundaries should be located outside visibility splays and sightlines, and a sightline drawing should be produced to demonstrate achievable visibility on both the horizontal and vertical plane. Trees, boundaries and landscaping should be offset a safe distance from the carriageway edge and ideally away from footways or areas where shedding leaves and tree roots may cause slip/trip hazards, or where street lighting luminescence may be compromised.

2.1.7 Problem – Traffic Volumes

There was no information provided on anticipated traffic volumes and turning movement proportions to and from the development site to determine any issues arising in respect of queues or junction geometry.

Recommendations

The anticipated traffic volumes and turning movement proportions should be considered to determine the optimal layout and form of the proposed access junction. Suitable forward visibility and SSD should be provided towards the rear of any potential queues arising as a result of the proposed development.

2.1.8 Problem – Parking

It was noted that perpendicular and parallel parking spaces have been provided to each side of the access road into the site in relatively close proximity to the proposed access junction, as shown in figure 6. Visibility towards vehicles pulling out of these spaces, particularly those reversing from the perpendicular spaces, is likely to be compromised by the proposed landscaping shown on the plan at this location. Vehicles reversing out of these spaces may also obstruct the path of entering vehicles, leading to an increased risk of blocking back onto the major road, and an increased risk of rear shunt or right angled collision.

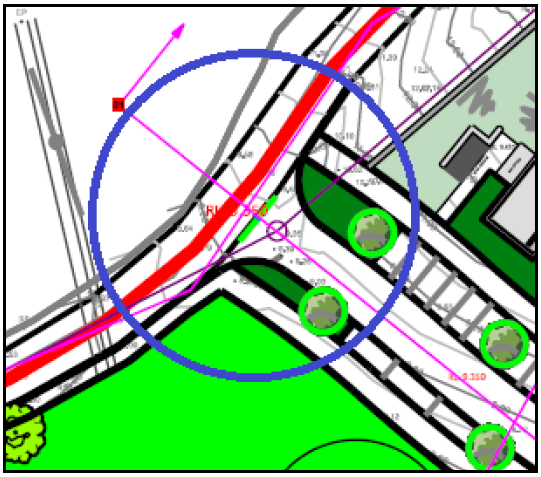


Figure 6: Parking close to proposed Access Junction

Recommendations

Parking spaces should be located away from the junction to minimise obstruction to accessing and egressing vehicles. Any potential intervisibility obstructions arising from landscaping or street furniture proposals should be removed.

2.2 JUNCTION LAYOUT AND LINK ALIGNMENT/CROSS SECTION

2.2.1 Problem – Access Junction/Link geometry

There was no swept path analysis provided for the proposed access junction off the L2039 to demonstrate that the proposed geometry will accommodate the swept paths and turning movements of all vehicle types and sizes, under all operating conditions. The proposed access junction has been configured with low corner radii, which may present difficulties for some vehicles turning, and may result in encroachment into the adjacent/opposing traffic lane. The cross section on both the major and minor roads is narrow, and it is unclear if safe two way movement can be accommodated. Vehicles turning right out of the site are likely to encroach into the verge area on the opposite side of the carriageway, as shown indicatively in figure 7. The preliminary layout shows provision for embankments within the site in close proximity to the local road, and no details have been provided on slopes. The

treatment of the area immediately northeast of the access junction in unclear, at the location highlighted in figure 8 where there are significant gradients.

Figure 7: Treatment of road edge unclear

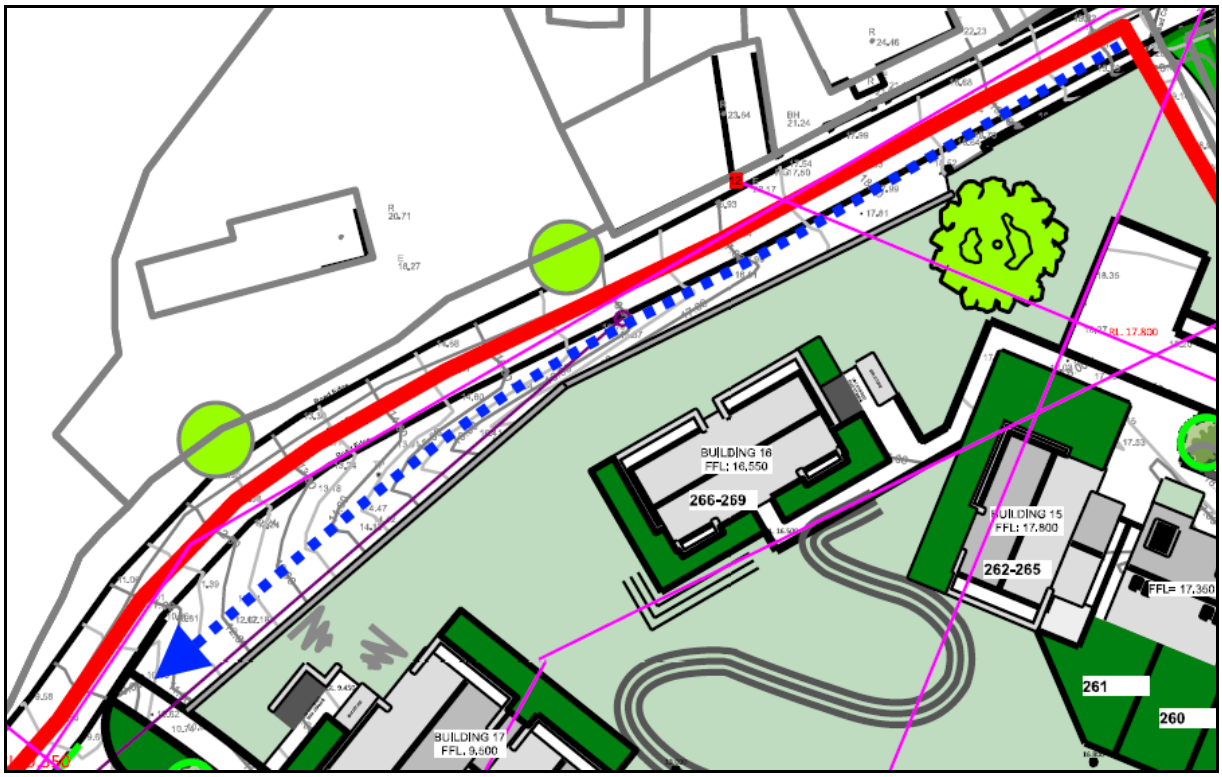


Figure 8: Treatment of road edge unclear

Recommendations

A worst case scenario swept path analysis should be undertaken to demonstrate that the proposed access junction geometry will accommodate the swept path and turning movements of all anticipated vehicle sizes with adequate margins of safety. Safe two-way movement should be provided at all times on both the major and minor road, and the risk of turning vehicles encroaching into the pedestrian zone to each side of the access should be minimised. Detailed design should include details of gradients and vertical design for both the major and minor roads, with safe approach gradients to be provided on the major road, and a relatively level dwell area to be provided on the minor road for distance of 15m back from the channel line. Confirmation of any proposed embankment slopes should be included on cross sections at detailed design stage, and embankments adjacent to the carriageway should not present a hazard to road users or compromise sightlines.

2.2.2 Problem – Ambiguous Form of Control and Layout

It was noted that there is no provision for form of control at the proposed access junction to provide unambiguous guidance on rights of way and priority.

Recommendations

The rights of way and priority at the junction should be clear and unambiguous for all road users, to include provision for suitable road markings and signage as appropriate.

2.3 NON-MOTORISED USER PROVISION

2.3.1 Problem – Pedestrian Provision

There was no information provided on anticipated pedestrian demands and desire lines, however the following issues were noted in respect of proposed and existing pedestrian accessibility to and from the site, which can be summarised as follows:

2.3.1.1 Problem – Discontinuous Footways

Footways have been provided to each side of the minor road access into the site, however the footway on the eastern side terminates abruptly, as shown in figure 9, and there is no provision for safe pedestrian continuity. Pedestrians wishing to travel between the site and the centre of the town of Enniscorthy, located approximately 1.5km east of the site, will be vulnerable at this location, where there is no provision for footways at present on either side of the carriageway at a location where SSD is limited by the current cross section, boundary treatment, and horizontal and vertical alignment curvature. A narrow footway appears to have been provided along the site boundary to the southwest of the access junction, however continuity of the footway beyond the site boundary is unclear.

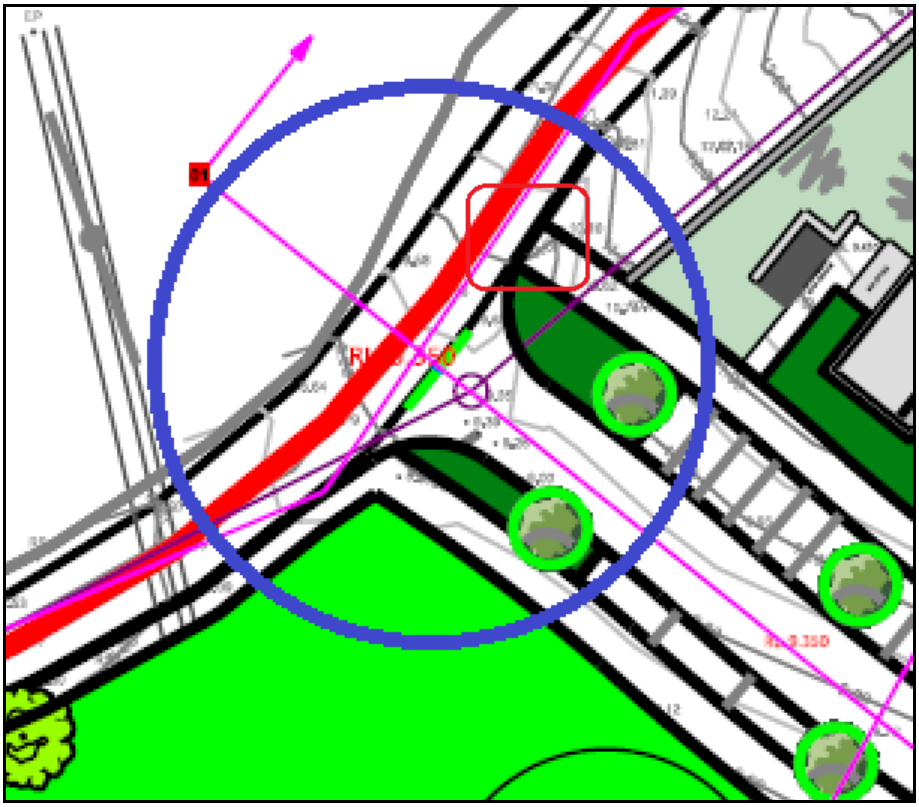


Figure 9: Discontinuous footway at Junction

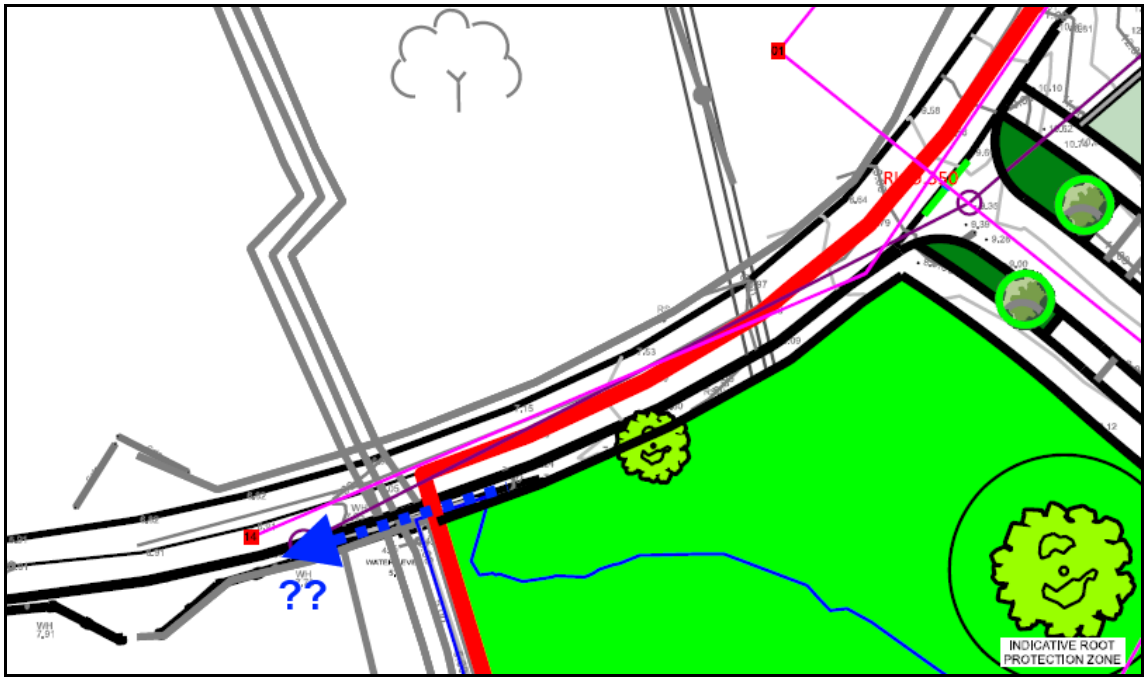


Figure 10: Narrow Footway & Continuity Unclear

Recommendations

Pedestrian activity, desire lines and demands should be considered at tie-in points to the junction, and provision should be made for continuous footways a minimum 2m width on all pedestrian desire lines, with dropped kerbs and tactile paving to be provided where necessary for the benefit of visually and mobility impaired pedestrians. Footways should not terminate abruptly, particularly where pedestrians may be brought out into the carriageway into the path of passing or turning vehicles, where intervisibility may be restricted.

2.3.2 Problem – Cyclist Provision

No information has been provided on likely cyclist demand and activity to and from the site, and there was no cycling activity observed adjacent to the site at the time of the site visit. The design does not include for any cycling infrastructure, and cyclists would be expected to share road space with motorised vehicles where the risk of conflict is higher. It was noted that is currently no provision for cyclists on the road network surrounding the site, and gradients on the local road are likely to provide increased risks for some cyclists. The footways shown within the site and on approaches to the access junction are too narrow for shared use, leading to an increased risk of pedestrian and cyclist conflict.

Recommendations

Likely cyclist demands, desire lines and volumes should be examined within and on all approaches to the site to take into account issues raised above, with safe continuous and unobstructed facilities provided to cater for anticipated demands, inclusive of shared off road facilities where necessary with a minimum 3m width.

2.4 ROAD SIGNS, MARKINGS AND LIGHTING

2.4.1 Problem – Lighting

There were no details provided for proposed lighting at the access junction. The new scheme will need to be adequately lit to minimise the risk of collisions occurring during the hours of darkness.

Recommendation

Lighting proposals should be clarified at detailed design stage, to include for new lighting where required at the site access junction and on the approaches from each direction. All lighting columns should be passively safe, and placed to the rear of footways where possible at a sufficient offset from the carriageway edge.

2.4.2 Problem – Signing and Lining

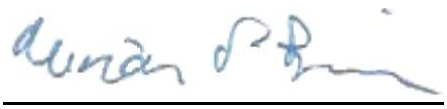
There was no signing and lining schedule provided for the proposed site access. There is no provision for centreline road markings on the local road at present adjacent to the site, which increases the risk of head on or side swipe collision, with current evidence of the former noted at the site through an examination of the RSA collision history.

Recommendations

A signing and lining schedule should be produced at detailed design stage, to include provision for a stop line and road markings, as well as a stop sign at a suitable safe location at the proposed access junction. Centreline road markings should also be provided, subject to a review of the existing cross section width on the local road adjacent to the site, with provision for suitable widening as necessary. Warning signage regarding the minor road access ahead should also be provided at a suitable and safe location in each direction on approaches to the site. All signs should be posted in full view of motorists in a safe location with a minimum offset of 600mm-450mm from the sign face to the carriageway edge. The lowest edge of all signs should be set at a height of 2.1m or higher over footway and at 2.4m or higher over a surface which may be used by cyclists. All road markings and signage to be highly reflective material to ensure visibility during the hours of darkness.

3. AUDIT TEAM STATEMENT

We certify that we have visited the site and examined the drawings and information supplied. This examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified to improve the safety of the scheme. The problems identified have been noted within the report, together with suggestions for improvements which are recommended to be studied for implementation. No one on the Audit Team has been otherwise involved with the design of the measures audited. This audit has been carried out in accordance with TII GE-STY-01024 December 2017.

Signed:  Date: 1/5/20

MIRIAM O'BRIEN

Signed:  Date: 1/5/20

ANTHONY SUMNER

APPENDIX A – ROAD SAFETY AUDIT BRIEF CHECKLIST

Have the following been included in the audit brief?: (*if 'No', reasons should be given below)*

	Yes	No
1. The Design Brief	☑	☐
2. Departures from Standard	☐	☑
3. Scheme Drawings	☑	☐
4. Scheme Details (e.g. signs schedules, traffic signal staging)	☐	☑
5. Collision data for existing roads affected by scheme	☐	☑
6. Traffic surveys	☑	☐
7. Previous Road Safety Audit Reports and Designer Responses/Feedback Form	☐	☑
8. Previous Exception Reports	☐	☑
9. Start date for construction and expected opening date	☐	☑
10. Any elements to be excluded from audit	☐	☑

Any other information? ☐ ☑

APPENDIX B – SITE PHOTOGRAPHS

Road Safety Matters Ltd
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mobrien@roadsafetymatters.net
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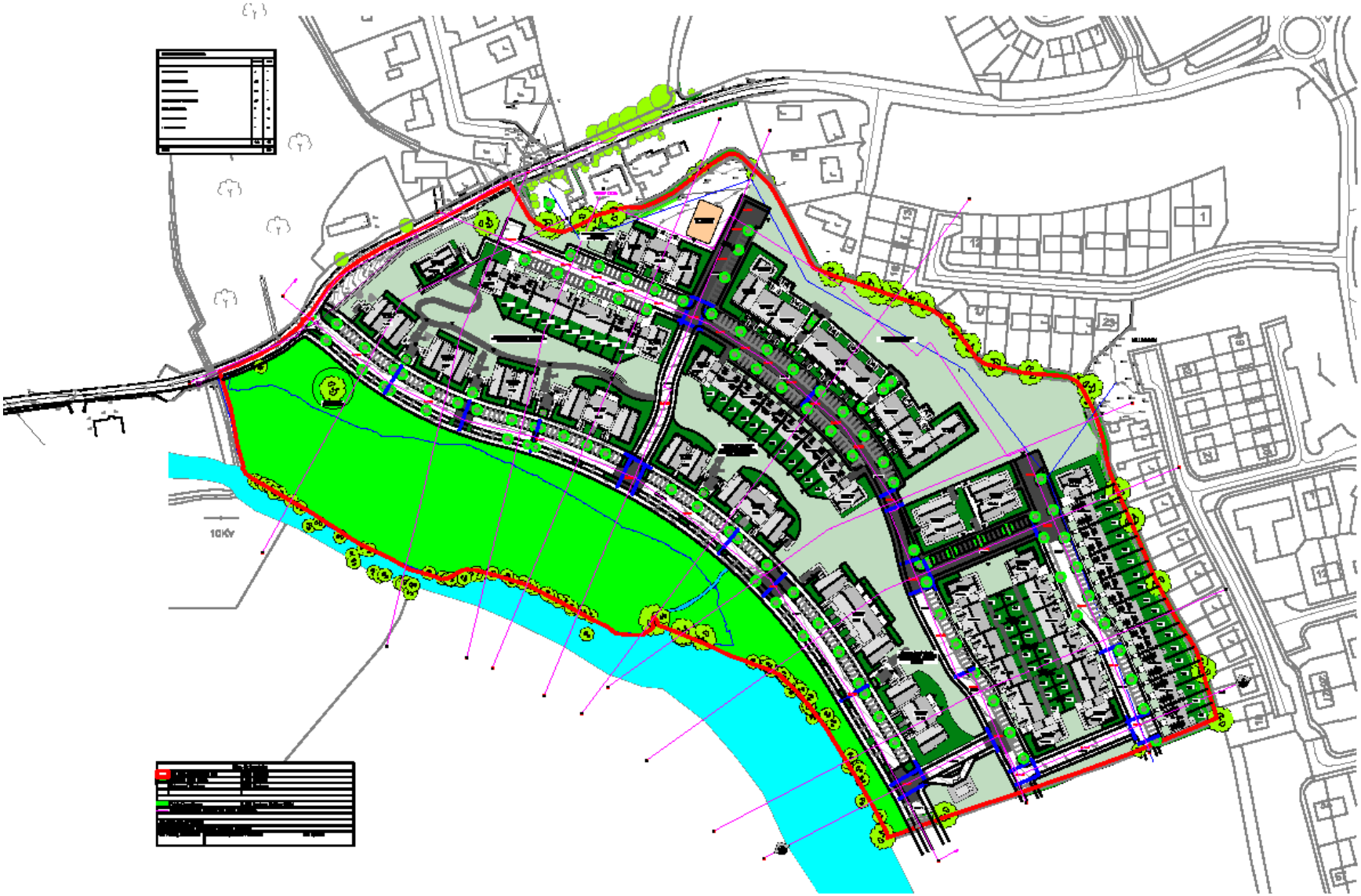
Company Registration No 657952 VAT No IE 3649269UH


10Kv

Road Safety Audit Feedback Form

Scheme: Access to residential development, Enniscorthy, Co Wexford

Route No. N/A

Audit Stage: 1

Date Audit Completed: May 2020

	To Be Completed By Designer			To Be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	**Problem accepted (yes/no)**	**Recommended measure accepted (yes/no)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure**	**Alternative measures or reasons accepted by auditors (yes/no) [1]**
2.1.4	**Yes**	**Yes**		**Yes**
2.1.5	**Yes**	**Yes**		**Yes**
2.1.6	**Yes**	**Yes**		**Yes**
2.1.7	**Yes**	**Yes**		**Yes**
2.1.8	**Yes**	**Yes**		**Yes**
2.2.1	**Yes**	**Yes**		**Yes**
2.2.2	**Yes**	**Yes**		**Yes**

[1] Note: No formal ATL response required in accordance with TII GE-STY-01024 Dec 2017, however Yes responses included subject to Stage 2 detailed design Road Safety Audit, with scope to include internal layout for site and safety/accessibility issues to and from the site in all directions.

