Residential Development, Kilcarbery, Dublin South

Traffic and Transportation Assessment

230026-X-90-X-XXX-RP-DBFL-CE-0002

TRANSPORTATION

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DBFL CONSULTING ENGINEERS

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1 INTRODUCTION

1.1 Background

DBFL Consulting Engineers have been commissioned to compile a Traffic and Transport Assessment (TTA) for a Residential Development in Kilcarbery, Dublin South. The proposal has been prepared on behalf of South Dublin County Council as a Part 8 application for a residential development, consisting of 88 residential units on undeveloped lands measuring c. 2.03 hectares adjoining the Upper Nangor Rd, Kilcarbery Grange, Dublin 22.

The proposed development consists of a mix of 88 units comprising a variety of house and duplex types. The units proposed include 44 no. 3bed 2 storey houses, 8 no. 4 bed 2 storeys houses, 36 no. duplex units (varying from 1 to 3 beds) within 3 storey duplex blocks. The development includes 100 no. surface car park spaces and 110 no. bicycle parking spaces, above ground sustainable urban drainage measures, an ESB kiosk, Irish Water below-ground foul pumping station, proposed new roads, footpath and cycle-paths (including works to provide a cycle-path along a portion of the Upper Nangor Rd), public open space areas, landscape works, bin/bicycle stores and all associated ancillary site development works.

During the development of this report, traffic turning count surveys have been assessed with the objective of providing background information relating to existing traffic movement patterns across the local road network. This information has been supplemented with data obtained from site audits of the local road network, subsequently enabling the identification of existing local travel characteristics and an appreciation of the local receiving environment from a transportation perspective.

This TTA has been produced to address any potential concerns that the local planning authority may have pertaining to the level of influence of the proposed development upon the local transportation system.

1.2 Scope of Assessment

The purpose of this TTA is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of any transport impact generated because of the proposed residential development. The scope of the assessment covers transport and related sustainability issues including means of vehicular access, pedestrian, cyclist, and local

public transport connections. The principal objective of the report is to quantify the level of impact across the local road network and subsequently ascertain both the existing and future operational performance of the local road network.

1.3 Appraisal Methodology

The approach followed to the study accords with policy and guidance both at a national and local level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, exemplified by a series of publications, all of which advocate this method of analysis. Key publications consulted include:

- *'Traffic and Transport Assessment Guidelines'* (May 2014) by the National Road Authority
- *'Design Manual for Urban Roads and Streets'* (DMURS, 2019) by the Department of Transport, Tourism and Sport
- Cycle Design Manual (August 2023) by the National Transport Authority
- *'South Dublin County Development Plan 2022-2028'* (SDCC, 2022).

The methodology incorporates several key inter-related stages, including:

- **Background Review:** This important exercise incorporated three parallel tasks which included (a) an examination of the local regulatory and development management documentation; (b) an analysis of previous 'transport' related, strategic, and site specific studies of development and transport infrastructure proposals across the Kilcarbery Area, and (c) a review of planning applications to establish the status of various third party development schemes that were either considered within the strategic 'transport' studies or which have emerged and received full planning permission since.
- **Site Audit:** A site audit was undertaken to quantify existing road network issues and identify local infrastructure characteristics, in addition to establishing the level of accessibility to the site in terms of walking, cycling and public transport. An inventory of the local road network was also developed during this stage of the assessment.
- **Traffic Counts:** Junction traffic counts were analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed residential development.

- **Trip Generation:** A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed residential development.
- **Trip Distribution:** Based upon both the existing and future network characteristics (i.e. with future through route via the subject lands and therefore new routing opportunities), a distribution exercise has been undertaken to assign site generated vehicle trips across the local road network.
- **Network Analysis:** Further to quantifying the predicted impact of vehicle movements across the local road network for the adopted site access strategy more detailed computer simulations have been undertaken to assess the operational performance of key junctions in the post development 2026, 2031, and 2041 scenarios.

1.4 Report Structure

As introduced above, this TTA seeks to clarify the potential level of influence generated by the proposed development upon the local road network and subsequently ascertain the existing and future operational performance of the local transport system. The structure of the report responds to the various stages of this exercise including the key tasks summarised below.

Chapter 2 of this report describes the existing conditions at the proposed development location and surrounding area, whilst **Chapter 3** provides a summary of the relevant transport policies that influence the design and appraisal of the subject residential proposals.

A description of the proposed development scheme is described in **Chapter 4** whilst **Chapter 5** outlines the trip generation exercise carried out and the adopted methodology for applying growth factors to establish design year network traffic flows.

The predicted scale of impact upon the local road network is outlined in **Chapter 6**.

The operational performance of key local junctions is assessed for the 2026 Opening Year, the 2031 (Opening Year +5 years) Design Year, and the 2041 (Opening Year +15 years) Design Year and are summarised within **Chapter 7**. Finally, the main conclusions and recommendations derived from the analysis are summarised in **Chapter 8**.

2 RECEIVING ENVIRONMENT

2.1 Land Use

The subject site comprises of a development area of approximately 2.03 ha and is located north of Kingswood Business Park and southeast of Grange Castle Business Park. Under the South Dublin County Development Plan 2022-2028, the site is zoned as "*Objective RES-N: To provide for new residential communities in accordance with approved area plans".* Refer to **Figure 2-1** which highlights the subject site's land use zoning.

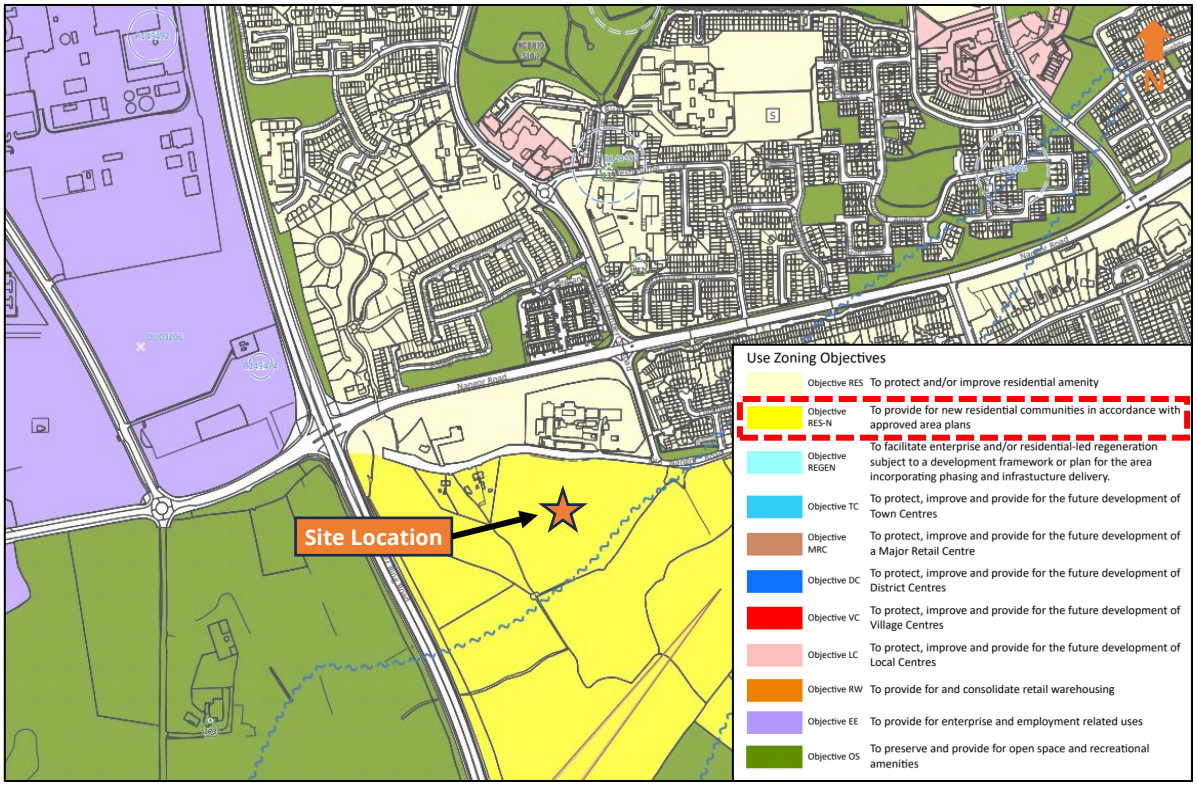


Figure 2-1: Land Use Zoning (Source: Map 4, SDCC Development Plan 2022-2028)

2.2 Location

The subject site is located to the south of Old Nangor Road opposite the Spina Bifida Hydrocephalus Ireland Institute in Dublin South. The site is located approximately 1.1 km southeast of Grange Castle Business Park and 1.6 km north of Kingswood Business Park. Dublin City Centre is approximately 12 km to the east of the site.

The site is bounded by the Old Nangor Road corridor to the north, the R136 to the west, a permitted development currently under construction to the south (SDCC Reference: SHD3ABP-305267-19), and the associated road infrastructure for this committed development to the east. **Figure 2-2** presents the general location of the subject site in relation to the surrounding road network whilst **Figure 2-3** presents the extent of the subject site boundary.

Figure 2-2: Site Location (Source: Google Maps)

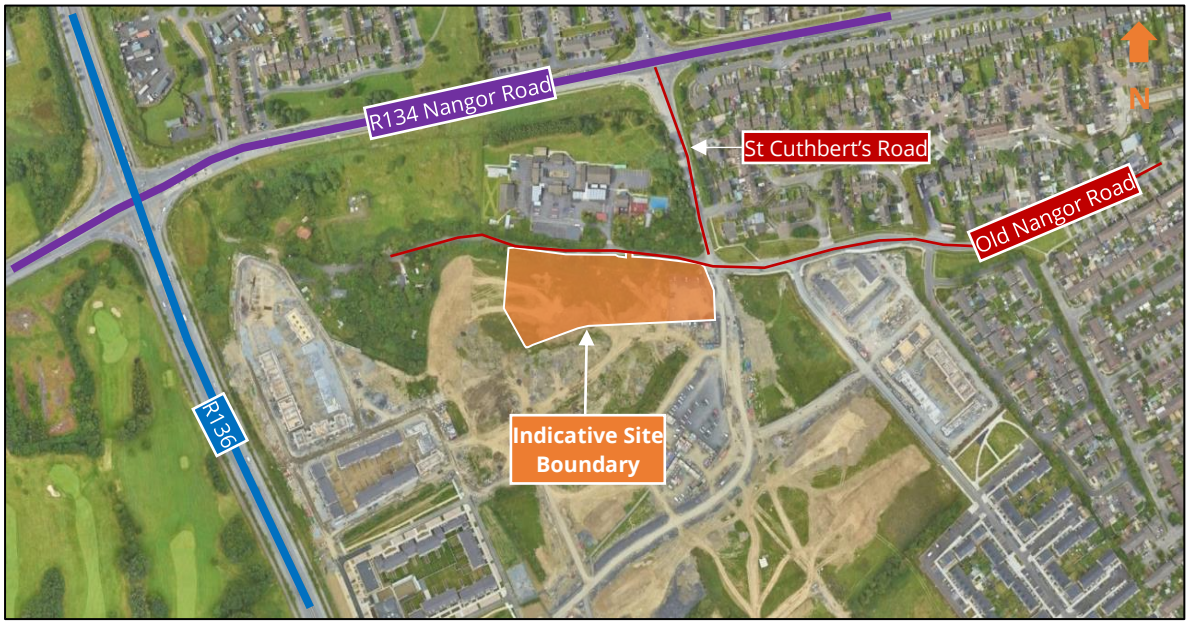


Figure 2-3: Subject Site Boundary Extents (Source: Google Maps)

2.3 Site Accessibility

2.3.1 Facilities and Amenities

Within 2 km of the subject site, there are various facilities and local amenities available which includes employment, leisure, retail, and education facilities. There are a variety of schools for students of different ages in the vicinity of the site. These include the Spina Bifida Hydrocephalus Ireland (SBHI) which is a non-profit organisation for children who have spina bifida and/or hydrocephalus. The SBHI is located opposite the subject site on Old Nangor Road. Deansrath Community College (≈ 1 km travel distance from site) is located to the north and is located within a 12 minute walk or 3 minute cycle. Additionally, Rainbow Magic Pre School (≈ 900 m travel distance from site) and Nano Nagle Junior National School (≈ 1.7 km travel distance from site) are both within convenient walking distance.

There are retail facilities and stores located within walking distance (Daybreak Clondalkin Convenience Store ≈ 750 m travel distance from site) or accessible by a short cycle (10-minute / 2.8 km cycle to Greenpark Shopping Centre to the southeast of the site and 8-minute / 2.3 km cycle to The Mill Shopping Centre to the east of the site).

Furthermore, the site benefits from being close to leisure amenities including Clondalkin Leisure Centre and an Outdoor Gym located approx. 2km to the east. In addition, Clondalkin Skatepark, Sandy Hole Park, and Round Tower GAA Community Centre are all located within 2 km of the subject site (6-minute cycle or 24-minute walk).

Apart from the previously mentioned education, leisure, and retail facilities which all could provide employment opportunities, there are also the Grange Castle Business Park (≈ 1.6 km travel distance from site) and Kingswood Business Park (≈2.7 travel distance km from site) which offer major employment opportunities in close proximity to the subject site.

Figure 2-4 presents the location of some of the aforementioned facilities and amenities. Note that Figure 2-4 shows only a portion of all the amenities available in this locality.

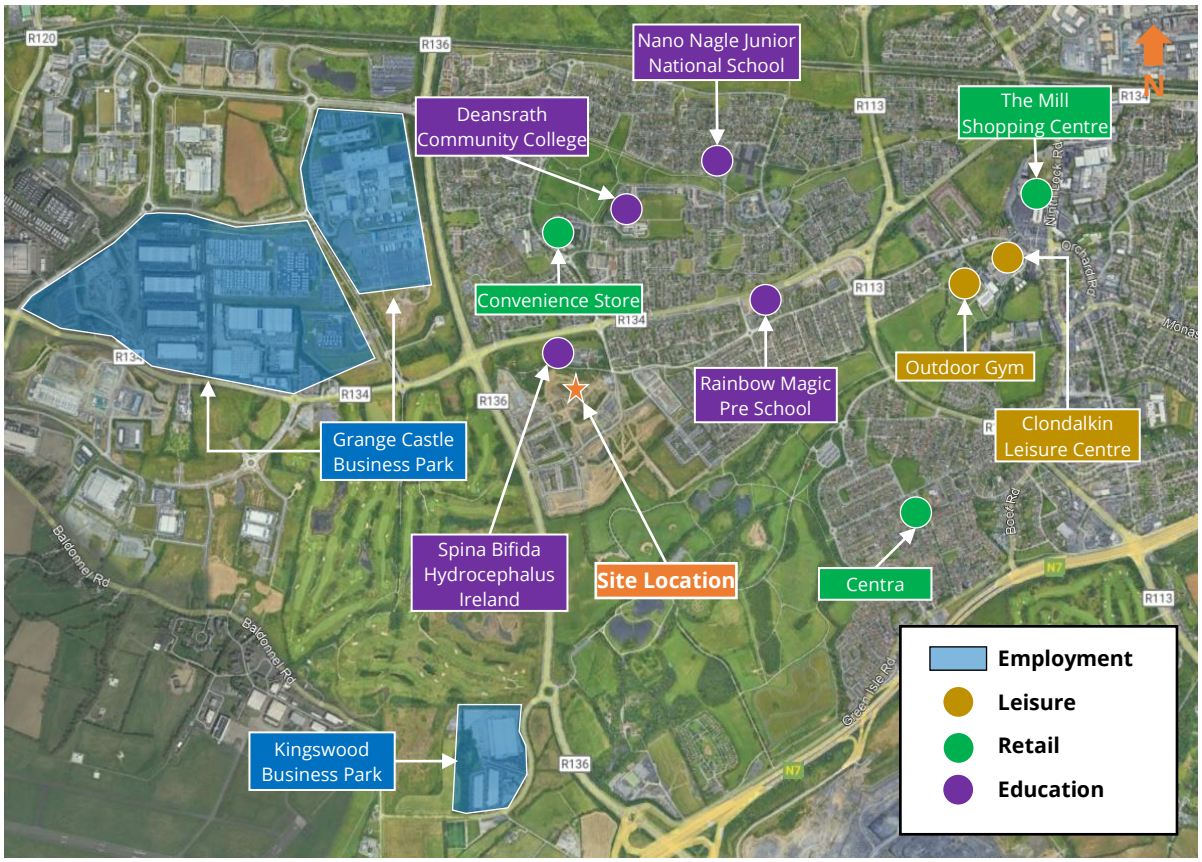


Figure 2-4: Amenities in vicinity of Subject Site

2.3.2 Catchment Analysis

Utilising Geographic Information Systems (GIS) to visually depict the positioning of a development within the local and regional context proves highly advantageous. This graphical representation greatly facilitates the description of the development. Additionally, the concept of catchment areas can be harnessed to demonstrate the distances one can comfortably walk and cycle to access public transportation links and other amenities. This analysis should identify any hindrances as well as opportunities for enhancing the environment to encourage walking and cycling. It is crucial to ensure that the isochrones, which represent travel times, accurately reflect the actual time it takes to travel, considering the available walking facilities rather than relying on a basic "as the crow flies" assessment.

The walking, cycling, and public transport travel time catchments are provided below, which indicate the level of accessibility for each mode in the vicinity of the subject site.

Walking Catchment

The facilities and amenities located within a 10, 20, and 30-minute walking catchment are presented in **Figure 2-5** below. The 151 Bus Service that travels east-west along the R134 New Nangor Road is easily accessible by walking to the nearest stop, which is located less than 10 minutes from the site. The 68 Bus Service that travels between Newcastle and Dublin can also be accessed within a 10-minute walk, as well as the 13 (Grange Castle-Harristown) and 51D express service (Clondalkin-Waterloo). Furthermore, Clondalkin, including various retail and leisure amenities, can be accessed within a 30-minute walk. Employment opportunities at Grange Castle Business Park can be accessed within a 20-minute walk.

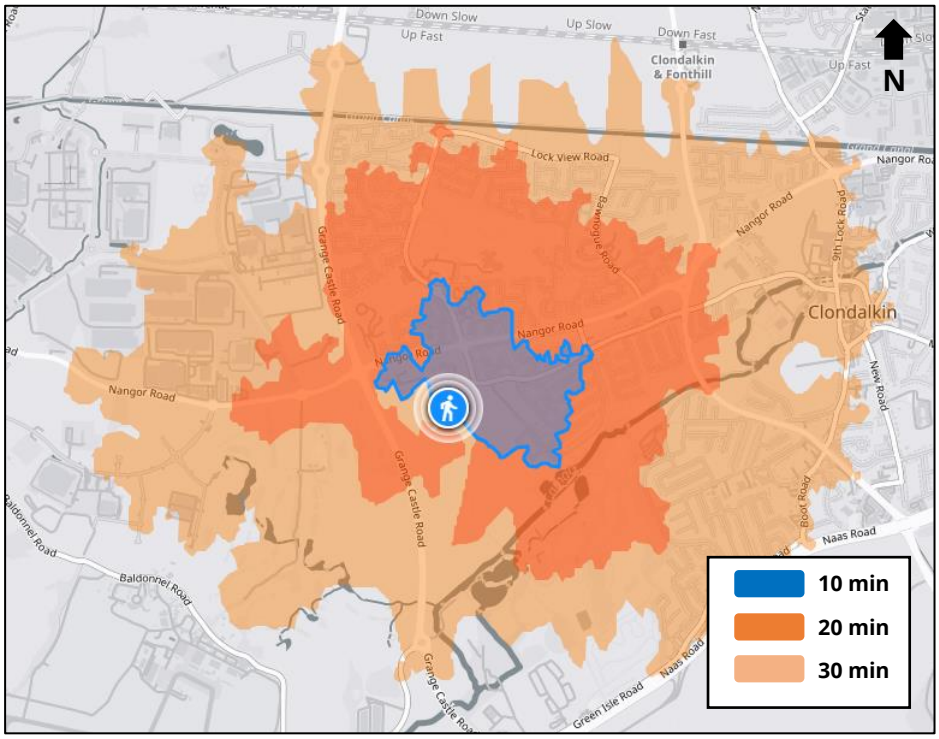


Figure 2-5: Walking Travel Time Catchment (Source: Travel Time API at app.traveltime.com)

The permitted development to the south of the subject site (SDCC reference: SHD3ABP-305267-19) is currently under construction and is partially occupied. This permitted development will provide an extension to Kilcarbery Grange Avenue southwards to connect with a left-in left-out junction on the R136. This new connection will have a positive impact on the walking catchment to the south of the subject site. As such, a catchment analysis with this new connection included has been conducted using GIS software.

The analysis reveals that the 30-minute walking catchment has increased to the south of the site including reducing the walking time to Kingswood Business Park, as well as improved access to

leisure locations such as the Roadstone Group Sports Club (≈28-minute walk) and the Shamrock Rovers Football Club Academy (≈29-minute walk) to the south of the N7 (Naas Road) / R136 junction. This extended catchment is presented in **Figure 2-6.**

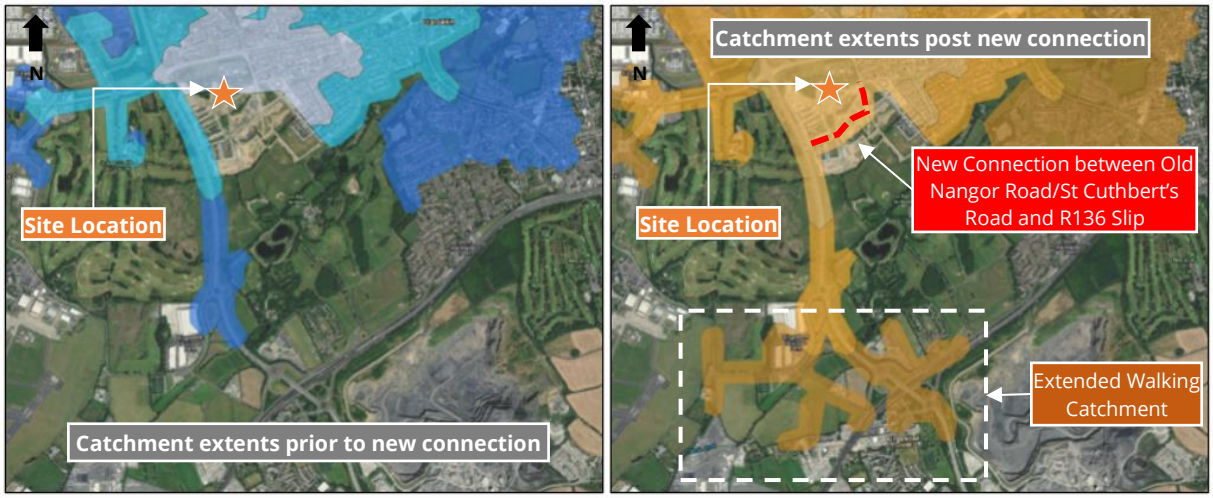


Figure 2-6: Extended 30-minute walking catchment associated with new R136 connection

Cycling Catchment

The facilities and amenities located within a 10, 20, and 30-minute cycle catchment are presented in **Figure 2-7** below. A 10-minute cycle effectively covers the same extents as that of the 30-minute walking catchment. Within a 30-minute cycle the eastern fringe of Dublin City Centre including Kilmainham and Walkinstown becomes accessible. In addition, locations including Newcastle and Jobstown are within a 30-minute cycle to the west and south respectively. The retail facilities within a 30-minute or longer are accessible within an 8-minutes cycle whilst a large number of retail opportunities are accessible within a comfortable cycle distance (<30-minutes).

A variety of leisure amenities are within a comfortable cycle distance including central Clondalkin to the east (10-minute cycle), Adamstown to the north (20-minute cycle), and Tallaght to the southeast of the site (30-minute cycle). The Clondalkin Fonthill rail service (≈2.5 km from site), which has free cycle parking facilities, can be accessed within a 10-minute cycle. Additionally, the Adamstown rail service (≈ 5.7 km from site) is accessible within the 20-minute cycle catchment.

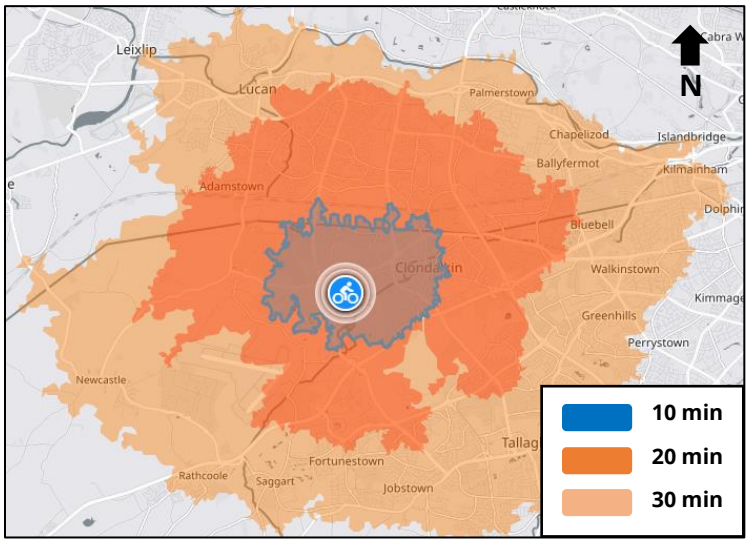


Figure 2-7: Cycling Travel Time Catchment (Source: Travel Time API at app.traveltime.com)

Public Transport Catchment

The facilities and amenities located within a 10, 20, and 30-minute public transport catchment are presented in **Figure 2-8** below. The public transport catchment provides a good coverage to areas in the vicinity of the subject site. The four bus services within a short walk from the site (13, 68, 151, and 51D express service) provide good linkage between the subject site and areas such as Grange Castle, Newcastle, Foxborough, and Clondalkin. These bus services provide access to many facilities and amenities within the aforementioned areas, as well as access to the Clondalkin-Fonthill (≈17-minute journey from site) and Adamstown (≈28-minute journey from site) rail services.

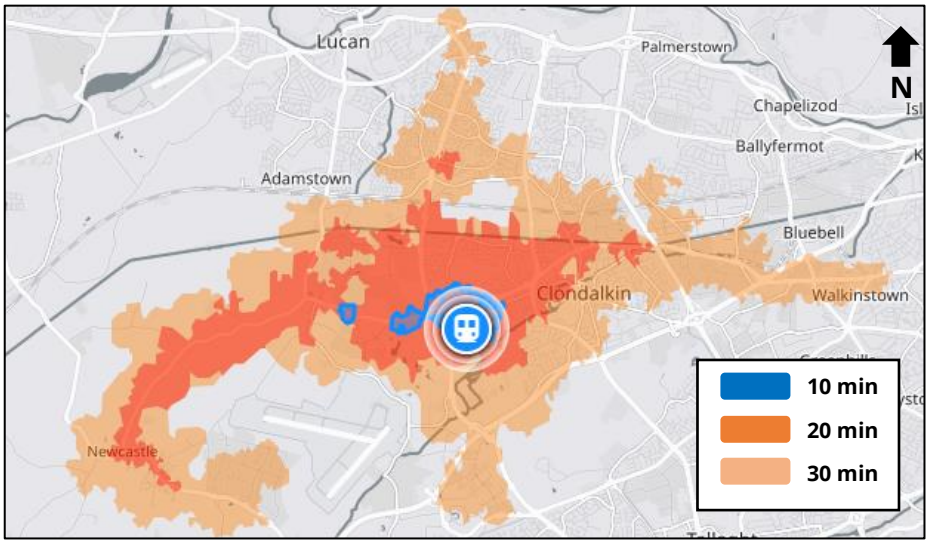


Figure 2-8: Public Transport Travel Time Catchment (Source: Travel Time API at app.traveltime.com)

2.4 Existing Transportation Infrastructure

2.4.1 Road Network

The proposed development will be directly accessed off Old Nangor Road which operates in an east-west direction to the north of the subject site. Old Nangor Road connects to St Cuthbert's Road to the east of the site at a priority-controlled junction. Travelling northwards on St Cuthbert's Road leads to the R134 Nangor Road corridor at a signal-controlled junction. Old Nangor Road and St Cuthbert's Road both function as link streets with one lane per direction, which provide linkages between surrounding neighbourhoods and the wider road network.

