Leydens Wholesalers & Distributors Dublin, No. 158A Richmond Road

Traffic and Transport Assessment

210178-DBFL-TR-XX-RP-C-0004

TRANSPORTATION

February 2023

DBFL CONSULTING ENGINEERS

Project Title:	**Leydens Wholesalers & Distributors Dublin, No. 158A Richmond Road**		
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5	27/02/2023	Planning	Sayed Ahmad Saeed	Mark McKenna	Thomas Jennings

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1 INTRODUCTION

1.1 BACKGROUND

DBFL Consulting Engineers (DBFL) has been commissioned to prepare a Traffic and Transport Assessment (TTA) for a proposed development known as 158A Richmond Road. Malkey Limited intends to apply for permission for development (Large-scale Residential Development (LRD)) at this c. 0.55 hectare site at the former Leyden's Wholesalers & Distributors, No. 158A Richmond Road, Dublin 3, D03 YK12.

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 transport impact generated as a result of this proposed development.

The scope of the assessment covers transport and sustainability issues including access, pedestrian, cyclist and public transport connections. Recommendations contained within this report are based on existing and proposed road layout plans, site visits, on site traffic observations and junction vehicle turning count data.

The TTA seeks to address any potential concerns that the local planning authority and/or An Bord Pleanála may have pertaining to the level of influence that the proposed development may generate upon the local transportation system.

This TTA has been prepared in reference to the requirements of the Transport Infrastructure Ireland "*Traffic and Transportation Assessment Guidelines*".

1.3 APPRAISAL METHODOLOGY

DBFL's approach 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) Transport infrastructure Ireland;

- '*Traffic Management Guidelines*' Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- '*Guidelines for Traffic Impact Assessments*' The Institution of Highways and Transportation (1994),
- '*Permeability Best Practice Guide*' National Transport Authority (2015)
- *Dublin City Development Plan 2022-2028.*

Our methodology incorporated a number of key inter-related stages, including;

- **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:** Two sources of traffic count data (detailed in section 5.2 of this report) have been procured and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed development.
- **Trip Generation:** A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed development.
- **Trip Distribution:** Based upon both the existing traffic characteristics and the network layout in addition to the spatial/land use configuration and density of the urban structure across the catchment area of the development, a distribution exercise has been undertaken to assign site generated vehicle trips across the local road network.
- **Network Impact:** In accordance with the Institute of Highways and Transportation; Traffic Impact Assessment guidelines, the specific level of influence generated by the proposed development upon the local road network was ascertained and the junctions which required assessment in greater detail were identified.
- **Network Analysis:** Drawing upon the findings of the previous stages, an operational assessment of the local road network has been undertaken to evaluate the performance of key junctions following the implementation and occupation of the proposed development.

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.
- The relevant transportation policies that influence the design and appraisal of the subject development proposals are highlighted within **Chapter 3**.
- **Chapter 4** provides a summary of the development's proposals, describing the nature of the development, future transport proposals and their impacts on the development.
- **Chapter 5** outlines the trip generation and distribution exercises carried out and the adopted methodology for applying growth factors to establish a baseline for the design year network traffic flows.
- The potential traffic impact of the proposals assessed for the 2025 Opening Year, 2030 Interim Year and the 2040 Horizon Year has been summarised within **Chapter 6**.
- **Chapter 7** of this report describes responses to DCC's LRD opinion
- The main conclusions and recommendations derived from the analysis are summarised in **Chapter 8**.

2 RECEIVING ENVIRONMENT

2.1 LAND USE

The subject lands are zoned Objective Z10 'Inner Suburban and Inner City Sustainable Mixed-Uses' within the Dublin City Development Plan 2022-2028, where the stated aim is "***to consolidate and facilitate the development of inner city and inner suburban sites for sustainable mixed-uses*** ". The site is currently occupied by Leyden's Wholesalers & Distributor.