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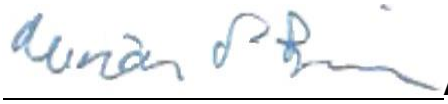
2.3.1	**Yes**	**Yes**		**Yes**
2.3.2	**Yes**	**Yes**		**Yes**
2.4.1	**Yes**	**Yes**		**Yes**
2.4.2	**Yes**	**Yes**		**Yes**

Signed:  **Designer** **Date** 01/05/2020

Signed:  **Audit Team Leader** **Date** **1/5/20**

Appendix F TRICS Trip Generation Data

TRICS 2013(b)v6.12.2
Trip Rate Parameter: Number of dwellings

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

1	GREATER LONDON		
	BN	BARNET	1 days
	BT	BRENT	1 days
	KI	KINGSTON	2 days
	KN	KENSINGTC	1 days
	SK	SOUTHWAI	1 days
	WE	WESTMINS	1 days
2	SOUTH EAST		
	ES	EAST SUSSI	1 days
	EX	ESSEX	1 days
	HF	HERTFORD	1 days
3	SOUTH WEST		
	CW	CORNWALI	2 days
	DC	DORSET	1 days
	WL	WILTSHIRE	1 days
4	EAST ANGLIA		
	CA	CAMBRIDG	2 days
	NF	NORFOLK	2 days
	SF	SUFFOLK	4 days
5	EAST MIDLANDS		
	LE	LEICESTERS	1 days
	LN	LINCOLNSH	3 days
	NR	NORTHAM	1 days
	NT	NOTTINGH	1 days
6	WEST MIDLANDS		
	SH	SHROPSHIF	3 days
	ST	STAFFORDS	1 days
	WK	WARWICKS	1 days
	WM	WEST MIDI	3 days
	WO	WORCESTE	4 days
7	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YOI	6 days
8	NORTH WEST		
	CH	CHESHIRE	6 days
	GM	GREATER M	1 days
	LC	LANCASHIF	1 days
	MS	MERSEYSID	1 days
9	NORTH		
	CB	CUMBRIA	2 days
	TV	TEES VALLE	1 days
10	WALES		
	CF	CARDIFF	2 days
	CM	CARMARTH	1 days
	CP	CAERPHILL	1 days
11	SCOTLAND		
	AD	ABERDEEN	1 days
	AG	ANGUS	1 days
	EA	EAST AYRSI	2 days
	FA	FALKIRK	2 days
	FI	FIFE	2 days
	HI	HIGHLAND	3 days
	PK	PERTH & KI	1 days
	SR	STIRLING	1 days
12	CONNAUGHT		
	CS	SLIGO	1 days
	GA	GALWAY	3 days
	MA	MAYO	1 days
	RO	ROSCOMM	2 days
13	MUNSTER		
	CR	CORK	1 days
	WA	WATERFOR	3 days
14	LEINSTER		
	KD	KILDARE	1 days
	KK	KILKENNY	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	4 days
16	ULSTER (REPUBLIC OF IRELAND)		
	CV	CAVAN	1 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	2 days
	AR	ARMAGH	1 days

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

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Number of dwellings
Actual Range: 6 to 437 (units:)
Range Selected by User: 4 to 4334 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 30/05/13

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:

Monday	15 days
Tuesday	24 days
Wednesday	11 days
Thursday	20 days
Friday	13 days
Saturday	3 days
Sunday	10 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	96 days
Directional ATC Count	0 days

This data displays the nur the total a whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Centre	0
Edge of Town Centre	0
Suburban Area (PPS6 Out	58
Edge of Town	38
Neighbourhood Centre (P	0
Free Standing (PPS6 Out c	0
Not Known	0

This data displays the nur Edge of To Suburban / Neighbour Edge of To Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	0
Commercial Zone	0
Development Zone	0
Residential Zone	77
Retail Zone	0
Built-Up Zone	2
Village	0
Out of Town	1
High Street	0
No Sub Category	16

This data displays the nur Industrial Z Developm Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	95 days

This data displays the nur which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	14 days
5,001 to 10,000	13 days
10,001 to 15,000	18 days
15,001 to 20,000	22 days
20,001 to 25,000	10 days
25,001 to 50,000	16 days
50,001 to 100,000	2 days
101,000 or More	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,000 or Less	2 days
5,001 to 25,000	12 days
25,001 to 50,000	11 days
50,001 to 75,000	11 days
75,001 to 100,000	14 days
100,001 to 125,000	13 days
125,001 to 250,000	13 days
250,001 to 500,000	8 days
500,001 or More	12 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	3 days
0.6 to 1.0	33 days

1.1 to 1.5 57 days
1.6 to 2.0 3 days
This data displays the nur within a radius of 5-miles of selected survey sites.

Travel Plan:
Yes 1 days
No 95 days
This data displays the nur and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 AD-03-A-0: SEMI-DETA ABERDEEN CITY
SPRINGFIELD ROAD

ABERDEEN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 59
Survey dat FRIDAY ######## Survey Typ MANUAL

2 AG-03-A-0: BUNGALOV ANGUS
KEPTIE ROAD

ARBROATH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 7
Survey dat TUESDAY ######## Survey Typ MANUAL

3 AN-03-A-0(SEMI-DET. ANTRIM
GLENMOUNT ROAD

NEWTOWNABBEY
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwell 132
Survey dat THURSDAY ######## Survey Typ MANUAL

4 AN-03-A-0: THE CEDAR ANTRIM
CASTLE WAY

ANTRIM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 55
Survey dat TUESDAY ######## Survey Typ MANUAL

5 AR-03-A-01 MIXED HOU ARMAGH
BIRCHDALE MANOR

LURGAN
Edge of Town
Residential Zone
Total Number of dwell 153
Survey dat TUESDAY ######## Survey Typ MANUAL

6 BN-03-A-0: SEMI DETA BARNET
NORRY'S ROAD

COCKFOSTERS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 10
Survey dat THURSDAY ######## Survey Typ MANUAL

7 BT-03-A-01 SEMI DETA BRENT
KENTON ROAD

BRENT
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 82
Survey dat TUESDAY ######## Survey Typ MANUAL

8 CA-03-A-0: SEMI-DET. CAMBRIDGESHIRE
SUGAR WAY
WOODSTON
PETERBOROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 28
Survey dat SUNDAY ######## Survey Typ MANUAL

9 CA-03-A-04 DETACHED CAMBRIDGESHIRE

THORPE PARK ROAD
PETERBOROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 9
Survey dat TUESDAY ######## Survey Typ MANUAL

10 CB-03-A-03 SEMI DETA CUMBRIA
HAWKSHEAD AVENUE

WORKINGTON
Edge of Town
Residential Zone
Total Number of dwell 40
Survey dat THURSDAY ######## Survey Typ MANUAL
11 CB-03-A-04 SEMI DETA CUMBRIA
MOORCLOSE ROAD
SALTERBACK
WORKINGTON
Edge of Town
No Sub Category
Total Number of dwell 82
Survey dat FRIDAY ######## Survey Typ MANUAL
12 CF-03-A-02 MIXED HOU CARDIFF
DROPE ROAD

CARDIFF
Edge of Town
Residential Zone
Total Number of dwell 196
Survey dat FRIDAY ######## Survey Typ MANUAL
13 CF-03-A-03 DETACHED CARDIFF
LLANTRISANT ROAD

CARDIFF
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 29
Survey dat MONDAY ######## Survey Typ MANUAL
14 CH-03-A-02 HOUSES/FL CHESHIRE
SYDNEY ROAD

CREWE
Edge of Town
Residential Zone
Total Number of dwell 174
Survey dat TUESDAY ######## Survey Typ MANUAL
15 CH-03-A-03 SEMI-DETA CHESHIRE
SPRING GARDENS

CREWE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 80
Survey dat SUNDAY ######## Survey Typ MANUAL
16 CH-03-A-04 DETACHED, CHESHIRE
LIME TREE AVENUE

CREWE
Edge of Town
Residential Zone
Total Number of dwell 25
Survey dat SUNDAY ######## Survey Typ MANUAL
17 CH-03-A-05 DETACHED CHESHIRE
SYDNEY ROAD
SYDNEY
CREWE
Edge of Town
Residential Zone
Total Number of dwell 17
Survey dat TUESDAY ######## Survey Typ MANUAL
18 CH-03-A-06 SEMI-DET./ CHESHIRE
CREWE ROAD

CREWE
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwell 129
Survey dat TUESDAY ######## Survey Typ MANUAL
19 CH-03-A-08 DETACHED CHESHIRE
WHITCHURCH ROAD
BOUGHTON HEATH
CHESTER
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 11
Survey dat TUESDAY ######## Survey Typ MANUAL
20 CM-03-A-0 DETAT./BG CARMARTHENSHIRE
TREVAUGHAN ROAD
TREVAUGHAN

CARMARTHEN
Edge of Town
No Sub Category
Total Number of dwell 17
Survey dat SATURDAY ######## Survey Typ MANUAL
21 CP-03-A-02 SEMI DETA CAERPHILLY
THE RISE

PENGAM
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwell 41
Survey dat MONDAY ######## Survey Typ MANUAL
22 CR-03-A-01 BUNGALOV CORK
CURRAGH ROAD
TURNER'S CROSS
CORK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 48
Survey dat THURSDAY ######## Survey Typ MANUAL
23 CS-03-A-02 DETACHED SLIGO
CHURCH HILL

SLIGO
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwell 35
Survey dat THURSDAY ######## Survey Typ MANUAL
24 CV-03-A-01 DETACHED CAVAN
DUBLIN ROAD

CAVAN
Edge of Town
No Sub Category
Total Number of dwell 37
Survey dat TUESDAY ######## Survey Typ MANUAL
25 CW-03-A-0 TERRACED CORNWALL
ALVERTON ROAD

PENZANCE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 13
Survey dat THURSDAY ######## Survey Typ MANUAL
26 CW-03-A-0 SEMI D./DE CORNWALL
BOSVEAN GARDENS

TRURO
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 73
Survey dat TUESDAY ######## Survey Typ MANUAL
27 DC-03-A-01 DETACHED DORSET
ISAACS CLOSE

POOLE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 51
Survey dat WEDNESDA ######## Survey Typ MANUAL
28 DL-03-A-02 SEMI DETA DUBLIN
COLLINS AVENUE

DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 437
Survey dat MONDAY ######## Survey Typ MANUAL
29 DL-03-A-05 MIXED HOU DUBLIN
UPPER KILMACUD ROAD
DUNDRUM
DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 234
Survey dat SATURDAY ######## Survey Typ MANUAL
30 DL-03-A-06 DETACHED DUBLIN
UPPER KILMACUD ROAD
DUNDRUM
DUBLIN
Edge of Town
Residential Zone

Total Number of dwell 147
Survey dat FRIDAY ######## Survey Typ MANUAL
31 DL-03-A-08 VARIOUS H DUBLIN
CASTLE PARK ROAD
DALKEY
DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 36
Survey dat MONDAY ######## Survey Typ MANUAL
32 EA-03-A-01 DETATCHEI EAST AYRSHIRE
TALISKER AVENUE

KILMARNOCK
Edge of Town
Residential Zone
Total Number of dwell 39
Survey dat THURSDAY ######## Survey Typ MANUAL
33 EA-03-A-02 DETATCHEI EAST AYRSHIRE
DALRY ROAD

STEWARTON
Edge of Town
Residential Zone
Total Number of dwell 65
Survey dat SUNDAY ######## Survey Typ MANUAL
34 ES-03-A-02 PRIVATE H(EAST SUSSEX
SOUTH COAST ROAD

PEACEHAVEN
Edge of Town
Residential Zone
Total Number of dwell 37
Survey dat FRIDAY ######## Survey Typ MANUAL
35 EX-03-A-01 SEMI-DET. ESSEX
MILTON ROAD
CORRINGHAM
STANFORD-LE-HOPE
Edge of Town
Residential Zone
Total Number of dwell 237
Survey dat TUESDAY ######## Survey Typ MANUAL
36 FA-03-A-01 SEMI-DETA FALKIRK
MANDELA AVENUE

FALKIRK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 37
Survey dat THURSDAY ######## Survey Typ MANUAL
37 FA-03-A-02 MIXED HOI FALKIRK
ROSEBANK AVENUE & SPRINGFIELD DRIVE

FALKIRK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 161
Survey dat WEDNESDA ######## Survey Typ MANUAL
38 FI-03-A-02 SEMI DETA FIFE
WAROUT ROAD

GLENROTHES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 58
Survey dat MONDAY ######## Survey Typ MANUAL
39 FI-03-A-03 MIXED HOI FIFE
WOODMILL ROAD

DUNFERMLINE
Edge of Town
Residential Zone
Total Number of dwell 155
Survey dat MONDAY ######## Survey Typ MANUAL
40 GA-03-A-01 SEMI DETA GALWAY
HEADFORD ROAD
KNOCKAYARRAGH
GALWAY
Edge of Town
No Sub Category
Total Number of dwell 123
Survey dat WEDNESDA ######## Survey Typ MANUAL
41 GA-03-A-02 TERRACED GALWAY

BOHERMORE
TOWNPARKS
GALWAY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 185
Survey dat TUESDAY ######## Survey Typ MANUAL
42 GA-03-A-0 SEMI DET./ GALWAY
MONEENEGEISHA ROAD
WELLPARK
GALWAY
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Number of dwell 24
Survey dat WEDNESD/ ######## Survey Typ MANUAL
43 GM-03-A-1 DETACHED, GREATER MANCHESTER
BUTT HILL DRIVE
PRESTWICH
MANCHESTER
Edge of Town
Residential Zone
Total Number of dwell 29
Survey dat WEDNESD/ ######## Survey Typ MANUAL
44 HF-03-A-02 HOUSES HERTFORDSHIRE
BLACK FAN ROAD
PANSHANGER
WELWYN GARDEN CITY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 195
Survey dat SUNDAY ######## Survey Typ MANUAL
45 HI-03-A-11 BUNGALOV HIGHLAND
STEVENSON ROAD
INSHES
INVERNESS
Edge of Town
Residential Zone
Total Number of dwell 85
Survey dat MONDAY ######## Survey Typ MANUAL
46 HI-03-A-13 HOUSING HIGHLAND
KINGSMILLS ROAD

INVERNESS
Edge of Town
Residential Zone
Total Number of dwell 9
Survey dat THURSDAY ######## Survey Typ MANUAL
47 HI-03-A-14 SEMI-DETA HIGHLAND
CALEDONIAN ROAD
DALNEIGH
INVERNESS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 73
Survey dat FRIDAY ######## Survey Typ MANUAL
48 KD-03-A-02 TERRACED/ KILDARE
CEDARWOOD PARK
MORRISTOWN ROAD
NEWBRIDGE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 71
Survey dat TUESDAY ######## Survey Typ MANUAL
49 KI-03-A-01 DETACHED KINGSTON
COOMBE RISE

KINGSTON UPON THAMES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 12
Survey dat THURSDAY ######## Survey Typ MANUAL
50 KI-03-A-02 DETACHED KINGSTON
WOLSEY CLOSE

KINGSTON UPON THAMES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 20
Survey dat THURSDAY ######## Survey Typ MANUAL
51 KK-03-A-03 MIXED HOI KILKENNY
FRESHFORD ROAD
FRIARSINCH
KILKENNY

Edge of Town
Residential Zone
Total Number of dwell 70
Survey dat WEDNESDA ######## Survey Typ MANUAL
52 KN-03-A-01 TERRACED KENSINGTON AND CHELSEA
BARLBY ROAD

NORTH KENSINGTON
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Number of dwell 24
Survey dat FRIDAY ######## Survey Typ MANUAL
53 LC-03-A-22 BUNGALOV LANCASHIRE
CLIFTON DRIVE NORTH

BLACKPOOL
Edge of Town
Residential Zone
Total Number of dwell 98
Survey dat TUESDAY ######## Survey Typ MANUAL
54 LE-03-A-01 DETACHED LEICESTERSHIRE
REDWOOD AVENUE

MELTON MOWBRAY
Edge of Town
Residential Zone
Total Number of dwell 11
Survey dat TUESDAY ######## Survey Typ MANUAL
55 LN-03-A-01 MIXED HOL LINCOLNSHIRE
BRANT ROAD
BRACEBRIDGE
LINCOLN
Edge of Town
Residential Zone
Total Number of dwell 150
Survey dat TUESDAY ######## Survey Typ MANUAL
56 LN-03-A-02 MIXED HOL LINCOLNSHIRE
HYKEHAM ROAD

LINCOLN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 186
Survey dat MONDAY ######## Survey Typ MANUAL
57 LN-03-A-03 SEMI DETA LINCOLNSHIRE
ROOKERY LANE
BOULTHAM
LINCOLN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 22
Survey dat TUESDAY ######## Survey Typ MANUAL
58 MA-03-A-0 SEMI-DET. MAYO
N26 STATION ROAD

BALLINA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 74
Survey dat FRIDAY ######## Survey Typ MANUAL
59 MS-03-A-0: DETACHED MERSEYSIDE
RIVERSIDE DRIVE
AIGBURTH
LIVERPOOL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 31
Survey dat SUNDAY ######## Survey Typ MANUAL
60 NF-03-A-01 SEMI DET. NORFOLK
YARMOUTH ROAD

CAISTER-ON-SEA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 27
Survey dat TUESDAY ######## Survey Typ MANUAL
61 NF-03-A-02 HOUSES & NORFOLK
DEREHAM ROAD

NORWICH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 98

Survey dat MONDAY ######## Survey Typ MANUAL
62 NR-03-A-01 HOUSES NORTHAMPTONSHIRE
BOUGHTON GREEN ROAD
KINGSTHORPE
NORTHAMPTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 102
Survey dat SATURDAY ######## Survey Typ MANUAL
63 NT-03-A-03 SEMI DETA NOTTINGHAMSHIRE
B6018 SUTTON ROAD

KIRKBY-IN-ASHFIELD
Edge of Town
Residential Zone
Total Number of dwell 166
Survey dat WEDNESDA ######## Survey Typ MANUAL
64 NY-03-A-01 MIXED HOU NORTH YORKSHIRE
GRAMMAR SCHOOL LANE

NORTHALLERTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 52
Survey dat TUESDAY ######## Survey Typ MANUAL
65 NY-03-A-02 DETACHED NORTH YORKSHIRE
CLOTHERHOLME ROAD

RIPON
Edge of Town
Residential Zone
Total Number of dwell 22
Survey dat SUNDAY ######## Survey Typ MANUAL
66 NY-03-A-04 PRIVATE HO NORTH YORKSHIRE

HORSEFAIR
BOROUGHBRIDGE
Edge of Town
Residential Zone
Total Number of dwell 23
Survey dat SUNDAY ######## Survey Typ MANUAL
67 NY-03-A-05 HOUSES AN NORTH YORKSHIRE
BOROUGHBRIDGE ROAD

RIPON
Edge of Town
No Sub Category
Total Number of dwell 71
Survey dat MONDAY ######## Survey Typ MANUAL
68 NY-03-A-06 BUNGALOW NORTH YORKSHIRE
HORSEFAIR

BOROUGHBRIDGE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 115
Survey dat FRIDAY ######## Survey Typ MANUAL
69 NY-03-A-07 DETACHED NORTH YORKSHIRE
CRAVEN WAY

BOROUGHBRIDGE
Edge of Town
No Sub Category
Total Number of dwell 23
Survey dat TUESDAY ######## Survey Typ MANUAL
70 PK-03-A-01 DETAC. & B PERTH & KINROSS
TULLYLUMB TERRACE
GORNHILL
PERTH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 36
Survey dat WEDNESDA ######## Survey Typ MANUAL
71 RO-03-A-01 MIXED HOU ROSCOMMON
GALWAY ROAD

ROSCOMMON
Edge of Town
No Sub Category
Total Number of dwell 80
Survey dat THURSDAY ######## Survey Typ MANUAL
72 RO-03-A-02 SEMI DET. A ROSCOMMON
SLIGO ROAD

BALLAGHADERREEN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 31
Survey dat THURSDAY ######## Survey Typ MANUAL
73 SF-03-A-01 SEMI DETA SUFFOLK
A1156 FELIXSTOWE ROAD
RACECOURSE
IPSWICH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 77
Survey dat WEDNESDA ######## Survey Typ MANUAL
74 SF-03-A-02 SEMI DET./ SUFFOLK
STOKE PARK DRIVE
MAIDENHALL
IPSWICH
Edge of Town
Residential Zone
Total Number of dwell 230
Survey dat THURSDAY ######## Survey Typ MANUAL
75 SF-03-A-03 MIXED HO SUFFOLK
BARTON HILL
FORNHAM ST MARTIN
BURY ST EDMUNDS
Edge of Town
Out of Town
Total Number of dwell 101
Survey dat MONDAY ######## Survey Typ MANUAL
76 SF-03-A-04 DETACHED SUFFOLK
NORMANSTON DRIVE

LOWESTOFT
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 7
Survey dat TUESDAY ######## Survey Typ MANUAL
77 SH-03-A-02 DETATCHE SHROPSHIRE
GATCOMBE WAY
PRIORSLEE
TELFORD
Edge of Town
Residential Zone
Total Number of dwell 57
Survey dat SUNDAY ######## Survey Typ MANUAL
78 SH-03-A-03 DETATCHE SHROPSHIRE
SOMERBY DRIVE
BICTON HEATH
SHREWSBURY
Edge of Town
No Sub Category
Total Number of dwell 10
Survey dat FRIDAY ######## Survey Typ MANUAL
79 SH-03-A-04 TERRACED SHROPSHIRE
ST MICHAEL'S STREET

SHREWSBURY
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwell 108
Survey dat THURSDAY ######## Survey Typ MANUAL
80 SK-03-A-01 SEMI DET. SOUTHWARK
TIMBER POND ROAD

CANADA WATER
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 15
Survey dat THURSDAY ######## Survey Typ MANUAL
81 SR-03-A-01 DETACHED STIRLING
BENVIEW

STIRLING
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 115
Survey dat MONDAY ######## Survey Typ MANUAL
82 ST-03-A-05 TERRACED STAFFORDSHIRE
WATERMEET GROVE
ETRURIA
STOKE-ON-TRENT
Suburban Area (PPS6 Out of Centre)

Residential Zone
Total Number of dwell 14
Survey dat WEDNESDA ######## Survey Typ MANUAL
83 TV-03-A-01 HOUSES & TEES VALLEY
POWLETT ROAD

HARTLEPOOL
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwell 225
Survey dat THURSDAY ######## Survey Typ MANUAL
84 WA-03-A-0 DET./SEMI- WATERFORD
DUNMORE ROAD

WATERFORD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 70
Survey dat TUESDAY ######## Survey Typ MANUAL
85 WA-03-A-0 DETACHED WATERFORD
MAYPARK LANE

WATERFORD
Edge of Town
Residential Zone
Total Number of dwell 290
Survey dat MONDAY ######## Survey Typ MANUAL
86 WA-03-A-0 TERR./SEM WATERFORD
OLD TRAMORE ROAD

WATERFORD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 70
Survey dat SUNDAY ######## Survey Typ MANUAL
87 WE-03-A-0 PRINCES M WESTMINSTER
HEREFORD ROAD

NOTTING HILL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 18
Survey dat THURSDAY ######## Survey Typ MANUAL
88 WK-03-A-0 TERRACED/ WARWICKSHIRE
ARLINGTON AVENUE

LEAMINGTON SPA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 6
Survey dat FRIDAY ######## Survey Typ MANUAL
89 WL-03-A-0: SEMI D./TE WILTSHIRE
MAPLE DRIVE

WOOTTON BASSETT
Edge of Town
Residential Zone
Total Number of dwell 99
Survey dat MONDAY ######## Survey Typ MANUAL
90 WM-03-A-(TERRACED WEST MIDLANDS
FOLESHILL ROAD
FOLESHILL
COVENTRY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 79
Survey dat FRIDAY ######## Survey Typ MANUAL
91 WM-03-A-(DETACHED WEST MIDLANDS
HEATH STREET

STOURBRIDGE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 12
Survey dat WEDNESDA ######## Survey Typ MANUAL
92 WM-03-A-(MIXED HOU WEST MIDLANDS
BASELEY WAY
ROWLEYS GREEN
COVENTRY
Edge of Town
Residential Zone
Total Number of dwell 84
Survey dat MONDAY ######## Survey Typ MANUAL

93 WO-03-A-0 DETACHED WORCESTERSHIRE
MARLBOROUGH AVENUE
ASTON FIELDS
BROMSGROVE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 10
Survey dat THURSDAY ######## Survey Typ MANUAL
94 WO-03-A-0 SEMI DETA WORCESTERSHIRE
MEADOWHILL ROAD

REDDITCH
Edge of Town
No Sub Category
Total Number of dwell 48
Survey dat TUESDAY ######## Survey Typ MANUAL
95 WO-03-A-0 DETACHED WORCESTERSHIRE
BLAKEBROOK
BLAKEBROOK
KIDDERMINSTER
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwell 138
Survey dat FRIDAY ######## Survey Typ MANUAL
96 WO-03-A-0 DET./TERR/ WORCESTERSHIRE
ST GODWALDS ROAD
ASTON FIELDS
BROMSGROVE
Edge of Town
No Sub Category
Total Number of dwell 232
Survey dat THURSDAY ######## Survey Typ MANUAL

This section provides a lis it displays the selecte the day of and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
Calculation Factor: 1 DWELLS
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	DWELLS	Rate	Days	DWELLS	Rate	Days	DWELLS	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	96	81	0.065	96	81	0.237	96	81	0.302
08:00-09:00	96	81	0.139	96	81	0.37	96	81	0.509
09:00-10:00	96	81	0.155	96	81	0.223	96	81	0.378
10:00-11:00	96	81	0.147	96	81	0.176	96	81	0.323
11:00-12:00	96	81	0.175	96	81	0.185	96	81	0.36
12:00-13:00	96	81	0.203	96	81	0.188	96	81	0.391
13:00-14:00	96	81	0.205	96	81	0.193	96	81	0.398
14:00-15:00	96	81	0.207	96	81	0.209	96	81	0.416
15:00-16:00	96	81	0.261	96	81	0.202	96	81	0.463
16:00-17:00	96	81	0.31	96	81	0.198	96	81	0.508
17:00-18:00	96	81	0.365	96	81	0.224	96	81	0.589
18:00-19:00	96	81	0.274	96	81	0.207	96	81	0.481
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			2.506			2.612			5.118

Parameter summary

Trip rate parameter range 6 - 437 (units:)
Survey date date range: 01/01/05 - 30/05/13
Number of weekdays (Mc 83
Number of Saturdays: 3
Number of Sundays: 10
Surveys manually remove 1
This section displays a qui followed b the total n the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRICS 2013(b)v6.12.2
Trip Rate P Number of dwellings

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

1	GREATER LONDON		
	CN	CAMDEN	1 days
	HG	HARINGEY	1 days
	HK	HACKNEY	1 days
	IS	ISLINGTON	1 days
	RD	RICHMONI	1 days
	TH	TOWER HA	2 days
2	SOUTH EAST		
	HC	HAMPSHIR	1 days
	HF	HERTFORD	1 days
	OX	OXFORDSH	1 days
	SC	SURREY	3 days
3	SOUTH WEST		
	BR	BRISTOL CI	1 days
4	EAST ANGLIA		
	CA	CAMBRIDG	1 days
5	EAST MIDLANDS		
	DS	DERBYSHIF	2 days
	NR	NORTHAM	1 days
6	WEST MIDLANDS		
	ST	STAFFORD	1 days
9	NORTH		
	TV	TEES VALLI	2 days
11	SCOTLAND		
	GC	GLASGOW	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	6 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

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter Number of dwellings
Actual Ran 8 to 372 (units:)
Range Sele 8 to 372 (units:)

Public Transport Provision:
Selection t Include all surveys

Date Rang 01/01/05 to 11/05/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Monday 6 days
Tuesday 5 days
Wednesda 7 days
Thursday 3 days
Friday 3 days
Saturday 4 days
Sunday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 29 days
Directional 0 days
This data d the total a whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Cent 0
Edge of To 0
Suburban / 25
Edge of To 4
Neighbour 0
Free Stand 0

Not Known 0
This data d Edge of Tc Suburban Neighbou Edge of Tc Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 0
Commerci 2
Developme 0
Residentia 16
Retail Zone 0
Built-Up Zc 3
Village 0
Out of Tow 0
High Stree 0
No Sub Cat 8
This data d Industrial Develop Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:
C3 28 days
This data d which can be found within the Library module of TRICS®.