The R134 Nangor Road comprises two lanes in each direction (one standard lane and one bus lane) and is subject to a speed limit of 60 km/h. The R134 travels in an east-west direction. Continuing east on the R134 leads to Dublin City Centre located approx. 12km away. Travelling west on The R134 leads to locations including Naas (via the R120 south) and Maynooth (via the R120 north). The R136, which travels in a north-south direction which is subject to a speed limit of 80 km/h, is a dual carriageway road with two lanes per direction. Travelling north on the R136 leads to the strategic N4 National Road. Travelling southwards on the R136 leads to the N81 National Road corridor.

The road network in the vicinity of the subject site was shown illustrated in Figure 2-3.

2.4.2 Pedestrian and Cyclist Facilities

Along Old Nangor Road which is located immediately north of the subject site, existing pedestrians benefit from a footway along on the northern side of the road as indicated in **Figure 2-9.** The are also streetlights on this side of the road. It is noted that as part of the subject scheme proposals, dedicated pedestrian and cycle facilities are being proposed on the southern side of the road.

Figure 2-9: Pedestrian facilities along Old Nangor Road in site vicinity

There are footways available on both sides of St Cuthbert's Road, as well as streetlighting on the eastern side of the corridor. Cyclist currently share the road with vehicular traffic. Refer to **Figure 2-10** which shows the existing pedestrian facilities on St Cuthbert's Road.

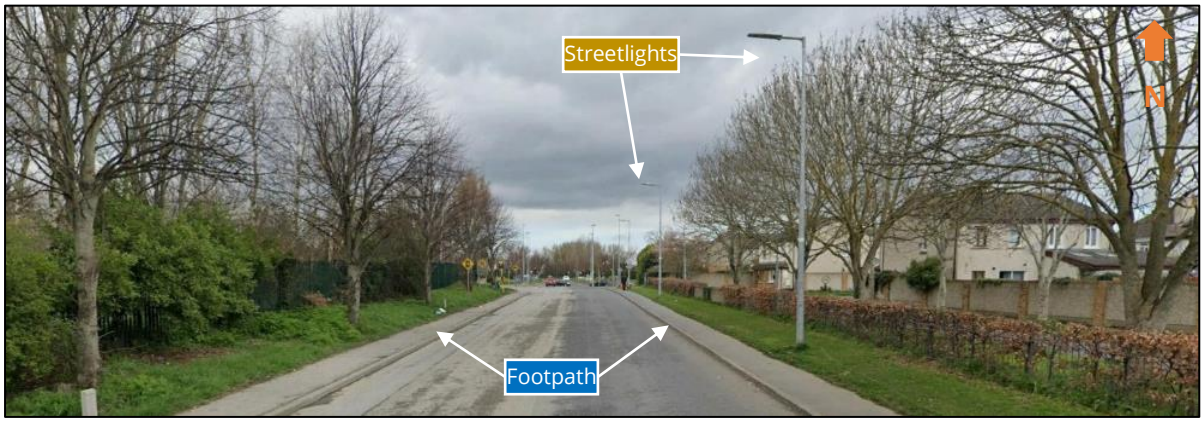


Figure 2-10: Pedestrian facilities along St Cuthbert's Road in site vicinity

Along the R134, there are dedicated pedestrian facilities and streetlighting on both sides of the corridor. Cyclists are permitted to utilise bus lanes in both directions. Refer to **Figure 2-11** which presents the dedicated pedestrian and cycle / bus facilities along the R134.

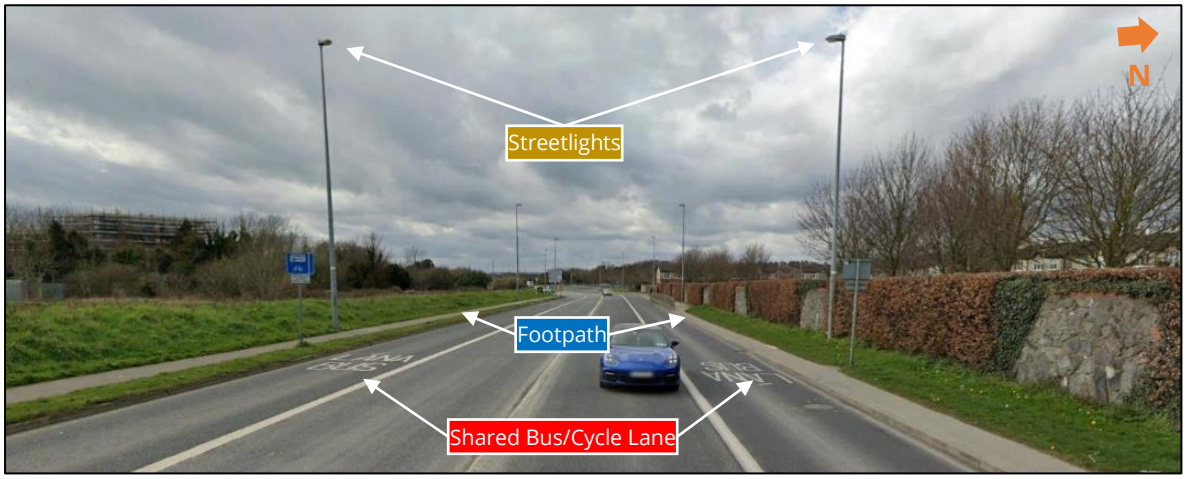


Figure 2-11: Pedestrian and cyclist facilities along the R134 in site vicinity

2.4.3 Public Transport – Bus

There are currently four bus services in the vicinity of the subject site. These include:

- **Dublin Bus Route 13** operates between Harristown, which is located to the north of Central Dublin (and to the east of the site) and Grange Castle (to the west of the site) along

the R134. The nearest stop for Bus Route 13 located approx. 500 m to the north of the proposed development site (approximately a 6-minute walk).

- **Dublin Bus Route 68** is accessible at the same stop as the abovementioned Dublin Bus Route 13. This bus services travels between Newcastle to the southwest of the site and Hawkins Street in Central Dublin.
- **Dublin Bus Route 151** operates at the same stop as the abovementioned Dublin Bus 13 and Dublin Bus 68. The 151 services travels between Foxborough to the north of the site and Dublin Docklands in Central Dublin.
- **Dublin Bus Route 51D** is an express service that operates between from Clondalkin towards Waterloo Road in Central Dublin, and from Aston Quay towards Clondalkin. This service is a Monday to Friday services. Only two buses depart from Clondalkin towards Waterloo Road (in the morning) and only one bus departs from Aston Quay towards Clondalkin in the evening.

The bus stops discussed above are presented in **Figure 2-12.**

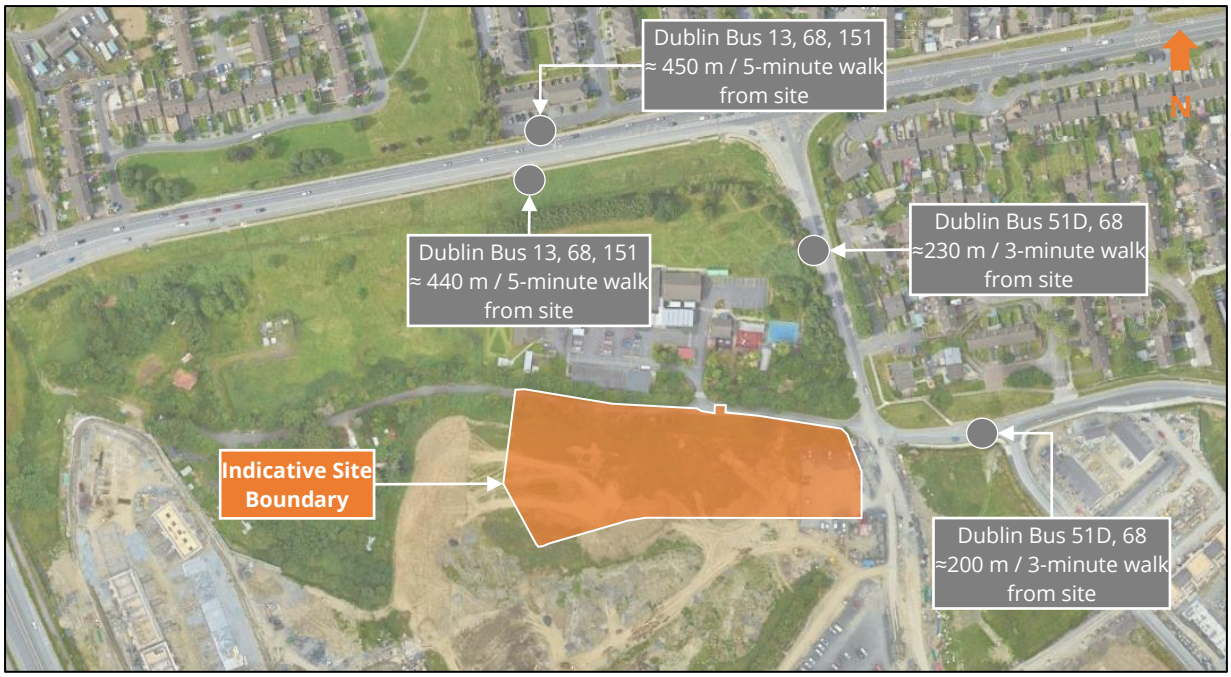


Figure 2-12: Location of Bus Stops in the site vicinity

The number of bus services associated with the aforementioned bus routes presented in Figure 2-12 are summarised in **Table 2-1.**

Route No.	Direction	Number of Services Per Day		
		Mon – Fri	Sat	Sun
13	Grange Castle to Harristown	82	68	59
	Harristown to Grange Castle	81	68	59
68	Newcastle to Hawkins Street	22	19	13
	Hawkins Street to Newcastle	20	17	13
151	Foxborough to Docklands	51	48	35
	Docklands to Foxborough	48	46	31
51D	Clondalkin to Waterloo Road	2	-	-
	Aston Quay to Clondalkin	1	-	-

Table 2-1: Bus Frequency for Stops in Site Vicinity

2.4.4 Public Transport – Rail and Luas

The subject development site is located approximately a 2.5 km southwest of Clondalkin Fonthill train station. This station offers three commuter heavy rail services including :-

- Kildare/Waterford Service
- Portlaoise/Limerick Service
- Phoenix Park Tunnel Service

This station can be accessed within a 34-minute walk, an 8-minute cycle, or a 5-minute drive. This station benefits from a free car and cycle parking that has approximately 150 no. car parking spaces including 12 no. disabled/accessible parking spaces which are located at the entrance to the train station and sheltered cycle parking (with additional secure bike lockers which can be rented). This allows the option for future residents to avail of park and ride services at this station. Furthermore, Dublin Buses 13, 68, and 151 travel to and from the train station. The Adamstown Train Station is located approximately 5.7 km northwest of the subject site. This train station can be reached in 17 minutes by bike or by a 32-minute public transport journey.

The Red Cow Luas Stop is located approximately 5.5 km to the east of the subject site, which can be reached in 15 minutes by bike or 37 minutes by bus. This Luas stop is on the Red Line which provides light rail services between Dublin City Centre and Saggart.

A summary of the average Luas service frequency for Red Line services towards Dublin City Centre is presented in **Table 2-2.**

Time of Day (Period)		Average Service Frequency (Minutes)		
		Mon – Fri	Sat	Sun
AM	Peak	7	9	12
	Off Peak	4	6	12
PM	Peak	4	6	9
	Off Peak	11	11	11

Table 2-2: Luas Red Line Service Frequency from Red Cow Luas Stop (minutes)

The location of the subject site in relation to the aforementioned Clondalkin Fonthill & Adamstown train stations and Red Cow Luas Stop is presented in **Figure 2-13.**

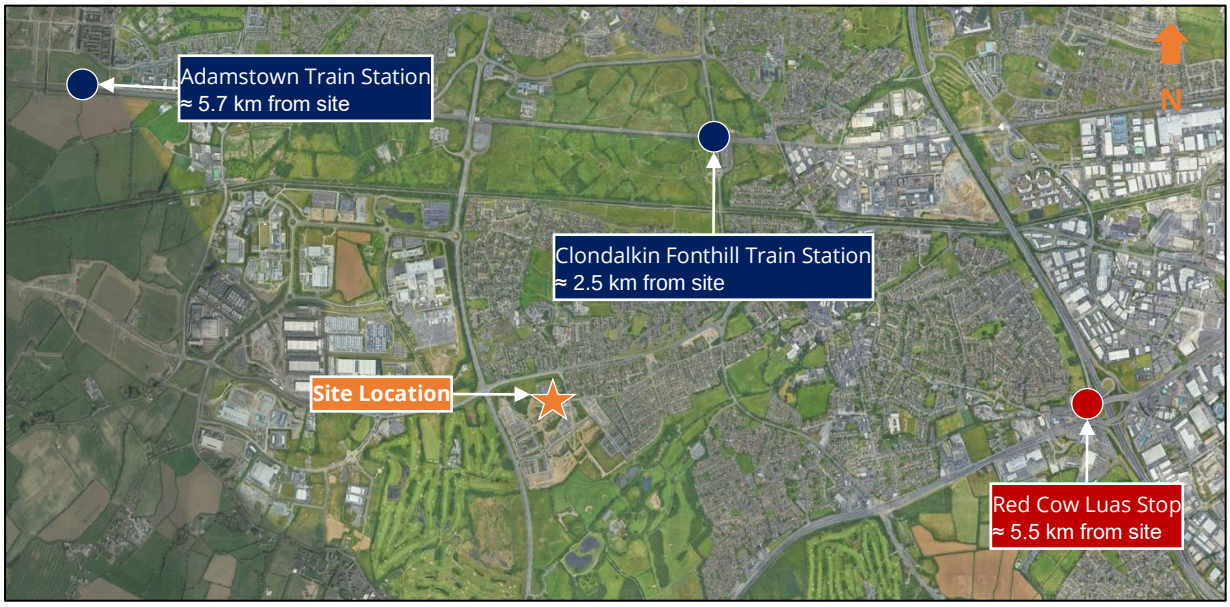


Figure 2-13: Location of Site in relation to Rail and Luas Services

2.5 Emerging Transportation Infrastructure

2.5.1 Cycle Network Proposals

Greater Dublin Area Cycle Network 2022

The Greater Dublin Area (GDA) Cycle Network 2022 was published alongside the Greater Dublin Area Transport Strategy 2022-2042 in January 2023. The 2022 cycle network builds upon the original 2013 cycle network to *"set out a comprehensive cycle network for development during the period of the transport strategy".*

As part of the GDA Cycle Network 2022, it is proposed to provide feeder cycle routes through a selection of local streets to the north and south of the R134 (New Nangor Road). These feeder routes will provide linkages to secondary cycle routes along the R134 and R136, creating better integration for cyclists. Refer to **Figure 2-14** which shows the proposed Cycle Network as per the 2022 GDA.

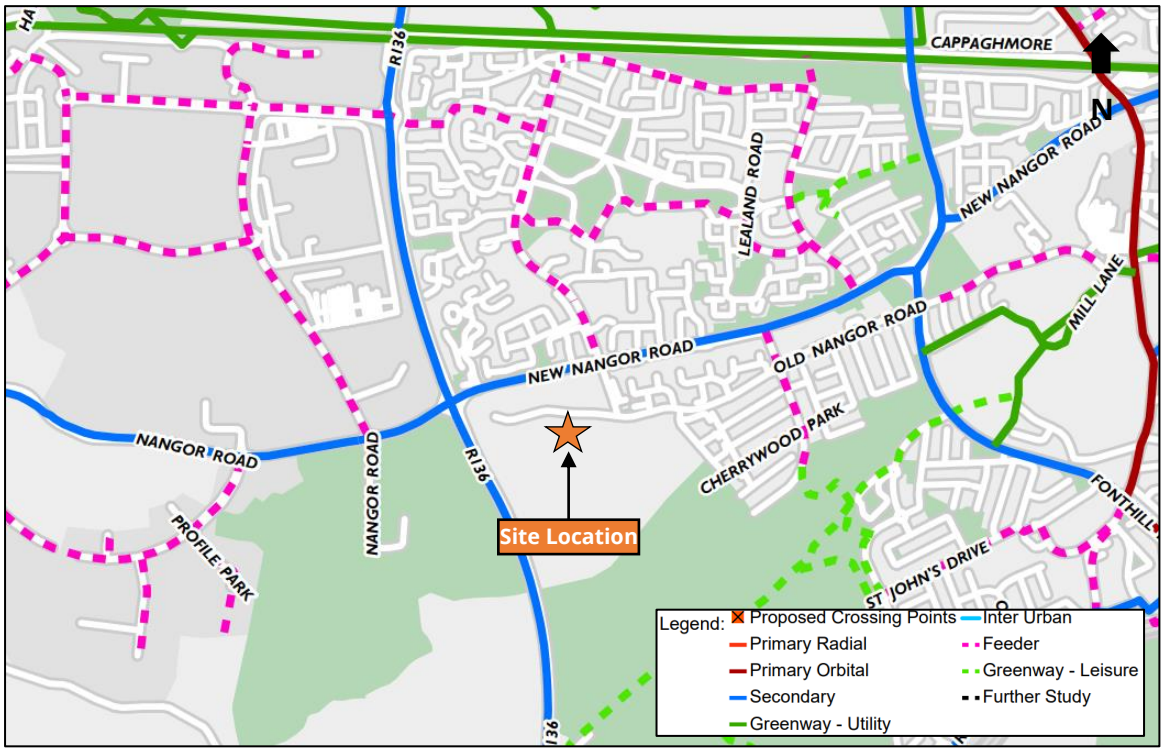


Figure 2-14: Proposed Cycle Network (Source: GDA Cycle Network Plan 2022)

Bus Connects – Cycle Infrastructure

The Tallaght / Clondalkin to City Centre Core Bus Corridors proposed as apart of the Bus connects CBC schemes is a project that spans approximately 15.5 km and includes an additional 3.9 km dedicated off-road cycling facilities. It consists of two sections: the Tallaght to City Centre section and the Clondalkin to Drimnagh section. The Tallaght to City Centre section begins at the junction of Old Blessington Road / Cookstown Way and follows a route through various roads and areas, ultimately ending at Walkinstown Roundabout. From there, it continues along Walkinstown Road to the junction with R110 Long Mile Road and Drimnagh Road. The Clondalkin to Drimnagh section starts at the junction of New Nangor Road and Woodford Walk and follows a route that includes New Nangor Road, Naas Road, Walkinstown Avenue, and Long Mile Road until it joins the Tallaght to City Centre section. Additionally, an offline cycling facility is included between Walkinstown Roundabout and Parnell Road, offering a more direct route to the city via specific roads in the County. The Proposed Scheme ends at Winetavern Street and Christchurch Place in the City Centre.

This Core Bus Corridors Infrastructure Works has a positive, indirect effect on the subject site as users will be able to access cycle facilities along the Works. Refer to

Figure 2-15 which shows the subject site's location in relation to the Infrastructure Works.

Figure 2-15: Tallaght/Clondalkin to City Centre Core Bus Corridors (Source: www.busconnects.ie)

https://www.sdcc.ie/en/active-travel/cysd-programme/soon-projects-progressed-within-the-next-5-years/

2.5.2 Road Infrastructure Proposals

The South Dublin County Development Plan 2022-2028 outlines a total of 20 no. 6-year roads objectives. One of these objectives is the **New Nangor Road (R134) Extension**, which is a new road between the R120 / New Nangor Road junction at Brownsbarn, for which the SDCC defines the function as

> *"To provide access to employment lands within Grange Castle and onward connections as appropriate."*

This road objective begins at the R120 / New Nangor Road junction approximately 2.3 km west of the subject site.

Additionally, Public Right of Way (PROW) schemes as per the SDCC Development Plan are proposed approximately 1.3 km to the east of the site. These proposals run in a north-south direction through Clondalkin, as well as extending westward from the R113 / St John's Grove junction.

The proposed road infrastructure improvements are shown in **Figure 2-16.**

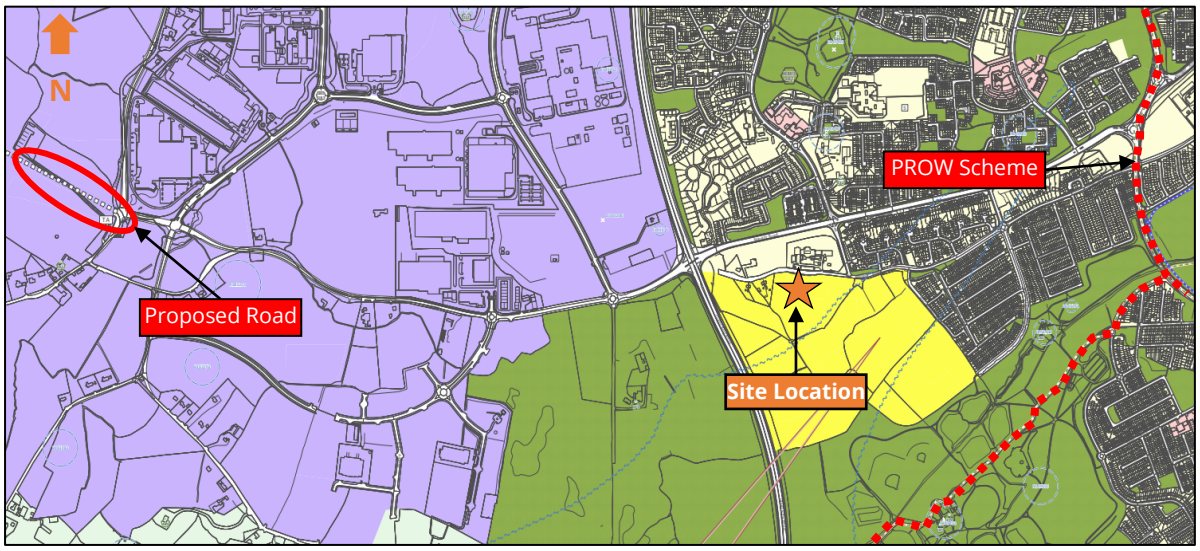


Figure 2-16: Proposed 6-year Road Infrastructure Improvement (Source: SDCC Development Plan 2022-2028)

2.5.3 Public Transport Proposals – BusConnects Network Redesign

BusConnects is an initiative launched by the National Transport Authority with the aim of overhauling the bus system in the Dublin Region. This initiative includes a review of the bus services, the definition of a core bus network which comprises radial, orbital, and regional core bus corridors. It also includes enhancements to ticketing and fare systems as well as transition to a new low emission vehicle fleet.

This initiative proposes to implement a redesign of the existing bus network. The fundamental changes to the network expected would be as follows:

- Increasing the overall amount of bus services. Providing new and frequent orbital services connecting more outer parts of the city together.
- Simplifying the bus services on the key radial into “spines” where all buses will operate under a common letter system and buses will run very frequently and be more evenly spaced.
- Increasing the number of routes where buses will come every 15 minutes or less all day.
- The frequent network would become a web-shaped grid, with many interchange opportunities to reach more destinations. Everywhere that two frequent routes cross, a fast interchange is possible.

- Additional service would be provided at peak hours to limit overcrowding.

The Bus Network Redesign is the first step in a series of transformative changes to Dublin's bus network over the coming years. However, the next steps in this initiative are the improvements to the infrastructure and operation of the proposed Bus network which include:

- Building a network of "next generation" bus corridors on the busiest bus lines to make bus journeys faster, predictable, and reliable.
- Developing a state-of-the-art ticketing system using credit and debit cards or mobile phones to link with payment accounts and making payment much more convenient.
- Implementing a cashless payment system to vastly speed up passenger boarding times.
- A simpler fare structure, allowing seamless movement between different bus services without financial penalty.
- New bus stops with better signage and information and increasing the provision of additional bus shelters.
- Transitioning to a new bus fleet using low-emission vehicle technologies.

In relation to the subject site, following this redesign of the bus network, the proposed development will be in close proximity to the following new routes:

- **Spine Route D1**: Clongriffin – Dublin City Centre – Grange Castle
- **Spine Route D3:** Clongriffin – Dublin City Centre – Clondalkin
- **Local Route L56:** Newcastle - Clondalkin - Red Cow
- **Radial Route 58:** Rathcoole – Dublin City Centre - Dublin Port
- **Peak Time Route X55**: Clondalkin – Dublin City Centre – Ringsend

In addition to the above, the following route has been launched under Phase 5a of the BusConnects Network Redesign:

- **Orbital Route W4:** Blanch. SC - Liffey Valley - Grange Castle Rd - Tallaght

Table 2-3 summarises the frequency at which these routes will operate, while **Figure 2-17** shows the proposed BusConnects network in the vicinity of the subject site.

Route Number	Direction	Number of Buses Per Day		
		Mon – Fri	Sat	Sun
D1	Clongriffin – Dublin City Centre – Grange Castle	72	63	41
D3	Clongriffin – Dublin City Centre – Clondalkin	72	63	41
W4	Blanch. SC - Liffey Valley - Grange Castle Rd – Tallaght	45	32	29
L56	Newcastle - Clondalkin - Red Cow	18	18	16
58	Rathcoole - City Centre - Dublin Port	18	18	16
X55	Clondalkin – Dublin City Centre - Ringsend	5	-	-

Table 2-3: Proposed BusConnects Service Frequency (Source: www.busconnects.ie)

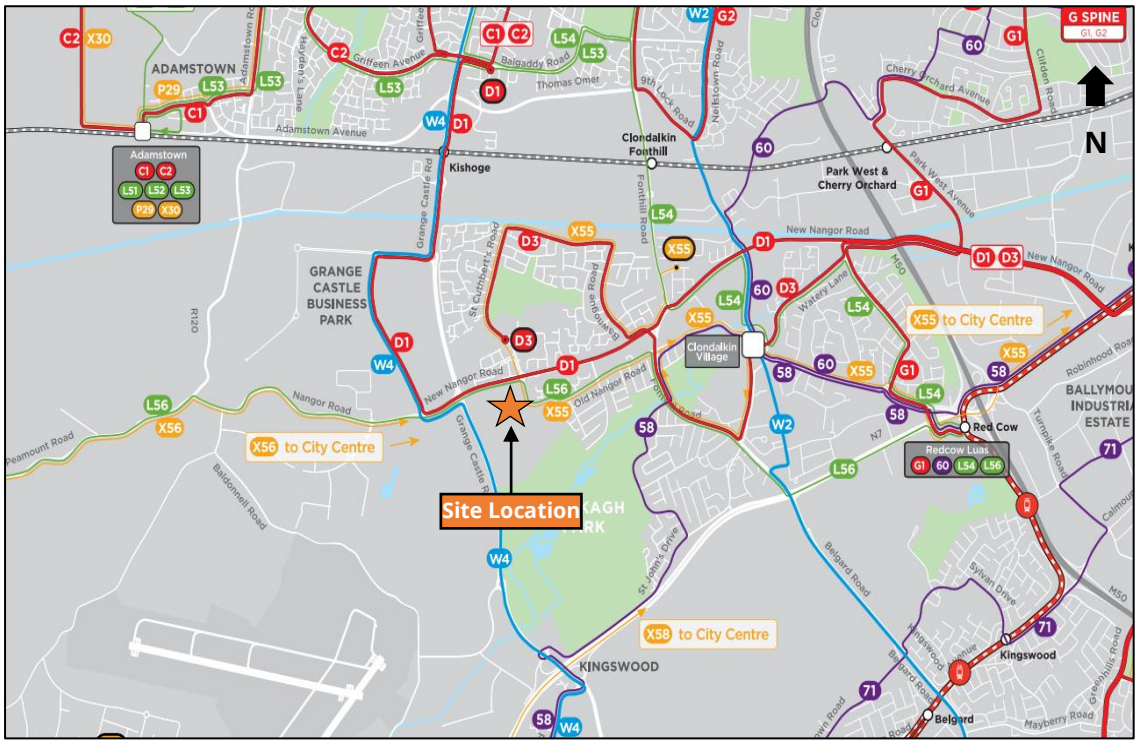


Figure 2-17: Proposed BusConnects Network (Routes D2, S8, and X58) in the vicinity of the Subject Site (Source: www.busconnects.ie)

2.5.4 Public Transport Proposals – Dart+

The DART+ Programme will revolutionise travel in the Greater Dublin Area. It will see the DART network grow from its current 50km in length to over 150km. The programme will see rail electrification introduced on existing lines servicing locations such as Drogheda, Maynooth, Hazelhatch and Greystones. Electrification of the fleet will help to reduce greenhouse gas emissions from transport, provide more frequent services with higher capacity and support sustainable growth among existing communities.