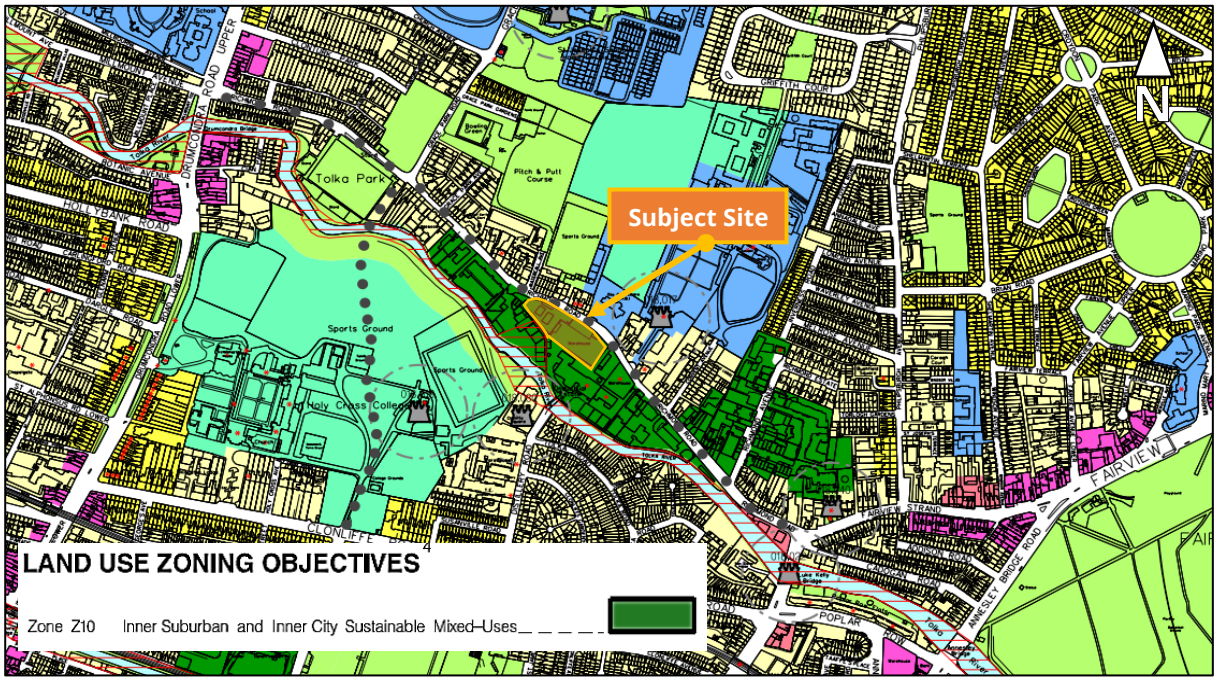


Figure 2.1: Land Use Zoning Objectives (Source: Map E Dublin City Development Plan 2022-2028)

2.2 LOCATION

The general location of the subject site in relation to the surrounding road network is illustrated in **Figure 2.2** below while **Figure 2.3** indicatively shows the extent of the site boundary and neighbouring lands.

The subject development site is located circa 2.4km from Dublin City Centre and a 17 min walk to Drumcondra Train Station, a 9-10 minute walk to the R132 Drumcondra Road corridor and R803 Ballybough Road corridor, both of which are serviced by numerous bus routes that link Dublin City Centre to destinations across the city environs.

The land uses surrounding the development site and along Richmond Road are a mix of commercial and residential, all of which benefit from direct access to/from Richmond Road.