Population within 1 mile:
1,001 to 5 4 days
5,001 to 1 1 days
10,001 to 1 4 days
15,001 to 2 1 days
20,001 to 2 3 days
25,001 to 5 11 days
50,001 to 1 5 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
5,001 to 2 1 days
50,001 to 1 days
75,001 to 1 days
100,001 to 2 days
125,001 to 7 days
250,001 to 6 days
500,001 or 11 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.5 or Less 6 days
0.6 to 1.0 6 days
1.1 to 1.5 16 days
1.6 to 2.0 1 days
This data d within a radius of 5-miles of selected survey sites.

Travel Plan:
Yes 1 days
No 28 days
This data d and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters
1 AN-03-C-0: BLOCK OF ANTRIM
STOCKMANS WAY

BELFAST
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwel 60
Survey dat TUESDAY ######## Survey Typ MANUAL
2 BR-03-C-01 FLATS & TE BRISTOL CITY
CLARENCE ROAD

BRISTOL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 102
Survey dat MONDAY ######## Survey Typ MANUAL
3 CA-03-C-0: BLOCK OF CAMBRIDGESHIRE
WESTFIELD ROAD
NETHERTON
PETERBOROUGH

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwel 44
Survey dat TUESDAY ######## Survey Typ MANUAL
4 CN-03-C-0: BLOCK OF CAMDEN
OVAL ROAD

REGENTS PARK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 12
Survey dat FRIDAY ######## Survey Typ MANUAL
5 DL-03-C-02 BLOCKS Of DUBLIN
MAIN STREET
RATHCOOLE
NEAR DUBLIN
Edge of Town
Commercial Zone
Total Number of dwel 74
Survey dat WEDNESD, ######## Survey Typ MANUAL
6 DL-03-C-05 FLATS DUBLIN
SOUTH CIRCULAR ROAD
ISLANDBRIDGE
DUBLIN
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwel 179
Survey dat MONDAY ######## Survey Typ MANUAL
7 DL-03-C-07 BLOCKS Of DUBLIN
SANDYFORD ROAD
DUNDRUM
DUBLIN
Edge of Town
No Sub Category
Total Number of dwel 372
Survey dat TUESDAY ######## Survey Typ MANUAL
8 DL-03-C-08 FLATS DUBLIN
FINGLAS ROAD
FINGLAS
DUBLIN
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwel 340
Survey dat FRIDAY ######## Survey Typ MANUAL
9 DL-03-C-09 FLATS DUBLIN
OLD FINGLAS ROAD
GLASNEVIN
DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 201
Survey dat THURSDAY ######## Survey Typ MANUAL
10 DL-03-C-10 FLATS IN B DUBLIN
MONKSTOWN VALLEY
MONKSTOWN
DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 18
Survey dat MONDAY ######## Survey Typ MANUAL
11 DS-03-C-01 BLOCK OF DERBYSHIRE
DRAGE STREET
LITTLE CHESTER
DERBY
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwel 8
Survey dat THURSDAY ######## Survey Typ MANUAL
12 DS-03-C-02 FLATS DERBYSHIRE
BURTON ROAD
NEW NORMANTON
DERBY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 28
Survey dat SATURDAY ######## Survey Typ MANUAL

13 GC-03-C-0: BLOCK OF GLASGOW CITY
FERSIT STREET
MANESWOOD
GLASGOW
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Number of dwel 36
Survey dat SUNDAY ######## Survey Typ MANUAL
14 HC-03-C-0: FLATS HAMPSHIRE
WORTING ROAD

BASINGSTOKE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 16
Survey dat THURSDAY ######## Survey Typ MANUAL
15 HF-03-C-0: FLATS HERTFORDSHIRE
BRIDGE ROAD EAST

WELWYN GARDEN CITY
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwel 86
Survey dat WEDNESD, ######## Survey Typ MANUAL
16 HG-03-C-0: BLOCK OF HARINGEY
CHADWELL LANE
NEW RIVER VILLAGE
HORNSEY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 25
Survey dat TUESDAY ######## Survey Typ MANUAL
17 HK-03-C-0: BLOCK OF HACKNEY
UNION WALK

SHOREDITCH
Edge of Town
Commercial Zone
Total Number of dwel 17
Survey dat SATURDAY ######## Survey Typ MANUAL
18 IS-03-C-01 FLATS ISLINGTON
RAMSEY WALK

ISLINGTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 31
Survey dat TUESDAY ######## Survey Typ MANUAL
19 NR-03-C-0: BLOCK OF NORTHAMPTONSHIRE
ROCKINGHAM ROAD

CORBY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 20
Survey dat FRIDAY ######## Survey Typ MANUAL
20 OX-03-C-0: BLOCK OF OXFORDSHIRE
OXFORD ROAD
COWLEY
OXFORD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 14
Survey dat WEDNESD, ######## Survey Typ MANUAL
21 RD-03-C-0: BLOCK OF RICHMOND
B306 QUEENS RIDE

BARNES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 28
Survey dat MONDAY ######## Survey Typ MANUAL
22 SC-03-C-02 FLATS SURREY
CONSTITUTION HILL

WOKING

Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Number of dwel 36
Survey dat WEDNESD, ######## Survey Typ MANUAL
23 SC-03-C-03 FLATS SURREY
KINGS ROAD

WOKING
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 52
Survey dat SATURDAY ######## Survey Typ MANUAL
24 SC-03-C-04 BLOCK OF SURREY
LONDON ROAD
BURPHAM
GUILDFORD
Edge of Town
Residential Zone
Total Number of dwel 72
Survey dat SATURDAY ######## Survey Typ MANUAL
25 ST-03-C-01 BLOCKS OF STAFFORDSHIRE
ETRURIA COURT
HUMBERT ROAD
STOKE-ON-TRENT
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwel 33
Survey dat WEDNESD, ######## Survey Typ MANUAL
26 TH-03-C-02 FLATS TOWER HAMLETS
BURNHAM STREET

BETHNAL GREEN
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Number of dwel 24
Survey dat MONDAY ######## Survey Typ MANUAL
27 TH-03-C-03 FLATS TOWER HAMLETS
PALMERS ROAD

BETHNAL GREEN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 69
Survey dat WEDNESD, ######## Survey Typ MANUAL
28 TV-03-C-01 APARTMEI TEES VALLEY
OXFORD ROAD
LINTHORPE
MIDDLESBROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 85
Survey dat MONDAY ######## Survey Typ MANUAL
29 TV-03-C-02 FLATS TEES VALLEY
ACKLAM ROAD
LINTHORPE
MIDDLESBROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwel 85
Survey dat WEDNESD, ######## Survey Typ MANUAL

This sectio it displays the select the day of and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
Calculation Factor: 1 DWELLS
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Rang	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									
07:00-08:0	29	75	0.032	29	75	0.158	29	75	0.19
08:00-09:0	29	75	0.051	29	75	0.207	29	75	0.258
09:00-10:0	29	75	0.056	29	75	0.105	29	75	0.161
10:00-11:0	29	75	0.054	29	75	0.066	29	75	0.12
11:00-12:0	29	75	0.063	29	75	0.057	29	75	0.12
12:00-13:0	29	75	0.079	29	75	0.089	29	75	0.168
13:00-14:0	29	75	0.083	29	75	0.083	29	75	0.166
14:00-15:0	29	75	0.065	29	75	0.067	29	75	0.132
15:00-16:0	29	75	0.093	29	75	0.067	29	75	0.16
16:00-17:0	29	75	0.116	29	75	0.065	29	75	0.181
17:00-18:0	29	75	0.197	29	75	0.071	29	75	0.268
18:00-19:0	29	75	0.152	29	75	0.09	29	75	0.242
19:00-20:0	3	34	0.176	3	34	0.127	3	34	0.303
20:00-21:0	3	34	0.088	3	34	0.059	3	34	0.147
21:00-22:0	3	34	0.098	3	34	0.059	3	34	0.157
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			1.403			1.37			2.773

Parameter summary

Trip rate p: 8 - 372 (units:)
Survey dat 01/01/05 - 11/05/12
Number of 24
Number of 4
Number of 1
Surveys m: 2
This sectio followed b the total r the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRICS 2013(b)v6.12.2
Trip Rate P Gross floor area

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 04 - EDUCATION
Category D - NURSERY
VEHICLES

Selected regions and areas:

1	GREATER LONDON		
	LB	LAMBETH	1 days
2	SOUTH EAST		
	HC	HAMPSHIR	1 days
	KC	KENT	1 days
3	SOUTH WEST		
	BA	BATH & NC	1 days
4	EAST ANGLIA		
	NF	NORFOLK	1 days
5	EAST MIDLANDS		
	NR	NORTHAM	2 days
6	WEST MIDLANDS		
	WM	WEST MIDI	1 days
8	NORTH WEST		
	GM	GREATER M	1 days
9	NORTH		
	DH	DURHAM	1 days
	TW	TYNE & WE	1 days
10	WALES		
	GW	GWYNEDD	1 days
	MT	MERTHYR ˆ	1 days
11	SCOTLAND		
	EA	EAST AYRSI	1 days
	HI	HIGHLAND	1 days
14	LEINSTER		
	WT	WESTMEAˆ	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	1 days

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

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Gross floor area
Actual Ran 109 to 2350 (units: sqm)
Range Sele 109 to 2350 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/05 to 28/11/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Monday 2 days
Tuesday 3 days
Wednesda 6 days
Thursday 4 days
Friday 2 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual co 17 days
Directional 0 days
This data d the total a whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Cent 0
Edge of To 0
Suburban A 10
Edge of To 7
Neighbourl 0
Free Stand 0
Not Known 0
This data d Edge of To Suburban Neighbour Edge of To Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	1
Commercia	3
Developme	1
Residential	8
Retail Zone	0
Built-Up Zo	1
Village	0
Out of Tow	0
High Street	0
No Sub Cat	3

This data d Industrial Z Developm Residentia Retail Zon Built-Up Z Village Out of Tov High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	1 days
D1	16 days

This data d which can be found within the Library module of TRICS®.

Population within 1 mile:

1,000 or Le	1 days
1,001 to 5,	3 days
5,001 to 1(	1 days
10,001 to 1	4 days
15,001 to 2	1 days
20,001 to 2	1 days
25,001 to 5	4 days
50,001 to 1	1 days
101,000 or	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 2	1 days
25,001 to	3 days
75,001 to	3 days
100,001 to	3 days
125,001 to	2 days
250,001 to	2 days
500,001 or	3 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	8 days
1.1 to 1.5	7 days
1.6 to 2.0	2 days

This data d within a radius of 5-miles of selected survey sites.

Travel Plan:

No	17 days

This data d and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 BA-04-D-01 NURSERY BATH & NORTH EAST SOMERSET
WESTON ROAD

BATH
Edge of Town
Residential Zone
Total Gross floor area: 825 sqm
Survey date THURSDAY ######## Survey Typ MANUAL

2 DH-04-D-0 NURSERY DURHAM
PRIORY ROAD
FRAMWELLGATE MOOR
DURHAM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 382 sqm
Survey date THURSDAY ######## Survey Typ MANUAL

3 DL-04-D-01 NURSERY DUBLIN
78 THE PARK
BEAUMONT WOODS
DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone

Total Gross floor area: 256 sqm
Survey date WEDNESDA ######## Survey Typ MANUAL
4 EA-04-D-01 NURSERY EAST AYRSHIRE
ALTONHILL AVENUE

KILMARNOCK
Edge of Town
No Sub Category
Total Gross floor area: 592 sqm
Survey date THURSDAY ######## Survey Typ MANUAL
5 GM-04-D-0 NURSERY GREATER MANCHESTER
RUFFORD ROAD
WHALLEY RANGE
MANCHESTER
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 200 sqm
Survey date MONDAY ######## Survey Typ MANUAL
6 GW-04-D-0 NURSERY GWYNEDD
FFORDD GELLI MORGAN
PARC MENAI
BANGOR
Edge of Town
Commercial Zone
Total Gross floor area: 200 sqm
Survey date MONDAY ######## Survey Typ MANUAL
7 HC-04-D-01 NURSERY HAMPSHIRE
STAG OAK LANE
CHINEHAM BUSINESS PARK
BASINGSTOKE
Edge of Town
Commercial Zone
Total Gross floor area: 725 sqm
Survey date THURSDAY ######## Survey Typ MANUAL
8 HI-04-D-01 NURSERY HIGHLAND
STRATHERRICK ROAD
UPPER DRUMMOND
INVERNESS
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 2350 sqm
Survey date FRIDAY ######## Survey Typ MANUAL
9 KC-04-D-01 NURSERY KENT
PEMBURY ROAD

TONBRIDGE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 210 sqm
Survey date WEDNESDA ######## Survey Typ MANUAL
10 LB-04-D-01 NURSERY LAMBETH
ST MARYS GARDEN
LAMBETH
LAMBETH
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Gross floor area: 109 sqm
Survey date WEDNESDA ######## Survey Typ MANUAL
11 MT-04-D-0 NURSERY MERTHYR TYDFIL
BREWERY ROAD
DOWLAIS
MERTHYR TYDFIL
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 200 sqm
Survey date TUESDAY ######## Survey Typ MANUAL
12 NF-04-D-01 NURSERY NORFOLK
MERIDIAN WAY

NORWICH
Edge of Town
Commercial Zone
Total Gross floor area: 700 sqm
Survey date FRIDAY ######## Survey Typ MANUAL
13 NR-04-D-0 NURSERY NORTHAMPTONSHIRE
OWL CLOSE

MOULTON PARK
NORTHAMPTON
Edge of Town
Industrial Zone
Total Gross floor area: 350 sqm
Survey date: TUESDAY ######## Survey Typ MANUAL
14 NR-04-D-02 NURSERY NORTHAMPTONSHIRE
PARK AVENUE

KETTERING
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 182 sqm
Survey date: WEDNESDA ######## Survey Typ MANUAL
15 TW-04-D-0 NURSERY TYNE & WEAR
ETTRICK GROVE
HIGH BARNES
SUNDERLAND
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 500 sqm
Survey date: WEDNESDA ######## Survey Typ MANUAL
16 WM-04-D-(NURSERY WEST MIDLANDS
SCHOOL ROAD
YARDLEY WOOD
BIRMINGHAM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 850 sqm
Survey date: WEDNESDA ######## Survey Typ MANUAL
17 WT-04-D-0 NURSERY WESTMEATH
DUBLIN ROAD
GARRYCASTLE
ATHLONE
Edge of Town
Development Zone
Total Gross floor area: 625 sqm
Survey date: TUESDAY ######## Survey Typ MANUAL

This sectio it displays the selecte the day of and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Rang	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									
06:00-07:0	1	256	0.391	1	256	0	1	256	0.391
07:00-08:0	15	584	1.529	15	584	0.844	15	584	2.373
08:00-09:0	17	544	4.527	17	544	3.825	17	544	8.352
09:00-10:0	17	544	2.258	17	544	2.366	17	544	4.624
10:00-11:0	17	544	0.562	17	544	0.519	17	544	1.081
11:00-12:0	17	544	0.778	17	544	0.799	17	544	1.577
12:00-13:0	17	544	1.048	17	544	1.145	17	544	2.193
13:00-14:0	17	544	0.929	17	544	0.962	17	544	1.891
14:00-15:0	17	544	0.929	17	544	0.864	17	544	1.793
15:00-16:0	17	544	1.037	17	544	1.199	17	544	2.236
16:00-17:0	17	544	1.977	17	544	1.934	17	544	3.911
17:00-18:0	16	572	3.4	16	572	3.706	16	572	7.106
18:00-19:0	15	596	0.458	15	596	1.33	15	596	1.788
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			19.823			19.493			39.316

Parameter summary

Trip rate pa 109 - 2350 (units: sqm)
Survey dat 01/01/05 - 28/11/12
Number of 17
Number of 0
Number of 0
Surveys ma 0
This sectio followed b the total n the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Appendix G Traffic Modelling Results

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462

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

Filename: 20200326 C543 Ross Roundabout ARCADY v1.3.j9
Path: C:\Users\CarolDiaz\Transport Insights\TI - Current Projects\C543 2020 Torca Devs E-corthy SHD App Traffic Support\Modelling and Analysis\ARCADY
Report generation date: 26/03/2020 17:31:02

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	[Lane Simulation] - Base Year 2020									
Arm 1	D1	0.2	3.27		A	D7	0.3	3.70		A
Arm 2		0.2	3.57		A		0.1	3.73		A
Arm 3		0.1	3.76		A		0.1	3.55		A
Arm 4		0.1	4.13		A		0.1	3.70		A
	[Lane Simulation] - DN 2022									
Arm 1	D3	0.1	3.28		A	D8	0.3	3.63		A
Arm 2		0.2	3.63		A		0.3	3.55		A
Arm 3		0.1	3.71		A		0.2	3.44		A
Arm 4		0.1	4.17		A		0.1	3.80		A
	[Lane Simulation] - DS 2022									
Arm 1	D4	0.3	3.42		A	D9	0.3	3.84		A
Arm 2		0.2	3.87		A		0.1	3.74		A
Arm 3		0.3	4.15		A		0.2	3.64		A
Arm 4		0.2	4.23		A		0.1	3.88		A
	[Lane Simulation] - DN 2037									
Arm 1	D5	0.1	3.37		A	D10	0.2	3.70		A
Arm 2		0.2	3.61		A		0.1	3.60		A
Arm 3		0.2	3.86		A		0.1	3.45		A
Arm 4		0.1	4.25		A		0.1	3.96		A
	[Lane Simulation] - DS 2037									
Arm 1	D6	0.1	3.43		A	D11	0.4	3.91		A
Arm 2		0.3	3.69		A		0.2	3.88		A
Arm 3		0.4	4.15		A		0.2	3.66		A

Arm 4		0.1	4.59		A		0.1	3.90		A

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay.

File summary

File Description

Title	
Location	
Site number	
Date	04/03/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	AzureAD\CarolDiaz
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			1889692380	86	0.85

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base Year 2020	AM	ONE HOUR	08:00	09:30	15	✓
D3	DN 2022	AM	ONE HOUR	08:00	09:30	15	✓
D4	DS 2022	AM	ONE HOUR	08:00	09:30	15	✓
D5	DN 2037	AM	ONE HOUR	08:00	09:30	15	✓
D6	DS 2037	AM	ONE HOUR	08:00	09:30	15	✓
D7	Base Year 2020	PM	ONE HOUR	15:45	17:15	15	✓
D8	DN 2022	PM	ONE HOUR	15:45	17:15	15	✓
D9	DS 2022	PM	ONE HOUR	15:45	17:15	15	✓
D10	DN 2037	PM	ONE HOUR	15:45	17:15	15	✓
D11	DS 2037	PM	ONE HOUR	15:45	17:15	15	✓

Analysis Set Details

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

Base Year 2020, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.59	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Ross Road East	
2	Andy Doyle Close	
3	Ross Road West	
4	Gort Ná Gréine	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	4.00	4.00	0.0	46.5	30.0	20.0	
2	3.50	4.40	15.0	12.4	30.0	28.5	
3	4.00	4.00	0.0	18.9	30.0	26.0	
4	3.10	3.60	8.3	35.7	30.0	24.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.593	1288
2	0.560	1257
3	0.564	1226
4	0.551	1111

The slope and intercept shown above include any corrections and adjustments.