The second phase of the wider DART+ programme to be implemented will be DART+ South West. This project will increase services between Dublin City Centre and Clondalkin Fonthill Train Station

from 12 trains per direction per hour to 23 trains per direction per hour. It will also see an increase in capacity from 5,000 passengers per direction per hour to 20,000 passengers per direction per hour. New stations along the line will include Heuston West and Glasnevin. **Figure 2-18** shows the extent of electrification proposed as part of the DART+ programme.

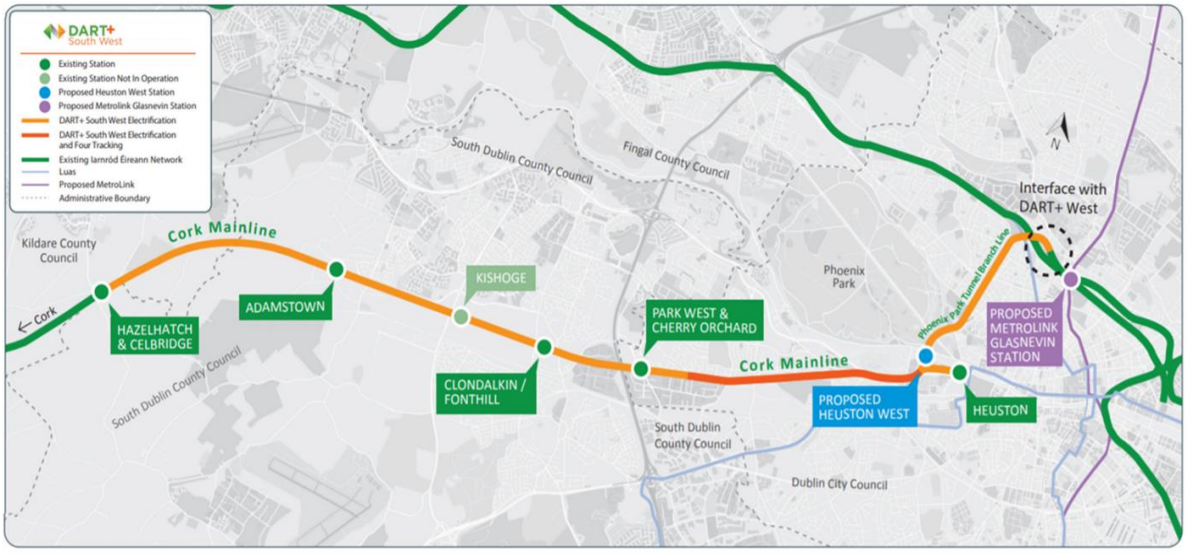


Figure 2-18: Proposed Dart+ Network (Source: www.dartplus.ie)

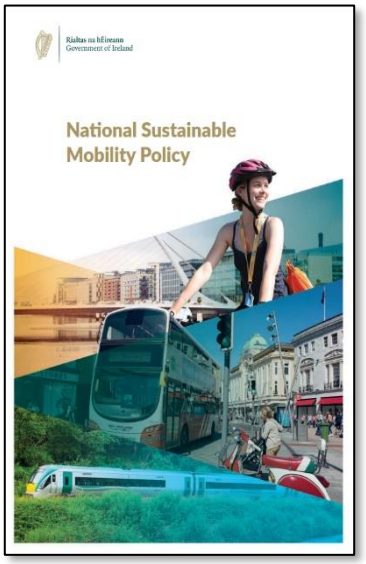
3 POLICY FRAMEWORK

3.1 Introduction

In the context of transportation, the subject development proposal's policy framework is influenced by the following key documentations:

- National Sustainable Mobility Policy (2022)
- Greater Dublin Area Transport Strategy (2022-2042)
- South Dublin County Development Plan 2022-2028

3.2 National Sustainable Mobility Policy 2022



The National Sustainable Mobility Policy was published in April 2022 by the Department of Transport and replaces Smarter Travel 2009. The overall aim of the Policy is to "set out a strategic framework for 2030 for active travel and public transport to support Ireland's overall requirement to achieve a 51% reduction in carbon emissions by the end of this decade".

The Policy is a direct response to the fact that continued growth in demand for road transport is not sustainable due to the resulting adverse impacts of increasing congestion levels, localised air pollution, contribution to global warming and the additional negative impacts to health through promoting increasingly sedentary lifestyles.

The following 3 key Policy areas and 10 goals form the basis of the National Sustainable Mobility Policy:

- **Safe and Green Mobility**
    1. Improve Mobility Safety
    2. Decarbonise Public Transport
    3. Expand availability of Sustainable Mobility in Metropolitan Areas
    4. Expand availability of Sustainable Mobility in Regional and Rural Areas
    5. Encourage people to choose Sustainable Mobility over the Private Car
- **People-Focused Mobility**
    6. Take a whole journey approach to Mobility, promoting Inclusive Access for all

7. Design infrastructure according to Universal Design Principles and the Hierarchy of Road Users model
8. Promote Sustainable Mobility through Research and Citizen Engagement

- **Better Integrated Mobility**
  9. Better integrate Land Use and Transport Planning at all levels
  10. Promote Smart and Integrated Mobility through Innovative Technologies and development of Appropriate Regulation

The policy is accompanied by an Action Plan with a total 91 actions organised by goal to be completed by 2025. Each action has been assigned to a specific government department or body with the hope of creating accountability for their implementation. The success of the policy will be measured using an annual National Household Travel Survey administered by the National Transport Authority.

3.3 Greater Dublin Area Transport Strategy 2022 – 2042

The Greater Dublin Area Transport Strategy 2022-2042 has arisen from a review of the original 2016 strategy.

The overall aim of the Transport Strategy is "To provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports the regional economy."

Four primary objectives have been identified as part of the Draft Greater Dublin Area Transport Strategy 2022-2042. These are:

- **An Enhanced Natural and Built Environment:** To create a better environment and meet our environmental obligations by transitioning to a clean, low emission transport system, increasing walking, cycling and public transport use, and reducing car dependency.
- **Connected Communities and a Better Quality of Life:** To enhance the health and quality of life of our society by improving connectivity between people and places, delivering safe and integrated transport options, and increasing opportunities for walking

and cycling.

- **A Strong Sustainable Economy:** To support sustainable economic activity and growth by improving the opportunity for people to travel for work or business where and when they need to and facilitating the efficient movement of goods.
- **An Inclusive Transport System:** To deliver a high quality, equitable and accessible transport system, which caters for the needs of all members of society.

With regards to cycling, the Strategy acknowledges the growth in cycling in the Greater Dublin Area since the mid-2000s and the need to provide a coherent network of cycling facilities linking origins and destinations to cater for trips within communities. Measures for cycling outlined within the Strategy include:

- **Measure CYC1 – GDA Cycle Network:** It is the intension of the NTA and local authorities to deliver a safe, comprehensive, attractive, and legible cycle network in accordance with the updated Greater Dublin Area Cycle Network.
- **Measure CYC2 – Cycle Infrastructure Design:** It is the intension of the NTA to ensure that cycle infrastructure in the GDA provides an appropriate quality of service for all users, through the implementation of the design guidance contained in the latest version of the National Cycle Manual.
- **Measure CYC4 – Maintenance of Cycle Infrastructure:** The local authorities will maintain the cycle network to a high standard, ensuring that it is safe, comfortable, and attractive to cycle.
- **Measure CYC10 – Bikes on Public Transport:** The NTA will facilitate the carriage of standard bicycles on all newly acquired (during this strategy period) DART, Commuter and Intercity rail carriages always operating in the Greater Dublin Area.

In terms of walking, the Strategy highlights the importance of good quality pedestrian facilities while recognising that walking forms some part of most journeys. Plans to provide a better walking environment include:

- Improving footpaths to ensure they are of sufficient width, adequately lit, serve both sides of the road in most urban areas, have good quality surfacing and are free of unnecessary clutter.
- Improving junctions to reduce the distance pedestrians have to cross and the number of times they must stop and wait during a crossing.
- Optimising crossing times for pedestrians at signalised junctions.

- Installing additional pedestrian crossing points where requirements are identified.
- Expanding and improving wayfinding systems.

3.4 South Dublin County Council Development Plan 2022 – 2028

The South Dublin County Council (SDCC) Development Plan 2022 – 2028 sets out the strategic policies and objectives that will guide development in the county over the coming six years.

The following Sustainable Movement (SM) objectives as outlined in the plan are of particular relevance to the proposed development:

Sustainable Movement Objective 1: These objectives promote ease of movement within, and access to South Dublin County. This is done by integrating sustainable land use planning with a high standard sustainable transport network.

> **SM1 Objective 4:** *"To ensure that future development is planned and designed in a manner that facilitates sustainable travel patterns, with a particular focus on increasing the share of active modes (walking and cycling) and public transport use and creating a safe and attractive street environment for pedestrians and cyclists".*
>
> **SM1 Objective 5:** *"To ensure that future development is planned and designed in a manner that maximises the efficiency and protects the strategic capacity of the metropolitan area transport network, both existing and planned, and to protect and maintain regional accessibility".*
>
> **SM1 Objective 6:** *"To safeguard the County's strategic road network and to improve the local road and street network in a manner that will better utilise existing road space and encourage a transition towards more sustainable modes of transport".*

Sustainable Movement Objective 2: This objective is in reference to pedestrians and cyclists and shifts the focus of transportation priorities to favour sustainable modes of travel by emphasising the enhancement of pedestrian and bicycling infrastructure.

> **SM2 Objective 3:** *"To ensure that connectivity for pedestrians and cyclists is maximised and walking and cycling distances are reduced by promoting compact growth and permeability in the design and layout of new development areas".*

Sustainable Movement Objective 3: These objectives relate to public transport in general. It encourages a substantial transition from car-dependent transportation to public transit in accordance with County goals and promote the County's sustainable growth by assisting and advising national agencies in implementing substantial enhancements to the public transportation system.

> **SM3 Objective 3:** *"To ensure that future development is planned in such a manner as to facilitate a significant shift to public transport use through pursuing compact growth policies, consolidating development around existing and planned public transport routes and interchanges, and maximising access to existing and planned public transport services throughout the network".*
>
> **SM3 Objective 4:** *"To optimise accessibility to public transport, increase catchment and maximise permeability through the creation of new and upgrading of existing walking and cycling routes linking to public transport stops".*

Sustainable Movement Objective 4: This objective relates to the County-wide strategic road network and states that, where necessary, the road network should be expanded to support economic development and provide access to new communities and development areas.

> **SM4 Objective 10:** *"To support sustainable measures including car-pooling and car clubs which promote access to cars rather than car ownership and which facilitate higher utilisation of vehicles rather than higher numbers of vehicles".*

Sustainable Movement Objective 5: SM5 refers to the Street and Road Design. It states that streets and roads within the County should be designed to balance the needs of all road users, as well as to promote sustainable movement.

> **SM5 Objective 1**: *"To ensure that all streets and street networks are designed to passively calm traffic through the creation of a self-regulating street environment that promotes active travel modes and public transport".*

Sustainable Movement Objective 6: SM6 states that impacts of traffic must be effectively managed and minimised. It also states that the road space needs to be shared between different road users.

> **SM6 Objective 3:** *"To minimise the impact of new development on the county's road and street network through prioritising active travel and public transport and implementing appropriate traffic and transport management measures".*

SM6 Objective 8: *"To require all major traffic generating development to submit a Mobility Management Plan/Workforce Plan and/or Traffic and Transport Assessment".*

3.5 Development Management Standards

To aid the assessment of the parking standards for the subject site, reference is made to Table 12.26 of Chapter 12 of the SDCC Development Plan (2022 – 2028). The proposed site is zoned as lands for "*New Residential Communities*" uses as per the SDCC Development Plan.

3.5.1 Car Parking

Car Parking standards in Dublin South are divided into two main categories:

- **Zone 1** – A general rate applicable throughout the County.
- **Zone 2 (Residential)** – More restrictive rates for application within town and village centres, lands zoned REGEN, and brownfield / infill sites within Dublin City and Suburbs settlement boundary within 400-500 metres of a high-quality public transport service (includes a train station, Luas station or bus stop with a high quality service).

The subject site location is characterised as being within a Zone 1 Parking Zone. The maximum parking requirements as per the SDCC development plan is summarised in **Table 3-1.**

Unit Type	SDCC Parking Space Standard (Spaces per bed)		Number of Units		SDCC Max Parking Spaces Required	
	Houses	Duplex	Houses	Duplex	Houses	Duplex
1-bed	1	1	0	12	0	12
2-bed	1.5	1.25	0	16	0	20
3 / 4 bed	2	1.5	52	8	104	12
Total			52	36	104	44
			88		148	

Table 3-1: Car Parking Standards and Requirements (Source: SDCC Development Plan)

3.5.2 Accessible/Disabled Car Parking

Table 12.25 in Chapter 12 of the SDCC Development Plan indicates that the parking provision should "*include provisions for the loading and unloading of goods and disabled parking and parking for electric vehicles as required by Part M of the Building Regulations 2010 (as amended) …".*

Subsequently, Part M of the Building Regulations produced by the Government of Ireland has been updated in 2022. This documents states that at least 5% of car parking spaces provided for the subject development should be designated as accessible/disabled parking spaces.

3.5.3 Electric Vehicle Parking

Section 12.7.5 of the SDCC Development Plan states that commercial developments shall provide Electric Vehicle (EV) charging points at a minimum of 20% of all car parking spaces. All other spaces should be provided with correct ducting to allow for the future installation of charging points as needed.

Furthermore, the SDCC provides the following design guidelines/tips:

- EV Charging facilities should be designed in such a way as to ensure passive surveillance and avoid anti-social behaviour.
- EV Charging facilities should not impinge on shared parking allocation.
- EV Charging facilities should not obstruct pedestrian or cycling paths.

3.5.4 Motorcycle Parking

There is currently no guidance in the SDCC Development Plan regarding the exact provision of motorcycle parking at employment/enterprise warehouse land uses. However, the Development Plan states that "*Parking arrangements for specific user requirements including disabled drivers, motorcycles and scooters will be required in town and district centres, shopping centres, public transport nodes and other destinations*".

3.5.5 Cycle Parking

Section 12.7.1 in the SDCC Development Plan sets out minimum cycle parking standards for all new developments in Dublin South. Cycle standards are divided into two main categories:

- **Long Term**: These are parking spaces that are designed to be used by employees. These cycle spaces should be located in a secure area that is not freely accessible to the general public.
- **Short Stay**: These are parking spaces that are designed for ease of use by the general public. These cycle spaces should be located in highly visible areas that are easy to access.

The minimum cycle parking requirements for the proposed development based on the SDCC Development Plan are summarised in **Table 3-2.**

Unit Type	SDCC Parking Space Standard		Number of Units	SDCC Minimum Parking Spaces Required	
	Long Term	Short Stay		Long Term	Short Stay
1-bed	1 per bedroom	1 per two apts	12	12	6
2-bed			16	32	8
3-bed			8	24	4
Total			36	68	18
				86	

Table 3-2: Cycle Parking Standards and Requirements (Source: SDCC Development Plan)

4 PROPOSED DEVELOPMENT

4.1 Overview

The proposed development consists of a mix of 88 units comprising a variety of house and duplex types. The units proposed include 44 no. 3bed 2 storey houses, 8 no. 4 bed 2 storeys houses, 36 no. duplex units (varying from 1 to 3 beds) within 3 storey duplex blocks. The development includes 100 no. surface car park spaces and 110 no. bicycle parking spaces, above ground sustainable urban drainage measures, an ESB kiosk, Irish Water below-ground foul pumping station, proposed new roads, footpath and cycle-paths (including works to provide a cycle-path along a portion of the Upper Nangor Rd), public open space areas, landscape works, bin/bicycle stores and all associated ancillary site development works.

Refer to **Figure 4-1** which provides an illustration of the proposed development.

Figure 4-1: Proposed Site Layout (Source: Burke-Kennedy Doyle Architects)

4.2 Site Access Arrangements

4.2.1 Vehicular Access

The subject development will comprise 4 vehicular access points. Two of these accesses will be to the north of the site onto Old Nangor Road, and two will be to the south onto the emerging Kilcarbery Grange Avenue which is being constructed as part of the permitted development

(Planning Ref. SHD3ABP-305267-19) to the south. Access roads to the site will provide thoroughfare in a north-south direction through the site. Additionally, the development traffic will connect to the wider road network via the Old Nangor Road / St Cuthbert's Road junction and the R136 (Outer Ring Road) Left-in Left-out junction.

Refer to **Figure 4-2** which illustrates the location of the site access for vehicles.

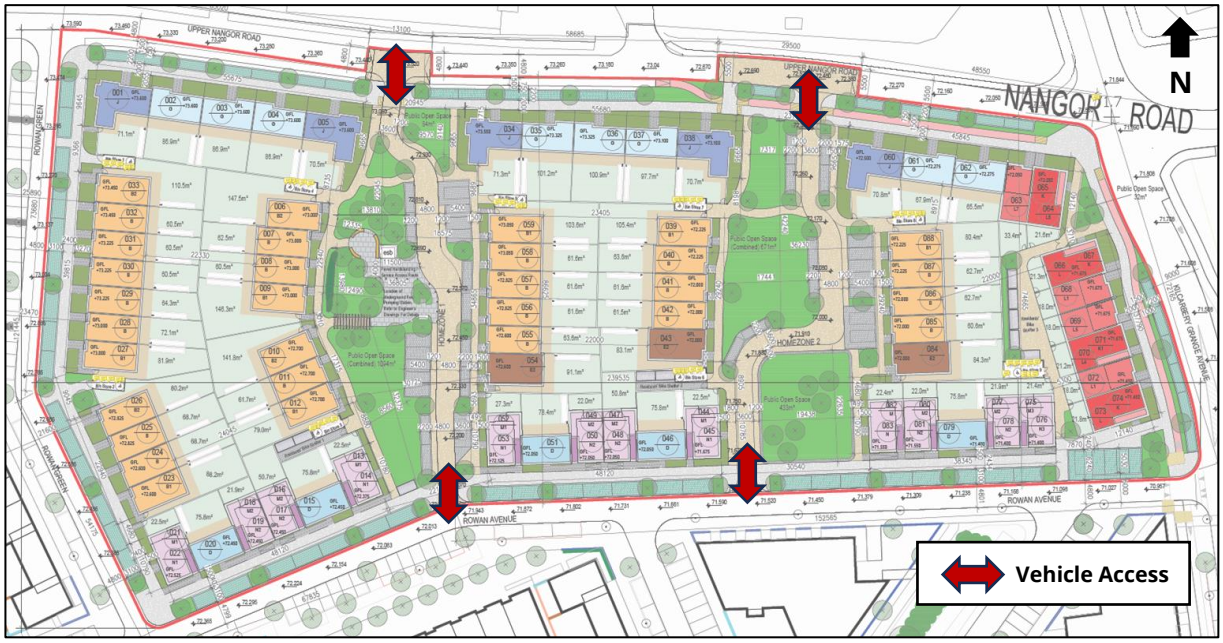


Figure 4-2: Proposed Vehicular Access (Source: Burke-Kennedy Doyle Architects)

4.2.2 Pedestrian and Cyclist Access

Pedestrians and cyclists will access the site at the same locations as the aforementioned vehicular accesses introduced above. The subject development proposals include for new footpaths along the perimeter of the site that leads to the 4 No. site access locations in addition to dedicated non-vehicular access points as indicated in Figure 4-3 below. Within the site, north-south pedestrian and cyclist movements are facilitated through the site between the two northern and two southern accesses through dedicated pedestrian facilities and traffic calmed streets.

Additionally, there are dedicated cycle facilities proposed as part of the subject scheme on the eastern and northern boundaries of the subject site. Further details of which can be seen in DBFL Drawing 230026-X-04-DTM-DR-DBFL-CE-1201 Roads Layout.

Figure 4-3 presents details of the proposed non-vehicular access locations provided as part of the subject proposal.

Figure 4-3: Non-vehicular Access Locations (Source: Burke-Kennedy Doyle Architects)

4.3 Parking Proposals

4.3.1 Overview

The following sub sections provide a summary of the car and cycle parking proposals being implemented as part of the subject scheme. In addition, a comparison of the proposed provision against the local development management standards is provided.

4.3.2 Car Parking

All car parking is located off curtilage. An overview of the parking provided at the proposed site is illustrated in **Figure 4-4.**

The subject development proposal includes a total of 100 no. car parking spaces (62 no. spaces for the houses and 38 no. spaces for duplex units). The proposed car parking assignment is outlined in **Table 4-1** in relation to the maximum parking requirements as set out by the South Dublin City Council's Development Plan (2022 – 2028).

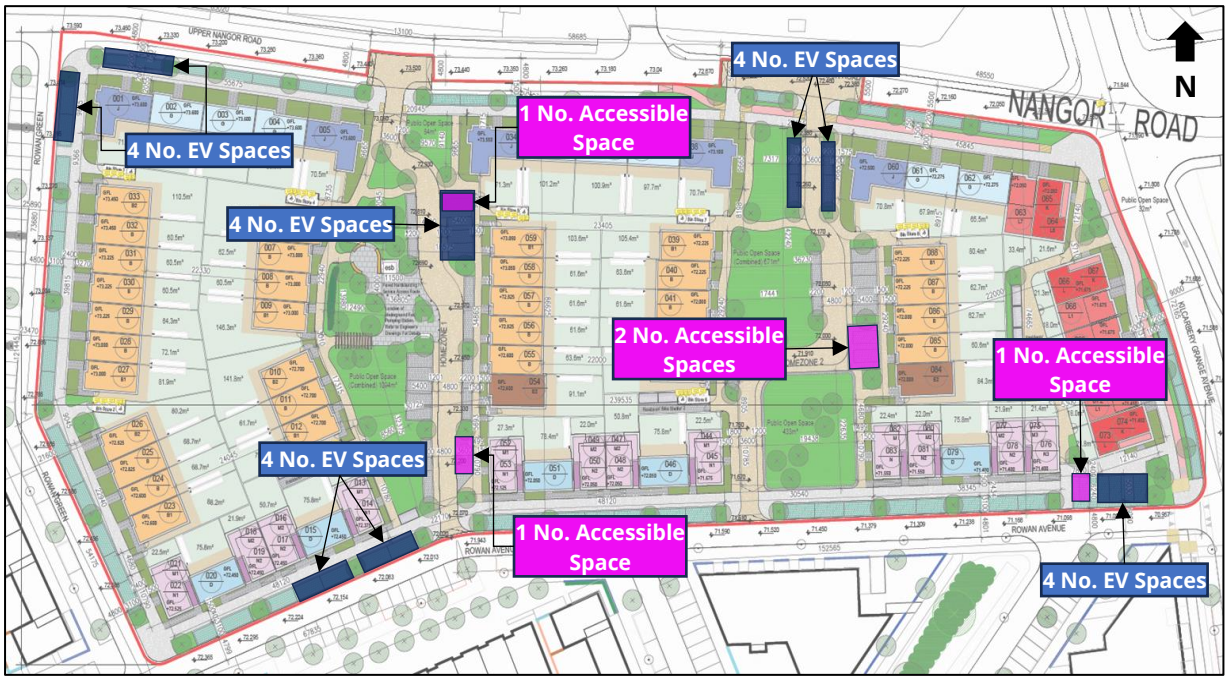


Figure 4-4: Proposed Car Parking Layout (Source: Burke-Kennedy Doyle Architects)

Unit Type	SDCC Max Parking Spaces Required		Car Parking Provided	
	Houses	Duplex	Houses	Duplex
1-bed	0	12	62	38
2-bed	0	20		
3/4 bed	104	12		
Total	**104**	**44**	**62**	**38**
	148		**100**	

Table 4-1: Car Parking Provision on Subject Site

The parking provided within the subject development does not exceed the maximum allowable parking as indicated in the SDCC Development Plan.

In regard to the car parking proposals for the 52 no. house units, it is noted that the car parking provision is approx. 40% below the maximum permitted quantum and subsequently do not exceed the maximum permitted. The provision of 62 no. house unit car parking spaces equates to **1.2 no. spaces per House Unit**. In the interest of ascertaining if this level of car parking is appropriate to meet the projected demand, a review of the 2022 Census car ownership statistics has been undertaken at existing local residential housing settlements in the vicinity of the subject

site location. A total of 7 No. Census small areas have been deemed representative of the proposed development site characteristics. These areas are illustrated in **Figure 4-5.**

Figure 4-5: 2022 Census Car Ownership areas assessed

The ratio of car ownership per residential house unit in the areas assessed are summarised in **Table 4-2.** It has been established that, at these comparable local residential areas, there is an existing ratio of approximately 1.2 car parking spaces per residential house unit. Accordingly, the proposed development's car parking ratio of 1.2 parking spaces per residential house unit aligns with the neighbouring residential settlements' ratio and therefore is considered an appropriate level of car parking provision to cater for the projected demand.

Census Area	Units	Car Ownership	Ratio
Area 1	86	84	1.0
Area 2	106	139	1.3
Area 3	104	129	1.2
Area 4	83	100	1.2
Area 5	85	90	1.1
Area 6	76	91	1.2
Area 7	72	95	1.3
Total	**612**	**728**	**1.2**

Table 4-2: Car Ownership in areas in vicinity of subject site

4.3.3 Accessible Car Parking

Part M of the Building Regulations produced by the Government of Ireland, as referenced by the SDCC Development Plan, outlines that at least 5% of car parking spaces provided for the subject development should be designated as accessible/disabled parking spaces.

The development has a total number of 100 no. car parking spaces, 5 of which are designated as Accessible Parking spaces which equates to 5% of all car parking spaces.

4.3.4 Electric Vehicle Parking

Section 12.7.5 of the SDCC Development Plan states that commercial developments shall provide Electric Vehicle (EV) charging points at a minimum of 20% of all car parking spaces which equates to 20 no. EV parking spaces.

The development makes provision for 20 No. EV Parking spaces and id therefore compliant with the SDCC Development Plan standards. Furthermore, all car parking spaces will be ducted to ensure that EV charging facilities can be easily retrofitted at a future date.

4.3.5 Cycle Parking

A total of 110 no. cycle parking spaces are proposed as part of the subject development, 90 no. of which are for residents (long term cycle parking) and 20 no. of which are for visitors (short stay cycle parking).

Table 4-3 which outlines the number of cycle parking spaces provided in comparison to the SDCC Development Plan requirements. The subject scheme proposals include for a higher quantum of cycle parking spaces in comparison to the local development management minimum standards and is therefore in compliance. Furthermore, the cycle parking facilities are ideally positioned around the site for convenient accessibility to unit accesses thereby making cycling a convenient travel option amongst future residents. **Figure 4-6** presents the location of the proposed bicycle parking around the subject site.