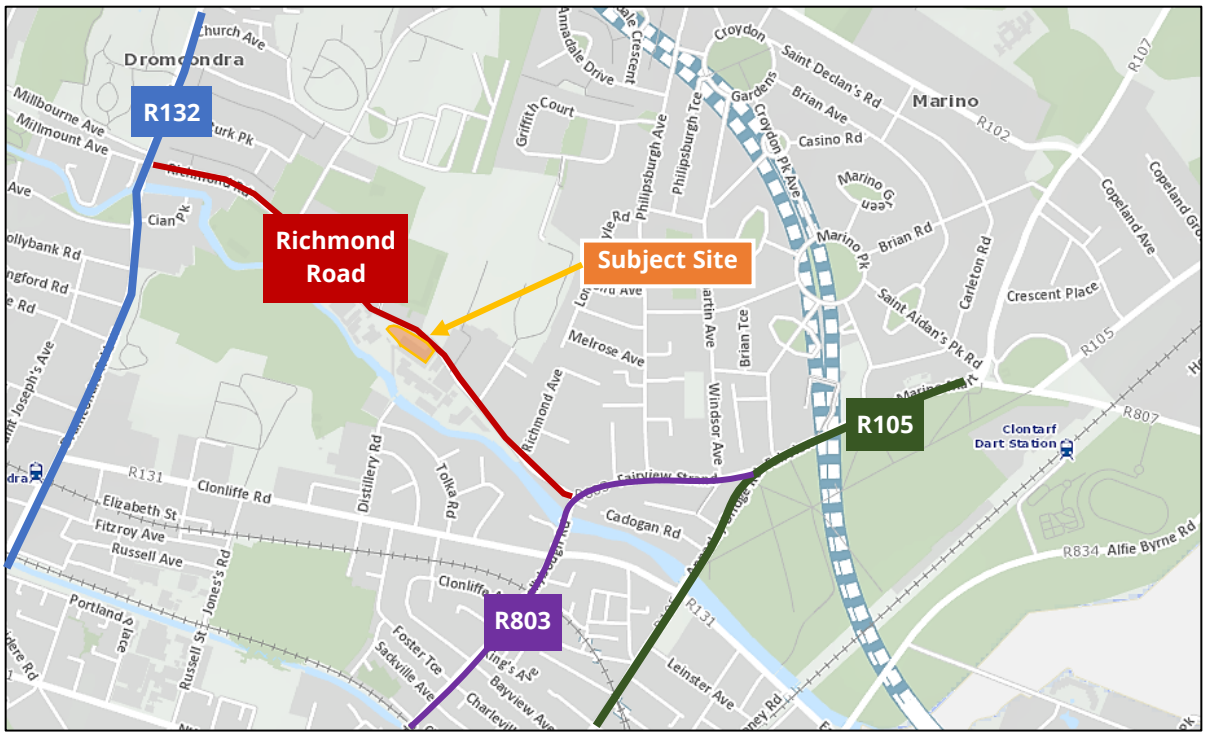


Figure 2.2: Subject Site Location (Source: Google Maps)

Figure 2.3: *Indicative Development Site Boundary (Source: Google Earth)*

2.3 EXISTING TRANSPORTATION INFRASTRUCTURE

2.3.1 Road Network

The Richmond Road corridor is generally aligned in a northwest-southeast direction and is subject to 50kph speed regulations. At the north western extents, this corridor terminates at the R132 Drumcondra Road Upper / Richmond Road / Millmount Avenue signal-controlled junction. A right turn ban is in place for vehicles exiting Richmond Road who may only travel straight along Millmount Avenue or turn left travelling in a southbound direction on the R132. Continuing south on the R132 for approximately 2km leads to Dublin City Centre. Between the subject site access and the aforementioned R132 / Richmond Road / Millmount Avenue signal-controlled junction, Grace Park Road is accessible which provides a connection to the N1 northbound and subsequently the strategic M50 road network. Travelling in a south eastern direction from the proposed development site access along Richmond Road leads to the Richmond Road / R803 signal controlled junction. Travelling south-west on the R803 provides access to Dublin City centre.

2.3.2 Existing Pedestrian Environment

All pedestrian routes leading to/from the subject site benefit from the provision of street lighting in addition to good quality pedestrian footways. There are signal controlled pedestrian crossing facilities available at both signal controlled junctions located at both termini of Richmond Road in addition to a dedicated signal controlled pedestrian crossing located to the west of the Richmond Road / Grace Park junction.

Along the 140m length of the site boundary on Richmond Road a relatively narrow pedestrian path is currently provided along the northern side of the carriageway. A footpath of only 20m in length is provided along the southern side of the carriageway. The practice of uncontrolled kerbside / verge car parking restricts the route for pedestrians along the site frontage. In general the available route for pedestrians along the site frontage on the southern side of the carriageway is currently generally poor and unsuitable for less abled bodied pedestrians.

2.3.3 Existing Cycling Environment

In the immediate vicinity of the subject site cyclists currently share the Richmond Road carriageway with general vehicular traffic. Both the R132 corridor and R803 corridor benefit from the provision of a mix of dedicated on-road cycle lanes and shared bus / cycle lanes as presented in **Figure 2.4** below.