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	1, 2, 3, 4		Infinity		0	99999	
	Exit	1	1			Infinity				
2	Entry	1	1	1, 2, 3, 4		Infinity		0	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	1, 2, 3, 4		Infinity		0	99999	
	Exit	1	1			Infinity				
4	Entry	1	1	1, 2, 3, 4		Infinity		0	99999	
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.593	1288
2	Entry	1	1	0.560	1257
3	Entry	1	1	0.564	1226
4	Entry	1	1	0.551	1111

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm			
			1	2	3	4
1	1	1	✓	✓	✓	✓
2	1	1	✓	✓	✓	✓
3	1	1	✓	✓	✓	✓
4	1	1	✓	✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	Base Year 2020	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	117	100.000
2		ONE HOUR	✓	150	100.000
3		ONE HOUR	✓	102	100.000
4		ONE HOUR	✓	46	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	67	35	14
	2	124	0	4	22
	3	77	11	0	14
	4	27	14	4	1

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	3	0	0
	2	4	0	0	0
	3	2	0	0	14
	4	0	14	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.27	0.2	A	107	161
2	3.57	0.2	A	136	204
3	3.76	0.1	A	91	136
4	4.13	0.1	A	41	62

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	86	22	20	86	91	173	0.0	0.1	3.189	A
2	111	28	45	112	115	61	0.0	0.1	3.205	A
3	77	19	121	77	79	36	0.0	0.0	3.372	A
4	33	8	161	33	37	37	0.0	0.0	3.979	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	107	27	27	107	105	209	0.1	0.1	3.071	A
2	135	34	49	136	135	85	0.1	0.2	3.569	A
3	96	24	145	95	89	40	0.0	0.1	3.515	A
4	40	10	196	40	39	45	0.0	0.0	3.976	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	128	32	31	128	124	236	0.1	0.2	3.197	A
2	157	39	62	156	158	96	0.2	0.2	3.413	A
3	103	26	172	103	108	46	0.1	0.1	3.756	A
4	47	12	219	47	50	56	0.0	0.0	4.078	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	129	32	33	129	129	249	0.2	0.2	3.273	A

2	162	41	63	164	163	98	0.2	0.1	3.543	A
3	109	27	177	109	110	50	0.1	0.1	3.623	A
4	51	13	231	51	50	54	0.0	0.1	4.125	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	111	28	28	110	104	204	0.2	0.1	3.240	A
2	137	34	53	136	134	85	0.1	0.1	3.317	A
3	84	21	149	84	89	40	0.1	0.1	3.594	A
4	44	11	189	44	42	45	0.1	0.0	4.093	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	84	21	22	84	87	169	0.1	0.1	3.145	A
2	114	28	39	113	113	67	0.1	0.1	3.255	A
3	76	19	122	77	78	31	0.1	0.1	3.632	A
4	31	8	160	32	32	38	0.0	0.0	4.008	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	**Entry**	**1**	**1**	1, 2, 3, 4	86	1276	0.068	86	91	0.0	0.1	3.189	A
	Exit	**1**	**1**		173			173	178	0.0	0.0	0.000	A
2	**Entry**	**1**	**1**	1, 2, 3, 4	111	1232	0.090	112	115	0.0	0.1	3.205	A
	Exit	**1**	**1**		61			61	70	0.0	0.0	0.000	A
3	**Entry**	**1**	**1**	1, 2, 3, 4	77	1157	0.066	77	79	0.0	0.0	3.372	A
	Exit	**1**	**1**		36			36	35	0.0	0.0	0.000	A
4	**Entry**	**1**	**1**	1, 2, 3, 4	33	1023	0.032	33	37	0.0	0.0	3.979	A
	Exit	**1**	**1**		37			37	39	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	**Entry**	**1**	**1**	1, 2, 3, 4	107	1272	0.084	107	105	0.1	0.1	3.071	A
	Exit	**1**	**1**		209			209	204	0.0	0.0	0.000	A
2	**Entry**	**1**	**1**	1, 2, 3, 4	135	1230	0.110	136	135	0.1	0.2	3.569	A
	Exit	**1**	**1**		85			85	80	0.0	0.0	0.000	A
3	**Entry**	**1**	**1**	1, 2, 3, 4	96	1144	0.084	95	89	0.0	0.1	3.515	A
	Exit	**1**	**1**		40			40	40	0.0	0.0	0.000	A
4	**Entry**	**1**	**1**	1, 2, 3, 4	40	1004	0.040	40	39	0.0	0.0	3.976	A
	Exit	**1**	**1**		45			45	43	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	**Entry**	**1**	**1**	1, 2, 3, 4	128	1270	0.101	128	124	0.1	0.2	3.197	A
	Exit	**1**	**1**		236			236	244	0.0	0.0	0.000	A
2	**Entry**	**1**	**1**	1, 2, 3, 4	157	1223	0.129	156	158	0.2	0.2	3.413	A

	Exit	1	1		96			96	96	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	103	1128	0.091	103	108	0.1	0.1	3.756	A
	Exit	1	1		46			46	45	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	47	991	0.048	47	50	0.0	0.0	4.078	A
	Exit	1	1		56			56	55	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	129	1268	0.102	129	129	0.2	0.2	3.273	A
	Exit	1	1		249			249	248	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	162	1222	0.133	164	163	0.2	0.1	3.543	A
	Exit	1	1		98			98	100	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	109	1126	0.097	109	110	0.1	0.1	3.623	A
	Exit	1	1		50			50	48	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	51	984	0.052	51	50	0.0	0.1	4.125	A
	Exit	1	1		54			54	55	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	111	1271	0.087	110	104	0.2	0.1	3.240	A
	Exit	1	1		204			204	202	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	137	1228	0.112	136	134	0.1	0.1	3.317	A
	Exit	1	1		85			85	80	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	84	1141	0.074	84	89	0.1	0.1	3.594	A
	Exit	1	1		40			40	40	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	44	1008	0.044	44	42	0.1	0.0	4.093	A
	Exit	1	1		45			45	47	0.0	0.0	0.000	A

09:15 - 09:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	84	1275	0.066	84	87	0.1	0.1	3.145	A
	Exit	1	1		169			169	171	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	114	1235	0.092	113	113	0.1	0.1	3.255	A
	Exit	1	1		67			67	71	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	76	1157	0.066	77	78	0.1	0.1	3.632	A
	Exit	1	1		31			31	31	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	31	1023	0.031	32	32	0.0	0.0	4.008	A
	Exit	1	1		38			38	37	0.0	0.0	0.000	A

DN 2022, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.62	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	DN 2022	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	120	100.000
2		ONE HOUR	✓	154	100.000
3		ONE HOUR	✓	105	100.000
4		ONE HOUR	✓	48	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	69	36	14
	2	128	0	4	22
	3	79	11	0	15
	4	27	15	4	1

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	3	0	0
	2	4	0	0	0
	3	2	0	0	14
	4	0	14	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.28	0.1	A	109	164
2	3.63	0.2	A	145	218
3	3.71	0.1	A	96	145
4	4.17	0.1	A	45	68

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	92	23	25	92	95	187	0.0	0.1	3.000	A
2	126	32	43	126	121	75	0.0	0.1	3.342	A
3	78	19	134	78	80	35	0.0	0.1	3.615	A
4	39	10	173	39	39	38	0.0	0.1	3.751	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	110	28	29	111	107	212	0.1	0.1	3.047	A
2	134	33	54	134	137	86	0.1	0.1	3.477	A
3	96	24	146	97	93	42	0.1	0.1	3.613	A
4	46	11	195	46	44	48	0.1	0.0	3.771	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	132	33	34	133	133	261	0.1	0.1	3.283	A
2	175	44	62	175	171	105	0.1	0.2	3.633	A
3	112	28	187	113	117	50	0.1	0.1	3.708	A
4	53	13	243	52	51	56	0.0	0.1	4.151	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	130	32	34	130	136	272	0.1	0.1	3.118	A
2	180	45	61	180	174	102	0.2	0.2	3.533	A
3	115	29	193	115	114	48	0.1	0.1	3.645	A
4	52	13	254	51	53	54	0.1	0.1	4.172	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	105	26	29	105	104	218	0.1	0.1	3.123	A
2	141	35	49	140	139	85	0.2	0.2	3.518	A
3	100	25	152	101	96	37	0.1	0.1	3.439	A
4	44	11	204	44	46	49	0.1	0.0	3.814	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	86	21	25	86	91	173	0.1	0.1	3.087	A
2	114	28	42	114	116	69	0.2	0.1	3.221	A
3	78	19	125	78	78	31	0.1	0.1	3.371	A
4	38	9	159	38	37	44	0.0	0.1	3.819	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	92	1273	0.073	92	95	0.0	0.1	3.000	A
	Exit	1	1		187			187	183	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	126	1233	0.103	126	121	0.0	0.1	3.342	A
	Exit	1	1		75			75	75	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	78	1150	0.068	78	80	0.0	0.1	3.615	A
	Exit	1	1		35			35	35	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	39	1016	0.038	39	39	0.0	0.1	3.751	A
	Exit	1	1		38			38	41	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	110	1270	0.087	111	107	0.1	0.1	3.047	A
	Exit	1	1		212			212	210	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	134	1227	0.109	134	137	0.1	0.1	3.477	A
	Exit	1	1		86			86	84	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	96	1143	0.084	97	93	0.1	0.1	3.613	A
	Exit	1	1		42			42	40	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	46	1004	0.046	46	44	0.1	0.0	3.771	A
	Exit	1	1		48			48	47	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	132	1268	0.105	133	133	0.1	0.1	3.283	A
	Exit	1	1		261			261	261	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	175	1222	0.143	175	171	0.1	0.2	3.633	A
	Exit	1	1		105			105	107	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	112	1120	0.100	113	117	0.1	0.1	3.708	A
	Exit	1	1		50			50	48	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	53	978	0.054	52	51	0.0	0.1	4.151	A
	Exit	1	1		56			56	56	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	130	1268	0.103	130	136	0.1	0.1	3.118	A
	Exit	1	1		272			272	262	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	180	1223	0.147	180	174	0.2	0.2	3.533	A
	Exit	1	1		102			102	109	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	115	1117	0.103	115	114	0.1	0.1	3.645	A
	Exit	1	1		48			48	48	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	52	972	0.053	51	53	0.1	0.1	4.172	A
	Exit	1	1		54			54	58	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	105	1270	0.083	105	104	0.1	0.1	3.123	A
	Exit	1	1		218			218	215	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	141	1230	0.115	140	139	0.2	0.2	3.518	A
	Exit	1	1		85			85	84	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	100	1140	0.088	101	96	0.1	0.1	3.439	A
	Exit	1	1		37			37	39	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	44	999	0.044	44	46	0.1	0.0	3.814	A
	Exit	1	1		49			49	47	0.0	0.0	0.000	A

09:15 - 09:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	86	1273	0.067	86	91	0.1	0.1	3.087	A
	Exit	1	1		173			173	178	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	114	1234	0.092	114	116	0.2	0.1	3.221	A
	Exit	1	1		69			69	72	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	78	1155	0.067	78	78	0.1	0.1	3.371	A
	Exit	1	1		31			31	35	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	38	1024	0.037	38	37	0.0	0.1	3.819	A
	Exit	1	1		44			44	39	0.0	0.0	0.000	A

DS 2022, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.88	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	DS 2022	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	151	100.000
2		ONE HOUR	✓	158	100.000
3		ONE HOUR	✓	189	100.000
4		ONE HOUR	✓	51	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	69	66	14
	2	128	0	8	22
	3	142	20	0	27
	4	27	15	8	1

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	3	0	0
	2	4	0	0	0
	3	1	0	0	8
	4	0	14	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.42	0.3	A	134	201
2	3.87	0.2	A	147	221
3	4.15	0.3	A	178	267
4	4.23	0.2	A	47	70

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	108	27	34	108	113	225	0.0	0.1	3.220	A
2	117	29	64	118	126	77	0.0	0.0	3.379	A
3	137	34	124	136	145	58	0.0	0.2	3.681	A
4	40	10	219	39	42	41	0.0	0.1	3.878	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	129	32	45	130	137	291	0.1	0.1	3.229	A
2	152	38	77	153	145	98	0.0	0.1	3.698	A
3	194	49	157	194	173	73	0.2	0.2	3.786	A
4	48	12	288	48	49	63	0.1	0.0	4.170	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	162	40	55	159	166	353	0.1	0.3	3.421	A
2	179	45	94	180	172	120	0.1	0.2	3.606	A
3	222	56	192	222	210	82	0.2	0.2	4.025	A
4	65	16	343	65	56	71	0.0	0.0	3.982	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	165	41	43	164	162	332	0.3	0.1	3.252	A
2	178	44	103	179	174	104	0.2	0.2	3.696	A
3	205	51	189	204	205	93	0.2	0.3	4.154	A
4	53	13	323	52	59	70	0.0	0.2	4.231	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	136	34	36	137	140	265	0.1	0.1	3.161	A
2	144	36	81	145	141	92	0.2	0.2	3.866	A
3	170	43	153	168	174	73	0.3	0.2	3.837	A
4	41	10	260	42	43	62	0.2	0.1	3.792	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	106	27	30	108	112	218	0.1	0.1	3.058	A
2	114	29	61	114	117	77	0.2	0.1	3.409	A
3	140	35	120	141	143	56	0.2	0.2	3.630	A
4	34	9	214	34	41	46	0.1	0.0	3.687	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	108	1268	0.085	108	113	0.0	0.1	3.220	A
	Exit	1	1		225			225	233	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	117	1221	0.096	118	126	0.0	0.0	3.379	A
	Exit	1	1		77			77	83	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	137	1155	0.118	136	145	0.0	0.2	3.681	A
	Exit	1	1		58			58	61	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	40	991	0.041	39	42	0.0	0.1	3.878	A
	Exit	1	1		41			41	48	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	129	1261	0.102	130	137	0.1	0.1	3.229	A
	Exit	1	1		291			291	275	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	152	1214	0.125	153	145	0.0	0.1	3.698	A
	Exit	1	1		98			98	96	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	194	1137	0.171	194	173	0.2	0.2	3.786	A
	Exit	1	1		73			73	75	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	48	953	0.050	48	49	0.1	0.0	4.170	A
	Exit	1	1		63			63	57	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	162	1255	0.129	159	166	0.1	0.3	3.421	A
	Exit	1	1		353			353	328	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	179	1205	0.148	180	172	0.1	0.2	3.606	A
	Exit	1	1		120			120	117	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	222	1117	0.199	222	210	0.2	0.2	4.025	A
	Exit	1	1		82			82	89	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	65	923	0.070	65	56	0.0	0.0	3.982	A
	Exit	1	1		71			71	70	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	165	1262	0.131	164	162	0.3	0.1	3.252	A
	Exit	1	1		332			332	329	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	178	1199	0.148	179	174	0.2	0.2	3.696	A
	Exit	1	1		104			104	113	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	205	1119	0.183	204	205	0.2	0.3	4.154	A
	Exit	1	1		93			93	87	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	53	933	0.057	52	59	0.0	0.2	4.231	A
	Exit	1	1		70			70	71	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	136	1266	0.108	137	140	0.1	0.1	3.161	A
	Exit	1	1		265			265	268	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	144	1212	0.119	145	141	0.2	0.2	3.866	A
	Exit	1	1		92			92	93	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	170	1139	0.149	168	174	0.3	0.2	3.837	A
	Exit	1	1		73			73	75	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	41	968	0.042	42	43	0.2	0.1	3.792	A
	Exit	1	1		62			62	62	0.0	0.0	0.000	A

09:15 - 09:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	106	1270	0.084	108	112	0.1	0.1	3.058	A
	Exit	1	1		218			218	227	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	114	1223	0.093	114	117	0.2	0.1	3.409	A
	Exit	1	1		77			77	78	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	140	1158	0.121	141	143	0.2	0.2	3.630	A
	Exit	1	1		56			56	60	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	34	994	0.034	34	41	0.1	0.0	3.687	A
	Exit	1	1		46			46	48	0.0	0.0	0.000	A

DN 2037, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.68	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	DN 2037	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	129	100.000
2		ONE HOUR	✓	166	100.000
3		ONE HOUR	✓	113	100.000
4		ONE HOUR	✓	52	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	74	38	15
	2	138	0	4	24
	3	85	12	0	17
	4	29	17	4	1

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	4	0	0
	2	5	0	0	0
	3	2	0	0	16
	4	0	16	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.37	0.1	A	117	176
2	3.61	0.2	A	153	229
3	3.86	0.2	A	104	156
4	4.25	0.1	A	45	68

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	97	24	27	96	99	191	0.0	0.1	3.215	A
2	128	32	47	128	128	76	0.0	0.1	3.496	A
3	82	21	138	82	86	37	0.0	0.1	3.494	A
4	39	10	179	39	38	41	0.0	0.0	3.910	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	113	28	29	113	117	224	0.1	0.1	3.373	A
2	146	37	51	146	150	91	0.1	0.2	3.549	A
3	105	26	156	104	102	42	0.1	0.1	3.679	A
4	43	11	210	43	43	49	0.0	0.0	4.170	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	141	35	37	142	139	275	0.1	0.1	3.373	A
2	183	46	67	184	186	112	0.2	0.2	3.607	A
3	125	31	201	125	123	50	0.1	0.1	3.777	A
4	54	13	259	54	51	68	0.0	0.1	4.193	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	139	35	35	139	139	274	0.1	0.1	3.305	A
2	187	47	66	186	183	108	0.2	0.2	3.613	A
3	120	30	201	120	124	50	0.1	0.1	3.865	A
4	53	13	256	53	56	65	0.1	0.1	4.248	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	121	30	30	122	117	230	0.1	0.1	3.153	A
2	146	37	52	146	151	100	0.2	0.2	3.443	A
3	108	27	156	108	105	42	0.1	0.1	3.638	A
4	44	11	217	43	46	47	0.1	0.1	4.176	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	93	23	24	94	97	192	0.1	0.1	3.088	A
2	126	32	43	126	125	75	0.2	0.1	3.327	A
3	84	21	134	83	86	34	0.1	0.2	3.618	A
4	40	10	176	40	41	41	0.1	0.0	3.944	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	97	1272	0.076	96	99	0.0	0.1	3.215	A
	Exit	1	1		191			191	192	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	128	1231	0.104	128	128	0.0	0.1	3.496	A
	Exit	1	1		76			76	79	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	82	1148	0.072	82	86	0.0	0.1	3.494	A
	Exit	1	1		37			37	36	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	39	1013	0.038	39	38	0.0	0.0	3.910	A
	Exit	1	1		41			41	43	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	113	1271	0.089	113	117	0.1	0.1	3.373	A
	Exit	1	1		224			224	227	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	146	1228	0.119	146	150	0.1	0.2	3.549	A
	Exit	1	1		91			91	95	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	105	1138	0.092	104	102	0.1	0.1	3.679	A
	Exit	1	1		42			42	41	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	43	996	0.043	43	43	0.0	0.0	4.170	A
	Exit	1	1		49			49	49	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	141	1266	0.112	142	139	0.1	0.1	3.373	A
	Exit	1	1		275			275	277	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	183	1220	0.150	184	186	0.2	0.2	3.607	A
	Exit	1	1		112			112	110	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	125	1112	0.112	125	123	0.1	0.1	3.777	A
	Exit	1	1		50			50	50	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	54	969	0.056	54	51	0.0	0.1	4.193	A
	Exit	1	1		68			68	62	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	139	1267	0.110	139	139	0.1	0.1	3.305	A
	Exit	1	1		274			274	278	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	187	1220	0.153	186	183	0.2	0.2	3.613	A
	Exit	1	1		108			108	112	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	120	1112	0.108	120	124	0.1	0.1	3.865	A
	Exit	1	1		50			50	51	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	53	970	0.055	53	56	0.1	0.1	4.248	A
	Exit	1	1		65			65	62	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	121	1270	0.096	122	117	0.1	0.1	3.153	A
	Exit	1	1		230			230	230	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	146	1228	0.119	146	151	0.2	0.2	3.443	A
	Exit	1	1		100			100	96	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	108	1138	0.095	108	105	0.1	0.1	3.638	A
	Exit	1	1		42			42	42	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	44	992	0.044	43	46	0.1	0.1	4.176	A
	Exit	1	1		47			47	51	0.0	0.0	0.000	A

09:15 - 09:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	93	1273	0.073	94	97	0.1	0.1	3.088	A
	Exit	1	1		192			192	190	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	126	1233	0.102	126	125	0.2	0.1	3.327	A
	Exit	1	1		75			75	80	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	84	1150	0.073	83	86	0.1	0.2	3.618	A
	Exit	1	1		34			34	35	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	40	1015	0.040	40	41	0.1	0.0	3.944	A
	Exit	1	1		41			41	43	0.0	0.0	0.000	A

DS 2037, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.86	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	DS 2037	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	160	100.000
2		ONE HOUR	✓	170	100.000
3		ONE HOUR	✓	197	100.000
4		ONE HOUR	✓	55	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	74	69	15
	2	138	0	8	24
	3	148	21	0	28
	4	29	17	8	1

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	4	0	0
	2	5	0	0	0
	3	1	0	0	9
	4	0	16	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.43	0.1	A	145	218
2	3.69	0.3	A	157	236
3	4.15	0.4	A	179	268
4	4.59	0.1	A	52	77

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	118	29	34	118	114	239	0.0	0.1	3.097	A
2	132	33	70	132	129	82	0.0	0.1	3.618	A
3	149	37	138	149	151	65	0.0	0.2	3.712	A
4	39	10	235	39	42	52	0.0	0.0	4.014	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	142	36	44	143	143	274	0.1	0.1	3.230	A
2	141	35	81	142	150	105	0.1	0.1	3.587	A
3	179	45	148	179	179	75	0.2	0.2	3.899	A
4	48	12	270	48	49	57	0.0	0.0	4.079	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	176	44	46	177	174	343	0.1	0.1	3.375	A
2	192	48	103	191	189	121	0.1	0.2	3.692	A
3	204	51	201	205	213	93	0.2	0.2	4.070	A
4	59	15	329	60	58	77	0.0	0.1	4.149	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	177	44	53	178	170	358	0.1	0.1	3.433	A
2	189	47	103	187	188	128	0.2	0.3	3.628	A
3	224	56	199	221	222	90	0.2	0.4	4.149	A
4	66	17	345	66	62	76	0.1	0.1	4.592	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	140	35	45	140	139	289	0.1	0.1	3.347	A
2	158	40	82	158	156	103	0.3	0.2	3.657	A
3	171	43	166	171	174	75	0.4	0.2	3.871	A
4	54	14	280	55	52	57	0.1	0.0	4.507	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	119	30	36	119	120	244	0.1	0.1	3.226	A
2	133	33	67	133	130	88	0.2	0.1	3.495	A
3	146	37	138	147	149	63	0.2	0.1	3.646	A
4	44	11	236	44	42	49	0.0	0.0	4.004	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	118	1268	0.093	118	114	0.0	0.1	3.097	A
	Exit	1	1		239			239	242	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	132	1218	0.108	132	129	0.0	0.1	3.618	A
	Exit	1	1		82			82	83	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	149	1148	0.130	149	151	0.0	0.2	3.712	A
	Exit	1	1		65			65	60	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	39	982	0.040	39	42	0.0	0.0	4.014	A
	Exit	1	1		52			52	51	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	142	1262	0.113	143	143	0.1	0.1	3.230	A
	Exit	1	1		274			274	284	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	141	1212	0.116	142	150	0.1	0.1	3.587	A
	Exit	1	1		105			105	101	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	179	1142	0.156	179	179	0.2	0.2	3.899	A
	Exit	1	1		75			75	75	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	48	963	0.050	48	49	0.0	0.0	4.079	A
	Exit	1	1		57			57	61	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	176	1260	0.140	177	174	0.1	0.1	3.375	A
	Exit	1	1		343			343	346	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	192	1200	0.160	191	189	0.1	0.2	3.692	A
	Exit	1	1		121			121	122	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	204	1112	0.183	205	213	0.2	0.2	4.070	A
	Exit	1	1		93			93	91	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	59	930	0.063	60	58	0.0	0.1	4.149	A
	Exit	1	1		77			77	75	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	177	1256	0.141	178	170	0.1	0.1	3.433	A
	Exit	1	1		358			358	352	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	189	1200	0.157	187	188	0.2	0.3	3.628	A
	Exit	1	1		128			128	122	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	224	1113	0.201	221	222	0.2	0.4	4.149	A
	Exit	1	1		90			90	89	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	66	922	0.072	66	62	0.1	0.1	4.592	A
	Exit	1	1		76			76	78	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	140	1261	0.111	140	139	0.1	0.1	3.347	A
	Exit	1	1		289			289	290	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	158	1211	0.131	158	156	0.3	0.2	3.657	A
	Exit	1	1		103			103	101	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	171	1132	0.151	171	174	0.4	0.2	3.871	A
	Exit	1	1		75			75	73	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	54	957	0.056	55	52	0.1	0.0	4.507	A
	Exit	1	1		57			57	58	0.0	0.0	0.000	A