Unit Type	SDCC Minimum Parking Spaces Required		Cycle Parking Provided	
	Long Term	Short Stay	Long Term	Short Stay
1-bed	12	6	90	20
2-bed	32	8		
3-bed	24	4		
Total	68	18	90	20
	86		110	

Table 4-3: Cycle Parking Provision on Subject Site

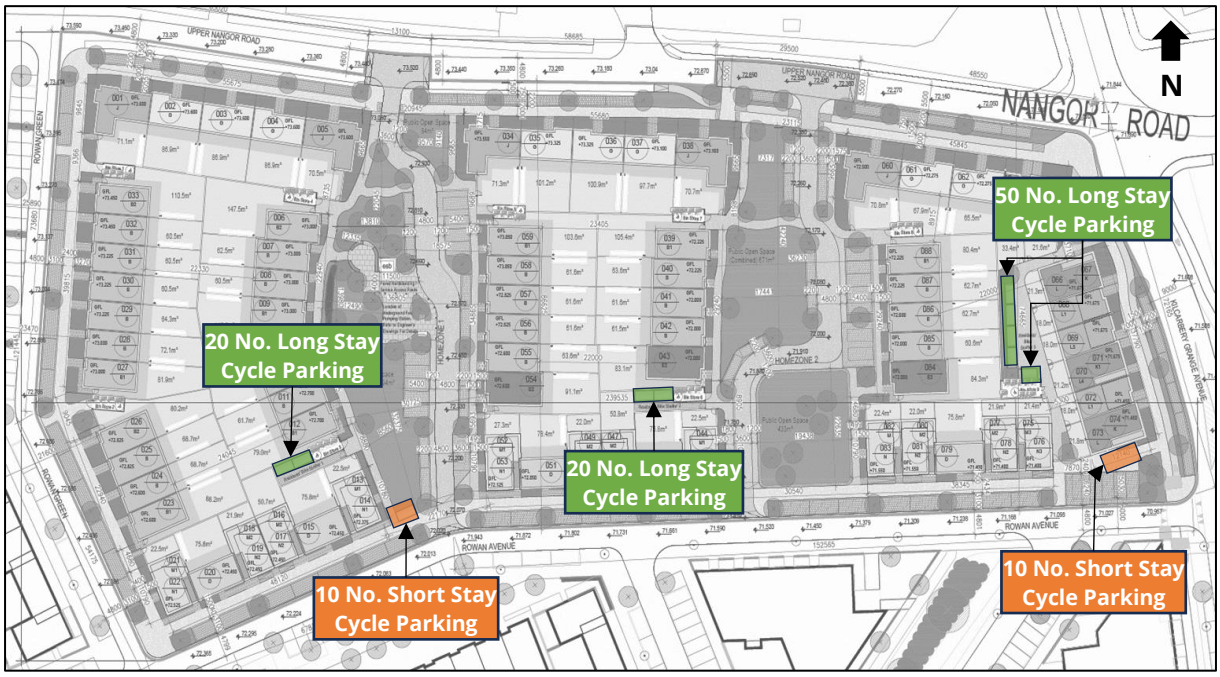


Figure 4-6: Proposed Bicycle Parking Locations and Number of Spaces (Source: Burke-Kennedy Doyle Architects)

4.4 Emergency and Refuse Collection Arrangements

Emergency and refuse collection vehicles will access the site through the designated vehicle access locations, ensuring prompt response and seamless operational functionality. These access points have been strategically planned to optimise accessibility, allowing for swift and unimpeded movement of essential vehicles to cater to the site's emergency response, service delivery, and maintenance requirements.

5 NETWORK CONDITIONS AND TRIP GENERATION

5.1 Traffic Surveys

IDASO, a specialist data collection firm, were commissioned by DBFL Consulting Engineers to undertake Junction Turning Count (JTC) surveys at key off-site junctions across the local transport network. These surveys were undertaken at 2 No. locations on Wednesday 11th of October 2023. Furthermore, the R136 Left-in Left-out (LILO) junction was also assessed using counts received previously. Refer to **Figure 5-1** and **Table 5-1** provide information regarding the junctions analysed in this assessment.

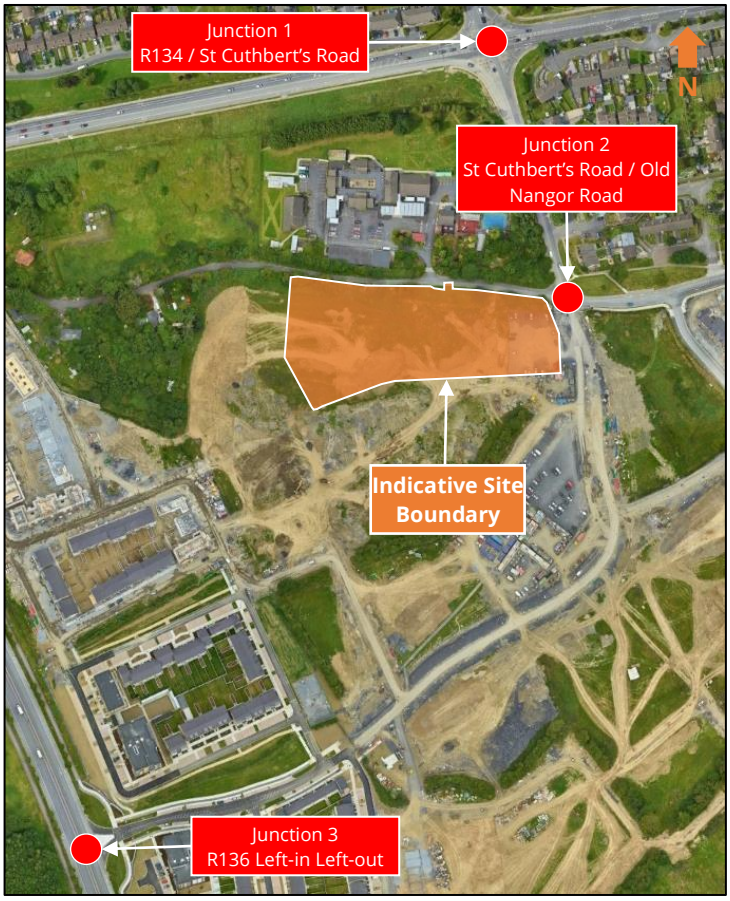


Figure 5-1: Location of Junctions Assessed

Location	Type of Survey Conducted	Location
1	Junction Turning Count	Four-arm junction located between R134 (New Nangor Road) / St Cuthbert's Road
2	Junction Turning Count	Four-arm junction located between Old Nangor Road / St Cuthbert's Road (N) / Kilcarbery Grange Avenue (S)
3	ATC	Left-in Left-out Junction located off the R136 to the southwest of the subject site

Table 5-1: Description of Junctions Assessed

5.2 Existing Modal Split

The Central Statistics Office's Small Area Population Statistics Map (SAPMAP) data has been investigated to determine the travel trends within the local vicinity of the subject development. SAPMAP is an interactive mapping tool that allows users to pinpoint a location on the map and access 2022 census data related to that area.

An area which encompasses similar land use characteristics in close proximity to the subject site was analysed to establish current commuter trends in the site vicinity. The areas analysed were to the north and south of the R134 due to their similar site characteristics to the subject site. In total, 18 No. SAPMAP areas were analysed. This analysis will form the basis of the initial travel characteristics that could be generated by the proposed development. Refer to **Figure 5-2** which shows the extent of the areas analysed as well as the location of the site in relation to the area analysed.

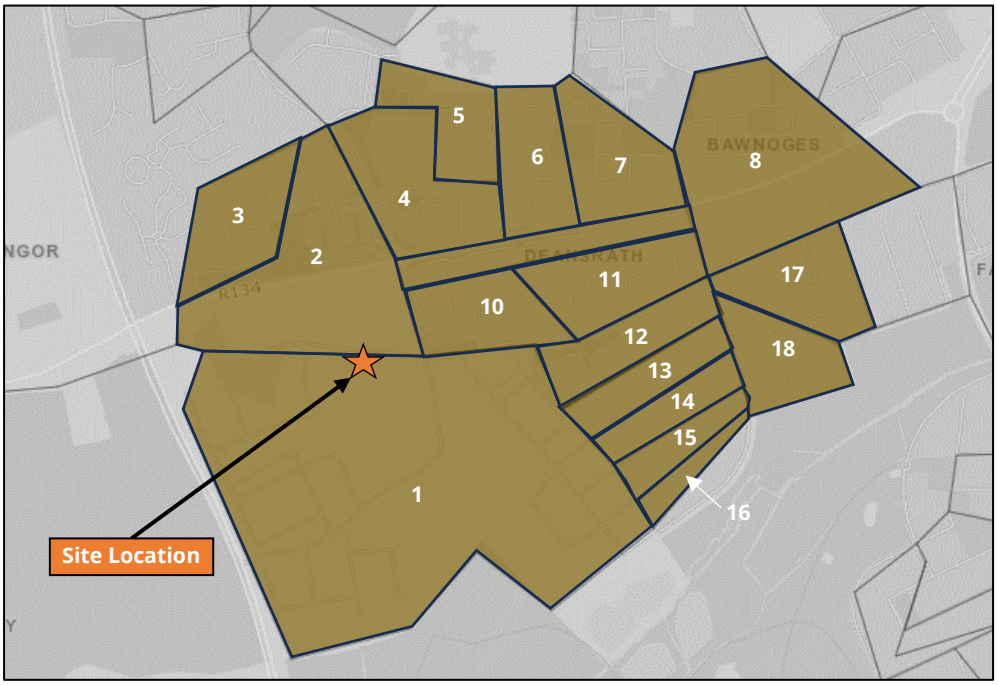


Figure 5-2: Area assessed in Census 2022 SAPMAP Analysis (Source: www.cso.ie/sapmap)

The analysis reveals the existing modal split of residents when travelling to work and education in the area identified above. A summary of the SAPMAP 2022 Census commuting data is provided in **Figure** 5-3**.**

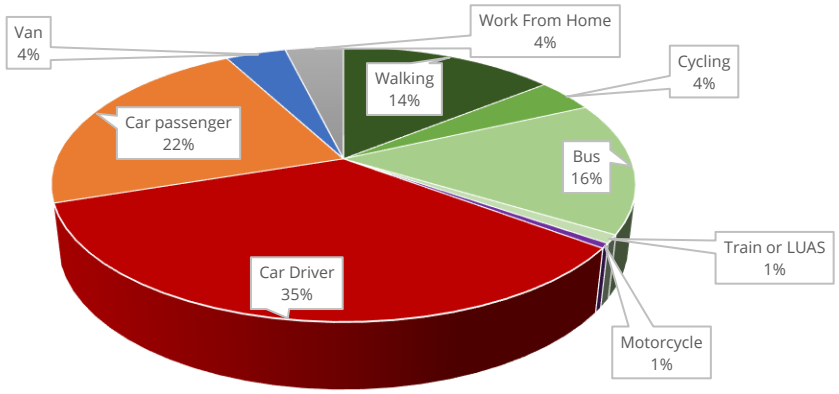


Figure 5-3: 2022 Modal Split for residents travelling to work and education in SAPMAP Analysis (Source: 2022 Census SAPMAP)

The analysis indicates that most people drive to work and education (35%), with a high proportion of carpooling (totalling 22% of modal split) being students who are dropped off/picked up at school. There is a relatively high level of bus usage (16%) and walking (14%) as part of the overall modal split within the vicinity of the subject site. Cycling (4%) is relatively low in the area at present. Only 1% of the proportion travelled by train or Luas likely due to the increased distance of train and Luas from the site.

5.3 Trip Generation

5.3.1 Person Trips

Based on the mode share proportions derived from the 2022 Census data above, the total person trips can be estimated. It has been assumed that the predicted vehicle trips generated by the subject residential development correspond to the proportion of vehicle trips derived within the 2022 Census Mode Share data. **Table 5-2** summarises the predicted person trips generated by the development during the AM and PM Peak Hours.

Means of Travel	Average Mode Share (%)	AM Peak Hour		PM Peak Hour	
		Arr	Dep	Arr	Dep
Walking	14%	5	8	9	7
Cycling	4%	1	2	3	2
Bus	16%	5	9	10	7
Train or LUAS	1%	0	1	1	0
Motorcycle	1%	0	0	0	0
Car Driver	35%	12	20	23	16
Car passenger	22%	8	13	15	10
Van	4%	1	2	3	2
Work From Home	4%	1	2	3	2
Total Person Trips		**35**	**58**	**66**	**46**

Table 5-2: Person trips generated by subject development

5.3.2 Vehicle Trip Generation

To estimate the potential level of vehicle trips that could be generated by the residential development, reference has been made to the TRICS trip generation database. TRICS provides trip rate information for a variety of different land uses and development types, which can be applied to the subject development.

The most appropriate land use within the TRICS database was used for the residential development. In the site selection process, only datasets with similar site characteristics as the subject site were selected. Subsequently, the data obtained from TRICS was filtered to ensure that the most appropriate dataset is used. The TRICS Trip Rates used were for Local Authority (LA) houses and flats. A summary of the TRICS output files can be found in **Appendix B.**

Table 5-3 summarises the TRICS adopted trip rates for the weekday road network AM and PM Peak Hours of 08:00 – 09:00 and 16:30 – 17:30 respectively.

Land Use	AM Peak (08:00-09:00)			PM Peak (16:30-17:30)		
	Arrival	Departure	Total	Arrival	Departure	Total
Residential (LA Houses)	0.167	0.273	0.44	0.308	0.205	0.513
Residential (LA Flats)	0.075	0.157	0.232	0.183	0.1415	0.3245

Table 5-3: TRICS Trip Rates for Development Site

Based on the trip rates provided in Table 5-3 above, the potential peak hour trips generated from the development can be calculated. This trip generation is shown in **Table 5-4.**

Land Use	AM Peak (08:00-09:00)			PM Peak (16:30-17:30)		
	Arrival	Departure	Total	Arrival	Departure	Total
Residential (LA Houses)	9	14	23	16	11	27
Residential (LA Flats)	3	6	9	7	5	12
Total	**12**	**20**	**32**	**23**	**16**	**39**

Table 5-4: Development Site Trip Generation

Refer to **Appendix A** which includes traffic flow diagrams illustrating the subject development trip generation and how these trips travel through key off-site junctions.

5.3.3 Trip Distribution

The assignment of the predicted vehicle trips generated by the subject development across the local road network is detailed within Figure 10 in **Appendix A** of this TTA. The site is expected to generate 95% of its trips through the St Cuthbert's Road / Old Nangor Road junction (57% north along St Cuthbert's Road and 38% east along Old Nangor Road for both AM and PM Peak Periods)

and 5% through the R136 left-in left-out junction to the south of the site (for both AM and PM Peak Periods).

5.3.4 Construction Rate

For this assessment, it is assumed that the development will be complete and occupied by the Opening Year 2026, with the Design Years 2031 (Opening Year + 5 years) and 2041 (Opening Year + 15 years) assessed.

5.4 Committed Developments

With the objective of providing a robust appraisal, DBFL have established that there are 2 No. committed developments located in the area of the subject site that would generate traffic on the surrounding road network and ultimately have an impact on the junctions assessed in this TTA. Refer to **Figure 5-4** which shows the location of these committed developments in relation to the subject site.

The assignment of the predicted vehicle trips generated by the independent committed scheme's TTA is detailed within **Figure 5 and Figure 6** in **Appendix A** of this TTA. A brief description of the development and its trips generated on the road network is provided in the following section.

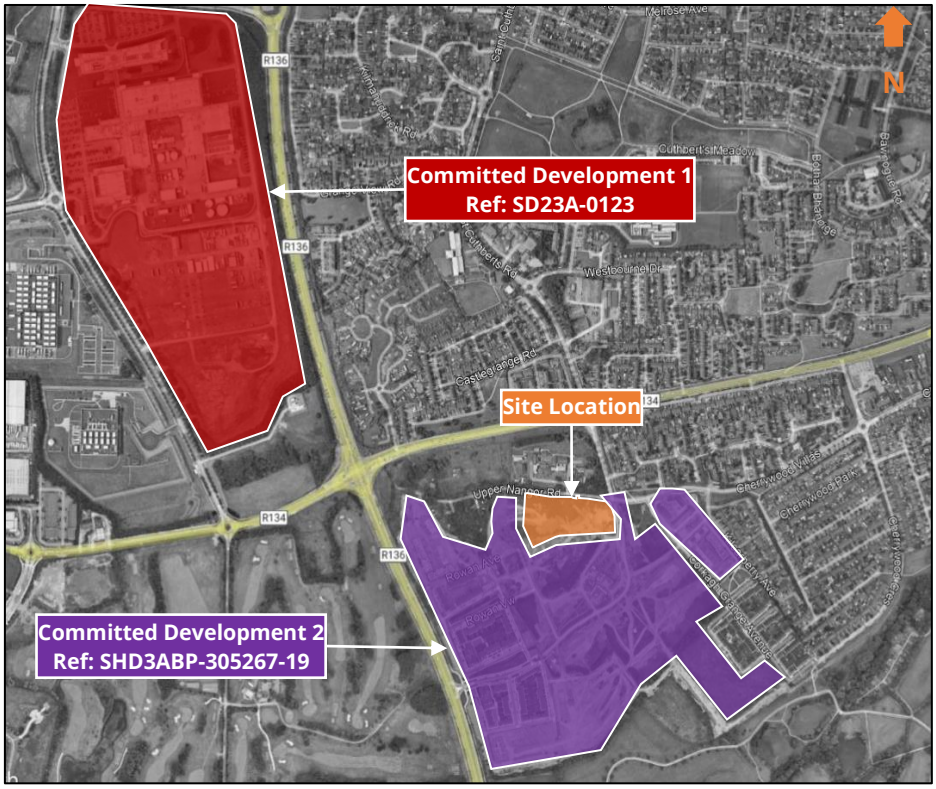


Figure 5-4: Location of Committed Developments in relation to Subject Site

5.4.1 Committed Development 1 (Planning Ref: SD23A/0123)

This committed development is for Pfizer Ireland Pharmaceuticals for a new building adjacent to their existing Development and Manufacturing Facility at the Grange Castle Business Park. The Proposed Development will comprise an overall floor area of approximately 37,041 m^2 and is expected to have 303 new staff once the proposed facility is fully operational.

Table 5-5 presents the predicted trip generation from the committed development obtained from the third-party scheme's TTA report submitted as part of the planning application.

AM Peak Period			PM Peak Period		
Arrival	Departure	Total	Arrival	Departure	Total
118	6	124	6	118	124

Table 5-5: Committed Development Trips (Reference: SD23A/0123)

5.4.2 Committed Development 2 (Planning Ref: SHD3ABP-305267-19)

This committed development is for a proposed residential development located to the south of the subject development site. Committed Development 2 will comprise 278 No. house units, 105 No. duplex units, 351 No. apartments within 9 No. apartment blocks, 1 No. 178 m^2 FGA retail unit, 1 No. 909 m^2 creche building, and a 785 m^2 Community Building. The trip generation associated with this Committed Development is provided in **Table 5-6.** This development is set to be implemented in a phased approach. It has been established that 276 No. Houses and 243 No. Apartments/Duplexes are constructed and occupied at the time of writing.

Permitted Development Design Year Scenario	Period	Vehicle Trip Generation	
		Arrival	Departure
2020 Opening Year	AM	13	35
	PM	40	30
2025 Future Design Year	AM	64	200
	PM	218	150
2035 Future Design Year	AM	64	200
	PM	218	150

Table 5-6: Committed Development Trips (Reference: SHD3ABP-305267-19)

5.5 Traffic Growth

The assessment adopts an Opening Design Year of 2026. The TII Project Appraisal Guidelines for National Roads (PAG) have been utilised to determine the traffic growth forecast rates. The traffic growth forecast rates within the PAG ensures local and regional variations and demographic

patterns are accounted for. Table 6.1 (Unit 5.3 – Travel Demand Projections) within the TII Project Appraisal Guidelines provides Annual Growth Factors for the different regions within Ireland. Central Growth Rates are used. The subject site lies within 'Dublin Metropolitan Area' with the growth factors as outlined within **Table 5-7.**

Metropolitan Area	Central Growth Rates					
	2016-2030		2030-2040		2040-2050	
	LV	HV	LV	HV	LV	HV
Dublin	1.0162	1.0295	1.0051	1.0136	1.0044	1.0162

Table 5-7: Traffic Growth Forecasts: Annual Growth Factors (Source: Table 6.1 PAG)

Applying the annual factors outlined above for the adopted Opening Year of 2026 and Future Design Years of 2031 (Opening Year +5 years) and 2041 (Opening Year +15 years), the following growth rates have been adopted to establish corresponding 2026, 2031 and 2041 baseline network flows:

- 2026 – 1.0494 (or 4.94%)
- 2031 – 1.1248 (or 12.48%)
- 2041 – 1.1826 (or 18.26%)

6 ASSESSMENT SCOPE AND NETWORK IMPACT

6.1 Assessment Scope

6.1.1 Assessment Scenarios

Three different traffic scenarios have been assessed, namely (a) the 'Base / Do-Nothing' traffic characteristics, (b) the 'Do-Minimum' scenario and (c) the 'Do-Something' scenario.

The **Base** scenario assesses the traffic conditions of the existing traffic obtained from Junction Turning Counts (JTCs). These volumes are grown with the growth factors shown previously in Table 5-7 for the design years, and no additional volumes are applied to this scenario.

The **Do-Nothing** scenario applies the volumes produced by the committed developments to the Base scenario. Finally, the **Do-Something** scenario applies the development site's volumes in this TTA to the **Do-Nothing** scenario.

In summary the following scenarios are considered:

Base

- 2026 Base Flows (base traffic counts grown to Year 2026 by 4.94%)
- 2031 Base Flows (base traffic counts grown to Year 2031 by 12.48%)
- 2041 Base Flows (base traffic counts grown to Year 2041 by 18.26%)

Do-Nothing

- 2026 Base Flows + Committed Development Flows
- 2031 Base Flows + Committed Development Flows
- 2041 Base Flows + Committed Development Flows

Do Something

- 2026 Do Nothing + Proposed Development Flows
- 2031 Do Nothing + Proposed Development Flows
- 2041 Do Nothing + Proposed Development Flows

6.1.2 Assessment Period

The AM and PM peak hour flows have been identified as occurring between **08:00 – 09:00** and **16:30 – 17:30** respectively. These peak hour periods form the basis of the 2026, 2031 and 2041 network assessments.

6.1.3 Network Vehicle Flows

The following figures as included in **Appendix A** present the vehicle flows across the local road network for each of the adopted scenarios. For clarity, all Figures in Appendix A are described below:

- **Figure 1** - 2023 Base Flows
- **Figure 2 to Figure 4** - 2026, 2031 and 2041 Base Flows
- **Figure 7 to Figure 9** - 2026, 2031, and 2041 Do-Nothing Scenario
- **Figure 12 to Figure 14** - 2026, 2031, and 2041 Do-Something Scenario

6.2 Road Network Impact

The TII document entitled Traffic and Transport Assessment Guidelines (2014) provides thresholds in relation to the impact of a proposed development upon the local road network. It is considered material when the level of traffic a development generates exceeds 10% of the traffic flow on the adjoining road (or 5% for congested conditions). When such levels of impact are generated, a more detailed assessment should be undertaken to determine the detailed impact upon the network's operational performance.

Table 6-1 details the specific scale of network impact predicted at each of the key local junctions during the 2026, 2031 and 2041 design years as a result of the subject development. It can be seen that the St Cuthbert's Road / Old Nangor Road junction has an impact of larger than 5% during the PM Peak Period and, as such, will be assessed further in **Chapter 7**. Junctions 1 and 3 are predicted to experience negligible impacts of under 1% during both the AM and PM Peak Periods once the proposed development is operational.

No.	Junction	Year	AM Peak (08:00-09:00)			PM Peak (16:30-17:30)		
			DN	DS	% Impact	DN	DS	% Impact
1	Nangor Road (R134) / St Cuthbert's Road	2026	2306	2324	0.75%	2156	2177	0.96%
		2031	2463	2480	0.71%	2309	2329	0.89%
		2041	2583	2600	0.67%	2418	2438	0.85%
2	St Cuthbert's Road / Old Nangor Road	2026	757	787	4.02%	587	624	6.31%
		2031	797	828	3.81%	610	647	6.07%
		2041	828	859	3.67%	628	665	5.90%
3	R136 Left-in Left-Out (LILO)	2026	3204	3205	0.05%	3242	3244	0.06%
		2031	3477	3479	0.05%	3523	3525	0.06%
		2041	3650	3652	0.04%	3697	3699	0.05%

Table 6-1: Network Impact through key Junctions

Figure 6-1 presents the predicted additional two-way traffic travelling through each of the key junctions and the associated percentage impact for the Year 2041.

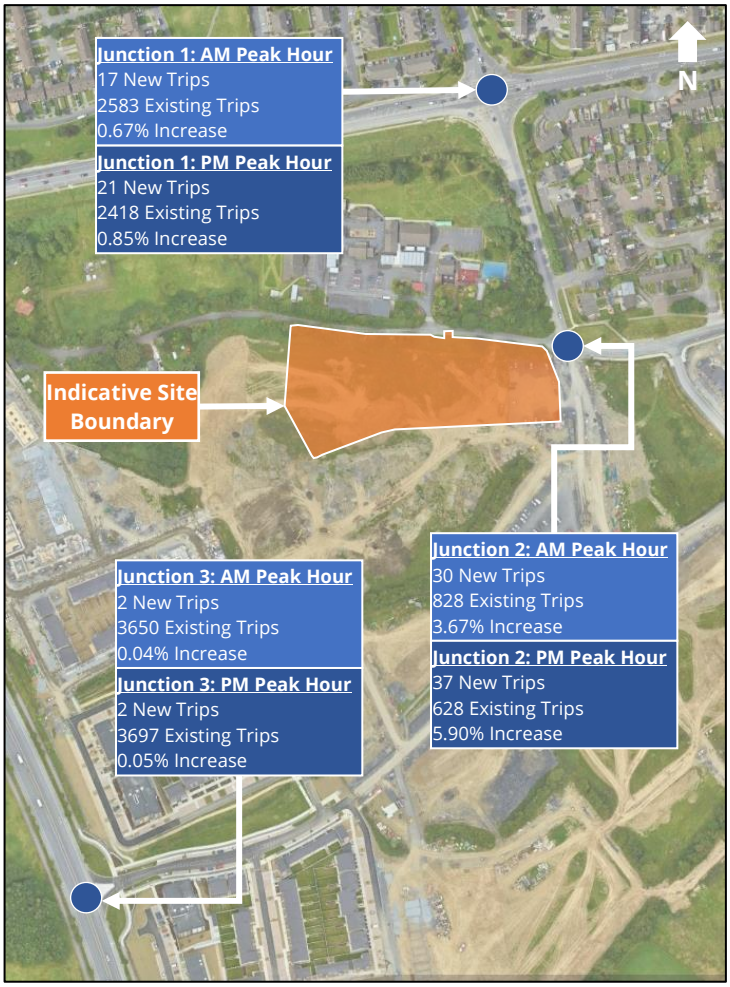


Figure 6-1: Additional two-way trips through network (Year 2041)

7 NETWORK ASSESSMENT

7.1 Introduction

As discussed in the previous section, the predicted traffic impact at the existing Old Nangor Road / Saint Cuthbert's Road junction is calculated to be over 5% in the PM peak hour. Accordingly, this priority-controlled junction has been subject to more detailed assessment using the Transport Research Laboratory's computer package PICADY. This package is used to assess isolated priority junctions. The St Cuthbert's Road / Old Nangor Road junction is assessed for the Do-Nothing and Do-Something Scenarios.

For the PICADY analysis, 90-minute periods have been simulated between 07:45 – 09:15 and 16:15 – 17:45 for the AM Peak and PM Peak periods respectively. The PICADY output files can be found in **Appendix C.**

A summary of the arms as labelled in the PICADY assessment is presented in **Figure 7-1.**

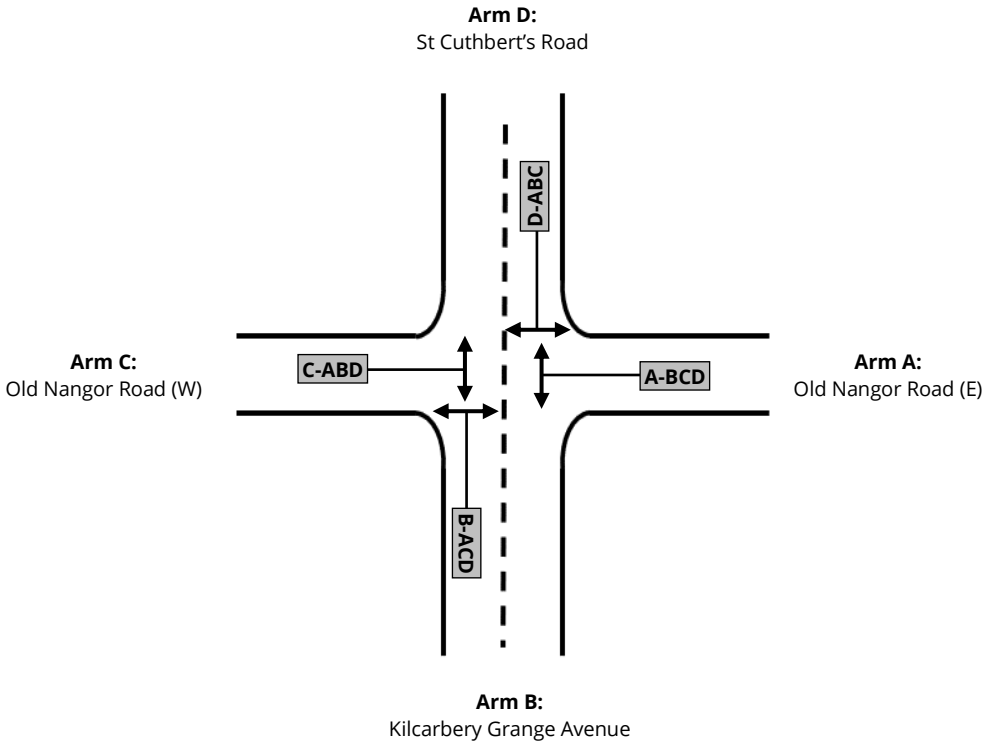


Figure 7-1: Description of Arms and Streams assessed in PICADY Traffic Model

7.2 Junction Analysis

The Do-Nothing and Do-Something scenarios were assessed for the Years 2026, 2031, and 2041. The results of the operational assessment on the existing site access roundabout without the presence of the proposed development arm and traffic (Do-Nothing), as well as the results of the Do-Something assessment when the development is operational, are summarised in **Section 7.2.1** and **Section 7.2.2** that follow.