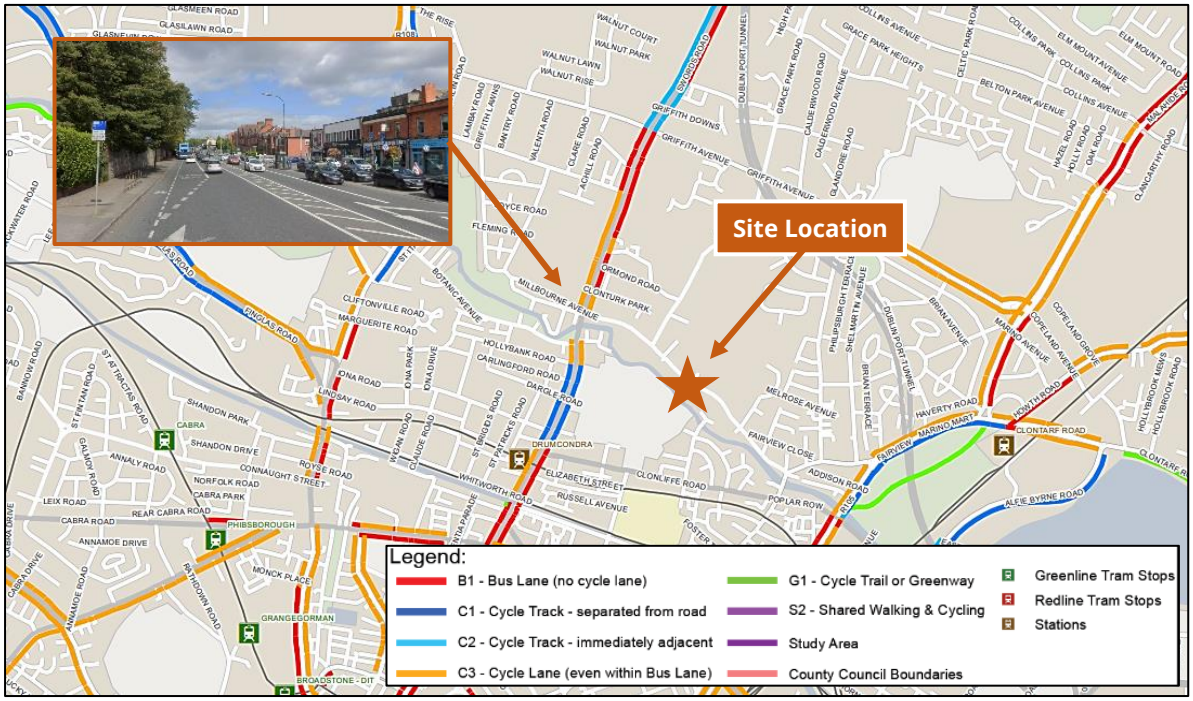


Figure 2.4: Existing Cycle Facilities (Source: Sheet E1 GDA Cycle Network Plan)

2.3.4 Public Transport – Bus

Existing Baseline Services

The subject development is well placed to benefit from existing bus services operating within comfortable walking distance including both citywide and regional services provided by numerous operators including Dublin Bus for citywide services and McConnon, Wexford Bus and Mathews Bus Services for regional services.

Dublin Bus currently operates several services along the R132 Drumcondra Road and R05 Fairview corridors as demonstrated in **Figure 2.5** and summarised in **Table 2-1A & Table 2-1B** below.

All services are located within easy walking distance from the subject site with the nearest interchange on the R132 located approx. 800m away (approx. 10 minute walk) and the nearest interchange on the R803 located approx. 650m away (approx. 8 minute walk).

Operator	Route No.	Route	Mon - Fri	Sat	Sun
Dublin Bus	1	From Pearse Street (Shaw St.) Towards Santry (Shanard Rd.)	89	48	42
	11	Wadelai Park – Sandyford Business District	43	34	27
	13	Harristown – Grange Castle	85	68	59
	16	Dublin Airport – Ballinteer	86	82	64
	33	Lower Abbey Street – Balbriggan	59	39	33
	41	Lower Abbey Street – Swords Manor	62	58	48
	41B	Lower Abbey Street – Rolestown	5	4	3
	41C	Lower Abbey Street – Swords Manor	43	42	28
	41D	Lower Abbey Street – Swords Business Park	2	-	-
	44	DCU – Enniskerry	19	16	14
McConnon	180	Clones (Monaghan) – UCD Belfield	2	1	1
Wexford Bus	740	Wexford - Dublin City - Airport	19	14	13
	740A	Arklow - Dublin via Wicklow	9	4	4
Matthews Coach Hire	900	Dundalk – Dublin Cathal Brugha Street	10	7	7
	901	Dundalk – Drogheda - Dublin	21	17	13
	910	Bettystown – Laytown - Dublin	19	12	12