09:15 - 09:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	119	1267	0.094	119	120	0.1	0.1	3.226	A
	Exit	1	1		244			244	239	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	133	1220	0.109	133	130	0.2	0.1	3.495	A
	Exit	1	1		88			88	86	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	146	1148	0.127	147	149	0.2	0.1	3.646	A
	Exit	1	1		63			63	64	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	44	982	0.045	44	42	0.0	0.0	4.004	A
	Exit	1	1		49			49	52	0.0	0.0	0.000	A

Base Year 2020, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.71	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	Base Year 2020	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	186	100.000
2		ONE HOUR	✓	88	100.000
3		ONE HOUR	✓	78	100.000
4		ONE HOUR	✓	45	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	75	77	33
	2	57	0	10	21
	3	60	6	0	12
	4	16	18	11	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	7	2	0
	2	4	0	15	7
	3	3	0	0	0
	4	9	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.70	0.3	A	168	252
2	3.73	0.1	A	82	123
3	3.55	0.1	A	71	106
4	3.97	0.1	A	41	62

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	136	34	30	137	139	102	0.0	0.1	3.367	A
2	61	15	94	62	70	73	0.0	0.0	3.252	A
3	56	14	86	57	60	71	0.0	0.0	3.342	A
4	38	9	94	37	35	48	0.0	0.0	3.972	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	169	42	33	171	166	125	0.1	0.1	3.327	A
2	80	20	105	80	81	98	0.0	0.1	3.399	A
3	74	18	101	74	73	85	0.0	0.0	3.426	A
4	42	10	116	42	42	60	0.0	0.0	3.756	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	203	51	41	203	204	149	0.1	0.3	3.344	A
2	102	25	133	103	95	111	0.1	0.1	3.726	A
3	80	20	128	80	83	108	0.0	0.1	3.541	A
4	54	13	137	53	51	71	0.0	0.1	3.908	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	193	48	33	194	203	144	0.3	0.2	3.697	A
2	99	25	126	99	95	101	0.1	0.1	3.372	A
3	82	21	120	82	80	105	0.1	0.1	3.420	A
4	46	11	132	45	49	70	0.1	0.0	3.650	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	163	41	31	163	167	118	0.2	0.2	3.345	A
2	77	19	105	77	82	89	0.1	0.1	3.443	A
3	70	18	97	70	70	86	0.1	0.0	3.549	A
4	37	9	111	38	39	56	0.0	0.0	3.762	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	144	36	26	145	145	104	0.2	0.1	3.388	A
2	73	18	95	73	69	76	0.1	0.0	3.188	A
3	62	15	93	62	56	75	0.0	0.0	3.513	A
4	31	8	99	31	31	56	0.0	0.0	3.445	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	136	1270	0.107	137	139	0.0	0.1	3.367	A
	Exit	1	1		102			102	109	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	61	1204	0.051	62	70	0.0	0.0	3.252	A
	Exit	1	1		73			73	73	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	56	1177	0.048	57	60	0.0	0.0	3.342	A
	Exit	1	1		71			71	75	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	38	1059	0.036	37	35	0.0	0.0	3.972	A
	Exit	1	1		48			48	47	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	169	1269	0.133	171	166	0.1	0.1	3.327	A
	Exit	1	1		125			125	127	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	80	1198	0.067	80	81	0.0	0.1	3.399	A
	Exit	1	1		98			98	92	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	74	1169	0.063	74	73	0.0	0.0	3.426	A
	Exit	1	1		85			85	86	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	42	1048	0.040	42	42	0.0	0.0	3.756	A
	Exit	1	1		60			60	57	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	203	1263	0.161	203	204	0.1	0.3	3.344	A
	Exit	1	1		149			149	144	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	102	1183	0.086	103	95	0.1	0.1	3.726	A
	Exit	1	1		111			111	111	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	80	1153	0.070	80	83	0.0	0.1	3.541	A
	Exit	1	1		108			108	107	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	54	1036	0.052	53	51	0.0	0.1	3.908	A
	Exit	1	1		71			71	71	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	193	1268	0.152	194	203	0.3	0.2	3.697	A
	Exit	1	1		144			144	141	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	99	1186	0.083	99	95	0.1	0.1	3.372	A
	Exit	1	1		101			101	108	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	82	1158	0.071	82	80	0.1	0.1	3.420	A
	Exit	1	1		105			105	107	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	46	1039	0.044	45	49	0.1	0.0	3.650	A
	Exit	1	1		70			70	70	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	163	1270	0.128	163	167	0.2	0.2	3.345	A
	Exit	1	1		118			118	123	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	77	1198	0.064	77	82	0.1	0.1	3.443	A
	Exit	1	1		89			89	91	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	70	1171	0.060	70	70	0.1	0.0	3.549	A
	Exit	1	1		86			86	84	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	37	1050	0.036	38	39	0.0	0.0	3.762	A
	Exit	1	1		56			56	59	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	144	1273	0.113	145	145	0.2	0.1	3.388	A
	Exit	1	1		104			104	98	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	73	1204	0.060	73	69	0.1	0.0	3.188	A
	Exit	1	1		76			76	79	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	62	1173	0.053	62	56	0.0	0.0	3.513	A
	Exit	1	1		75			75	73	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	31	1057	0.029	31	31	0.0	0.0	3.445	A
	Exit	1	1		56			56	51	0.0	0.0	0.000	A

DN 2022, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.60	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	DN 2022	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	192	100.000
2		ONE HOUR	✓	91	100.000
3		ONE HOUR	✓	80	100.000
4		ONE HOUR	✓	46	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	78	79	34
	2	59	0	11	22
	3	61	6	0	12
	4	17	18	11	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	7	2	0
	2	4	0	15	7
	3	3	0	0	0
	4	9	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.63	0.3	A	175	263
2	3.55	0.3	A	86	128
3	3.44	0.2	A	73	109
4	3.80	0.1	A	42	63

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	144	36	27	145	143	102	0.0	0.1	3.331	A
2	71	18	98	71	68	74	0.0	0.1	3.416	A
3	56	14	90	56	61	78	0.0	0.1	3.203	A
4	36	9	93	37	37	53	0.0	0.0	3.466	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	174	43	30	175	172	119	0.1	0.2	3.452	A
2	80	20	123	80	79	82	0.1	0.1	3.554	A
3	66	16	104	66	71	99	0.1	0.0	3.434	A
4	38	9	111	38	39	59	0.0	0.0	3.473	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	201	50	41	199	205	162	0.2	0.3	3.632	A
2	105	26	136	103	101	104	0.1	0.3	3.378	A
3	96	24	129	95	91	110	0.0	0.2	3.350	A
4	51	13	152	51	47	72	0.0	0.1	3.705	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	208	52	39	208	210	157	0.3	0.2	3.533	A
2	106	27	141	106	105	106	0.3	0.1	3.467	A
3	89	22	131	89	89	116	0.2	0.1	3.429	A
4	51	13	145	51	49	76	0.1	0.0	3.605	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	175	44	32	177	175	126	0.2	0.1	3.619	A
2	82	21	114	83	83	95	0.1	0.1	3.328	A
3	70	17	108	71	72	90	0.1	0.0	3.415	A
4	40	10	119	40	40	59	0.0	0.0	3.636	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	149	37	28	149	147	102	0.1	0.1	3.285	A
2	68	17	93	67	68	84	0.1	0.1	3.326	A
3	58	15	89	58	64	71	0.0	0.0	3.444	A
4	37	9	92	37	37	56	0.0	0.0	3.797	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	144	1272	0.114	145	143	0.0	0.1	3.331	A
	Exit	1	1		102			102	107	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	71	1202	0.059	71	68	0.0	0.1	3.416	A
	Exit	1	1		74			74	74	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	56	1175	0.048	56	61	0.0	0.1	3.203	A
	Exit	1	1		78			78	77	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	36	1060	0.034	37	37	0.0	0.0	3.466	A
	Exit	1	1		53			53	51	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	174	1270	0.137	175	172	0.1	0.2	3.452	A
	Exit	1	1		119			119	122	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	80	1189	0.068	80	79	0.1	0.1	3.554	A
	Exit	1	1		82			82	87	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	66	1167	0.056	66	71	0.1	0.0	3.434	A
	Exit	1	1		99			99	94	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	38	1051	0.036	38	39	0.0	0.0	3.473	A
	Exit	1	1		59			59	57	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	201	1263	0.159	199	205	0.2	0.3	3.632	A
	Exit	1	1		162			162	153	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	105	1181	0.089	103	101	0.1	0.3	3.378	A
	Exit	1	1		104			104	110	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	96	1153	0.083	95	91	0.0	0.2	3.350	A
	Exit	1	1		110			110	109	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	51	1028	0.050	51	47	0.0	0.1	3.705	A
	Exit	1	1		72			72	72	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	208	1265	0.164	208	210	0.3	0.2	3.533	A
	Exit	1	1		157			157	157	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	106	1179	0.090	106	105	0.3	0.1	3.467	A
	Exit	1	1		106			106	106	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	89	1151	0.078	89	89	0.2	0.1	3.429	A
	Exit	1	1		116			116	115	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	51	1032	0.049	51	49	0.1	0.0	3.605	A
	Exit	1	1		76			76	76	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	175	1269	0.138	177	175	0.2	0.1	3.619	A
	Exit	1	1		126			126	125	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	82	1193	0.069	83	83	0.1	0.1	3.328	A
	Exit	1	1		95			95	93	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	70	1165	0.060	71	72	0.1	0.0	3.415	A
	Exit	1	1		90			90	91	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	40	1046	0.038	40	40	0.0	0.0	3.636	A
	Exit	1	1		59			59	61	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	149	1271	0.117	149	147	0.1	0.1	3.285	A
	Exit	1	1		102			102	108	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	68	1205	0.056	67	68	0.1	0.1	3.326	A
	Exit	1	1		84			84	81	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	58	1175	0.050	58	64	0.0	0.0	3.444	A
	Exit	1	1		71			71	73	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	37	1061	0.035	37	37	0.0	0.0	3.797	A
	Exit	1	1		56			56	54	0.0	0.0	0.000	A

DS 2022, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.78	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	DS 2022	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	250	100.000
2		ONE HOUR	✓	99	100.000
3		ONE HOUR	✓	135	100.000
4		ONE HOUR	✓	55	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	78	137	34
	2	59	0	18	22
	3	104	10	0	21
	4	17	18	20	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	7	1	0
	2	4	0	9	7
	3	2	0	0	0
	4	9	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.84	0.3	A	226	339
2	3.74	0.1	A	90	135
3	3.64	0.2	A	123	185
4	3.88	0.1	A	50	74

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	183	46	37	181	185	131	0.0	0.2	3.421	A
2	70	18	139	70	75	79	0.0	0.1	3.167	A
3	98	25	81	99	101	129	0.0	0.1	3.512	A
4	40	10	128	40	42	51	0.0	0.0	3.694	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	217	54	43	218	219	166	0.2	0.2	3.676	A
2	98	25	165	98	90	96	0.1	0.1	3.717	A
3	119	30	110	118	119	153	0.1	0.2	3.592	A
4	50	13	159	50	49	69	0.0	0.1	3.877	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	279	70	57	282	277	192	0.2	0.2	3.720	A
2	103	26	213	103	109	126	0.1	0.1	3.666	A
3	145	36	124	145	144	193	0.2	0.1	3.565	A
4	64	16	185	64	59	84	0.1	0.0	3.883	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	266	67	51	266	272	202	0.2	0.3	3.845	A
2	115	29	203	115	113	115	0.1	0.1	3.742	A
3	152	38	130	151	148	189	0.1	0.1	3.644	A
4	58	15	194	59	58	87	0.0	0.0	3.827	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	222	56	40	221	226	160	0.3	0.3	3.528	A
2	87	22	167	87	90	95	0.1	0.1	3.417	A
3	119	30	102	120	121	152	0.1	0.1	3.595	A
4	46	12	153	47	47	69	0.0	0.1	3.822	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	187	47	35	187	189	134	0.3	0.2	3.507	A
2	68	17	140	68	74	83	0.1	0.0	3.603	A
3	106	27	80	107	104	128	0.1	0.1	3.507	A
4	39	10	130	39	40	57	0.1	0.0	3.768	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	183	1266	0.145	181	185	0.0	0.2	3.421	A
	Exit	1	1		131			131	139	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	70	1179	0.060	70	75	0.0	0.1	3.167	A
	Exit	1	1		79			79	78	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	98	1180	0.083	99	101	0.0	0.1	3.512	A
	Exit	1	1		129			129	134	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	40	1041	0.039	40	42	0.0	0.0	3.694	A
	Exit	1	1		51			51	54	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	217	1262	0.172	218	219	0.2	0.2	3.676	A
	Exit	1	1		166			166	161	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	98	1165	0.084	98	90	0.1	0.1	3.717	A
	Exit	1	1		96			96	96	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	119	1164	0.102	118	119	0.1	0.2	3.592	A
	Exit	1	1		153			153	152	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	50	1024	0.049	50	49	0.0	0.1	3.877	A
	Exit	1	1		69			69	69	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	279	1254	0.222	282	277	0.2	0.2	3.720	A
	Exit	1	1		192			192	192	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	103	1138	0.090	103	109	0.1	0.1	3.666	A
	Exit	1	1		126			126	118	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	145	1156	0.126	145	144	0.2	0.1	3.565	A
	Exit	1	1		193			193	195	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	64	1010	0.063	64	59	0.1	0.0	3.883	A
	Exit	1	1		84			84	84	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	266	1257	0.212	266	272	0.2	0.3	3.845	A
	Exit	1	1		202			202	198	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	115	1144	0.101	115	113	0.1	0.1	3.742	A
	Exit	1	1		115			115	117	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	152	1152	0.132	151	148	0.1	0.1	3.644	A
	Exit	1	1		189			189	192	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	58	1004	0.058	59	58	0.0	0.0	3.827	A
	Exit	1	1		87			87	85	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	222	1264	0.176	221	226	0.3	0.3	3.528	A
	Exit	1	1		160			160	161	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	87	1164	0.075	87	90	0.1	0.1	3.417	A
	Exit	1	1		95			95	96	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	119	1168	0.102	120	121	0.1	0.1	3.595	A
	Exit	1	1		152			152	158	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	46	1027	0.045	47	47	0.0	0.1	3.822	A
	Exit	1	1		69			69	68	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	187	1267	0.148	187	189	0.3	0.2	3.507	A
	Exit	1	1		134			134	136	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	68	1179	0.057	68	74	0.1	0.0	3.603	A
	Exit	1	1		83			83	83	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	106	1180	0.090	107	104	0.1	0.1	3.507	A
	Exit	1	1		128			128	129	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	39	1040	0.037	39	40	0.1	0.0	3.768	A
	Exit	1	1		57			57	59	0.0	0.0	0.000	A

DN 2037, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.66	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	DN 2037	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	207	100.000
2		ONE HOUR	✓	99	100.000
3		ONE HOUR	✓	86	100.000
4		ONE HOUR	✓	50	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	85	85	36
	2	64	0	12	24
	3	66	7	0	13
	4	18	20	12	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	8	2	0
	2	4	0	17	8
	3	3	0	0	0
	4	11	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.70	0.2	A	186	279
2	3.60	0.1	A	89	134
3	3.45	0.1	A	78	118
4	3.96	0.1	A	46	69

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	147	37	31	147	154	114	0.0	0.2	3.424	A
2	74	19	96	75	76	81	0.0	0.1	3.367	A
3	65	16	92	65	67	79	0.0	0.1	3.421	A
4	40	10	105	40	39	52	0.0	0.0	3.917	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	182	45	35	182	187	130	0.2	0.2	3.427	A
2	89	22	124	88	87	92	0.1	0.1	3.416	A
3	73	18	112	73	77	101	0.1	0.0	3.362	A
4	45	11	121	45	44	65	0.0	0.1	3.709	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	225	56	40	225	226	165	0.2	0.2	3.702	A
2	109	27	140	109	108	125	0.1	0.1	3.572	A
3	92	23	133	93	91	115	0.0	0.1	3.365	A
4	56	14	149	56	52	78	0.1	0.1	3.960	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	224	56	42	224	228	160	0.2	0.2	3.698	A
2	103	26	145	103	108	120	0.1	0.0	3.599	A
3	94	24	133	94	97	116	0.1	0.1	3.447	A
4	55	14	147	55	56	80	0.1	0.1	3.900	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	181	45	32	180	184	139	0.2	0.2	3.511	A
2	88	22	116	89	87	97	0.0	0.0	3.474	A
3	82	20	110	82	80	95	0.1	0.0	3.279	A
4	41	10	130	41	43	61	0.1	0.1	3.706	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	157	39	31	157	156	108	0.2	0.2	3.305	A
2	72	18	104	73	72	84	0.0	0.0	3.488	A
3	64	16	92	64	65	84	0.0	0.0	3.264	A
4	39	10	101	38	38	56	0.1	0.0	3.678	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	147	1270	0.116	147	154	0.0	0.2	3.424	A
	Exit	1	1		114			114	115	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	74	1203	0.062	75	76	0.0	0.1	3.367	A
	Exit	1	1		81			81	85	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	65	1174	0.056	65	67	0.0	0.1	3.421	A
	Exit	1	1		79			79	82	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	40	1053	0.038	40	39	0.0	0.0	3.917	A
	Exit	1	1		52			52	54	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	182	1267	0.143	182	187	0.2	0.2	3.427	A
	Exit	1	1		130			130	132	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	89	1188	0.075	88	87	0.1	0.1	3.416	A
	Exit	1	1		92			92	99	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	73	1162	0.063	73	77	0.1	0.0	3.362	A
	Exit	1	1		101			101	100	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	45	1045	0.043	45	44	0.0	0.1	3.709	A
	Exit	1	1		65			65	64	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	225	1264	0.178	225	226	0.2	0.2	3.702	A
	Exit	1	1		165			165	159	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	109	1179	0.093	109	108	0.1	0.1	3.572	A
	Exit	1	1		125			125	120	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	92	1150	0.080	93	91	0.0	0.1	3.365	A
	Exit	1	1		115			115	120	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	56	1029	0.054	56	52	0.1	0.1	3.960	A
	Exit	1	1		78			78	77	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	224	1263	0.178	224	228	0.2	0.2	3.698	A
	Exit	1	1		160			160	166	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	103	1176	0.087	103	108	0.1	0.0	3.599	A
	Exit	1	1		120			120	123	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	94	1151	0.082	94	97	0.1	0.1	3.447	A
	Exit	1	1		116			116	120	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	55	1031	0.054	55	56	0.1	0.1	3.900	A
	Exit	1	1		80			80	80	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	181	1269	0.142	180	184	0.2	0.2	3.511	A
	Exit	1	1		139			139	136	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	88	1192	0.074	89	87	0.0	0.0	3.474	A
	Exit	1	1		97			97	101	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	82	1164	0.070	82	80	0.1	0.0	3.279	A
	Exit	1	1		95			95	96	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	41	1040	0.039	41	43	0.1	0.1	3.706	A
	Exit	1	1		61			61	61	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	157	1270	0.124	157	156	0.2	0.2	3.305	A
	Exit	1	1		108			108	109	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	72	1199	0.060	73	72	0.0	0.0	3.488	A
	Exit	1	1		84			84	83	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	64	1173	0.055	64	65	0.0	0.0	3.264	A
	Exit	1	1		84			84	83	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	39	1056	0.037	38	38	0.1	0.0	3.678	A
	Exit	1	1		56			56	57	0.0	0.0	0.000	A

DS 2037, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.84	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	DS 2037	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	265	100.000
2		ONE HOUR	✓	107	100.000
3		ONE HOUR	✓	141	100.000
4		ONE HOUR	✓	58	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	1	85	143	36
	2	64	0	19	24
	3	109	11	0	22
	4	18	20	20	0

Vehicle Mix

Heavy Vehicle Percentages

	To

		1	2	3	4
From	1	0	8	1	0
	2	4	0	10	8
	3	2	0	0	0
	4	11	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	3.91	0.4	A	242	363
2	3.88	0.2	A	100	149
3	3.66	0.2	A	131	197
4	3.90	0.1	A	52	79

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	194	48	38	193	200	143	0.0	0.2	3.546	A
2	88	22	149	88	83	82	0.0	0.1	3.565	A
3	101	25	101	101	105	136	0.0	0.1	3.414	A
4	43	11	139	42	44	63	0.0	0.1	3.553	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	235	59	46	236	236	179	0.2	0.2	3.563	A
2	91	23	185	90	91	97	0.1	0.1	3.680	A
3	132	33	109	132	127	167	0.1	0.1	3.560	A
4	56	14	170	56	55	70	0.1	0.0	3.572	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	296	74	52	295	290	215	0.2	0.3	3.913	A
2	126	31	223	125	119	124	0.1	0.2	3.824	A
3	151	38	142	152	154	207	0.1	0.2	3.522	A
4	64	16	204	63	64	90	0.0	0.1	3.897	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	290	73	57	288	286	207	0.3	0.4	3.847	A
2	121	30	220	121	121	125	0.2	0.1	3.880	A
3	157	39	135	157	154	207	0.2	0.1	3.662	A
4	60	15	203	61	61	89	0.1	0.1	3.814	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	234	59	45	234	239	178	0.4	0.2	3.629	A
2	96	24	178	96	98	102	0.1	0.1	3.609	A
3	134	34	112	134	128	162	0.1	0.1	3.565	A
4	51	13	173	51	50	74	0.1	0.1	3.778	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	203	51	39	202	202	142	0.2	0.2	3.554	A
2	76	19	154	76	77	86	0.1	0.1	3.454	A
3	110	28	87	110	109	144	0.1	0.1	3.380	A
4	41	10	139	41	43	58	0.1	0.0	3.784	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	194	1265	0.153	193	200	0.0	0.2	3.546	A
	Exit	1	1		143			143	144	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	88	1174	0.075	88	83	0.0	0.1	3.565	A
	Exit	1	1		82			82	85	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	101	1168	0.087	101	105	0.0	0.1	3.414	A
	Exit	1	1		136			136	140	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	43	1035	0.042	42	44	0.0	0.1	3.553	A
	Exit	1	1		63			63	64	0.0	0.0	0.000	A

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	235	1260	0.186	236	236	0.2	0.2	3.563	A
	Exit	1	1		179			179	171	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	91	1154	0.079	90	91	0.1	0.1	3.680	A
	Exit	1	1		97			97	103	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	132	1164	0.113	132	127	0.1	0.1	3.560	A
	Exit	1	1		167			167	165	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	56	1018	0.055	56	55	0.1	0.0	3.572	A
	Exit	1	1		70			70	70	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	296	1257	0.235	295	290	0.2	0.3	3.913	A
	Exit	1	1		215			215	210	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	126	1132	0.111	125	119	0.1	0.2	3.824	A
	Exit	1	1		124			124	125	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	151	1145	0.132	152	154	0.1	0.2	3.522	A
	Exit	1	1		207			207	201	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	64	999	0.064	63	64	0.0	0.1	3.897	A
	Exit	1	1		90			90	91	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	290	1254	0.231	288	286	0.3	0.4	3.847	A
	Exit	1	1		207			207	210	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	121	1134	0.107	121	121	0.2	0.1	3.880	A
	Exit	1	1		125			125	127	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	157	1150	0.137	157	154	0.2	0.1	3.662	A
	Exit	1	1		207			207	199	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	60	1000	0.060	61	61	0.1	0.1	3.814	A
	Exit	1	1		89			89	88	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	234	1261	0.186	234	239	0.4	0.2	3.629	A
	Exit	1	1		178			178	174	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	96	1158	0.083	96	98	0.1	0.1	3.609	A
	Exit	1	1		102			102	103	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	134	1162	0.115	134	128	0.1	0.1	3.565	A
	Exit	1	1		162			162	165	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	51	1016	0.050	51	50	0.1	0.1	3.778	A
	Exit	1	1		74			74	74	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	1, 2, 3, 4	203	1265	0.160	202	202	0.2	0.2	3.554	A
	Exit	1	1		142			142	144	0.0	0.0	0.000	A
2	Entry	1	1	1, 2, 3, 4	76	1171	0.065	76	77	0.1	0.1	3.454	A
	Exit	1	1		86			86	90	0.0	0.0	0.000	A
3	Entry	1	1	1, 2, 3, 4	110	1176	0.094	110	109	0.1	0.1	3.380	A
	Exit	1	1		144			144	137	0.0	0.0	0.000	A
4	Entry	1	1	1, 2, 3, 4	41	1035	0.039	41	43	0.1	0.0	3.784	A
	Exit	1	1		58			58	60	0.0	0.0	0.000	A