7.2.1 Do-Nothing Scenario

The results of the PICADY analysis associated with the Do-Nothing Scenario is summarised in **Table 7-1.**

Design Year	Arm	Arm Description	AM Peak (08:00 - 09:00)			PM Peak (15:30 - 16:30)		
			Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2026	Arm A	Old Nangor Road (E)	1.1	11.5	0.5	0.5	7.92	0.3
	Arm B	Kilcarbery Grange Ave	0.6	12.85	0.37	0.5	10.83	0.32
	Arm C	Old Nangor Road (W)	0	0	0	0	0	0
	Arm D	St Cuthbert's Road	1.4	15.92	0.58	0.7	11.59	0.42
2031	Arm A	Old Nangor Road (E)	1.2	12.37	0.54	0.5	8.15	0.32
	Arm B	Kilcarbery Grange Ave	0.6	13.25	0.38	0.5	11.06	0.33
	Arm C	Old Nangor Road (W)	0	0	0	0	0	0
	Arm D	St Cuthbert's Road	1.6	17.73	0.62	0.8	11.87	0.43
2041	Arm A	Old Nangor Road (E)	1.4	13.09	0.57	0.6	8.36	0.33
	Arm B	Kilcarbery Grange Ave	0.6	13.68	0.39	0.5	11.33	0.34
	Arm C	Old Nangor Road (W)	0	0	0	0	0	0
	Arm D	St Cuthbert's Road	1.8	19.46	0.65	0.8	12.11	0.44

Table 7-1: PICADY Output for Do Nothing Scenario

From Table 7-1, Arm D (St Cuthbert's Road North Arm) operates with the highest ratio of flow to capacity (RFC) of 0.58, 0.62, and 0.65 for the 2026, 2031, and 2041 AM Peak Scenarios respectively. Furthermore, Arm A (Old Nangor Road East Arm) operates with the second highest RFC after Arm D for the AM Peak Period with RFCs of 0.5, 0.54, and 0.57 for the three Scenarios assessed. For the PM Peak 2026, 2031, and 2041 Scenarios, Arms A operates with RFCs of 0.3, 0.32, and 0.33 respectively and Arm D operates with RFCs of 0.42, 0.43, and 0.44 respectively. This is the capacity without the subject development in place.

Furthermore, Arm A operates at relatively high RFCs for the three scenario periods. However, the delay is not excessive and, for Arm B, the delay is due to the high number of right turners onto St Cuthbert's Road.

The highest RFC experienced was 0.65 for Arm D during the 2041 AM Peak Scenario. This RFC, however, is significantly below 0.85, which is the RFC that indicates a junction is approaching capacity).

7.2.2 Do-Something Scenario

The results of the PICADY analysis associated with the Do-Something Scenario is summarised in **Table 7-2.**

Design Year	Arm	Arm Description	AM Peak (08:00 - 09:00)			PM Peak (15:30 - 16:30)		
			Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
2026	Arm A	Old Nangor Road (E)	1.1	11.64	0.51	0.5	7.92	0.3
	Arm B	Kilcarbery Grange Ave	0.6	13.2	0.38	0.5	11.07	0.33
	Arm C	Old Nangor Road (W)	0	0	0	0	0	0
	Arm D	St Cuthbert's Road	1.5	17.12	0.6	0.8	12.67	0.45
2031	Arm A	Old Nangor Road (E)	1.3	12.53	0.54	0.5	8.16	0.32
	Arm B	Kilcarbery Grange Ave	0.6	13.69	0.39	0.5	11.36	0.34
	Arm C	Old Nangor Road (W)	0	0	0	0	0	0
	Arm D	St Cuthbert's Road	1.8	19.24	0.64	0.9	13.01	0.47
2041	Arm A	Old Nangor Road (E)	1.4	13.28	0.57	0.6	8.38	0.34
	Arm B	Kilcarbery Grange Ave	0.7	14.07	0.4	0.5	11.59	0.35
	Arm C	Old Nangor Road (W)	0	0	0	0	0	0
	Arm D	St Cuthbert's Road	2	21.28	0.68	0.9	13.3	0.48

Table 7-2: PICADY Output for Do Something Scenario

From Table 7-2, it can be seen that the addition of the subject development has a negligible impact on the traffic conditions. This is evident by comparing the RFC between the Do-Nothing and Do-Something Scenarios which increase, at most, by 0.04 (Arm D during the 2031 and 2041 PM Peak Periods). Following the same trend, the delay at each Arm is not increased by much, with the highest increase of 1.8 seconds per vehicle being observed at Arm D between the Do-Nothing and Do-Something 2041 Design Years for the PM Peak Period.

8 SUMMARY AND CONCLUSIONS

8.1 Summary

- DBFL Consulting Engineers have been commissioned by the South Dublin City Council (SDCC) to compile a Traffic and Transport Assessment (TTA) for a Residential Development in Kilcarbery, Dublin South. The proposal has been prepared on behalf of South Dublin County Council as a Part 8 application for a residential development and consists of a mix of 88 units consisting of a variety of house and duplex types. The units proposed include 44 no. 3bed 2 storey houses, 8 no. 4 bed 2 storeys houses, 36 no. duplex units (varying from 1 to 3 beds) within 3 storey duplex blocks.
- This TTA has been produced to address any potential concerns of the local planning authority pertaining to the level of influence of the proposed development upon the local transportation system.
- The subject site is ideally located to access a range of facilities and amenities using different modes of transportation. Furthermore, the proposal incorporates the provision of 4 No. new site access junctions. Two of these accesses will be to the north of the site on Old Nangor Road, and two will be to the south on a newly constructed road off Kilcarbery Grange Avenue for the SHD3ABP-305267-19 development.
- Pedestrians and cyclists will access the site at the same locations as vehicles. Pedestrians and cyclists will access the site at the same locations as the aforementioned vehicular accesses introduced above. The subject development proposals include for new footpaths along the perimeter of the site that leads to the 4 No. site access locations. Within the site, north-south pedestrian and cyclist movements are facilitated through the site between the two northern and two southern accesses through dedicated pedestrian facilities and traffic calmed streets. Additionally, there are dedicated cycle facilities proposed as part of the subject scheme on the eastern and northern boundaries of the subject site.
- The subject development proposal includes a total of 100 no. car parking spaces (62 no. spaces for the houses and 38 no. spaces for duplex units). In regard to the car parking proposals for the 52 no. house units, it is noted that the car parking provision is approx. 40% below the maximum permitted quantum and subsequently do not exceed the maximum permitted. The provision of 62 no. House Unit car parking spaces equates to **1.2 no. spaces per House Unit**. In the interest of ascertaining if this level of car parking is

appropriate to meet the projected demand, a review of the 2022 Census car ownership statistics has been undertaken. It has been established that, at comparable local residential areas, there is an existing ratio of approximately 1.2 car parking spaces per residential housing unit. Accordingly, the proposed development's car parking ratio of 1.2 parking spaces per residential housing unit aligns with the neighbouring residential settlements' ratio and therefore is considered an appropriate level of car parking provision to cater for the projected demand.

- The subject scheme proposals include for a higher quantum of cycle parking spaces in comparison to the local development management minimum standards and is therefore in compliance.
- The analysis in this TTA reveals that the impact at key local junctions is less than 5% for all scenarios apart from the St Cuthbert's Road / Old Nangor Road junction during the PM Peak, which is summarised in **Figure 8-1**.

Figure 8-1: Additional two-way trips through network (Year 2041)

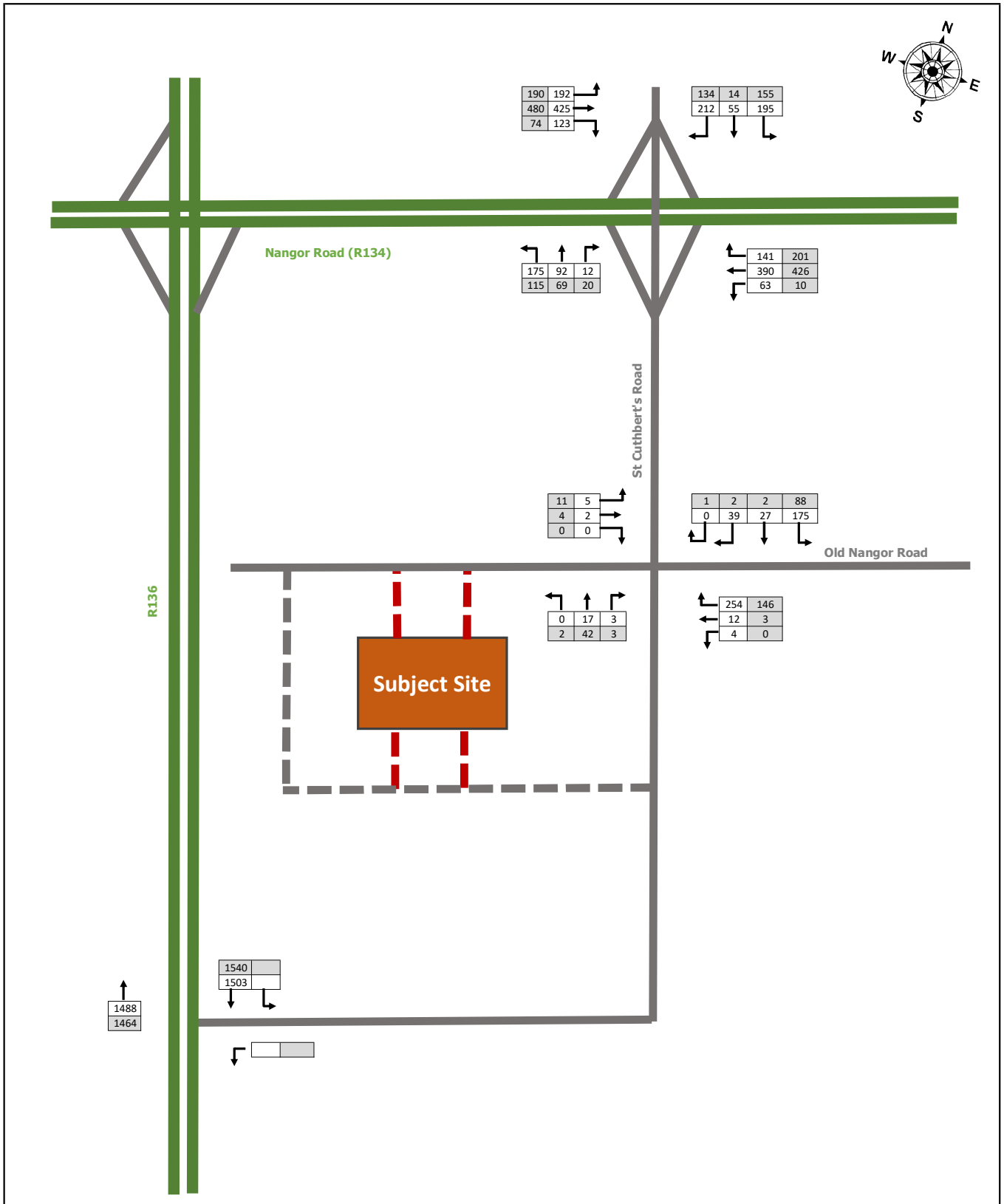
- The AM and PM Peak Hour PICADY modelling assessment of the Old Nangor Road / St Cuthbert's Road Junction, which is the main access junction leading to the development, reveals that the addition of the subject development has a negligible impact on traffic conditions. This is evident by comparing the RFC between the Do-Nothing and Do-Something Scenarios which increase, at most, by 0.04 (Arm D during the 2031 and 2041 PM Peak Periods). Following the same trend, the delay at each Arm increases by a negligible amount, with the highest increase of 1.8 seconds per vehicle being observed at Arm D between the Do-Nothing and Do-Something 2041 Design Years for the PM Peak Period.

8.2 Conclusion

The analysis of the network's operational performance in each of the adopted design years 'post development' scenarios has established that the proposals will not result in a significant material deterioration of the network's operational performance. This is based on the anticipated levels of traffic generated by the proposed development and analysis summarised in the above report.

It is concluded that the proposals represent a sustainable and practical approach to development on the subject site with no material traffic or road safety related reasons that should prevent the granting of planning permission for the proposed development.

Appendix A : Traffic Flow Diagrams



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Project : Kilcarbery School Site, South Dublin

DRG. Title : 2023 Base Traffic Flows (PCUs)

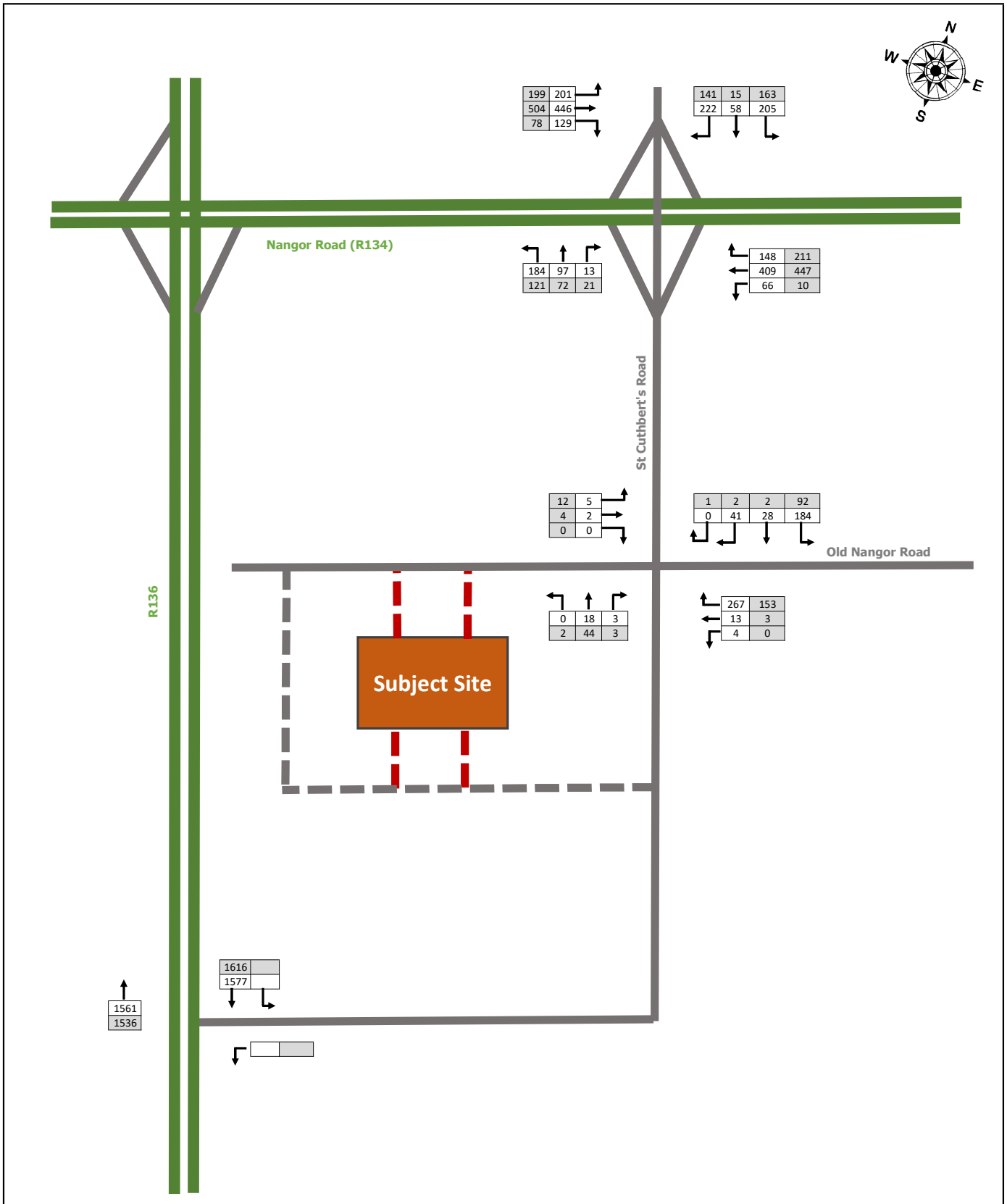
Key:
- AM Peak Hour (08:00 to 09:00)
- PM Peak Hour (16:30 to 17:30)

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 1

Rev:



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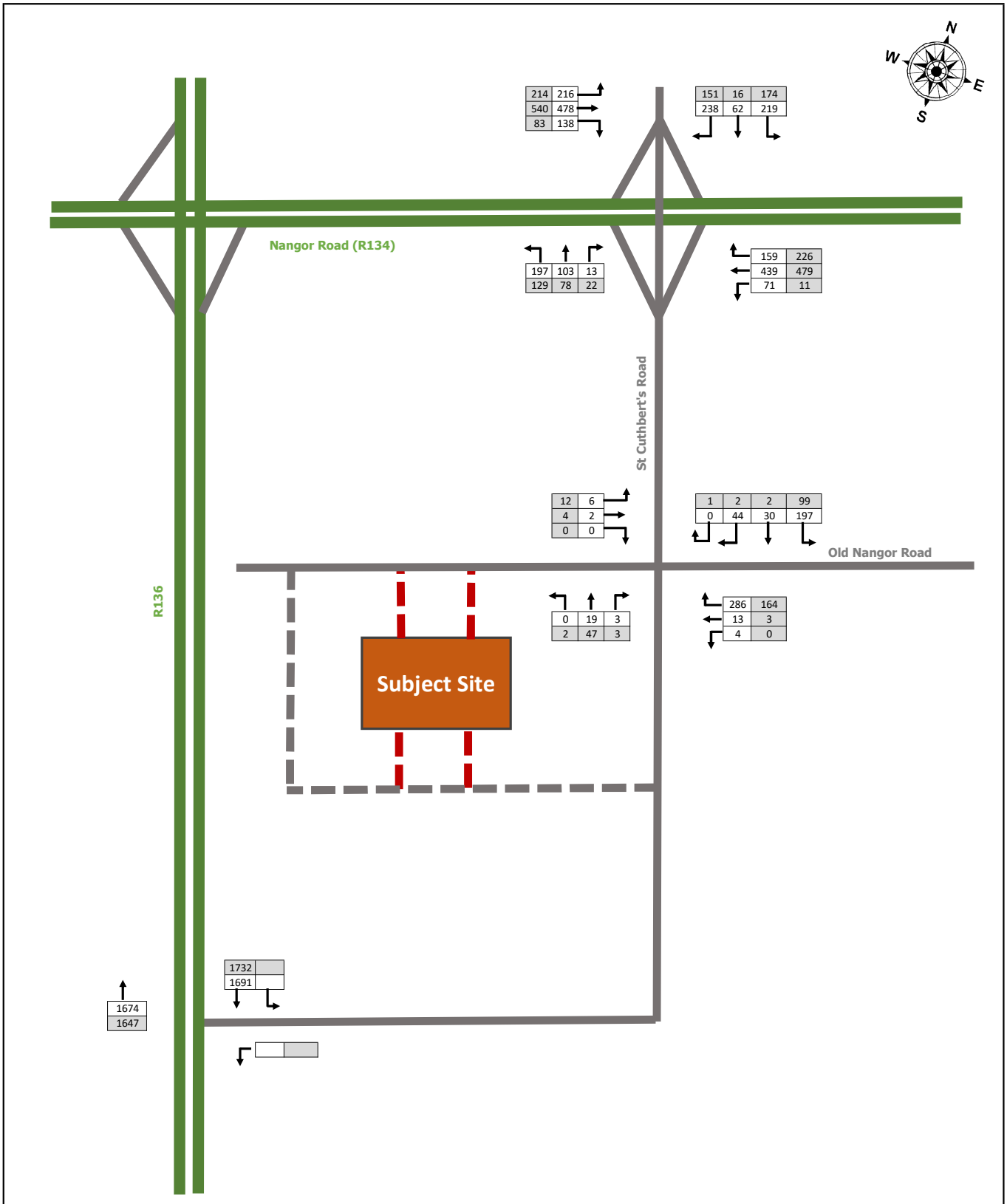

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Project : Kilcarbery School Site, South Dublin

DRG. Title : 2031 Base Traffic Flows (PCUs)

Key:
AM Peak Hour (08:00 to 09:00)
PM Peak Hour (16:30 to 17:30)
Growth Factor 1.12

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

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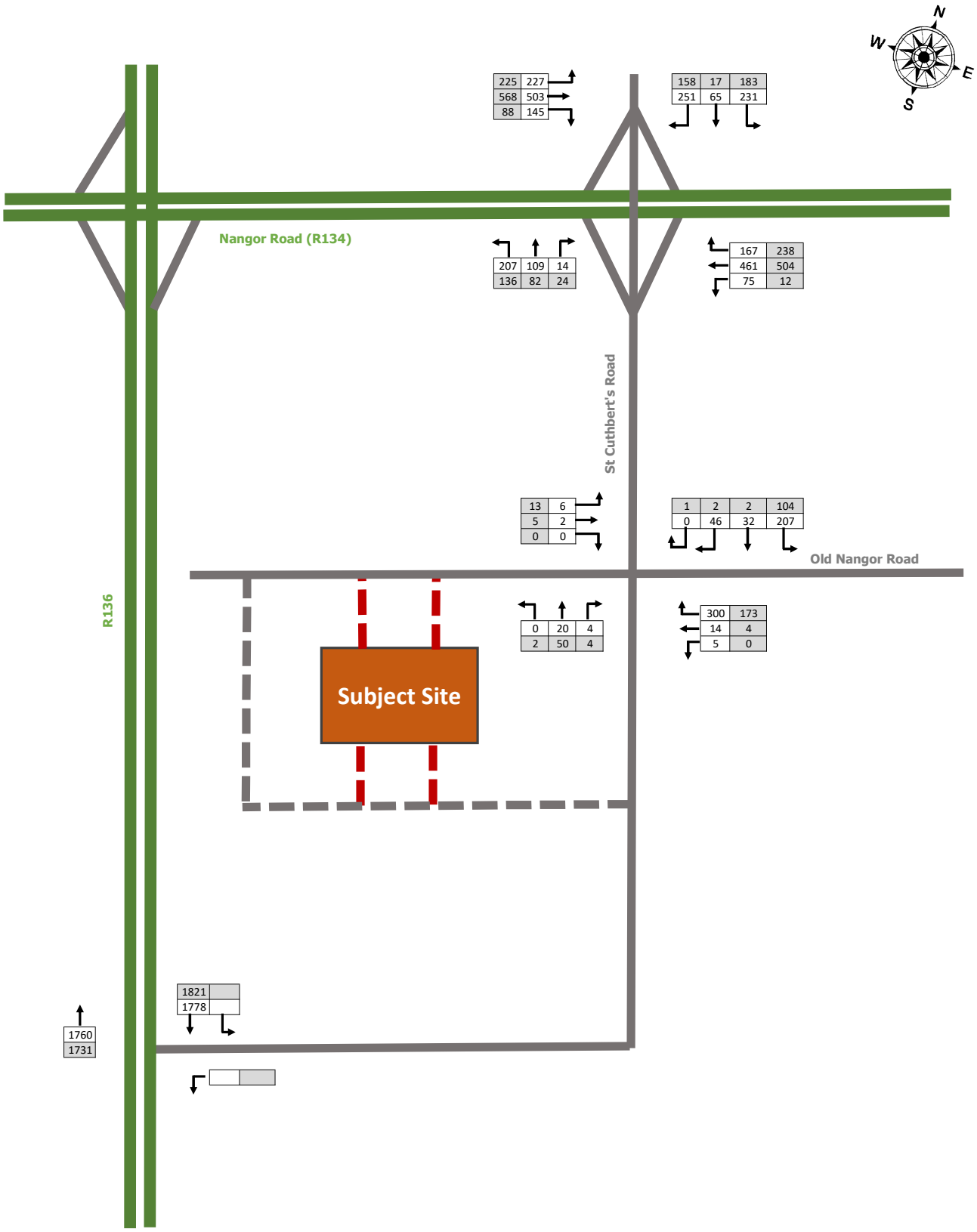

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Project : Kilcarbery School Site, South Dublin

DRG. Title : 2041 Base Traffic Flows (PCUs)

Key:
AM Peak Hour (08:00 to 09:00)
PM Peak Hour (16:30 to 17:30)

Growth Factor 1.18

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 4

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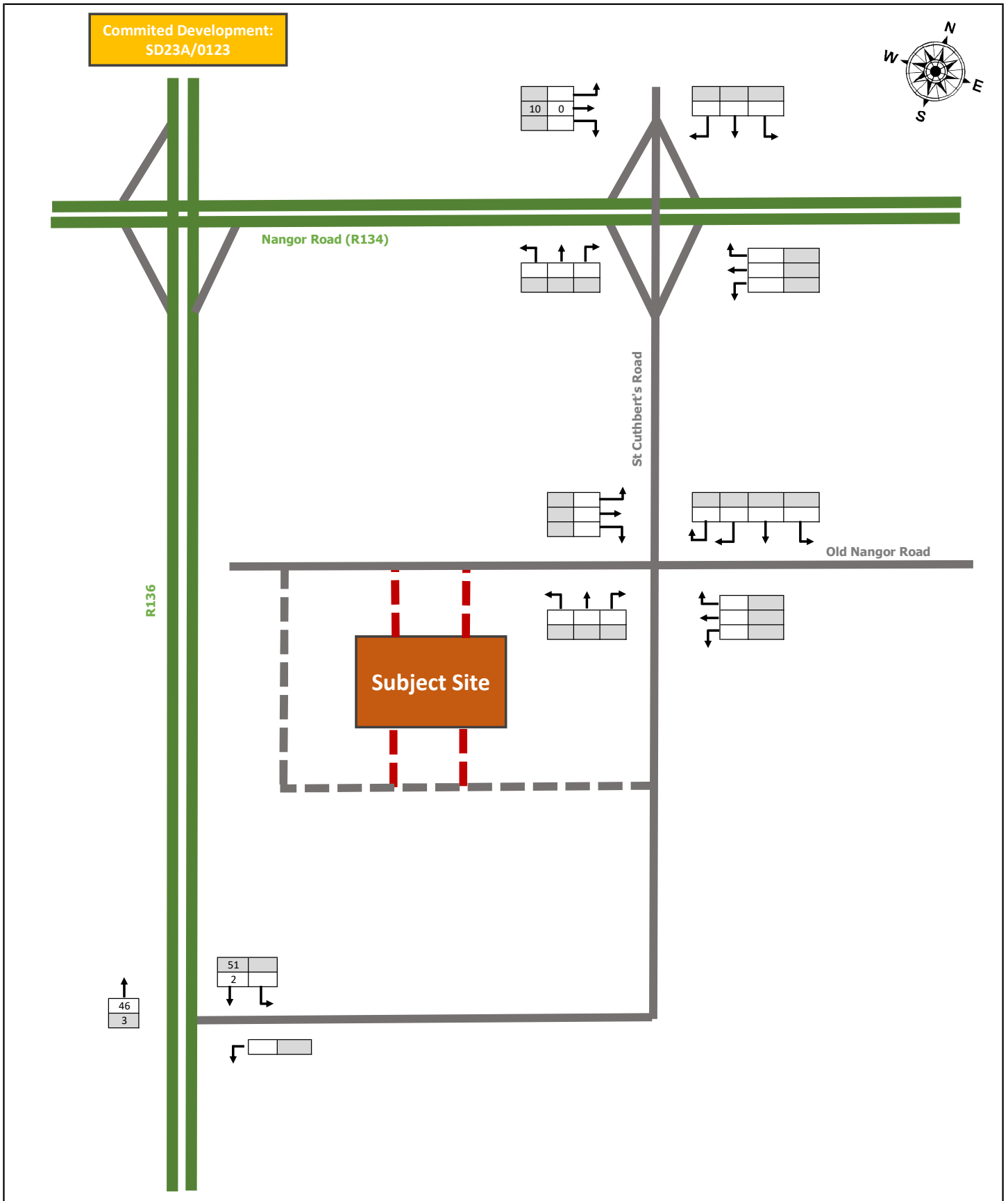