Table 2.1A: Local Bus Services (No. of Services) along R132 Drumcondra Road

Operator	Route No.	Route	Mon - Fri	Sat	Sun
Dublin Bus	123	Walkinstown - Marino	77	65	39
	6	Howth Station – Abbey Street lower	20	11	11
	14	Beaumont (Ardlea Rd.) - Dundrum Luas Station	68	59	43
	15	Ballycullen Rd. - Clongriffin	160	96	96
	27	Clare Hall - Jobstown	96	85	85
	27A	Eden Quay - Blunden Drive	27	27	19
	27B	Liberty Hall - Harristown Bus Garage	52	51	30
	42	Sand's Hotel (Portmarnock) - Talbot St.	39	38	24
	43	Swords Business Park - Talbot St.	35	20	18
	130	Castle Ave. - Talbot St.	91	64	45
	H1	Baldoyle to Abbey Street Lower	72	64	55
	H2	Malahide - Abbey Street Lower	36	33	28
	H3	Howth Summit - Abbey Street Lower	36	34	33

Table 2.2B: Local Bus Services (No. of Services) along R803 and R05 Fairview

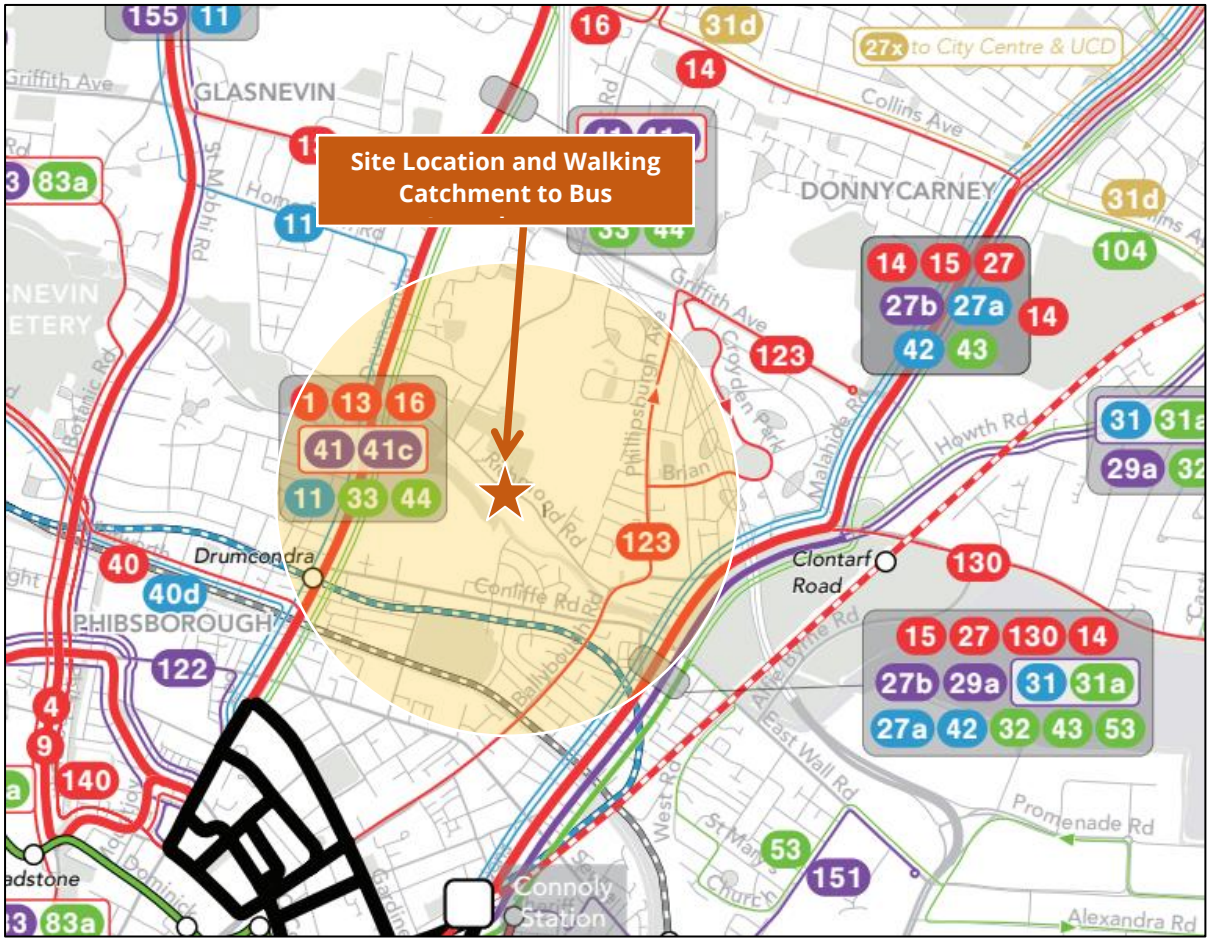


Figure 2-5: Existing Bus Routes (Source: BusConnects)

It is noted that some routes in **Figure 2.5** above have been changed/renamed as part of the BusConnects proposals.