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462

For sales and distribution information, program advice and maintenance, contact TRL:
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Filename: 20200326 C543 Site Access junction PICADY v1.2.j9
Path: C:\Users\CarolDiaz\Transport Insights\TI - Current Projects\C543 2020 Torca Devs E-corthy SHD App Traffic Support\Modelling and Analysis\ARCADY
Report generation date: 26/03/2020 17:40:49

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Base Year 2020									
Stream B-AC	D1	0.0	0.00	0.00	A	D7	0.0	0.00	0.00	A
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	DN 2022									
Stream B-AC	D2	0.0	0.00	0.00	A	D8	0.0	0.00	0.00	A
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	DS 2022									
Stream B-AC	D4	0.2	9.04	0.19	A	D9	0.1	8.68	0.13	A
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	DN 2037									
Stream B-AC	D5	0.0	0.00	0.00	A	D10	0.0	0.00	0.00	A
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	DS 2037									
Stream B-AC	D6	0.2	9.09	0.19	A	D11	0.1	8.75	0.13	A
Stream C-AB		0.0	0.00	0.00	A		0.0	0.00	0.00	A

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

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

File summary

File Description

Title	
Location	
Site number	
Date	10/03/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	AzureAD\CarolDiaz
Description	

Units

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

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue 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	Base Year 2020	AM	ONE HOUR	08:00	09:30	15
D2	DN 2022	AM	ONE HOUR	08:00	09:30	15
D4	DS 2022	AM	ONE HOUR	08:00	09:30	15
D5	DN 2037	AM	ONE HOUR	08:00	09:30	15
D6	DS 2037	AM	ONE HOUR	08:00	09:30	15
D7	Base Year 2020	PM	ONE HOUR	15:45	17:15	15
D8	DN 2022	PM	ONE HOUR	15:45	17:15	15
D9	DS 2022	PM	ONE HOUR	15:45	17:15	15
D10	DN 2037	PM	ONE HOUR	15:45	17:15	15
D11	DS 2037	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Base Year 2020, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		0.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Carley's Bridge East		Major
B	Site Access		Minor
C	Carley's Bridge West		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	5.90			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	68	49

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	524	0.096	0.242	0.152	0.346
B-C	655	0.101	0.255	-	-
C-B	620	0.241	0.241	-	-

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	Base Year 2020	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	43	100.000
B		✓	0	100.000
C		✓	102	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	43
	B	0	0	0
	C	102	0	0

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	567	0.000	0	0.0	0.000	A
C-AB	0	612	0.000	0	0.0	0.000	A
C-A	77			77			
A-B	0			0			
A-C	32			32			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	564	0.000	0	0.0	0.000	A
C-AB	0	611	0.000	0	0.0	0.000	A
C-A	92			92			
A-B	0			0			
A-C	39			39			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	560	0.000	0	0.0	0.000	A
C-AB	0	609	0.000	0	0.0	0.000	A
C-A	112			112			
A-B	0			0			
A-C	47			47			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	560	0.000	0	0.0	0.000	A
C-AB	0	609	0.000	0	0.0	0.000	A
C-A	112			112			
A-B	0			0			
A-C	47			47			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	564	0.000	0	0.0	0.000	A
C-AB	0	611	0.000	0	0.0	0.000	A
C-A	92			92			
A-B	0			0			
A-C	39			39			

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	567	0.000	0	0.0	0.000	A
C-AB	0	612	0.000	0	0.0	0.000	A
C-A	77			77			
A-B	0			0			
A-C	32			32			

DN 2022, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		0.00	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	DN 2022	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	44	100.000
B		✓	0	100.000
C		✓	105	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	44
	B	0	0	0
	C	105	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	0

From	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	566	0.000	0	0.0	0.000	A
C-AB	0	612	0.000	0	0.0	0.000	A
C-A	79			79			
A-B	0			0			
A-C	33			33			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	563	0.000	0	0.0	0.000	A
C-AB	0	611	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	0			0			
A-C	39			39			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	559	0.000	0	0.0	0.000	A
C-AB	0	609	0.000	0	0.0	0.000	A
C-A	116			116			
A-B	0			0			
A-C	48			48			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	559	0.000	0	0.0	0.000	A
C-AB	0	609	0.000	0	0.0	0.000	A
C-A	116			116			
A-B	0			0			
A-C	48			48			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	563	0.000	0	0.0	0.000	A
C-AB	0	611	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	0			0			
A-C	39			39			

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	566	0.000	0	0.0	0.000	A
C-AB	0	612	0.000	0	0.0	0.000	A
C-A	79			79			
A-B	0			0			
A-C	33			33			

DS 2022, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		2.81	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)
D4	DS 2022	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	81	100.000
B		✓	84	100.000
C		✓	105	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	38	44
	B	84	0	0
	C	105	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	0

From	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.19	9.04	0.2	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	63	501	0.126	63	0.1	8.198	A
C-AB	0	605	0.000	0	0.0	0.000	A
C-A	79			79			
A-B	28			28			
A-C	33			33			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	76	497	0.152	75	0.2	8.539	A
C-AB	0	603	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	34			34			
A-C	39			39			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	491	0.188	92	0.2	9.030	A
C-AB	0	599	0.000	0	0.0	0.000	A
C-A	116			116			
A-B	42			42			
A-C	48			48			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	491	0.188	92	0.2	9.039	A
C-AB	0	599	0.000	0	0.0	0.000	A
C-A	116			116			
A-B	42			42			
A-C	48			48			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	76	497	0.152	76	0.2	8.554	A
C-AB	0	603	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	34			34			
A-C	39			39			

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	63	501	0.126	63	0.1	8.226	A
C-AB	0	605	0.000	0	0.0	0.000	A
C-A	79			79			
A-B	28			28			
A-C	33			33			

DN 2037, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		0.00	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)
D5	DN 2037	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	47	100.000
B		✓	0	100.000
C		✓	113	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	47
	B	0	0	0
	C	113	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	0

From	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	565	0.000	0	0.0	0.000	A
C-AB	0	612	0.000	0	0.0	0.000	A
C-A	85			85			
A-B	0			0			
A-C	35			35			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	562	0.000	0	0.0	0.000	A
C-AB	0	610	0.000	0	0.0	0.000	A
C-A	102			102			
A-B	0			0			
A-C	42			42			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	557	0.000	0	0.0	0.000	A
C-AB	0	608	0.000	0	0.0	0.000	A
C-A	125			125			
A-B	0			0			
A-C	51			51			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	557	0.000	0	0.0	0.000	A
C-AB	0	608	0.000	0	0.0	0.000	A
C-A	125			125			
A-B	0			0			
A-C	51			51			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	562	0.000	0	0.0	0.000	A
C-AB	0	610	0.000	0	0.0	0.000	A
C-A	102			102			
A-B	0			0			
A-C	42			42			

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	565	0.000	0	0.0	0.000	A
C-AB	0	612	0.000	0	0.0	0.000	A
C-A	85			85			
A-B	0			0			
A-C	35			35			

DS 2037, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		2.71	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)
D6	DS 2037	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	85	100.000
B		✓	84	100.000
C		✓	113	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	38	47
	B	84	0	0
	C	113	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	0

From	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.19	9.09	0.2	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	63	500	0.127	63	0.1	8.226	A
C-AB	0	605	0.000	0	0.0	0.000	A
C-A	85			85			
A-B	28			28			
A-C	35			35			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	76	495	0.153	75	0.2	8.576	A
C-AB	0	602	0.000	0	0.0	0.000	A
C-A	102			102			
A-B	34			34			
A-C	42			42			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	489	0.189	92	0.2	9.081	A
C-AB	0	598	0.000	0	0.0	0.000	A
C-A	125			125			
A-B	42			42			
A-C	51			51			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	489	0.189	92	0.2	9.090	A
C-AB	0	598	0.000	0	0.0	0.000	A
C-A	125			125			
A-B	42			42			
A-C	51			51			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	76	495	0.153	76	0.2	8.589	A
C-AB	0	602	0.000	0	0.0	0.000	A
C-A	102			102			
A-B	34			34			
A-C	42			42			

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	63	500	0.127	63	0.1	8.253	A
C-AB	0	605	0.000	0	0.0	0.000	A
C-A	85			85			
A-B	28			28			
A-C	35			35			

Base Year 2020, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		0.00	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)
D7	Base Year 2020	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	98	100.000
B		✓	0	100.000
C		✓	78	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	98
	B	0	0	0
	C	78	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	3

From	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	558	0.000	0	0.0	0.000	A
C-AB	0	602	0.000	0	0.0	0.000	A
C-A	59			59			
A-B	0			0			
A-C	74			74			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	553	0.000	0	0.0	0.000	A
C-AB	0	599	0.000	0	0.0	0.000	A
C-A	70			70			
A-B	0			0			
A-C	88			88			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	547	0.000	0	0.0	0.000	A
C-AB	0	594	0.000	0	0.0	0.000	A
C-A	86			86			
A-B	0			0			
A-C	108			108			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	547	0.000	0	0.0	0.000	A
C-AB	0	594	0.000	0	0.0	0.000	A
C-A	86			86			
A-B	0			0			
A-C	108			108			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	553	0.000	0	0.0	0.000	A
C-AB	0	599	0.000	0	0.0	0.000	A
C-A	70			70			
A-B	0			0			
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)	Unsignalised level of service
B-AC	0	558	0.000	0	0.0	0.000	A
C-AB	0	602	0.000	0	0.0	0.000	A
C-A	59			59			
A-B	0			0			
A-C	74			74			

DN 2022, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		0.00	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)
D8	DN 2022	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	101	100.000
B		✓	0	100.000
C		✓	80	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	101
	B	0	0	0
	C	80	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	3

From	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	557	0.000	0	0.0	0.000	A
C-AB	0	602	0.000	0	0.0	0.000	A
C-A	60			60			
A-B	0			0			
A-C	76			76			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	553	0.000	0	0.0	0.000	A
C-AB	0	598	0.000	0	0.0	0.000	A
C-A	72			72			
A-B	0			0			
A-C	90			90			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	546	0.000	0	0.0	0.000	A
C-AB	0	594	0.000	0	0.0	0.000	A
C-A	88			88			
A-B	0			0			
A-C	111			111			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	546	0.000	0	0.0	0.000	A
C-AB	0	594	0.000	0	0.0	0.000	A
C-A	88			88			
A-B	0			0			
A-C	111			111			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	553	0.000	0	0.0	0.000	A
C-AB	0	598	0.000	0	0.0	0.000	A
C-A	72			72			
A-B	0			0			
A-C	90			90			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	557	0.000	0	0.0	0.000	A
C-AB	0	602	0.000	0	0.0	0.000	A
C-A	60			60			
A-B	0			0			
A-C	76			76			

DS 2022, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		1.56	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)
D9	DS 2022	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	175	100.000
B		✓	56	100.000
C		✓	80	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	74	101
	B	56	0	0
	C	80	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	3

From	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.13	8.68	0.1	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	42	491	0.085	41	0.1	8.000	A
C-AB	0	588	0.000	0	0.0	0.000	A
C-A	60			60			
A-B	56			56			
A-C	76			76			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	50	485	0.103	50	0.1	8.276	A
C-AB	0	582	0.000	0	0.0	0.000	A
C-A	72			72			
A-B	67			67			
A-C	90			90			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	61	476	0.129	61	0.1	8.675	A
C-AB	0	574	0.000	0	0.0	0.000	A
C-A	88			88			
A-B	82			82			
A-C	111			111			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	61	476	0.129	61	0.1	8.680	A
C-AB	0	574	0.000	0	0.0	0.000	A
C-A	88			88			
A-B	82			82			
A-C	111			111			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	50	485	0.103	50	0.1	8.285	A
C-AB	0	582	0.000	0	0.0	0.000	A
C-A	72			72			
A-B	67			67			
A-C	90			90			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	42	491	0.085	42	0.1	8.016	A
C-AB	0	588	0.000	0	0.0	0.000	A
C-A	60			60			
A-B	56			56			
A-C	76			76			

DN 2037, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		0.00	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)
D10	DN 2037	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	109	100.000
B		✓	0	100.000
C		✓	86	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	109
	B	0	0	0
	C	86	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	4

From	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	556	0.000	0	0.0	0.000	A
C-AB	0	601	0.000	0	0.0	0.000	A
C-A	65			65			
A-B	0			0			
A-C	82			82			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	550	0.000	0	0.0	0.000	A
C-AB	0	597	0.000	0	0.0	0.000	A
C-A	77			77			
A-B	0			0			
A-C	98			98			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	543	0.000	0	0.0	0.000	A
C-AB	0	591	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	0			0			
A-C	119			119			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	543	0.000	0	0.0	0.000	A
C-AB	0	591	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	0			0			
A-C	119			119			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	550	0.000	0	0.0	0.000	A
C-AB	0	597	0.000	0	0.0	0.000	A
C-A	77			77			
A-B	0			0			
A-C	98			98			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	556	0.000	0	0.0	0.000	A
C-AB	0	601	0.000	0	0.0	0.000	A
C-A	65			65			
A-B	0			0			
A-C	82			82			

DS 2037, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Carley's Bridge/ site Acces Junction	T-Junction	Two-way		1.50	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)
D11	DS 2037	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	183	100.000
B		✓	56	100.000
C		✓	86	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	74	109
	B	56	0	0
	C	86	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
	A	0	0	4

From	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.13	8.75	0.1	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	42	489	0.086	41	0.1	8.038	A
C-AB	0	587	0.000	0	0.0	0.000	A
C-A	65			65			
A-B	56			56			
A-C	82			82			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	50	482	0.104	50	0.1	8.326	A
C-AB	0	581	0.000	0	0.0	0.000	A
C-A	77			77			
A-B	67			67			
A-C	98			98			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	61	473	0.129	61	0.1	8.741	A
C-AB	0	572	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	82			82			
A-C	119			119			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	61	473	0.129	61	0.1	8.746	A
C-AB	0	572	0.000	0	0.0	0.000	A
C-A	94			94			
A-B	82			82			
A-C	119			119			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	50	482	0.104	50	0.1	8.334	A
C-AB	0	581	0.000	0	0.0	0.000	A
C-A	77			77			
A-B	67			67			
A-C	98			98			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	42	489	0.086	42	0.1	8.056	A
C-AB	0	587	0.000	0	0.0	0.000	A
C-A	65			65			
A-B	56			56			
A-C	82			82			

Appendix H Letters of Consent

Comhairle Contae
Loch Garman

Wexford County Council

6th April 2022

Subject to Contract/Contract Denied

Mr Eoin Munn,
Associate Director,
Transport Insights,
Suite 30,
31 Baggot Street Lower,
Dublin 2, D02 X658

Re: Consent to make planning application on Wexford County Council Lands at Carley's Bridge, Enniscorthy, Co Wexford.

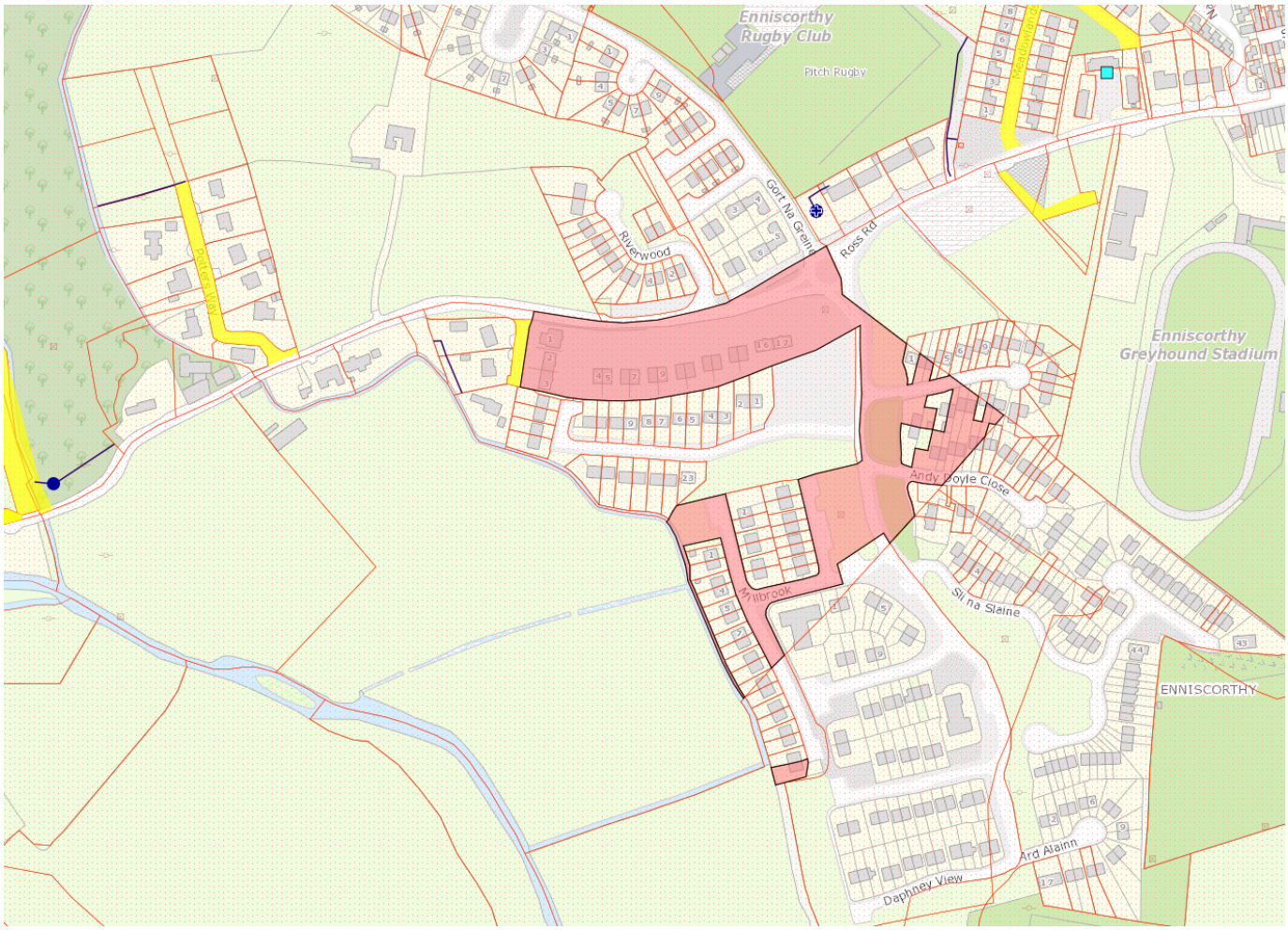
Dear Mr Munn,

I herein confirm that Wexford County Council gives consent to Transport Insights to apply for planning permission in relation to a SHD development on Council lands contained in Folio WX11457F and on and adjacent to the Carley's Bridge Road as outlined in the map submitted to Wexford County Council on 23rd of March 2022.

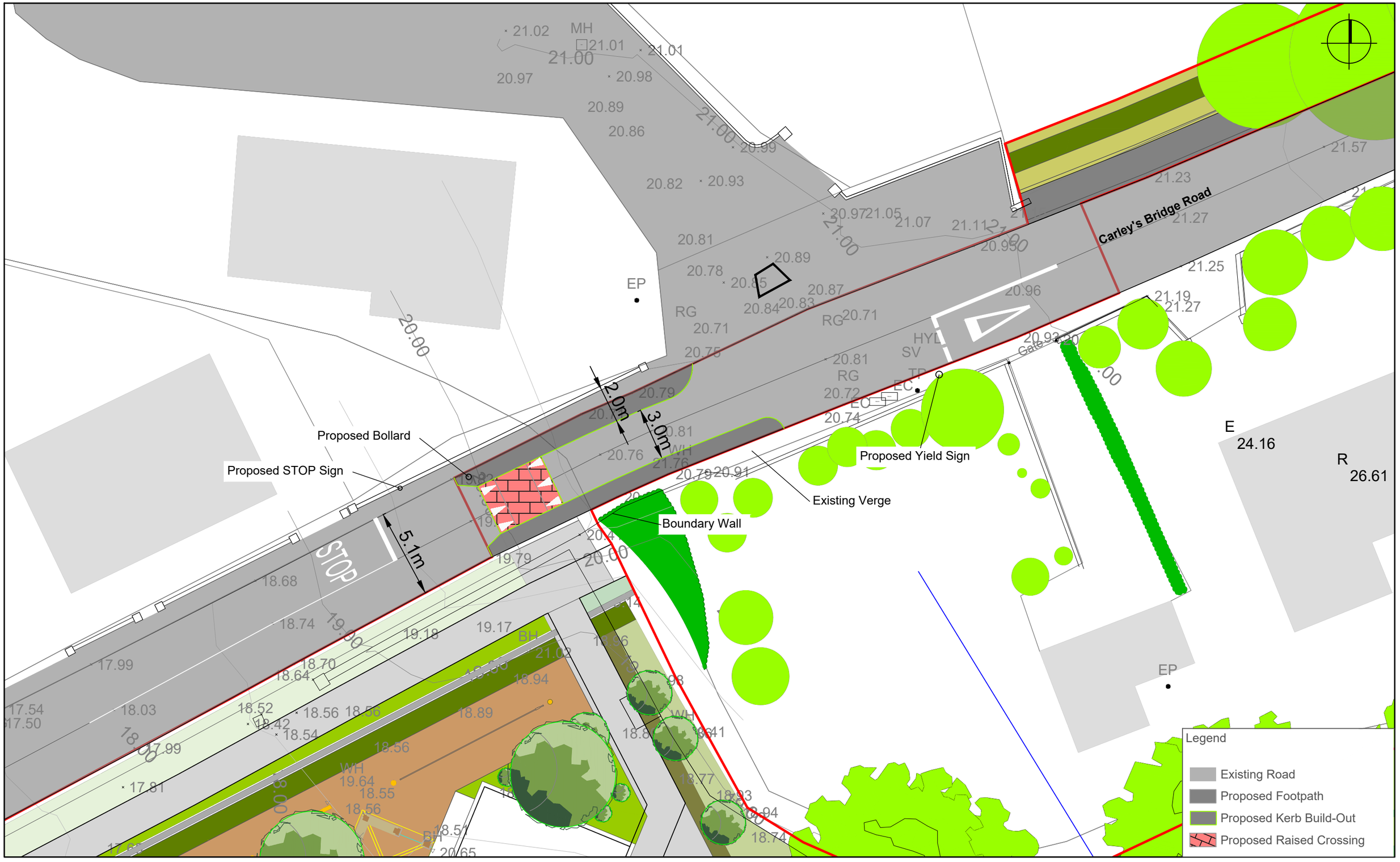
Yours Sincerely,

Elizabeth Hore

Elizabeth Hore,
Director of Services,
Economic Development & Planning



Folio Number	WX11457F
Title Level	Freehold
Plan Number	91A
Property Number	1
Area of selected plans	2.52 hectares.
Number of Plans on this folio:	2
Address	Not Available



Notes:

1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

Drawn	GI
Checked	EM
Date	2022/03/21

Drawing No.	2020 C543.1 /1 v1.6
Drawing	Road Design - Raised Crossing
Status	Prelim. Design
Client	Torca Developments Limited

Project	Torca Devs E-corthy SHD App Post Dec.
Scale	1:200@A3
OSI Ref	N/A
Sheet	01 of 01

TRANSPORT INSIGHTS

An Bord Pleanala,
64 Marlborough Street,
Rotunda,
D01 V902

1st April 2022

Dear Sir/Madam,

I wish to confirm that I have no objection to the inclusion of my lands, as set out in the plans signed, in a Strategic Housing Development application in relation to a site on Carley's Bridge Road, Enniscorthy, Co. Wexford.