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Project : Kilcarbery School Site, South Dublin

DRG. Title : Committed Development (SD23A/0123)

Key:
- AM Peak Hour (08:00 to 09:00)
- PM Peak Hour (16:30 to 17:30)

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 5

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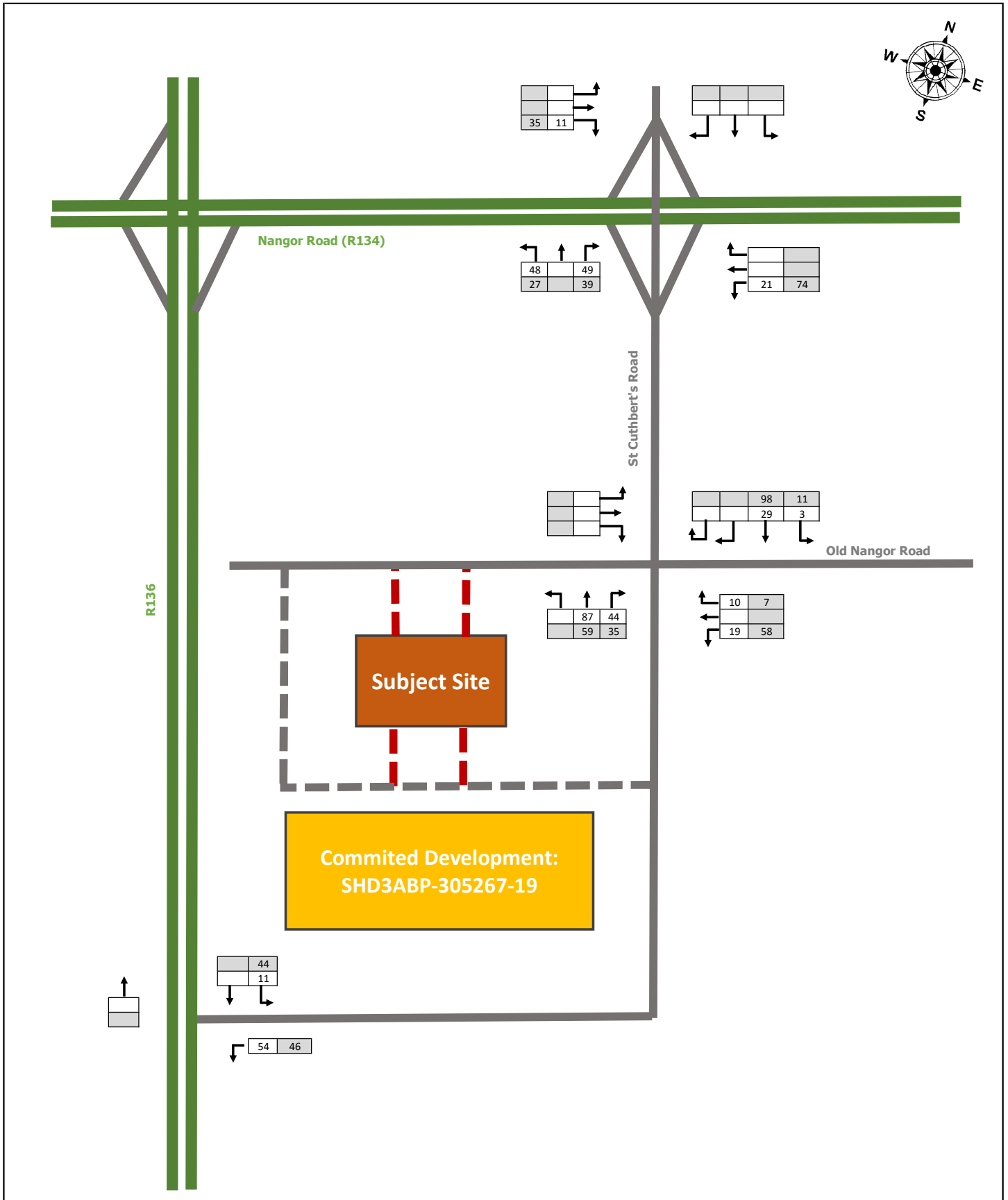

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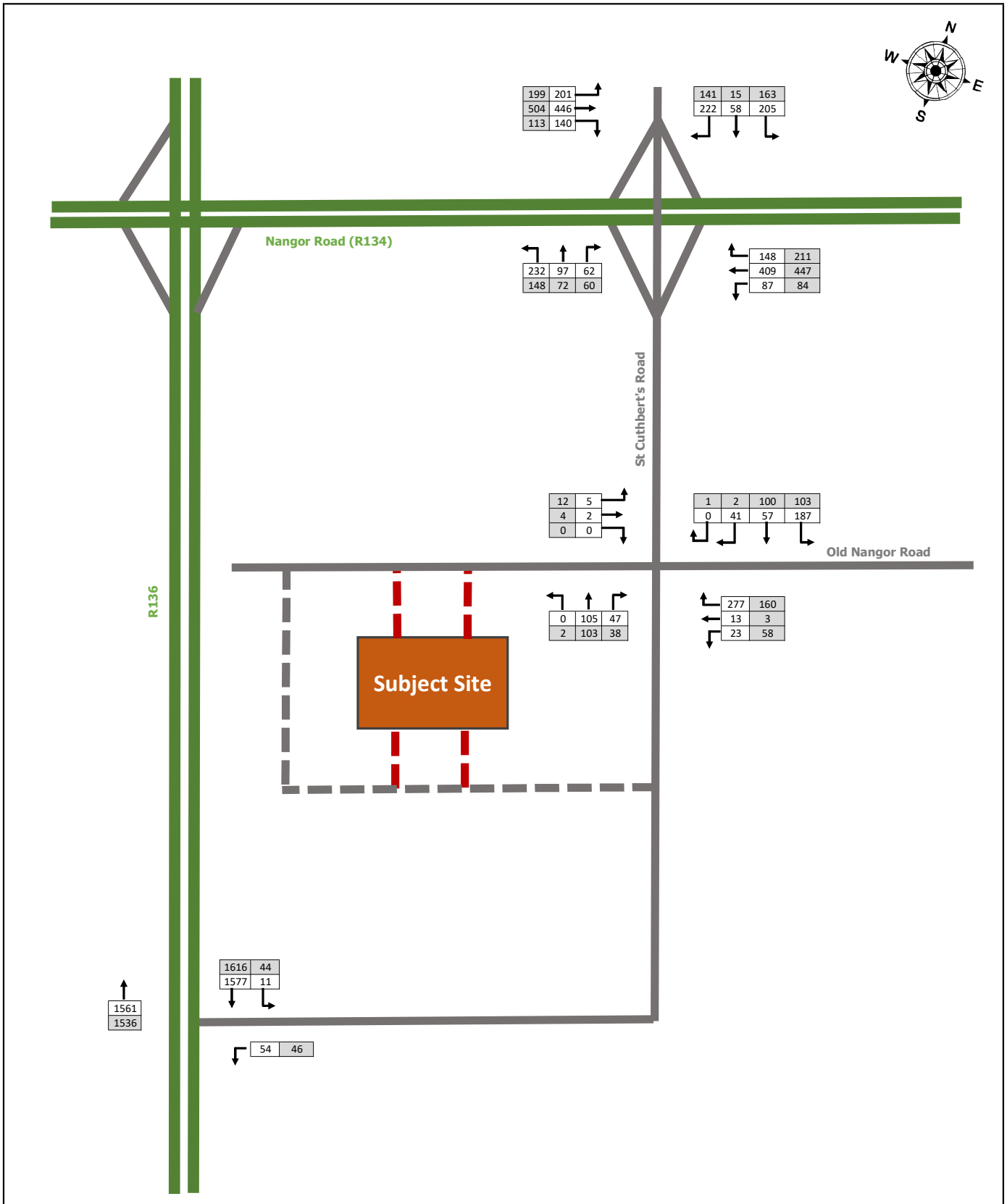

DBFL Consulting Engineers	**Dublin Office** Ormond House, Upper Ormond Quay Dublin 7 D07 W704 **phone:** +353 1 400 4000	**Cork Office** 14 South Mall, Cork T12 CT91 **phone:** +353 21 202 4538	**Waterford Office** Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028 **phone:** +353 309 500	**Galway Office** Odeon House 7 Eyre Square Galway H91 YNC8 **phone:** +353 91 33 55 99	**Project :** Kilcarbery School Site, South Dublin **DRG. Title :** 2026 Do Nothing Scenario (PCUs)	**Key:** AM Peak Hour (08:00 to 09:00) PM Peak Hour (16:30 to 17:30)	**Dwn:** RE **Ckd:** MMK **Date:** 17/11/2023 **Ref:** 230026_Traffic Model_001 **Figure:** 7 **Rev:**

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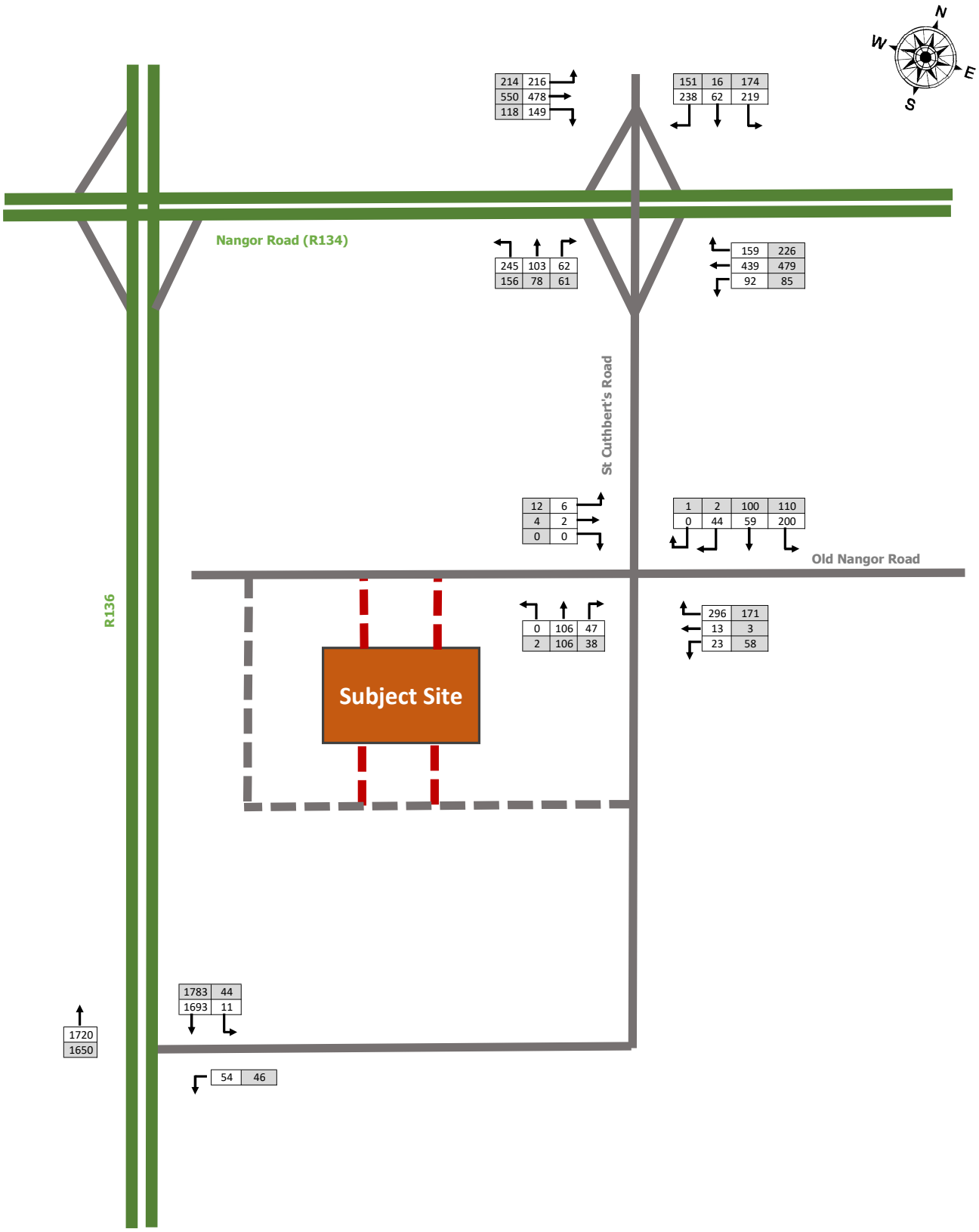
website: www.dbfl.ie



DBFL Consulting Engineers	**Dublin Office** Ormond House, Upper Ormond Quay Dublin 7 D07 W704 **phone:** +353 1 400 4000	**Cork Office** 14 South Mall, Cork T12 CT91 **phone:** +353 21 202 4538	**Waterford Office** Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028 **phone:** +353 309 500	**Galway Office** Odeon House 7 Eyre Square Galway H91 YNC8 **phone:** +353 91 33 55 99	**Project :** Kilcarbery School Site, South Dublin **DRG. Title :** 2031 Do Nothing Scenario (PCUs)	**Key:** AM Peak Hour (08:00 to 09:00) PM Peak Hour (16:30 to 17:30)	**Dwn:** RE **Ckd:** MMK **Date:** 17/11/2023 **Ref:** 230026_Traffic Model_001 **Figure:** 8 **Rev:**

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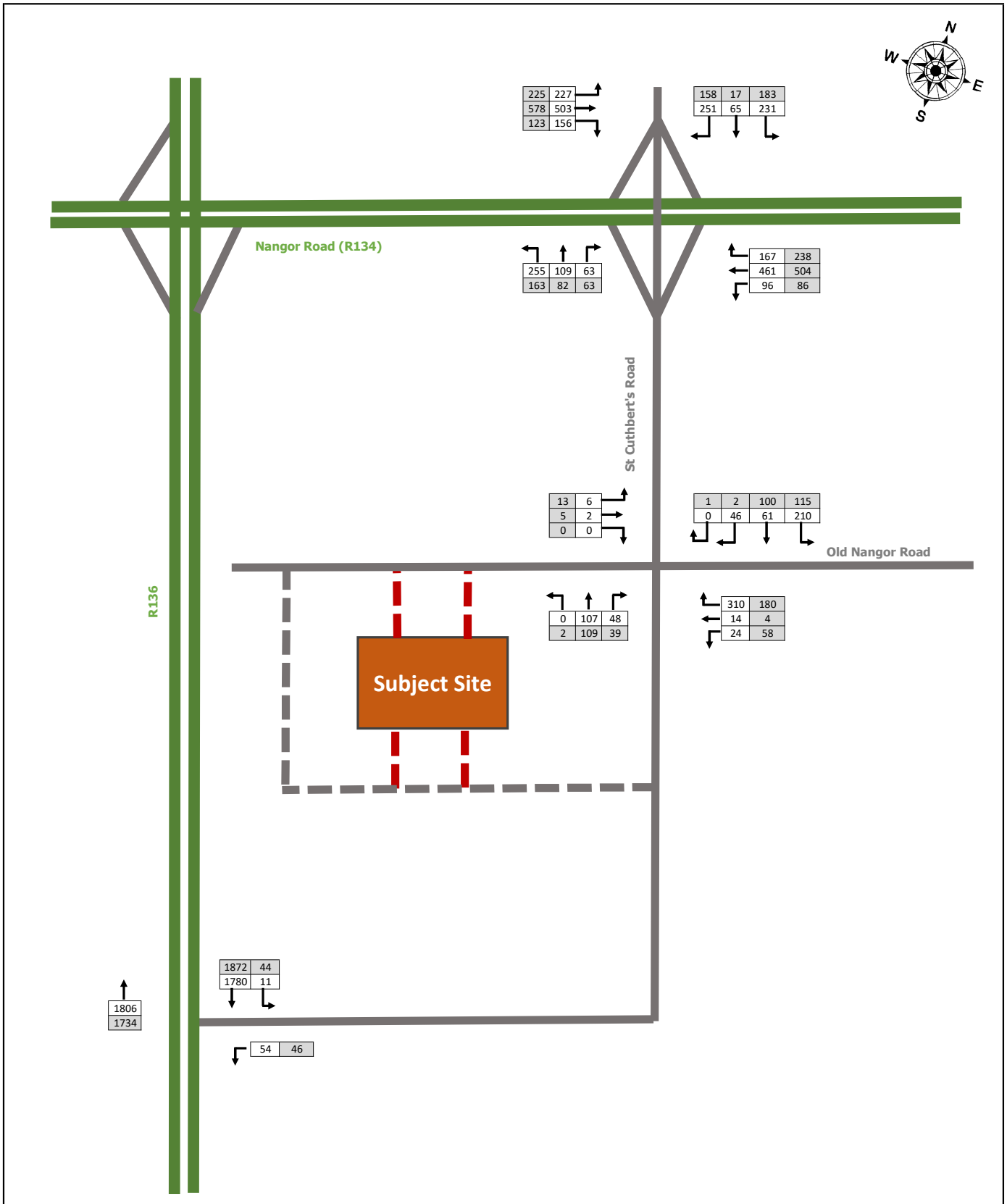
website: www.dbfl.ie



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Ormond House, Upper Ormond Quay Dublin 7 D07 W704	14 South Mall, Cork T12 CT91	Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028	Odeon House 7 Eyre Square Galway H91 YNC8
phone: +353 1 400 4000	phone: +353 21 202 4538	phone: +353 309 500	phone: +353 91 33 55 99

email: info@dbfl.ie
website: www.dbfl.ie

Project : Kilcarbery School Site, South Dublin

DRG. Title : 2041 Do Nothing Scenario (PCUs)

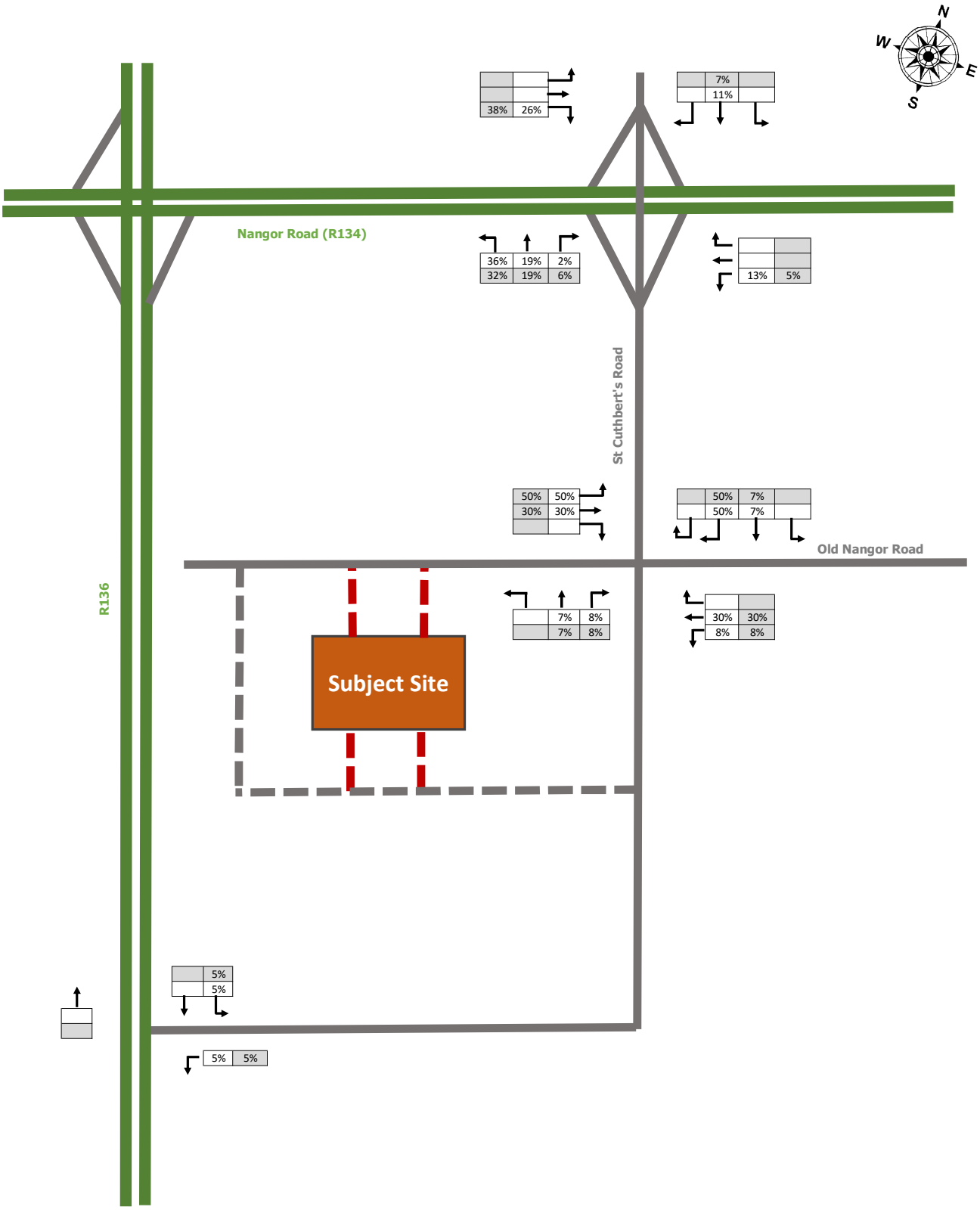
Key:
- AM Peak Hour (08:00 to 09:00)
- PM Peak Hour (16:30 to 17:30)

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 9

Rev:



DBFL Consulting Engineers

Dublin Office	Cork Office	Waterford Office	Galway Office
Ormond House, Upper Ormond Quay Dublin 7 D07 W704	14 South Mall, Cork T12 CT91	Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028	Odeon House 7 Eyre Square Galway H91 YNC8
phone: +353 1 400 4000	**phone:** +353 21 202 4538	**phone:** +353 309 500	**phone:** +353 91 33 55 99

email: info@dbfl.ie
website: www.dbfl.ie

Project : Kilcarbery School Site, South Dublin

DRG. Title : Trip Distribution

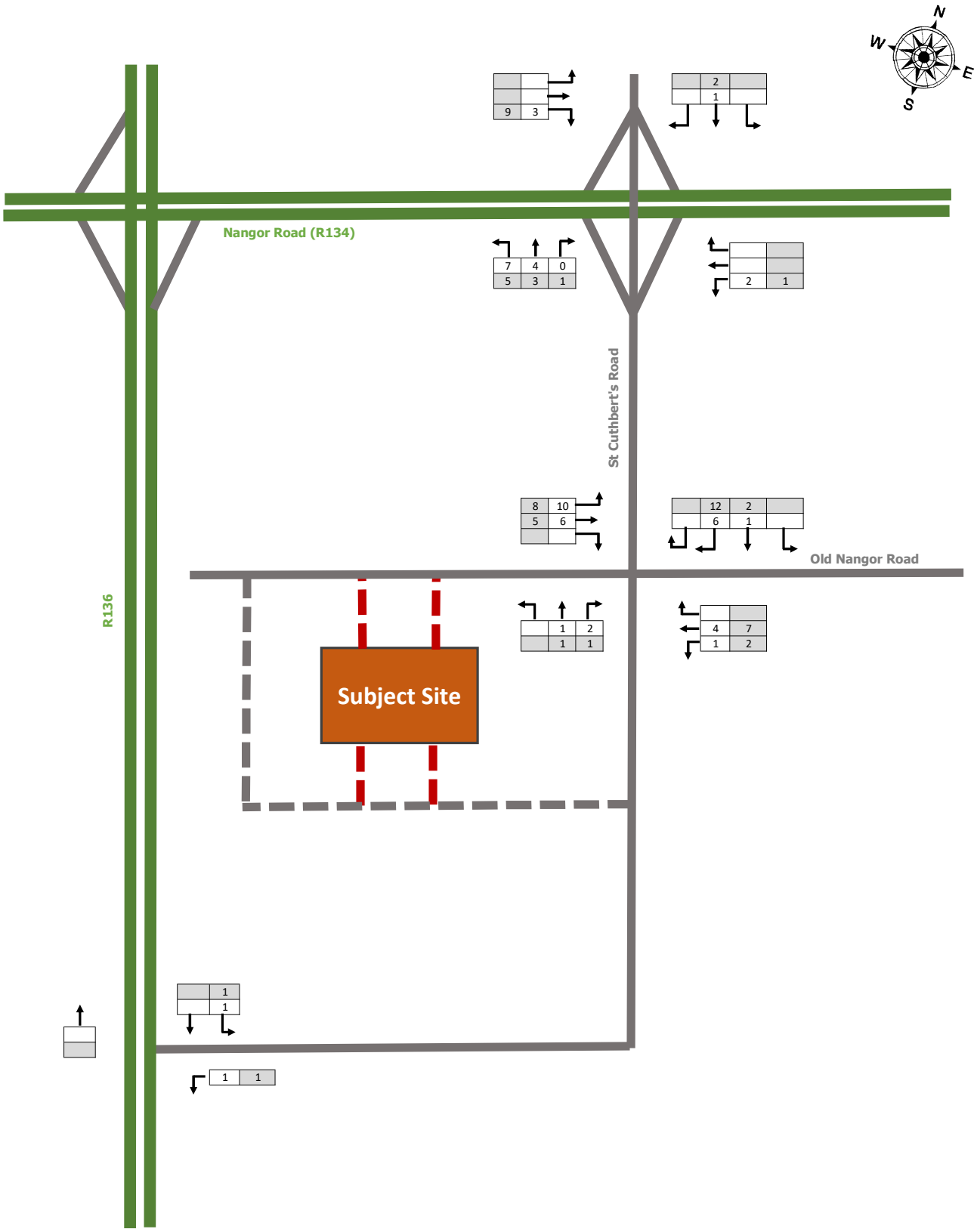
Key:
- AM Peak Hour (08:00 to 09:00)
- PM Peak Hour (16:30 to 17:30)

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 10

Rev:



DBFL Consulting Engineers

Dublin Office	Cork Office	Waterford Office	Galway Office
Ormond House, Upper Ormond Quay Dublin 7 D07 W704	14 South Mall, Cork T12 CT91	Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028	Odeon House 7 Eyre Square Galway H91 YNC8
phone: +353 1 400 4000	**phone:** +353 21 202 4538	**phone:** +353 309 500	**phone:** +353 91 33 55 99

email: info@dbfl.ie
website: www.dbfl.ie

Project : Kilcarbery School Site, South Dublin

DRG. Title : Development Trips

Key:
AM Peak Hour (08:00 to 09:00)
PM Peak Hour (16:30 to 17:30)