Existing Network Capacity

In reference to the baseline modal data detailed in section 2.7 and considering the journey times required to reach potential work, school, and college destinations (as accessed by public transport bus and rail services) the number of existing (January 2023) public transport services calling at local interchanges on the R132 Drumcondra Road, the R803 Fairview Street and R05 Fairview Road corridors (all of which are within close proximity and walking distance to the proposed development site) have been considered for the public transport capacity analysis.

As discussed in the previous section above, the proposed development is advanced to service the local network demand generated by public bus transport user in R132 Drumcondra Road and R803 and R05 Fairview Road corridor. The frequency of bus serving the in R132 Drumcondra Road and

R803 and R05 Fairview Road corridor during the AM peak hour is illustrated in **Table 2.3** and **Table 2.4.** As with the NTA modelling methodology of the Great Dublin Area transportation system the AM period is adopted as being the criteria period.

Route no.	Inbound			Outbound		
	No. of Service	Average Vehicle Capacity	Capacity (persons)	No. of Service	Average Vehicle Capacity	Capacity (persons)
1	5	89	445	5	89	445
11	5	89	445	3	89	267
13	4	89	356	4	89	356
16	3	89	267	4	89	356
33	1	89	89	1	89	89
41	4	89	356	3	89	267
41B	0	89	0	0	89	0
41C	4	89	356	2	89	178
41D	0	89	0	2	89	178
44	2	89	178	1	89	89
Total			**2492**			**2225**

Table 2.3: Drumcondra Road Bus Stop Network Capacity (AM Peak Hour 07:15-08:15)

Route no.	Inbound			Outbound		
	No. of Service	Average Vehicle Capacity	Capacity (persons)	No. of Service	Average Capacity	Capacity (persons)
123	5	89	445	5	89	445
6	1	89	89	1	89	89
14	6	89	534	7	89	623
15	6	89	534	7	89	623
27	6	89	534	5	89	445
27A	2	89	178	2	89	178
42	3	89	267	3	89	267
43	1	89	89	3	89	267
130	7	89	623	4	89	356
H1	4	89	356	5	89	445
H2	1	89	89	2	89	178
H3	2	89	178	2	89	178
Total			**3916**			**4094**

Table 2.4: Fairview Road Bus stop Network Capacity (AM Peak Hour 07:15-08:15)

With the objective of establishing the existing capacity on the local public bus network an average bus capacity of 89 persons is assumed for the bus vehicle. The total inbound and outbound AM

peak hour capacity of Drumcondra Road Bus stops respectively are found to be 2492 and 2225 passengers per hour respectively. The total inbound and outbound AM peak hour capacity of Fairview Road Bus stop respectively are established as being 3916 and 4094 passengers per hour respectively.

2.3.5 Public Transport – Heavy Rail

Existing Baseline Services

The Drumcondra Train Station is located approximately 1.3 km (17-minute walk) from the subject site where the following rail services can be accessed: -

- Dublin Connolly – Sligo
- Dublin – Maynooth, Longford and M3 Parkway; and
- Grand Canal Dock and Dublin Heuston - Portlaoise

In addition, the Clontarf Road Train Station is located approximately 1.8km (23-minute walk) walking distance to the west of the subject site. This interchange provides access to DART and regional Commuter rail services.

Existing Network Capacity

With the objective of establishing the existing capacity on the Train station near the vicinity of subject site, the frequency of trains during the peak AM hour was noted. The capacity of rail fleet as provided on Irish Rail was used for the analysis. The analysis revealed that the total inbound and outbound capacity of Drumcondra Road Train station are 2370 and 1059 respectively. The results are summarised in **Table 2.5.**

Route	Inbound			Outbound		
	No. of Service	Average Vehicle Capacity	Capacity (persons)	No. of Service	Average Vehicle Capacity	Capacity (persons)
Dublin Connolly – Sligo	2	252	504	0	252	0
Dublin – Maynooth, Longford and M3 Parkway	6	185	1110	3	185	555
Grand Canal Dock and Dublin Heuston – Portlaoise	3	252	756	2	252	504
Total			**2370**			**1059**