It should be noted that all costs and expenses associated with making the application are all the responsibility of Torca Developments Ltd (the applicant)

In the event this application is granted, and it is deemed necessary to include my lands in the development, I will allow Torca to carry out the required works on Carley's Bridge Road. Torca will also bear any construction costs and ensure my lands are left in good condition afterwards (including the relocation of any walls and hedgerows)

Kind regards

Michael J. Banville

Michael Banville

Notes:

1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

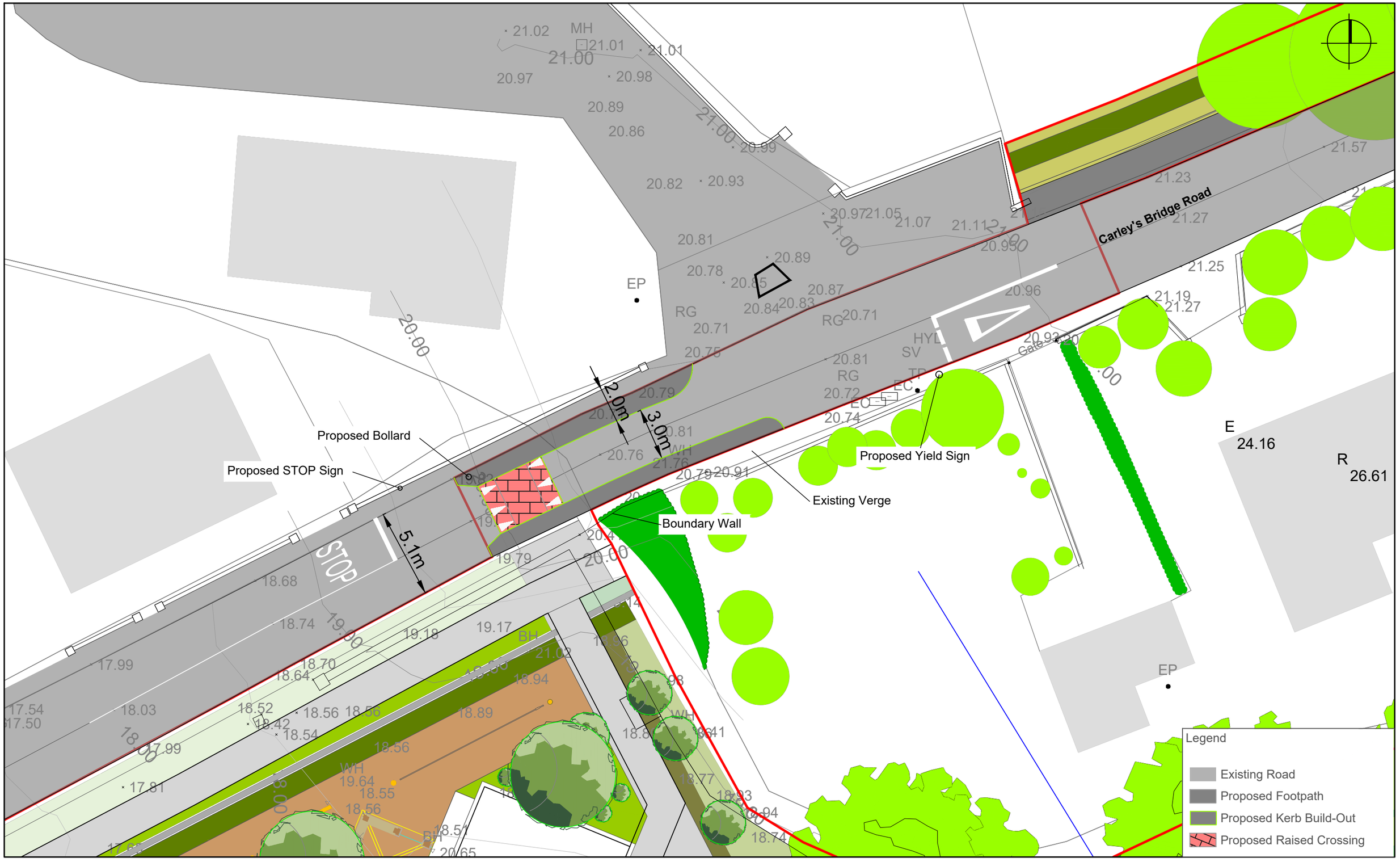
Drawn	GI
Checked	EM
Date	2022/03/21

Drawing No.	2020 C543.1 /1 v1.6
Drawing	Road Design - Raised Crossing
Status	Prelim. Design
Client	Torca Developments Limited

Project	Torca Devs E-corthy SHD App Post Dec.
Scale	1:500@A3
OSI Ref	N/A
Sheet	01 of 01

TRANSPORT INSIGHTS

Appendix I Carley's Bridge Road Preliminary Layout



Notes:

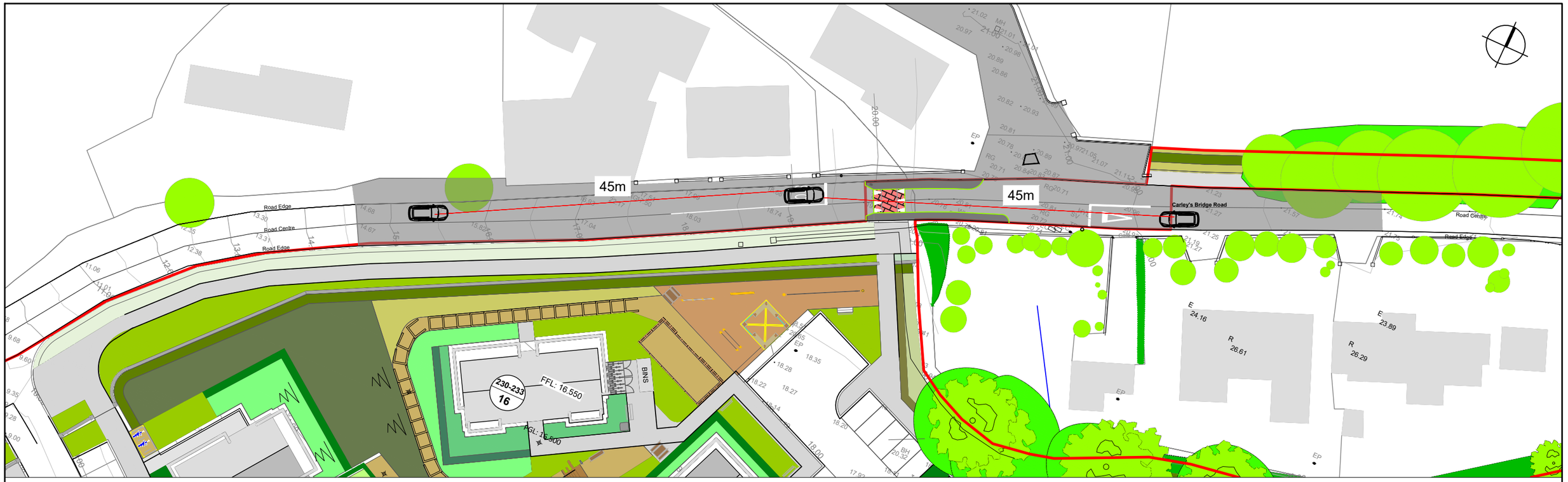
1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

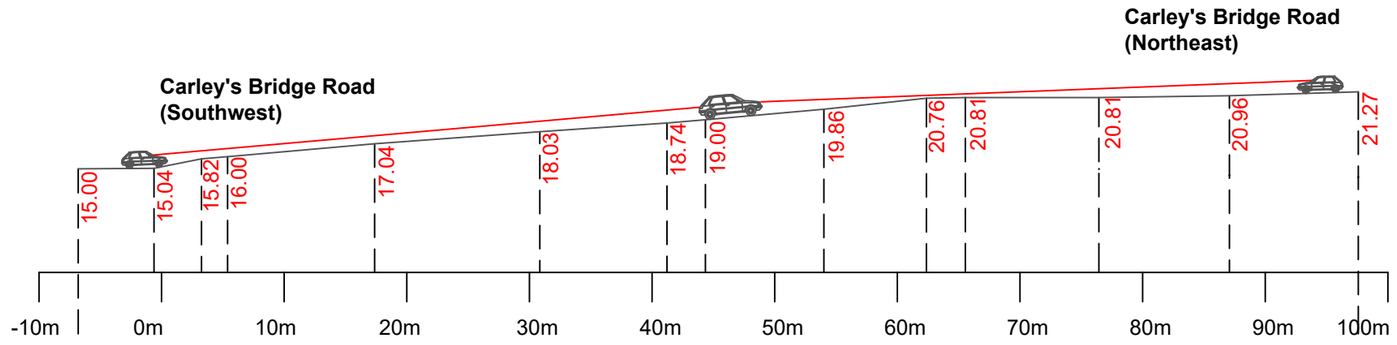
Drawn	GI
Checked	EM
Date	2022/03/21

Drawing No.	2020 C543.1 /1 v1.6
Drawing	Road Design - Raised Crossing
Status	Prelim. Design
Client	Torca Developments Limited

Project	Torca Devs E-corthy SHD App Post Dec.
Scale	1:200@A3
OSI Ref	N/A
Sheet	01 of 01

TRANSPORT INSIGHTS





Notes:

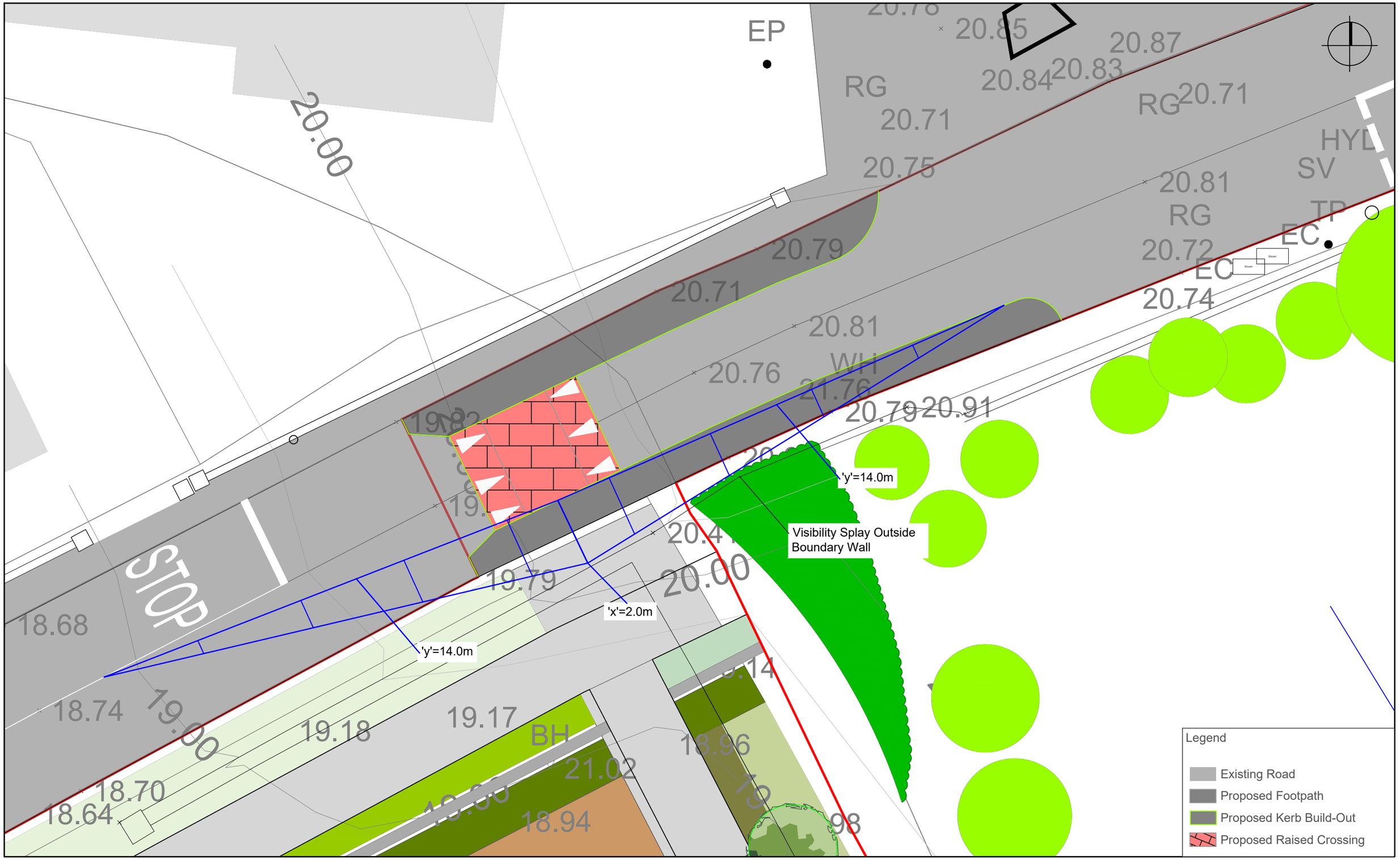
1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

Drawn	GI
Checked	EM
Date	2022/03/29

Drawing No.	2020 C543.1 /3 v1.7
Drawing	Road Design - Forward Visibility
Status	Prelim. Design
Client	Torca Developments Limited

Project	Torca Devs E-corthy SHD App Post Dec.
Scale	1:500@A3
OSI Ref	N/A
Sheet	01 of 01

TRANSPORT INSIGHTS



Notes:

1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

Drawn	GI
Checked	EM
Date	2022/03/21

Drawing No.	2020 C543.1 /2 v1.6
Drawing	Raised Crossing - Visibility Splay
Status	Prelim. Design
Client	Torca Developments Limited

Project	Torca Devs E-corthy SHD App Post Dec.
Scale	1:100@A3
OSI Ref	N/A
Sheet	01 of 01

TRANSPORT INSIGHTS

Appendix J Carley's Bridge Road Enhancements' Stage 1 Road Safety Audit

Transport Insights Limited, Suite 30, 21 Baggot Street Lower, Dublin 2, D02 X658, Ireland
Email: info@transportinsights.com | Telephone: + 353 1 685 2279

Title: **Stage 1 Road Safety Audit**

For;

Proposed Shuttle System and Pedestrian Crossing as Part of a SHD in Enniscorthy, Co. Wexford.

Client: **Transport Insights/Torca Developments**

Date: **March 2022**

Report reference: **1423R01**

VERSION: **FINAL**

Prepared By:

Bruton Consulting Engineers Ltd

Glaspistol
Clogherhead
Drogheda
Co. Louth.

Tel: 041 9881456
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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 Munn, Transport Insights, for a Stage 1 Road Safety Audit of the proposed shuttle system, associated pedestrian crossing and footpath works on Carley's Bridge Road in Enniscorthy, being part of an overall proposal for a Strategic Housing Development (SHD).

The Road Safety Team comprised of;

Team Leader: **Norman Bruton**, BE CEng FIEI, Cert Comp RSA

TII Auditor Approval no. NB 168446

Team Member: **Owen O'Reilly**, B.SC. Eng Dip Struct. Eng NCEA Civil Dip Civil. Eng CEng MIEI

TII Auditor Approval no. OO1291756

The Road Safety Audit comprised of an examination of drawings and other material provided by Transport Insights and a site visit by the Audit Team, on the 11th of March 2022. The weather at the time of the site visit was wet and the road surface was also wet.

This Stage 1 Road Safety Audit has been carried out in accordance with the requirements of TII Publication Number GE-STY-01024, dated December 2017.

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety. It has not been examined or verified for compliance with any other standards or criteria.

The problems identified in this report are considered to require action in order to improve the safety of the scheme for road users.

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

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

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

A plan drawing showing the problem locations is contained in **Appendix C**.

The revised layout post the changes made by the Design Team arising out of this RSA is contained in **Appendix D.**

2.0 Background

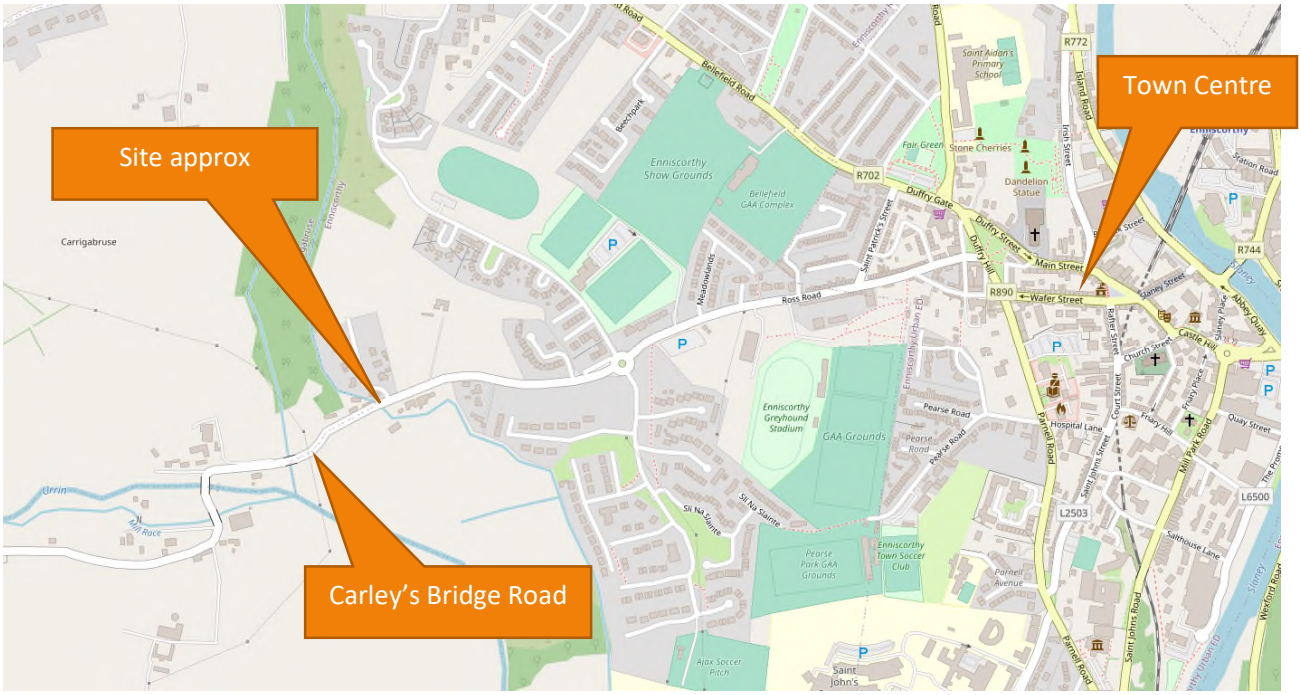
It is proposed to construct a strategic housing development (circa 233 no. residential units, creche and ancillary works) of Carley's Bridge Road in Enniscorthy Co. Wexford.

This road safety audit's scope involves a proposed shuttle system on Carley's Bridge Road to facilitate a pedestrian crossing and continuous footpath from the development to an existing footpath on Carley's Bridge Road/Ross Road.

(Carley's Bridge Road is also named as Ross Road in some mapping systems)

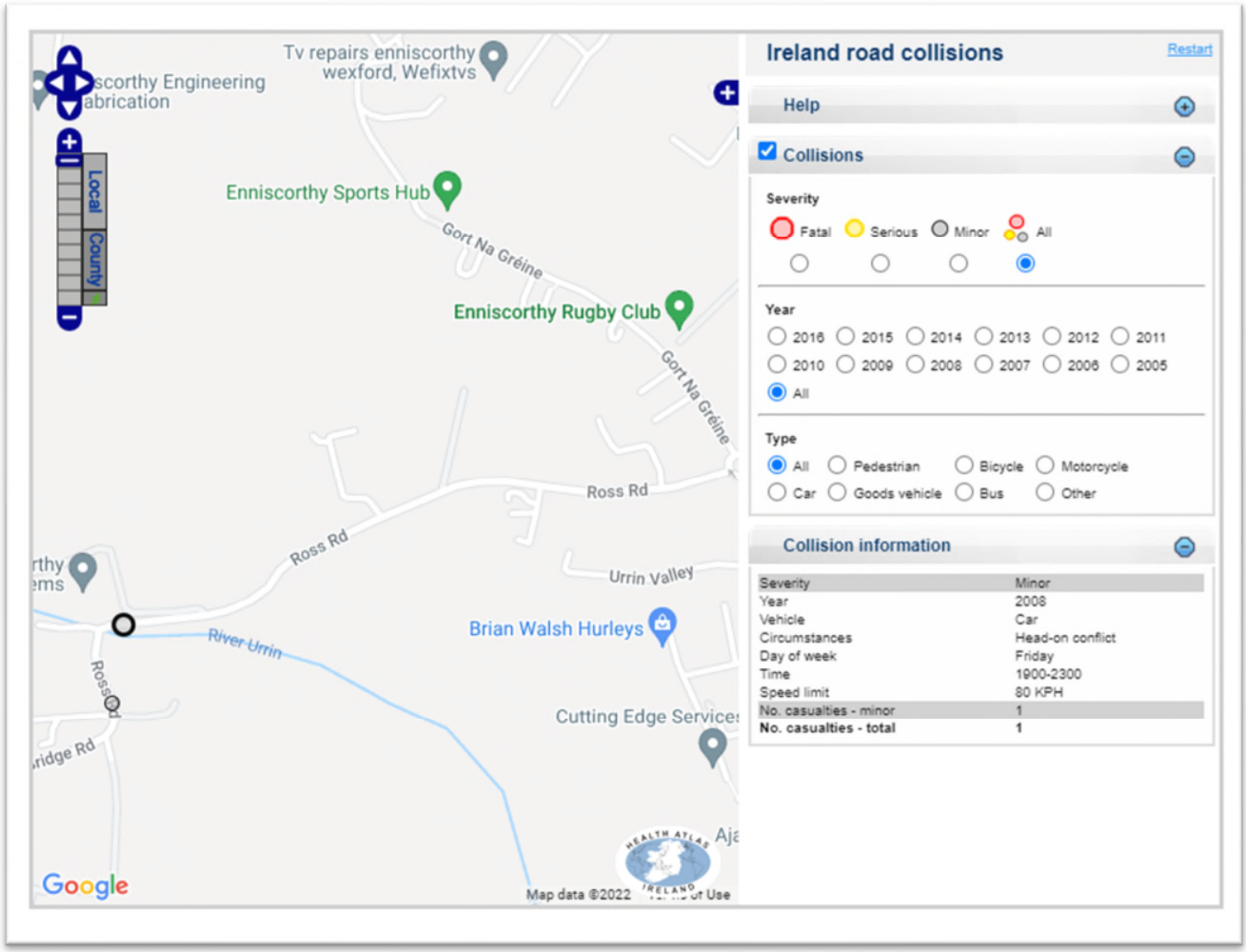
The speed limit on Carley's Bridge Road is 50km/hr. A traffic speed survey was carried out and the existing 85%ile speed was found to be 53.12km/hr.