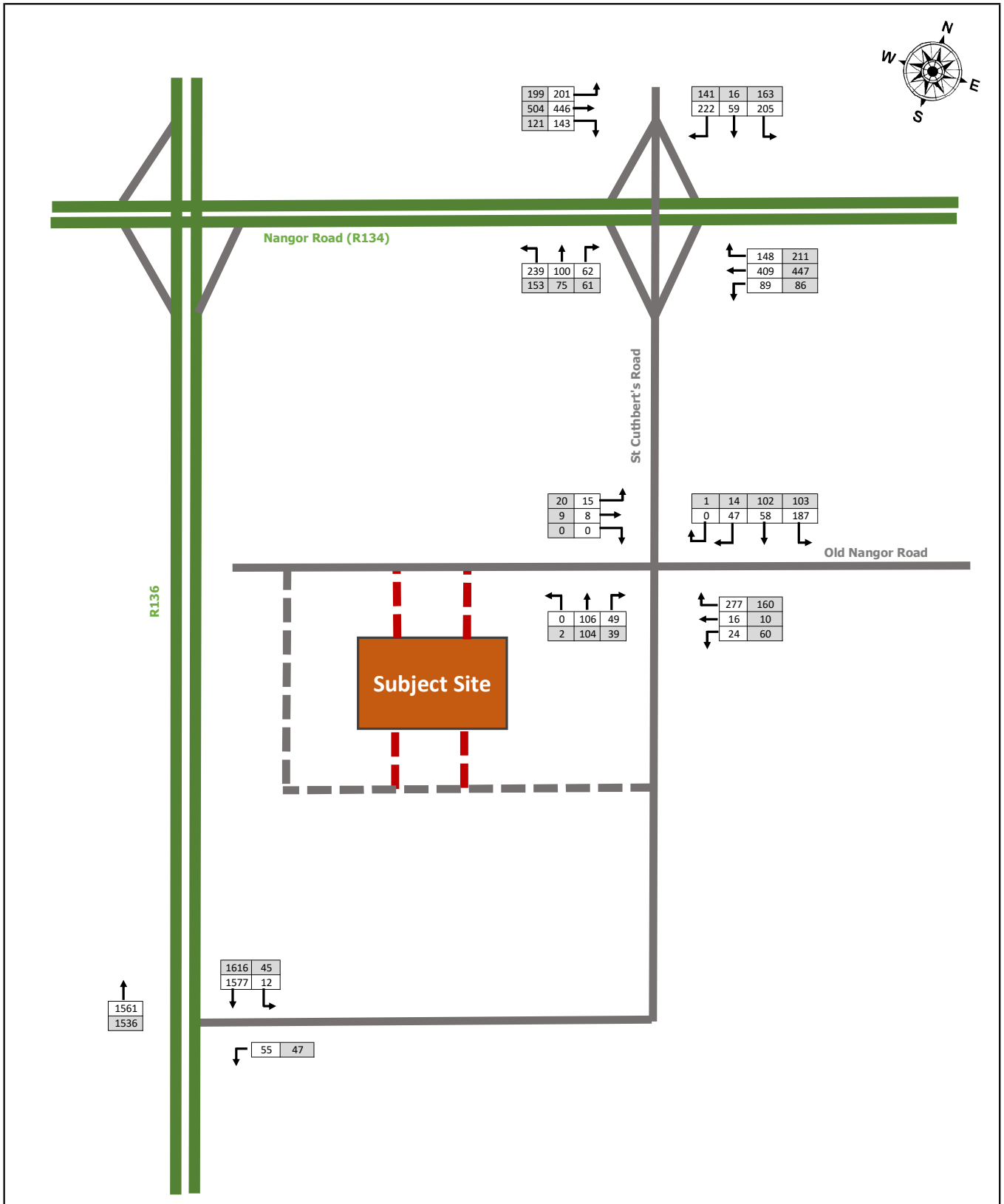
AM Peak		PM Peak	
Arr	Dep	Arr	Dep
12.0	20.0	23.0	16.0

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 11

Rev:



DBFL Consulting Engineers

Dublin Office	Cork Office	Waterford Office	Galway Office
Ormond House, Upper Ormond Quay Dublin 7 D07 W704	14 South Mall, Cork T12 CT91	Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028	Odeon House 7 Eyre Square Galway H91 YNC8
phone: +353 1 400 4000	phone: +353 21 202 4538	phone: +353 309 500	phone: +353 91 33 55 99

email: info@dbfl.ie
website: www.dbfl.ie

Project :	Kilcarbery School Site, South Dublin
DRG. Title :	2026 Do Something Scenario (PCUs)

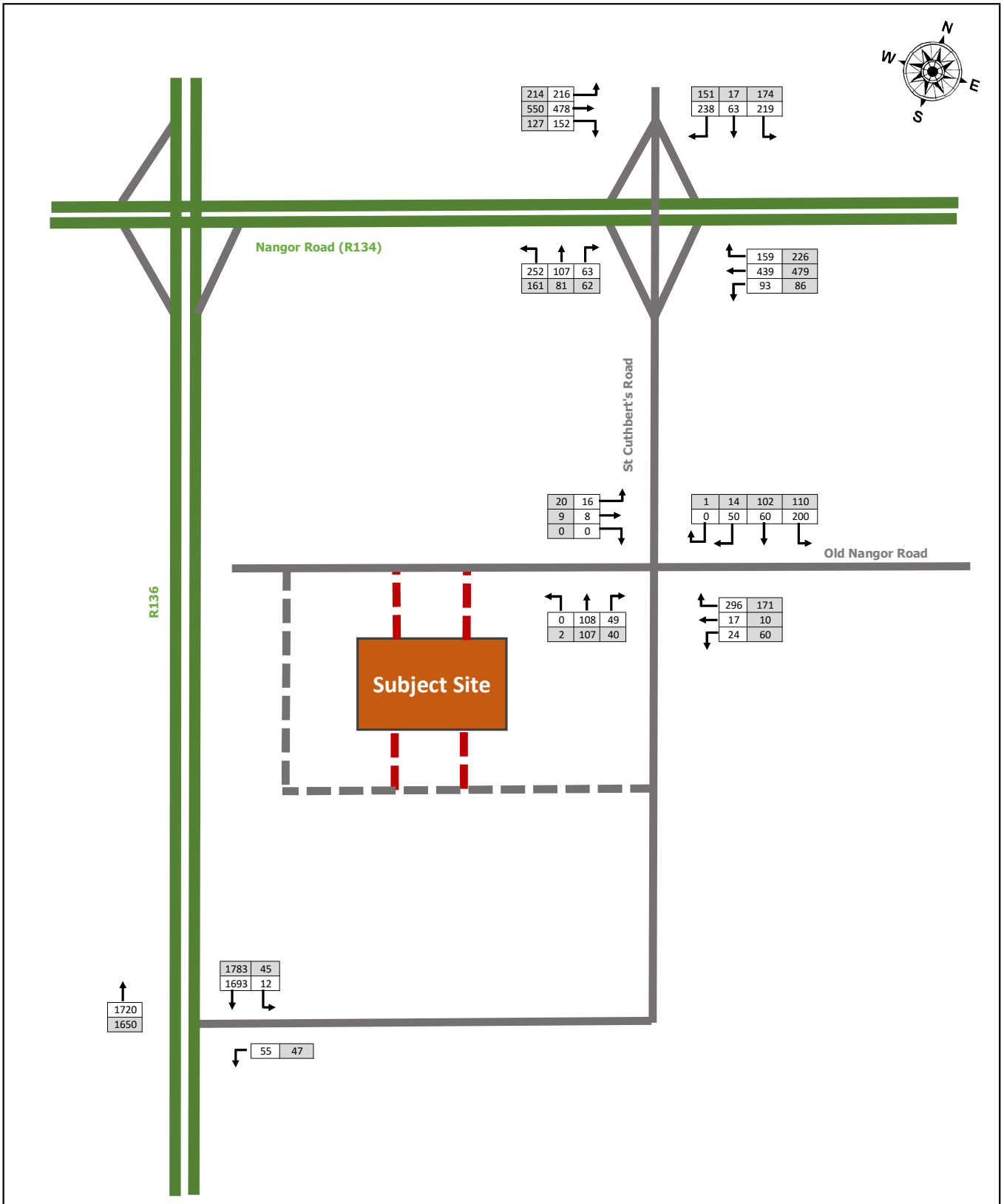
Key:
- AM Peak Hour (08:00 to 09:00)
- PM Peak Hour (16:30 to 17:30)

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 12

Rev:



DBFL Consulting Engineers

Dublin Office	Cork Office	Waterford Office	Galway Office
Ormond House, Upper Ormond Quay Dublin 7 D07 W704	14 South Mall, Cork T12 CT91	Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028	Odeon House 7 Eyre Square Galway H91 YNC8
phone: +353 1 400 4000	phone: +353 21 202 4538	phone: +353 309 500	phone: +353 91 33 55 99

email: info@dbfl.ie
website: www.dbfl.ie

Project : Kilcarbery School Site, South Dublin

DRG. Title : 2031 Do Something Scenario (PCUs)

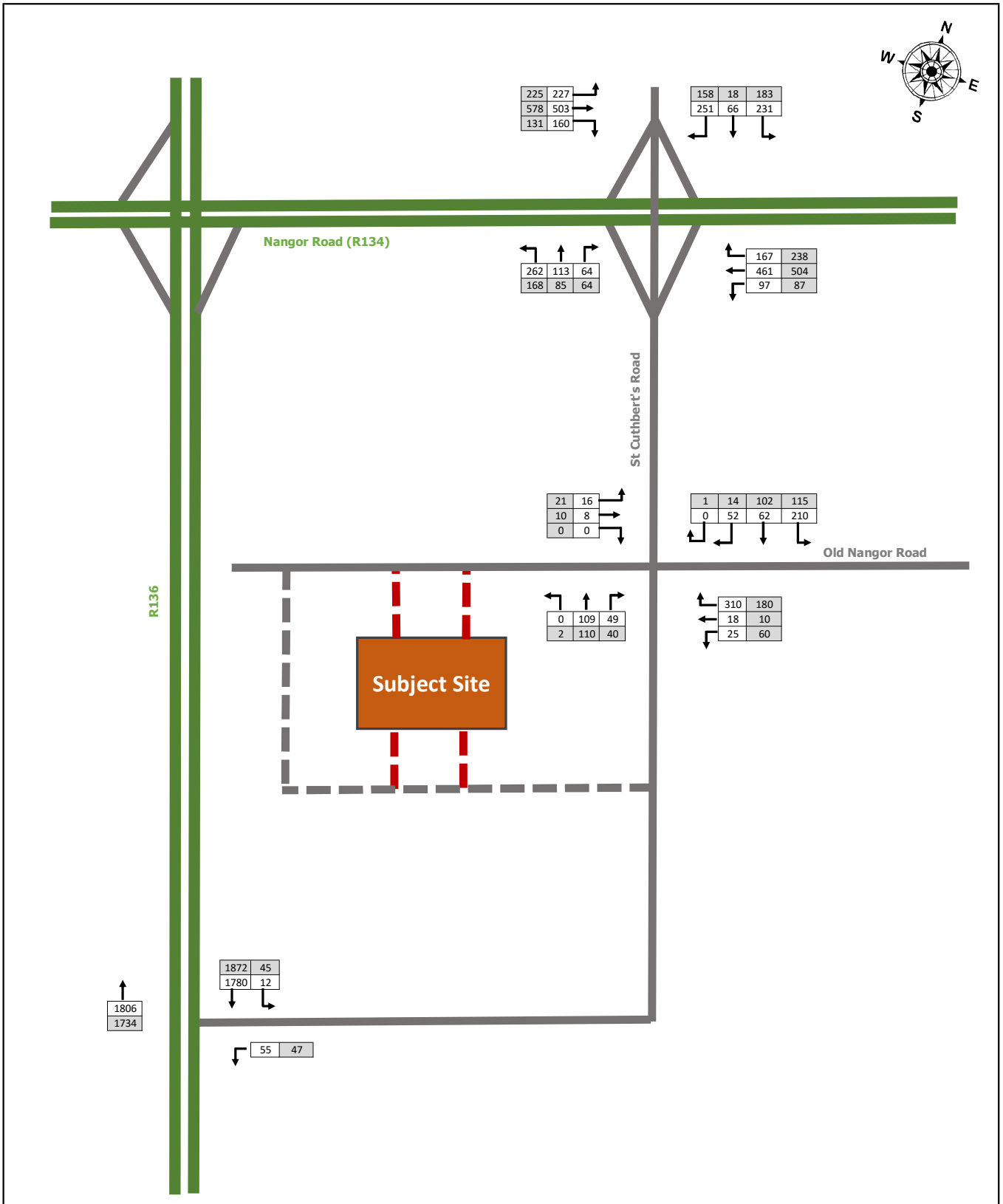
Key:
- AM Peak Hour (08:00 to 09:00)
- PM Peak Hour (16:30 to 17:30)

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 13

Rev:



DBFL Consulting Engineers

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Ormond House, Upper Ormond Quay Dublin 7 D07 W704	14 South Mall, Cork T12 CT91	Suite 8b The Atrium, Maritana Gate, Canada Street, Waterford, X91 W028	Odeon House 7 Eyre Square Galway H91 YNC8
phone: +353 1 400 4000	phone: +353 21 202 4538	phone: +353 309 500	phone: +353 91 33 55 99

email: info@dbfl.ie
website: www.dbfl.ie

Project : Kilcarbery School Site, South Dublin

DRG. Title : 2041 Do Something Scenario (PCUs)

Key:
- AM Peak Hour (08:00 to 09:00)
- PM Peak Hour (16:30 to 17:30)

Dwn:	Ckd:	Date:
RE	MMK	17/11/2023

Ref: 230026_Traffic Model_001

Figure: 14

Rev:

Appendix B : TRICS

Calculation Reference: AUDIT-638801-231019-1007

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : D - AFFORDABLE/LOCAL AUTHORITY FLATS
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	SP	SOUTHAMPTON	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	1 days
	NG	NOTTINGHAM	1 days
10	WALES		
	CF	CARDIFF	1 days

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

Primary Filtering 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: No of Dwellings
Actual Range: 22 to 66 (units:)
Range Selected by User: 6 to 467 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Monday-Friday 0700-1900
Include days where PT not known: Yes
Range: 29 to 5222

Date Range: 01/01/15 to 16/05/22

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:
Tuesday 2 days
Wednesday 1 days
Friday 1 days

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

Selected survey types:
Manual count 4 days
Directional ATC Count 0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:
Suburban Area (PPS6 Out of Centre) 3
Neighbourhood Centre (PPS6 Local Centre) 1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:
Residential Zone 4

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:
Servicing vehicles Included 1 days - Selected
Servicing vehicles Excluded 3 days - Selected

Secondary Filtering selection:

Use Class:
C3 4 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

15,001 to 20,000	1 days
25,001 to 50,000	3 days

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

Population within 5 miles:

125,001 to 250,000	1 days
250,001 to 500,000	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	3 days
1.1 to 1.5	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	4 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	4 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	CF-03-D-01 TYN-Y-PARC ROAD CARDIFF WHITCHURCH Neighbourhood Centre (PPS6 Local Centre) Residential Zone Total No of Dwellings: *Survey date: FRIDAY*	BLOCKS OF FLATS	24 *07/10/16*	CARDIFF *Survey Type: MANUAL*
2	LN-03-D-02 ADDISON DRIVE LINCOLN Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: *Survey date: WEDNESDAY*	FLATS	22 *01/07/15*	LINCOLNSHIRE *Survey Type: MANUAL*
3	NG-03-D-01 WATCOMBE ROAD NOTTINGHAM CARRINGTON Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: *Survey date: TUESDAY*	BLOCK OF FLATS	22 *23/06/15*	NOTTINGHAM *Survey Type: MANUAL*
4	SP-03-D-01 HANNAY RISE SOUTHAMPTON THORNHILL Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: *Survey date: TUESDAY*	BLOCKS OF FLATS	66 *24/11/15*	SOUTHAMPTON *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/D - AFFORDABLE/LOCAL AUTHORITY FLATS
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	34	0.022	4	34	0.090	4	34	0.112
08:00 - 09:00	4	34	0.075	4	34	0.157	4	34	0.232
09:00 - 10:00	4	34	0.097	4	34	0.179	4	34	0.276
10:00 - 11:00	4	34	0.097	4	34	0.119	4	34	0.216
11:00 - 12:00	4	34	0.104	4	34	0.090	4	34	0.194
12:00 - 13:00	4	34	0.060	4	34	0.067	4	34	0.127
13:00 - 14:00	4	34	0.104	4	34	0.090	4	34	0.194
14:00 - 15:00	4	34	0.149	4	34	0.187	4	34	0.336
15:00 - 16:00	4	34	0.194	4	34	0.157	4	34	0.351
16:00 - 17:00	4	34	0.209	4	34	0.082	4	34	0.291
17:00 - 18:00	4	34	0.157	4	34	0.201	4	34	0.358
18:00 - 19:00	4	34	0.112	4	34	0.060	4	34	0.172
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.380			1.479			2.859

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

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

Parameter summary

Trip rate parameter range selected:	22 - 66 (units:)
Survey date date range:	01/01/15 - 16/05/22
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

Calculation Reference: AUDIT-638801-231019-1054

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : B - AFFORDABLE/LOCAL AUTHORITY HOUSES
TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	WL	WILTSHIRE	1 days
05	EAST MIDLANDS		
	LR	LEICESTER	1 days
	NN	NORTH NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	WO	WORCESTERSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	KS	KIRKLEES	1 days
11	SCOTLAND		
	DU	DUNDEE CITY	1 days
13	MUNSTER		
	TI	TIPPERARY	2 days
15	GREATER DUBLIN		
	DL	DUBLIN	1 days

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

Primary Filtering 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: No of Dwellings
Actual Range: 8 to 68 (units:)
Range Selected by User: 8 to 516 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Monday-Friday 0700-1900
Include days where PT not known: Yes
Range: 5 to 362

Date Range: 01/01/15 to 13/05/22

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	3 days
Tuesday	1 days
Wednesday	1 days
Friday	4 days

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

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	6
Edge of Town	1
Neighbourhood Centre (PPS6 Local Centre)	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	9

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	X days - Selected
Servicing vehicles Excluded	10 days - Selected

Secondary Filtering selection:

Use Class:

C3	9 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	4 days
15,001 to 20,000	1 days
25,001 to 50,000	2 days
50,001 to 100,000	1 days

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

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	1 days
50,001 to 75,000	1 days
125,001 to 250,000	3 days
250,001 to 500,000	2 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	5 days
1.1 to 1.5	4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	9 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	9 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 DL-03-B-02 TERRACED HOUSES DUBLIN
MARIGOLD ROAD
DUBLIN
DARNDALE
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total No of Dwellings: 35
Survey date: MONDAY *19/10/15* *Survey Type: MANUAL*

2 DU-03-B-01 TERRACED BUNGALOWS DUNDEE CITY
307-441 BALUNIE DRIVE
DUNDEE
DOUGLAS & ANGUS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 68
Survey date: FRIDAY *21/04/17* *Survey Type: MANUAL*

3 KS-03-B-02 TERRACED HOUSES KIRKLEES
SYKES CLOSE
BATLEY

Edge of Town
Residential Zone
Total No of Dwellings: 17
Survey date: FRIDAY *19/10/18* *Survey Type: MANUAL*

4 LR-03-B-01 SEMI-DETACHED & TERRACED LEICESTER
COLEMAN ROAD
LEICESTER

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 38
Survey date: FRIDAY *22/10/21* *Survey Type: MANUAL*

5 NN-03-B-01 SEMI-DETACHED HOUSES NORTH NORTHAMPTONSHIRE
OCCUPATION ROAD
CORBY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 21
Survey date: WEDNESDAY *13/10/21* *Survey Type: MANUAL*

6 TI-03-B-01 MIXED HOUSES TIPPERARY
LIMERICK ROAD
NENAGH

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 43
Survey date: FRIDAY *27/05/16* *Survey Type: MANUAL*

7 TI-03-B-02 BUNGALOWS TIPPERARY
STRADAVOHER
THURLES

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 8
Survey date: MONDAY *20/11/17* *Survey Type: MANUAL*

8 WL-03-B-01 TERRACED HOUSES WILTSHIRE
BUTTERFIELD DRIVE
AMESBURY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 54
Survey date: TUESDAY *18/09/18* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9	WO-03-B-02	TERRACED HOUSES	WORCESTERSHIRE
	GOODREST WALK		
	WORCESTER		
	MERRIMANS HILL		
	Neighbourhood Centre (PPS6 Local Centre)		
	Residential Zone		
	Total No of Dwellings:	16	
	Survey date: MONDAY	*14/11/16*	*Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/B - AFFORDABLE/LOCAL AUTHORITY HOUSES
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	33	0.063	9	33	0.180	9	33	0.243
08:00 - 09:00	9	33	0.167	9	33	0.273	9	33	0.440
09:00 - 10:00	9	33	0.160	9	33	0.237	9	33	0.397
10:00 - 11:00	9	33	0.173	9	33	0.200	9	33	0.373
11:00 - 12:00	9	33	0.153	9	33	0.147	9	33	0.300
12:00 - 13:00	9	33	0.167	9	33	0.143	9	33	0.310
13:00 - 14:00	9	33	0.147	9	33	0.170	9	33	0.317
14:00 - 15:00	9	33	0.157	9	33	0.180	9	33	0.337
15:00 - 16:00	9	33	0.277	9	33	0.183	9	33	0.460
16:00 - 17:00	9	33	0.283	9	33	0.150	9	33	0.433
17:00 - 18:00	9	33	0.333	9	33	0.260	9	33	0.593
18:00 - 19:00	9	33	0.217	9	33	0.183	9	33	0.400
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.297			2.306			4.603

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

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

Parameter summary

Trip rate parameter range selected:	8 - 68 (units:)
Survey date date range:	01/01/15 - 13/05/22
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

Appendix C : PICADY OUTPUT FILES

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.2.1013

Filename: Do-Nothing Scenario.j9
Path: G:\2023\p230026\calcs\picady
Report generation date: 17/11/2023 10:08:36

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS
	Do Nothing Scenario - 2026 DN											
Stream B-ACD	D1	0.6	12.85	0.37	B	B	D4	0.5	10.83	0.32	B	A
Stream A-BCD		1.1	11.50	0.50	B			0.5	7.92	0.30	A	
Stream D-ABC		1.4	15.92	0.58	C			0.7	11.59	0.42	B	
Stream C-ABD		0.0	0.00	0.00	A			0.0	0.00	0.00	A	
	Do Nothing Scenario - 2031 DN											
Stream B-ACD	D2	0.6	13.25	0.38	B	B	D5	0.5	11.06	0.33	B	A
Stream A-BCD		1.2	12.37	0.54	B			0.5	8.15	0.32	A	
Stream D-ABC		1.6	17.73	0.62	C			0.8	11.87	0.43	B	
Stream C-ABD		0.0	0.00	0.00	A			0.0	0.00	0.00	A	
	Do Nothing Scenario - 2041 DN											
Stream B-ACD	D3	0.6	13.68	0.39	B	C	D6	0.5	11.33	0.34	B	A
Stream A-BCD		1.4	13.09	0.57	B			0.6	8.36	0.33	A	
Stream D-ABC		1.8	19.46	0.65	C			0.8	12.11	0.44	B	
Stream C-ABD		0.0	0.00	0.00	A			0.0	0.00	0.00	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

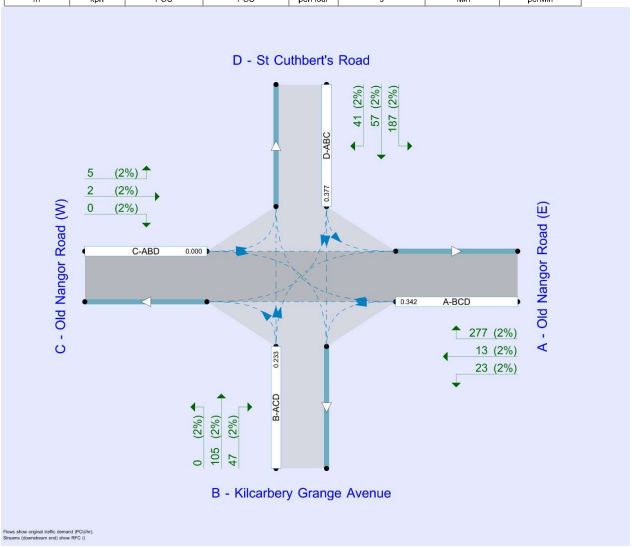
File summary

File Description

Title	Kilcarbery School Site
Location	Kilcarbery, South Dublin
Site number	1
Date	03/11/2023
Version	
Status	Planning
Identifier	
Client	SDCC
Jobnumber	230026
Enumerator	HEADOFFICE\ebrahimr
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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	2026 DN	AM	ONE HOUR	08:00	09:30	15
D2	2031 DN	AM	ONE HOUR	08:00	09:30	15
D3	2041 DN	AM	ONE HOUR	08:00	09:30	15
D4	2026 DN	PM	ONE HOUR	16:30	18:00	15
D5	2031 DN	PM	ONE HOUR	16:30	18:00	15
D6	2041 DN	PM	ONE HOUR	16:30	18:00	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Do Nothing Scenario	100.000

Do Nothing Scenario - 2026 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		13.02	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Old Nangor Road (E)		Major
B	Kilcarbery Grange Avenue		Minor
C	Old Nangor Road (W)		Major
D	St Cuthbert's Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Old Nangor Road (E)	6.00			80.0	✓	0.00
C - Old Nangor Road (W)	6.00			90.0	✓	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 - Kilcarbery Grange Avenue	One lane	3.00	70	135
D - St Cuthbert's Road	One lane	3.00	75	65

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	620	-	-	-	-	-	-	0.240	0.343	0.240	-	-	-
B-A	568	0.103	0.261	0.261	-	-	-	0.165	0.374	-	0.261	0.261	0.131
B-C	709	0.109	0.275	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	568	0.103	0.261	0.261	-	-	-	0.165	0.374	0.165	-	-	-
B-D, offside lane	568	0.103	0.261	0.261	-	-	-	0.165	0.374	0.165	-	-	-
C-B	626	0.243	0.243	0.347	-	-	-	-	-	-	-	-	-
D-A	665	-	-	-	-	-	-	0.258	-	0.102	-	-	-
D-B, nearside lane	534	0.155	0.155	0.351	-	-	-	0.246	0.246	0.097	-	-	-
D-B, offside lane	534	0.155	0.155	0.351	-	-	-	0.246	0.246	0.097	-	-	-
D-C	534	-	0.155	0.351	0.123	0.246	0.246	0.246	0.246	0.097	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2026 DN	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 - Old Nangor Road (E)		✓	313	100.000
B - Kilcarbery Grange Avenue		✓	152	100.000
C - Old Nangor Road (W)		✓	7	100.000
D - St Cuthbert's Road		✓	285	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	23	13	277
	B - Kilcarbery Grange Avenue	47	0	0	105
	C - Old Nangor Road (W)	2	0	0	5
	D - St Cuthbert's Road	187	57	41	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.37	12.85	0.6	B
A-BCD	0.50	11.50	1.1	B
D-ABC	0.58	15.92	1.4	C
C-ABD	0.00	0.00	0.0	A

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-ACD	114	491	0.233	113	0.3	9.686	A
A-BCD	218	637	0.342	216	0.5	8.679	A
D-ABC	215	569	0.377	212	0.6	10.221	B
C-ABD	0	547	0.000	0	0.0	0.000	A

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-ACD	137	475	0.288	136	0.4	10.823	B
A-BCD	262	640	0.410	262	0.7	9.689	A
D-ABC	256	559	0.458	255	0.8	12.056	B
C-ABD	0	531	0.000	0	0.0	0.000	A

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-ACD	167	453	0.369	167	0.6	12.768	B
A-BCD	325	645	0.504	324	1.1	11.410	B
D-ABC	314	544	0.576	312	1.3	15.650	C
C-ABD	0	510	0.000	0	0.0	0.000	A

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-ACD	167	453	0.369	167	0.6	12.854	B
A-BCD	325	645	0.505	325	1.1	11.499	B
D-ABC	314	544	0.577	314	1.4	15.917	C
C-ABD	0	509	0.000	0	0.0	0.000	A

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-ACD	137	474	0.288	137	0.4	10.921	B
A-BCD	262	640	0.410	264	0.7	9.794	A
D-ABC	256	558	0.459	258	0.9	12.305	B
C-ABD	0	530	0.000	0	0.0	0.000	A

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-ACD	114	490	0.234	115	0.3	9.796	A
A-BCD	218	637	0.342	219	0.6	8.799	A
D-ABC	215	568	0.377	216	0.6	10.436	B
C-ABD	0	546	0.000	0	0.0	0.000	A

Do Nothing Scenario - 2031 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		14.16	B

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	2031 DN	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 - Old Nangor Road (E)		✓	332	100.000
B - Kilcarbery Grange Avenue		✓	153	100.000
C - Old Nangor Road (W)		✓	8	100.000
D - St Cuthbert's Road		✓	303	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	23	13	296
	B - Kilcarbery Grange Avenue	47	0	0	106
	C - Old Nangor Road (W)	2	0	0	6
	D - St Cuthbert's Road	200	59	44	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.38	13.25	0.6	B
A-BCD	0.54	12.37	1.2	B
D-ABC	0.62	17.73	1.6	C
C-ABD	0.00	0.00	0.0	A