Table 2.5: AM Rail Service Utilisation -Drumcondra Train Station (AM Peak Hour 07:15-08:15)

Public Transport System Capacity

The assessment of the existing 2023 timetabled local rail (calling at Drumcondra Railway Station between 0715-0815) and bus (calling at local bus stops between 0715-0815) services reveals that the public transport network has a total passenger capacity of 8146 (4717 Bus +3429 Rail) on R132 Drumcondra Rd Corridor, and 8010 (8010 Bus + 0 Rail) on R803 / R05 Fairview Corridors during the peak AM perk hour period as summarised in **Table 2.6** below

Mode of Travel	R132 Drumcondra Corridor			R803 and R05 Fairview Corridor		
	Inbound	Outbound	Two-way	Inbound	Outbound	Two-way
Bus	2492	2225	4717	3916	4094	8010
Rail	2370	1059	3429	0	0	0
Total	**4862**	**3284**	**8146**	**3916**	**4094**	**8010**

Table 2.6: Public Transport Network Capacity – Existing 2023 Baseline Scenario(AM Peak Hour 07:15-08:15)

2.4 EXISTING SITE ACCESSIBILITY

2.4.1 Walking

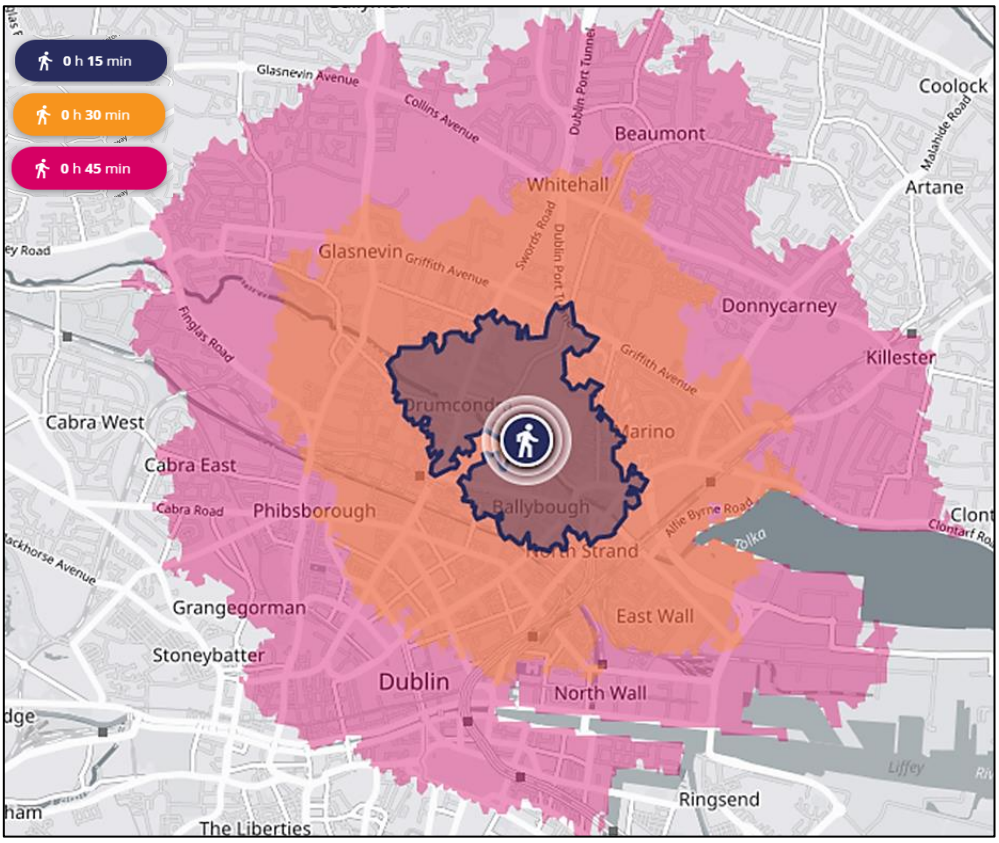


Figure 2.5: Pedestrian Accessibility (Walking from Site) (Reference: TravelTime)

Figure 2.5 presents the significant extent of the pedestrian catchments accessible from the subject brownfield site for different walking times ranging from 15 minutes to 45 minutes. Locations including Drumcondra and Ballybough are within a 15-minute walk whilst locations that include Glasnevin, East Wall, Marino and Connolly Station are all within a 30-minute walk. Dublin City Centre is an approximate 45-minute walk from the subject site location.