The location of the site is shown below.



Site Location Map (image courtesy of openstreetmaps.org)

The Road Safety Authority's website shows that during the 12-year period 2005 to 2016 there were two minor injury collisions recorded, one on each side of Carley's Bridge.



3.0 Issues Raised in This Road Safety Audit.

3.1 Problem

LOCATION

Drawing – 2020 C543_1/1 v1.5, Pedestrian crossing.

PROBLEM

There is a steep vertical gradient on Carley's Bridge Road from the Bridge approach. The location of the crossing appears to be at a suitable location for drivers to have forward visibility to low objects however this is not clear. Without suitable visibility/stopping sight distance a driver may not see a hazard on the crossing such as a small child or an object left on the carriageway. This could lead to collisions.

RECOMMENDATION

It is recommended that the stopping sight distance be checked in both directions based on the operating speed of Carley's Bridge Road.

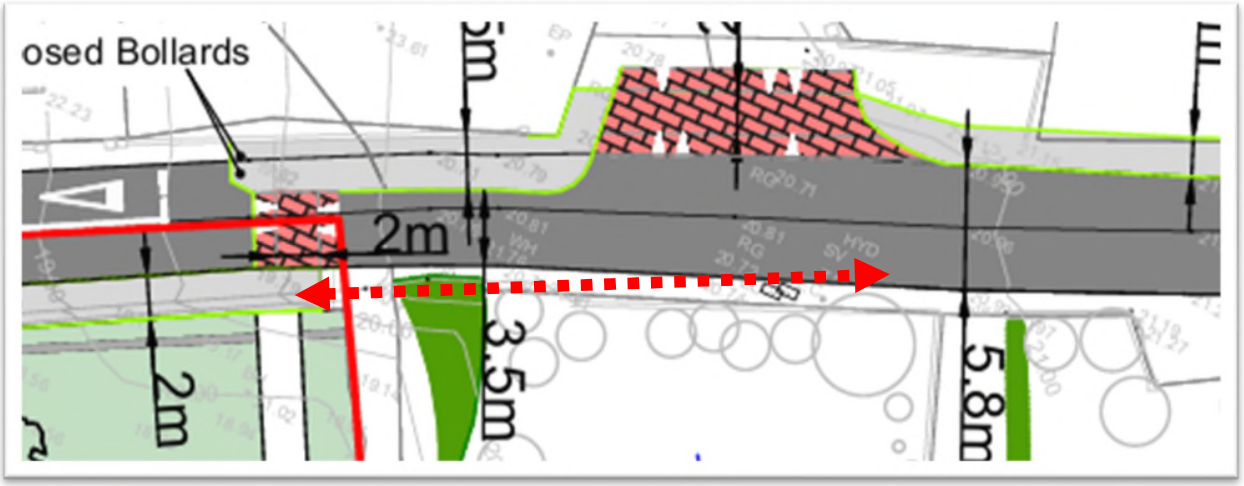
3.2 Problem

LOCATION

Drawing – 2020 C543_1/1 v1.5, Pedestrian crossing.

PROBLEM

The boundary wall and vegetation may obstruct inter-visibility between westbound drivers and pedestrians about to cross Carley's Bridge Road. This could lead to collisions.



RECOMMENDATION

Ensure suitable inter-visibility is provided.

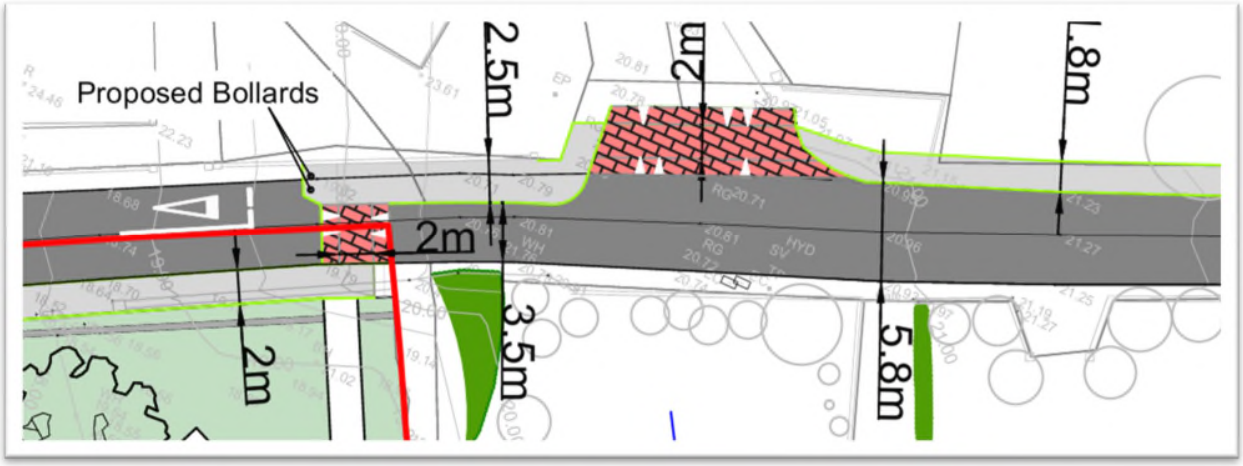
3.3 Problem

LOCATION

Drawing – 2020 C543_1/1 v1.5, Shuttle System.

PROBLEM

It is proposed to provide a priority/yield shuttle system. If a westbound driver approaches the area when an eastbound driver is travelling through the shuttle, the westbound driver may not realise where they have to stop to allow both vehicles pass. If they enter the single vehicle shuttle area this will lead to head-on collisions or to one or both vehicles having to reverse which could lead to collisions with pedestrians or rear-end collisions.



RECOMMENDATION

It is recommended that a Stop/Yield system be provided instead of the yield priority system with a yield line and triangle provided on the eastern side of the shuttle system. The location of the yield line should take into account right turning traffic from the Potters Way residential development.

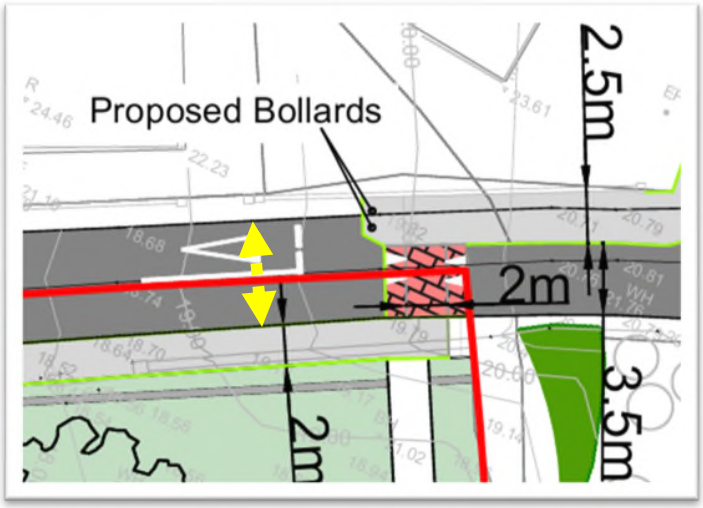
3.4 Problem

LOCATION

Drawing – 2020 C543_1/1 v1.5, Shuttle system.

PROBLEM

It is unclear if the carriageway to the West of the shittle system will be wide enough for two vehicles to pass. The presence of the new footpath along the development boundary will provide a defined carriageway edge unlike the existing verge which will not leave no room for wide agricultural vehicles to 'move in'. A lack of carriageway width could lead to side-swipe collisions.



RECOMMENDATION

It is recommended that sufficient space be provided for two wide vehicles to pass at the end of the shuttle system. The length of the widened area should be based on predicted queue lengths.

4.0 Observations

4.1 Observation

Drainage, Lighting, signage and tactile paving proposals have not been provided at this stage of the design development.

5.0 Audit Statement

We certify that we have examined the site. The examination has been carried out with the sole purpose of identifying any aspects of the design which could be added, removed or modified in order to improve the safety of the scheme.

The problems identified have been noted in this report together with associated safety improvement suggestions which we would recommend should be studied for implementation. The audit has been carried out by the persons named below who have not been involved in any design work on this scheme as a member of the Design Team.

Norman Bruton **Signed:** 

(Audit Team Leader) **Dated: 22/3/2022**

Owen O'Reilly **Signed:** 

(Audit Team Member) **Dated: 22/3/2022**

Appendix A

List of Material Supplied for this Audit;

- Drawing – 2020 C543_1/1 v1.5, Pedestrian crossing.

Material Provided as Background Information;

- Material relating to the SHD's Planning Application
- Traffic & Speed Survey, IDAS) , March 2022

Material Provided as Part of the Feedback Process;

- Drawing 2020 C543.1/1 v1.6 (Attached in Appendix D)
- Drawing 2020 C543.1/3 v1.6
- Drawing 2020 C543.1/2 v1.6
- Drawing 2020 C543.1/3 v1.6

Appendix B

Feedback Form

ROAD SAFETY AUDIT FORM – FEEDBACK ON AUDIT REPORT

Scheme: Carley's Bridge Road, Enniscorthy SHD
Stage: Stage 1 Road Safety Audit
Date Audit (Site Visit) Completed: 11-3-2022

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	A full forward visibility assessment taking into account the road's vertical and horizontal alignment characteristics has been undertaken by Transport Insights and issued to Bruton Consulting Engineers. The detailed assessment confirms there is no issue with forward visibility in both directions.	Yes
3.2	yes	yes	The proposed crossing layout has now been amended to address this concern with a kerb build-out introduced along the southern side of Carley's Bridge Road, and the kerb build-out along the northern side of the road reduced, whilst still maintaining a 2.0 metre wide footpath at that location. The proposals assume a design speed for the raised crossing of 20 km/h with an associated 14 metres of visibility provided in accordance with *Design Manual for Urban Roads and Streets*, *DMURS* stopping sight distance requirements (DMURS Table 4.2).	Yes
3.3	yes	yes	Auditor recommendations accepted and updated drawing issued to auditor for approval.	Yes
3.4	no	no	The road immediately to the west of the 'shuttle system' measures between 5.13 and 5.45 metres wide. According to *DMURS* (Section 4.4.1 Carriageway	Yes

			Widths) "*The standard carriageway width on Local streets should be between 5-5.5m*". As such, it is not proposed to widen the road further, as doing so would result in the road no longer being in compliance with DMURS.	

Signed……… **Date**…21/03/2022….

Design Team Leader

Signed…… **Date**……22/3/2022…

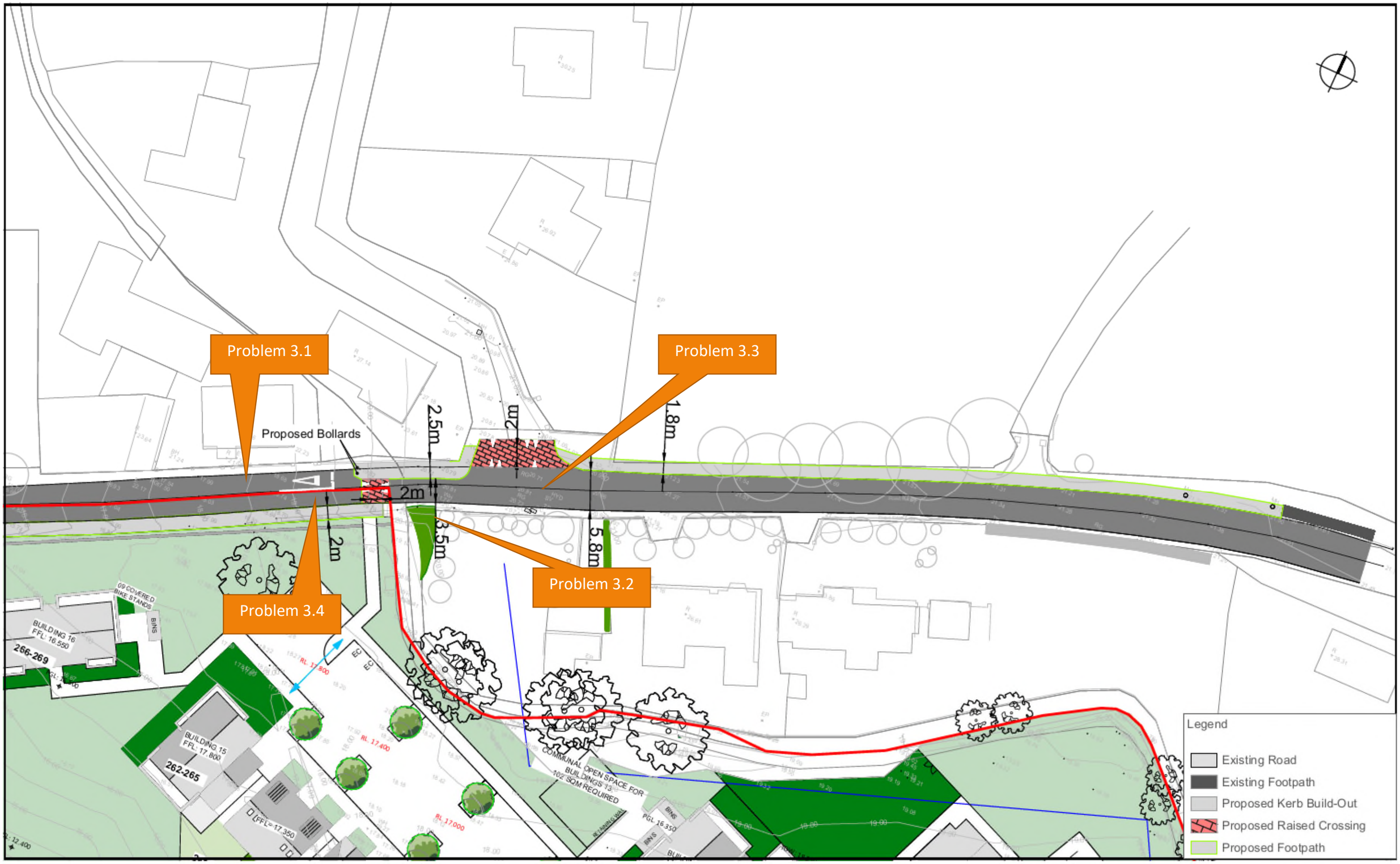
Audit Team Leader

Signed…… **Date**……21/03/22

Employer/Developer

Appendix C

Problem Location Plan.



Notes:

1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

Drawn	GI
Checked	EM
Date	2021/01/13

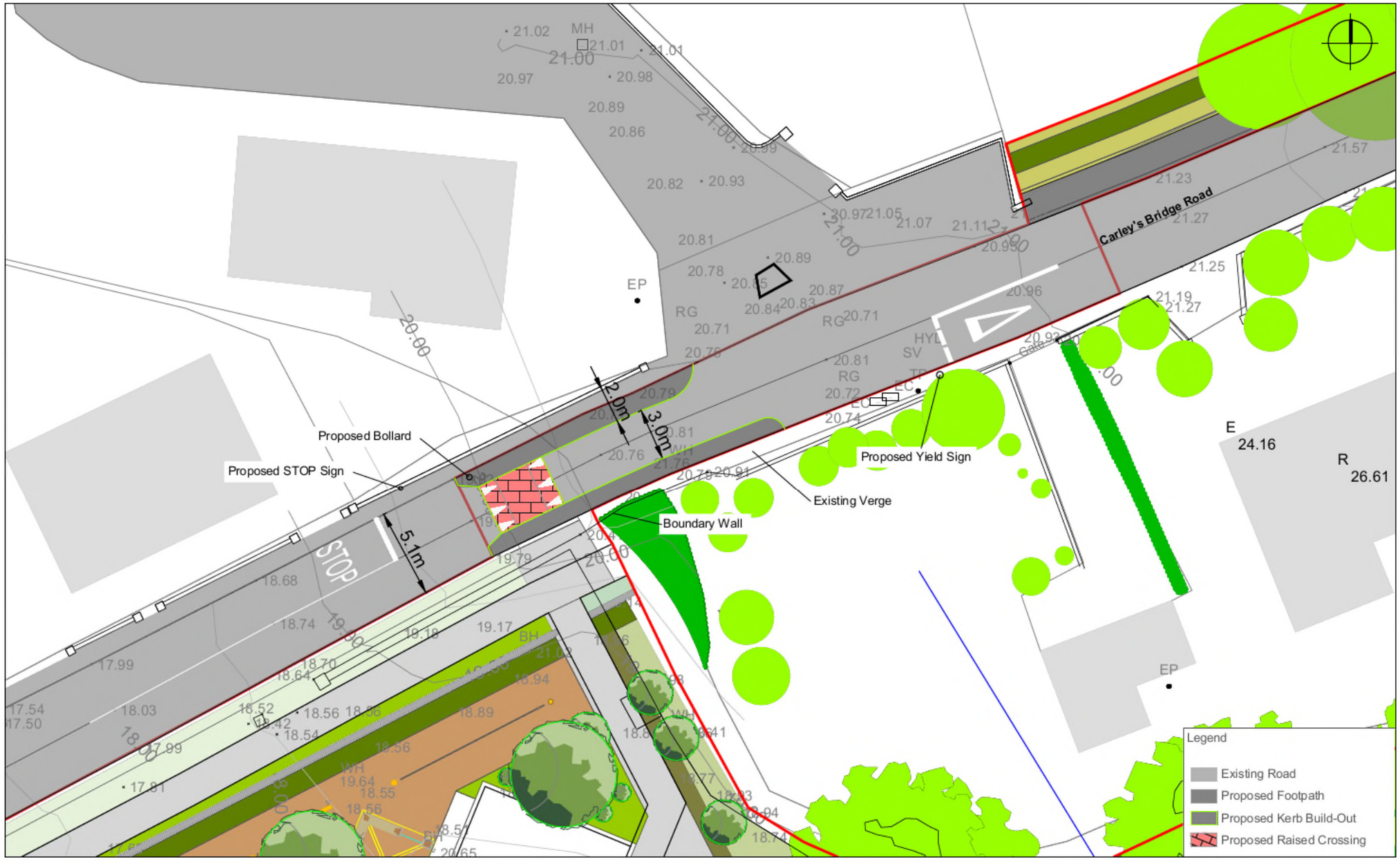
Drawing No.	2020 C543_1 /1 v1.5
Drawing	Road Design - Raised Crossing
Status	Concept Design
Client	Torca Developments Limited

Project	Torca Devs E-corthy SHD App TS
Scale	1:500@A3
OSI Ref	N/A
Sheet	01 of 01

TRANSPORT INSIGHTS

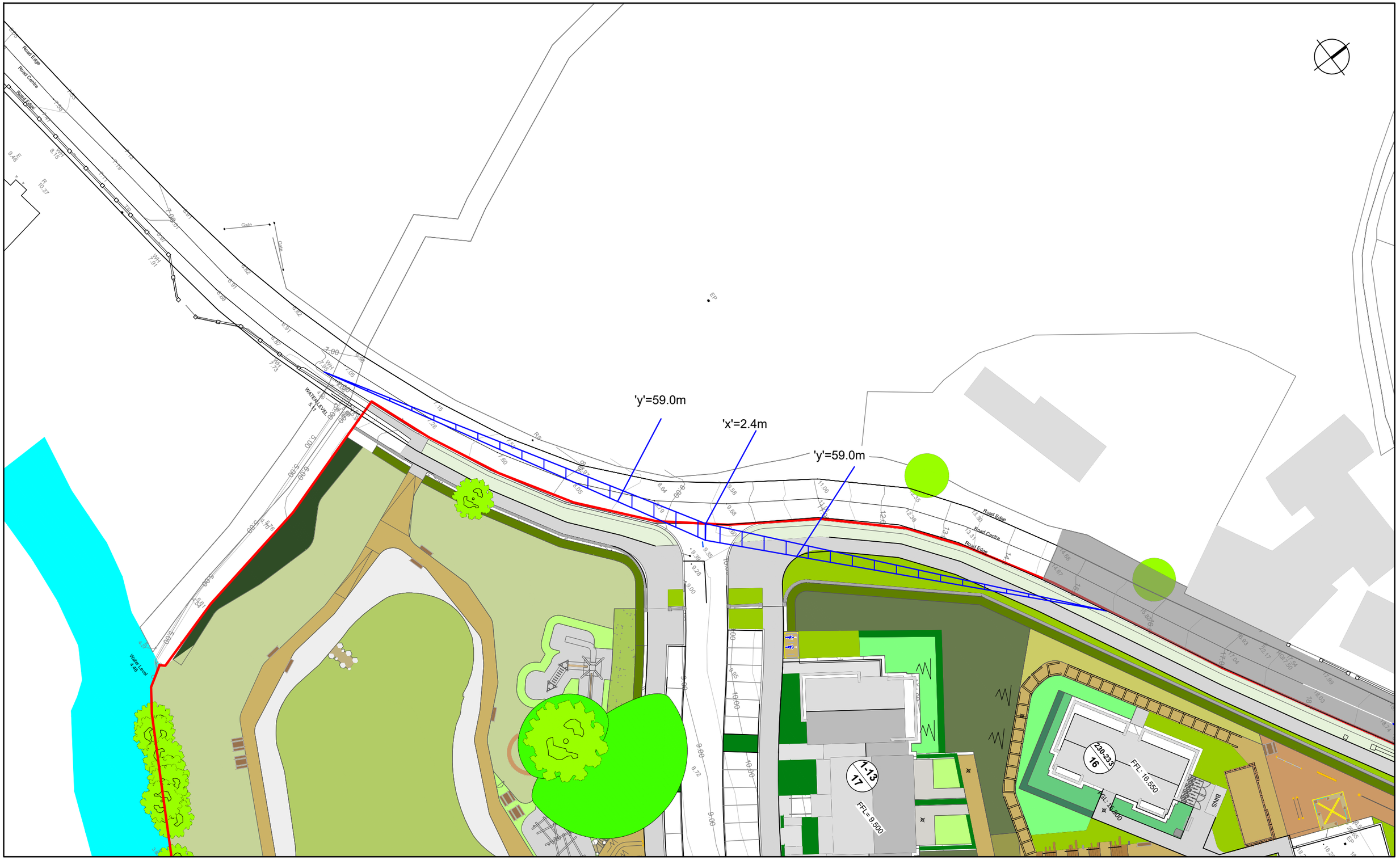
BRUTON CONSULTING ENGINEERS

Appendix D – Updated Layout Post RSA



Notes: 1. Do not scale from this drawing. 2. This drawing is for illustrative purposes only and not for construction. 3. This drawing is to be read and printed in colour.	Drawn	GI	Drawing No.	2020 C543.1 /1 v1.6	Project	Torca Devs E-corthy SHD App Post Dec.	TRANSPORT INSIGHTS
	Checked	EM	Drawing	Road Design - Raised Crossing	Scale	1:200@A3	
	Date	2022/03/21	Status	Prelim. Design	OSI Ref	N/A	
			Client	Torca Developments Limited	Sheet	01 of 01	

Appendix K Site Access Visibility Splay Drawing



Notes:

1. Do not scale from this drawing.
2. This drawing is for illustrative purposes only and not for construction.
3. This drawing is to be read and printed in colour.

Drawn	GI
Checked	EM
Date	2022/03/29

Drawing No.	2020 C543.1 /4 v1.7
Drawing	Road Design - Visibility Splay
Status	Prelim. Design
Client	Torca Developments Limited

Project	Torca Devs E-corthy SHD App Post Dec.
Scale	1:500@A3
OSI Ref	N/A
Sheet	01 of 01

TRANSPORT INSIGHTS