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-ACD	115	486	0.237	114	0.3	9.831	A
A-BCD	233	637	0.366	230	0.6	8.990	A
D-ABC	228	567	0.402	225	0.7	10.669	B
C-ABD	0	542	0.000	0	0.0	0.000	A

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-ACD	138	469	0.293	137	0.4	11.045	B
A-BCD	280	640	0.438	280	0.8	10.172	B
D-ABC	272	556	0.490	271	1.0	12.842	B
C-ABD	0	525	0.000	0	0.0	0.000	A

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-ACD	168	446	0.378	168	0.6	13.156	B
A-BCD	347	644	0.539	346	1.2	12.248	B
D-ABC	334	540	0.617	331	1.6	17.329	C
C-ABD	0	502	0.000	0	0.0	0.000	A

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-ACD	168	445	0.378	168	0.6	13.253	B
A-BCD	348	644	0.539	347	1.2	12.372	B
D-ABC	334	540	0.618	333	1.6	17.734	C
C-ABD	0	502	0.000	0	0.0	0.000	A

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-ACD	138	468	0.294	138	0.4	11.157	B
A-BCD	281	640	0.438	282	0.8	10.309	B
D-ABC	272	555	0.490	275	1.0	13.194	B
C-ABD	0	524	0.000	0	0.0	0.000	A

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-ACD	115	485	0.237	116	0.3	9.951	A
A-BCD	233	637	0.366	234	0.6	9.135	A
D-ABC	228	566	0.403	229	0.7	10.937	B

C-ABD	0	541	0.000	0	0.0	0.000	A

Do Nothing Scenario - 2041 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		15.20	C

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)
D3	2041 DN	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 - Old Nangor Road (E)		✓	348	100.000
B - Kilcarbery Grange Avenue		✓	155	100.000
C - Old Nangor Road (W)		✓	8	100.000
D - St Cuthbert's Road		✓	317	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	24	14	310
	B - Kilcarbery Grange Avenue	48	0	0	107
	C - Old Nangor Road (W)	2	0	0	6
	D - St Cuthbert's Road	210	61	46	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.39	13.68	0.6	B
A-BCD	0.57	13.09	1.4	B
D-ABC	0.85	19.46	1.8	C
C-ABD	0.00	0.00	0.0	A

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-ACD	117	482	0.242	115	0.3	9.978	A
A-BCD	244	638	0.383	242	0.6	9.221	A
D-ABC	239	565	0.422	236	0.7	11.047	B
C-ABD	0	538	0.000	0	0.0	0.000	A

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-ACD	139	464	0.300	139	0.4	11.275	B
A-BCD	295	641	0.459	294	0.9	10.543	B
D-ABC	285	554	0.515	284	1.1	13.526	B
C-ABD	0	520	0.000	0	0.0	0.000	A

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-ACD	171	440	0.388	170	0.6	13.563	B
A-BCD	365	646	0.566	363	1.3	12.930	B
D-ABC	349	537	0.650	346	1.8	18.898	C
C-ABD	0	496	0.000	0	0.0	0.000	A

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-ACD	171	439	0.389	171	0.6	13.679	B
A-BCD	365	646	0.566	365	1.4	13.089	B
D-ABC	349	537	0.650	349	1.8	19.464	C
C-ABD	0	496	0.000	0	0.0	0.000	A

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-ACD	139	463	0.301	140	0.4	11.400	B
A-BCD	295	641	0.460	296	0.9	10.712	B
D-ABC	285	553	0.515	288	1.1	13.992	B
C-ABD	0	519	0.000	0	0.0	0.000	A

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-ACD	117	481	0.243	117	0.3	10.111	B
A-BCD	245	638	0.383	246	0.7	9.391	A
D-ABC	239	565	0.423	240	0.8	11.367	B

C-ABD	0	537	0.000	0	0.0	0.000	A

Do Nothing Scenario - 2026 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		9.09	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2026 DN	PM	ONE HOUR	16:30	18:00	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 - Old Nangor Road (E)		✓	221	100.000
B - Kilcarbery Grange Avenue		✓	143	100.000
C - Old Nangor Road (W)		✓	16	100.000
D - St Cuthbert's Road		✓	205	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	58	3	160
	B - Kilcarbery Grange Avenue	38	0	2	103
	C - Old Nangor Road (W)	4	0	0	12
	D - St Cuthbert's Road	103	100	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.32	10.83	0.5	B
A-BCD	0.30	7.92	0.5	A
D-ABC	0.42	11.59	0.7	B
C-ABD	0.00	0.00	0.0	A

Main Results for each time segment

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-ACD	108	520	0.207	107	0.3	8.854	A
A-BCD	130	648	0.200	129	0.3	7.084	A
D-ABC	154	559	0.276	153	0.4	9.001	A
C-ABD	0	573	0.000	0	0.0	0.000	A

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-ACD	129	510	0.252	128	0.3	9.606	A
A-BCD	157	653	0.241	157	0.3	7.399	A
D-ABC	184	552	0.334	184	0.5	9.953	A
C-ABD	0	563	0.000	0	0.0	0.000	A

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-ACD	157	497	0.317	157	0.5	10.797	B
A-BCD	196	660	0.297	196	0.5	7.901	A
D-ABC	226	543	0.416	225	0.7	11.527	B
C-ABD	0	548	0.000	0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	157	496	0.317	157	0.5	10.834	B
A-BCD	196	660	0.297	196	0.5	7.917	A
D-ABC	226	542	0.416	226	0.7	11.590	B
C-ABD	0	548	0.000	0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	129	510	0.252	129	0.3	9.655	A
A-BCD	157	653	0.241	158	0.4	7.421	A
D-ABC	184	552	0.334	185	0.5	10.029	B
C-ABD	0	562	0.000	0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	108	520	0.207	108	0.3	8.924	A
A-BCD	130	648	0.200	130	0.3	7.099	A
D-ABC	154	559	0.276	155	0.4	9.097	A

C-ABD	0	573	0.000	0	0.0	0.000	A

Do Nothing Scenario - 2031 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		9.34	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	2031 DN	PM	ONE HOUR	16:30	18:00	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 - Old Nangor Road (E)		✓	232	100.000
B - Kilcarbery Grange Avenue		✓	146	100.000
C - Old Nangor Road (W)		✓	16	100.000
D - St Cuthbert's Road		✓	212	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	58	3	171
	B - Kilcarbery Grange Avenue	38	0	2	106
	C - Old Nangor Road (W)	4	0	0	12
	D - St Cuthbert's Road	110	100	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.33	11.06	0.5	B
A-BCD	0.32	8.15	0.5	A
D-ABC	0.43	11.87	0.8	B
C-ABD	0.00	0.00	0.0	A

Main Results for each time segment

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-ACD	110	518	0.212	109	0.3	8.953	A
A-BCD	139	648	0.214	137	0.3	7.184	A
D-ABC	160	560	0.285	158	0.4	9.085	A
C-ABD	0	570	0.000	0	0.0	0.000	A

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-ACD	131	507	0.259	131	0.4	9.748	A
A-BCD	168	653	0.257	168	0.4	7.564	A
D-ABC	191	553	0.345	190	0.5	10.104	B
C-ABD	0	559	0.000	0	0.0	0.000	A

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-ACD	161	493	0.326	160	0.5	11.017	B
A-BCD	210	660	0.318	209	0.5	8.136	A
D-ABC	233	543	0.430	233	0.8	11.796	B
C-ABD	0	544	0.000	0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	161	493	0.326	161	0.5	11.056	B
A-BCD	210	660	0.318	210	0.5	8.153	A
D-ABC	233	543	0.430	233	0.8	11.865	B
C-ABD	0	544	0.000	0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	131	507	0.259	132	0.4	9.800	A
A-BCD	168	653	0.257	168	0.4	7.588	A
D-ABC	191	553	0.345	191	0.5	10.186	B
C-ABD	0	559	0.000	0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	110	517	0.212	110	0.3	9.027	A
A-BCD	139	648	0.214	139	0.3	7.225	A
D-ABC	160	560	0.285	160	0.4	9.197	A

C-ABD	0	570	0.000	0	0.0	0.000	A

Do Nothing Scenario - 2041 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		9.54	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	2041 DN	PM	ONE HOUR	16:30	18:00	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 - Old Nangor Road (E)		✓	242	100.000
B - Kilcarbery Grange Avenue		✓	150	100.000
C - Old Nangor Road (W)		✓	18	100.000
D - St Cuthbert's Road		✓	217	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	58	4	180
	B - Kilcarbery Grange Avenue	39	0	2	109
	C - Old Nangor Road (W)	5	0	0	13
	D - St Cuthbert's Road	115	100	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.34	11.33	0.5	B
A-BCD	0.33	8.36	0.6	A
D-ABC	0.44	12.11	0.8	B
C-ABD	0.00	0.00	0.0	A

Main Results for each time segment

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-ACD	113	515	0.219	112	0.3	9.072	A
A-BCD	146	648	0.225	145	0.3	7.287	A
D-ABC	163	560	0.292	162	0.4	9.173	A
C-ABD	0	568	0.000	0	0.0	0.000	A

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-ACD	135	504	0.267	135	0.4	9.920	A
A-BCD	177	653	0.271	177	0.4	7.705	A
D-ABC	195	553	0.353	195	0.5	10.235	B
C-ABD	0	556	0.000	0	0.0	0.000	A

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-ACD	165	489	0.338	165	0.5	11.288	B
A-BCD	221	661	0.335	221	0.5	8.341	A
D-ABC	239	542	0.441	238	0.8	12.031	B
C-ABD	0	540	0.000	0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	165	489	0.338	165	0.5	11.333	B
A-BCD	221	661	0.335	221	0.6	8.364	A
D-ABC	239	542	0.441	239	0.8	12.107	B
C-ABD	0	540	0.000	0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	135	504	0.268	135	0.4	9.979	A
A-BCD	177	653	0.271	178	0.4	7.735	A
D-ABC	195	553	0.353	196	0.6	10.324	B
C-ABD	0	556	0.000	0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	113	515	0.219	113	0.3	9.151	A
A-BCD	146	648	0.226	147	0.3	7.334	A
D-ABC	163	560	0.292	164	0.4	9.263	A

C-ABD	0	567	0.000	0	0.0	0.000	A

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Do-Something Scenario.j9
Path: G:\2023\p230026\calcs\picady
Report generation date: 17/11/2023 10:17:17

»Do Something Scenario - 2026 DS, AM
»Do Something Scenario - 2031 DS, AM
»Do Something Scenario - 2041 DS, AM
»Do Something Scenario - 2026 DS, PM
»Do Something Scenario - 2031 DS, PM
»Do Something Scenario - 2041 DS, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction LOS
Do Something Scenario - 2026 DS												
Stream B-ACD	D1	0.6	13.20	0.38	B	B	D4	0.5	11.07	0.33	B	A
Stream A-BCD		1.1	11.64	0.51	B			0.5	7.92	0.30	A	
Stream D-ABC		1.5	17.12	0.60	C			0.8	12.67	0.45	B	
Stream C-ABD		0.0	0.00	0.00	A			0.0	0.00	0.00	A	
Do Something Scenario - 2031 DS												
Stream B-ACD	D2	0.6	13.69	0.39	B	B	D5	0.5	11.36	0.34	B	A
Stream A-BCD		1.3	12.53	0.54	B			0.5	8.16	0.32	A	
Stream D-ABC		1.8	19.24	0.64	C			0.9	13.01	0.47	B	
Stream C-ABD		0.0	0.00	0.00	A			0.0	0.00	0.00	A	
Do Something Scenario - 2041 DS												
Stream B-ACD	D3	0.7	14.07	0.40	B	C	D6	0.5	11.59	0.35	B	A
Stream A-BCD		1.4	13.28	0.57	B			0.6	8.38	0.34	A	
Stream D-ABC		2.0	21.28	0.68	C			0.9	13.30	0.48	B	
Stream C-ABD		0.0	0.00	0.00	A			0.0	0.00	0.00	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are domain-weighted averages.

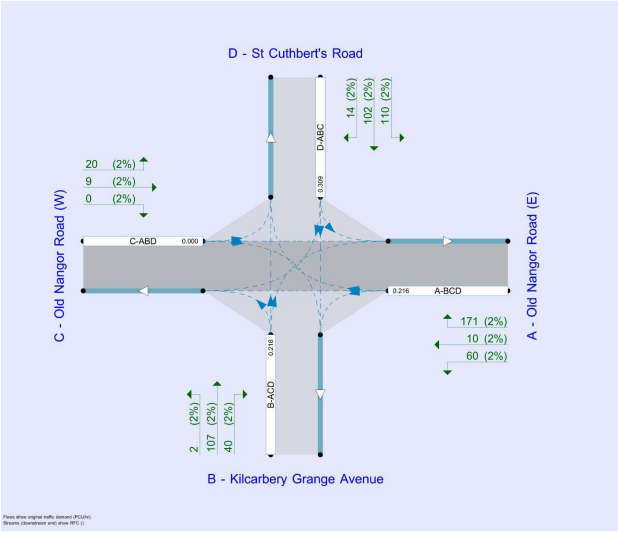
File summary

File Description

Title	Kilcarbery School Site
Location	Kilcarbery, South Dublin
Site number	1
Date	03/11/2023
Version	
Status	Planning
Identifier	
Client	SDCC
Jobnumber	230026
Enumerator	HEADOFFICE\ebrahimr
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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	2026 DS	AM	ONE HOUR	08:00	09:30	15
D2	2031 DS	AM	ONE HOUR	08:00	09:30	15
D3	2041 DS	AM	ONE HOUR	08:00	09:30	15
D4	2026 DS	PM	ONE HOUR	16:30	18:00	15
D5	2031 DS	PM	ONE HOUR	16:30	18:00	15
D6	2041 DS	PM	ONE HOUR	16:30	18:00	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Do Something Scenario	100.000

Do Something Scenario - 2026 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		13.30	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Old Nangor Road (E)		Major
B	Kilcarbery Grange Avenue		Minor
C	Old Nangor Road (W)		Major
D	St Cuthbert's Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Old Nangor Road (E)	6.00			80.0	✓	0.00
C - Old Nangor Road (W)	6.00			90.0	✓	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 - Kilcarbery Grange Avenue	One lane	3.00	70	135
D - St Cuthbert's Road	One lane	3.00	75	65

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	620	-	-	-	-	-	-	0.240	0.343	0.240	-	-	-
B-A	568	0.103	0.261	0.261	-	-	-	0.165	0.374	-	0.261	0.261	0.131
B-C	709	0.109	0.275	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	568	0.103	0.261	0.261	-	-	-	0.165	0.374	0.165	-	-	-
B-D, offside lane	568	0.103	0.261	0.261	-	-	-	0.165	0.374	0.165	-	-	-
C-B	626	0.243	0.243	0.347	-	-	-	-	-	-	-	-	-
D-A	665	-	-	-	-	-	-	0.258	-	0.102	-	-	-
D-B, nearside lane	534	0.155	0.155	0.351	-	-	-	0.246	0.246	0.097	-	-	-
D-B, offside lane	534	0.155	0.155	0.351	-	-	-	0.246	0.246	0.097	-	-	-
D-C	534	-	0.155	0.351	0.123	0.246	0.246	0.246	0.246	0.097	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2026 DS	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 - Old Nangor Road (E)		✓	317	100.000
B - Kilcarbery Grange Avenue		✓	155	100.000
C - Old Nangor Road (W)		✓	23	100.000
D - St Cuthbert's Road		✓	292	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	24	16	277
	B - Kilcarbery Grange Avenue	49	0	0	106
	C - Old Nangor Road (W)	8	0	0	15
	D - St Cuthbert's Road	187	58	47	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.38	13.20	0.6	B
A-BCD	0.51	11.64	1.1	B
D-ABC	0.60	17.12	1.5	C
C-ABD	0.00	0.00	0.0	A

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-ACD	117	488	0.239	115	0.3	9.815	A
A-BCD	219	636	0.344	217	0.5	8.718	A
D-ABC	220	563	0.391	217	0.6	10.553	B
C-ABD	0	547	0.000	0	0.0	0.000	A

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-ACD	139	472	0.295	139	0.4	11.020	B
A-BCD	264	639	0.413	263	0.7	9.755	A
D-ABC	263	552	0.476	261	0.9	12.605	B
C-ABD	0	530	0.000	0	0.0	0.000	A

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-ACD	171	449	0.380	170	0.6	13.108	B
A-BCD	328	643	0.509	326	1.1	11.538	B
D-ABC	321	536	0.600	319	1.5	16.769	C
C-ABD	0	509	0.000	0	0.0	0.000	A

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-ACD	171	449	0.380	171	0.6	13.201	B
A-BCD	328	643	0.509	328	1.1	11.636	B
D-ABC	321	536	0.600	321	1.5	17.116	C
C-ABD	0	508	0.000	0	0.0	0.000	A

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-ACD	139	471	0.296	140	0.4	11.129	B
A-BCD	264	639	0.413	265	0.8	9.866	A
D-ABC	263	551	0.476	265	1.0	12.916	B
C-ABD	0	530	0.000	0	0.0	0.000	A

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-ACD	117	487	0.240	117	0.3	9.936	A
A-BCD	219	636	0.344	220	0.8	8.842	A
D-ABC	220	562	0.391	221	0.7	10.801	B
C-ABD	0	545	0.000	0	0.0	0.000	A

Do Something Scenario - 2031 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		14.57	B

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	2031 DS	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 - Old Nangor Road (E)		✓	337	100.000
B - Kilcarbery Grange Avenue		✓	157	100.000
C - Old Nangor Road (W)		✓	24	100.000
D - St Cuthbert's Road		✓	310	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	24	17	296
	B - Kilcarbery Grange Avenue	49	0	0	108
	C - Old Nangor Road (W)	8	0	0	16
	D - St Cuthbert's Road	200	60	50	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.39	13.69	0.6	B

A-BCD	0.54	12.53	1.3	B
D-ABC	0.64	19.24	1.8	C
C-ABD	0.00	0.00	0.0	A

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-ACD	118	483	0.245	117	0.3	9.988	A
A-BCD	234	636	0.368	232	0.8	9.028	A
D-ABC	233	561	0.416	231	0.7	11.034	B
C-ABD	0	541	0.000	0	0.0	0.000	A

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-ACD	141	466	0.303	141	0.4	11.286	B
A-BCD	283	639	0.442	282	0.8	10.243	B
D-ABC	279	549	0.508	277	1.0	13.470	B
C-ABD	0	524	0.000	0	0.0	0.000	A

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-ACD	173	442	0.391	172	0.5	13.578	B
A-BCD	351	644	0.545	349	1.2	12.400	B
D-ABC	341	532	0.642	338	1.7	18.706	C
C-ABD	0	501	0.000	0	0.0	0.000	A

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-ACD	173	441	0.392	173	0.6	13.691	B
A-BCD	351	644	0.545	351	1.3	12.534	B
D-ABC	341	531	0.642	341	1.8	19.243	C
C-ABD	0	501	0.000	0	0.0	0.000	A

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-ACD	141	465	0.304	142	0.5	11.412	B
A-BCD	283	640	0.442	284	0.9	10.386	B
D-ABC	279	548	0.508	281	1.1	13.912	B
C-ABD	0	523	0.000	0	0.0	0.000	A

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-ACD	118	482	0.245	119	0.3	10.118	B
A-BCD	234	636	0.368	235	0.6	9.179	A
D-ABC	233	560	0.417	235	0.7	11.342	B
C-ABD	0	540	0.000	0	0.0	0.000	A

Do Something Scenario - 2041 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		15.73	C

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)
D3	2041 DS	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 - Old Nangor Road (E)		✓	353	100.000
B - Kilcarbery Grange Avenue		✓	158	100.000
C - Old Nangor Road (W)		✓	24	100.000
D - St Cuthbert's Road		✓	324	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	25	18	310
	B - Kilcarbery Grange Avenue	49	0	0	109
	C - Old Nangor Road (W)	8	0	0	16
	D - St Cuthbert's Road	210	62	52	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.40	14.07	0.7	B

A-BCD	0.57	13.28	1.4	B
D-ABC	0.68	21.28	2.0	C
C-ABD	0.00	0.00	0.0	A

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-ACD	119	479	0.248	118	0.3	10.114	B
A-BCD	246	637	0.386	243	0.7	9.264	A
D-ABC	244	559	0.436	241	0.8	11.434	B
C-ABD	0	537	0.000	0	0.0	0.000	A

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-ACD	142	461	0.308	142	0.4	11.483	B
A-BCD	297	641	0.463	296	0.9	10.625	B
D-ABC	291	547	0.533	290	1.1	14.221	B
C-ABD	0	519	0.000	0	0.0	0.000	A

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-ACD	174	436	0.399	173	0.7	13.934	B
A-BCD	369	645	0.571	367	1.4	13.108	B
D-ABC	357	529	0.675	353	2.0	20.512	C
C-ABD	0	495	0.000	0	0.0	0.000	A

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-ACD	174	435	0.400	174	0.7	14.066	B
A-BCD	369	645	0.571	369	1.4	13.276	B
D-ABC	357	528	0.675	356	2.0	21.277	C
C-ABD	0	494	0.000	0	0.0	0.000	A

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-ACD	142	460	0.309	143	0.5	11.624	B
A-BCD	297	641	0.463	299	0.9	10.800	B
D-ABC	291	546	0.534	295	1.2	14.808	B
C-ABD	0	518	0.000	0	0.0	0.000	A

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-ACD	119	478	0.249	119	0.3	10.255	B
A-BCD	246	637	0.386	247	0.7	9.439	A
D-ABC	244	558	0.437	246	0.8	11.802	B
C-ABD	0	536	0.000	0	0.0	0.000	A

Do Something Scenario - 2026 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		9.29	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	2026 DS	PM	ONE HOUR	16:30	18:00	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 - Old Nangor Road (E)		✓	230	100.000
B - Kilcarbery Grange Avenue		✓	145	100.000
C - Old Nangor Road (W)		✓	29	100.000
D - St Cuthbert's Road		✓	219	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	60	10	160
	B - Kilcarbery Grange Avenue	39	0	2	104
	C - Old Nangor Road (W)	9	0	0	20
	D - St Cuthbert's Road	103	102	14	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.33	11.07	0.5	B

A-BCD	0.30	7.92	0.5	A
D-ABC	0.45	12.67	0.8	B
C-ABD	0.00	0.00	0.0	A

Main Results for each time segment

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-ACD	109	517	0.211	108	0.3	8.960	A
A-BCD	131	650	0.202	130	0.3	7.054	A
D-ABC	165	550	0.300	163	0.4	9.445	A
C-ABD	0	572	0.000	0	0.0	0.000	A

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-ACD	130	506	0.258	130	0.3	9.758	A
A-BCD	159	656	0.243	159	0.4	7.391	A
D-ABC	197	542	0.363	196	0.6	10.599	B
C-ABD	0	561	0.000	0	0.0	0.000	A

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-ACD	160	491	0.325	159	0.5	11.033	B
A-BCD	199	664	0.301	199	0.5	7.901	A
D-ABC	241	531	0.454	240	0.8	12.577	B
C-ABD	0	546	0.000	0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	160	491	0.325	160	0.5	11.072	B
A-BCD	200	664	0.301	200	0.5	7.918	A
D-ABC	241	531	0.454	241	0.8	12.667	B
C-ABD	0	546	0.000	0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	130	506	0.258	131	0.4	9.811	A
A-BCD	159	656	0.243	160	0.4	7.417	A
D-ABC	197	542	0.363	198	0.6	10.702	B
C-ABD	0	560	0.000	0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	109	516	0.211	109	0.3	9.033	A
A-BCD	131	650	0.202	132	0.3	7.090	A
D-ABC	165	550	0.300	165	0.4	9.566	A
C-ABD	0	571	0.000	0	0.0	0.000	A

Do Something Scenario - 2031 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		9.59	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	2031 DS	PM	ONE HOUR	16:30	18:00	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 - Old Nangor Road (E)		✓	241	100.000
B - Kilcarbery Grange Avenue		✓	149	100.000
C - Old Nangor Road (W)		✓	29	100.000
D - St Cuthbert's Road		✓	226	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	60	10	171
	B - Kilcarbery Grange Avenue	40	0	2	107
	C - Old Nangor Road (W)	9	0	0	20
	D - St Cuthbert's Road	110	102	14	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.34	11.36	0.5	B

A-BCD	0.32	8.16	0.5	A
D-ABC	0.47	13.01	0.9	B
C-ABD	0.00	0.00	0.0	A

Main Results for each time segment

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-ACD	112	514	0.218	111	0.3	9.082	A
A-BCD	140	650	0.216	139	0.3	7.176	A
D-ABC	170	551	0.309	168	0.4	9.550	A
C-ABD	0	569	0.000	0	0.0	0.000	A

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-ACD	134	503	0.266	134	0.4	9.934	A
A-BCD	170	656	0.260	170	0.4	7.558	A
D-ABC	203	543	0.374	203	0.6	10.778	B
C-ABD	0	557	0.000	0	0.0	0.000	A

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-ACD	164	488	0.337	163	0.5	11.311	B
A-BCD	213	664	0.321	213	0.5	8.140	A
D-ABC	249	531	0.469	248	0.9	12.908	B
C-ABD	0	542	0.000	0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	164	487	0.337	164	0.5	11.356	B
A-BCD	213	664	0.321	213	0.5	8.160	A
D-ABC	249	531	0.469	249	0.9	13.009	B
C-ABD	0	541	0.000	0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	134	503	0.267	134	0.4	9.991	A
A-BCD	170	656	0.260	171	0.4	7.587	A
D-ABC	203	542	0.375	204	0.6	10.891	B
C-ABD	0	557	0.000	0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	112	514	0.218	113	0.3	9.163	A
A-BCD	140	650	0.216	141	0.3	7.219	A
D-ABC	170	551	0.309	171	0.5	9.683	A
C-ABD	0	568	0.000	0	0.0	0.000	A

Do Something Scenario - 2041 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		9.81	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)
D6	2041 DS	PM	ONE HOUR	16:30	18:00	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 - Old Nangor Road (E)		✓	250	100.000
B - Kilcarbery Grange Avenue		✓	152	100.000
C - Old Nangor Road (W)		✓	31	100.000
D - St Cuthbert's Road		✓	231	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	60	10	180
	B - Kilcarbery Grange Avenue	40	0	2	110
	C - Old Nangor Road (W)	10	0	0	21
	D - St Cuthbert's Road	115	102	14	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Old Nangor Road (E)	B - Kilcarbery Grange Avenue	C - Old Nangor Road (W)	D - St Cuthbert's Road
From	A - Old Nangor Road (E)	0	2	2	2
	B - Kilcarbery Grange Avenue	2	0	2	2
	C - Old Nangor Road (W)	2	2	0	2
	D - St Cuthbert's Road	2	2	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.35	11.59	0.5	B

A-BCD	0.34	8.38	0.6	A
D-ABC	0.48	13.30	0.9	B
C-ABD	0.00	0.00	0.0	A

Main Results for each time segment

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-ACD	114	512	0.223	113	0.3	9.179	A
A-BCD	147	649	0.227	146	0.3	7.283	A
D-ABC	174	551	0.316	172	0.5	9.640	A
C-ABD	0	566	0.000	0	0.0	0.000	A

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-ACD	137	500	0.273	136	0.4	10.074	B
A-BCD	179	655	0.273	179	0.4	7.706	A
D-ABC	208	542	0.383	207	0.6	10.932	B
C-ABD	0	554	0.000	0	0.0	0.000	A

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-ACD	167	484	0.345	167	0.5	11.536	B
A-BCD	224	663	0.339	224	0.6	8.355	A
D-ABC	254	530	0.480	253	0.9	13.190	B
C-ABD	0	538	0.000	0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	167	484	0.346	167	0.5	11.586	B
A-BCD	225	663	0.339	225	0.6	8.377	A
D-ABC	254	530	0.480	254	0.9	13.303	B
C-ABD	0	538	0.000	0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	137	500	0.273	137	0.4	10.137	B
A-BCD	179	655	0.274	180	0.4	7.736	A
D-ABC	208	542	0.383	209	0.6	11.052	B
C-ABD	0	554	0.000	0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	114	512	0.224	115	0.3	9.265	A
A-BCD	148	649	0.227	148	0.3	7.329	A
D-ABC	174	551	0.316	175	0.5	9.779	A
C-ABD	0	566	0.000	0	0.0	0.000	A

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