2.4.2 Cycling

Figure 2.6 indicates cycle travel time catchment areas from the brownfield subject site. In 15 minutes of cycling, a significant number of nearby neighbourhood centres and their employment / educational facilities are accessible. In 30 minutes of cycling, Blanchardstown and all of Dublin City Centre can be reached. In 45 minutes of cycling, areas such as Swords and Malahide in the north and Dundrum in the south are all accessible from the subject site.

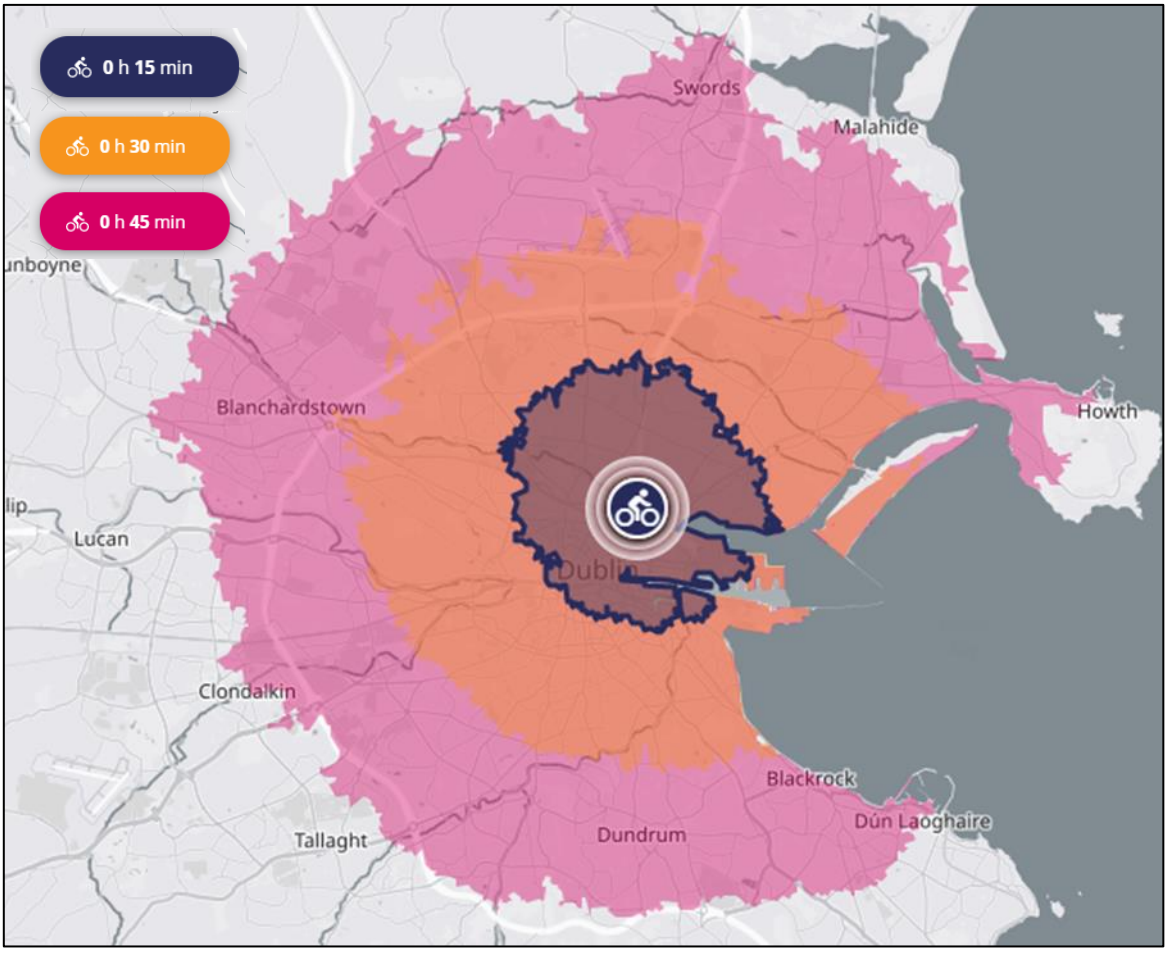


Figure 2.6: Cycling Accessibility (Reference: TravelTime)

2.4.3 Public Transport and Walking

Figure 2.7 indicates public transport travel time catchment areas from the subject site. In reference to Section 2.3.4, it is noted that the subject development location benefits from a number of different bus service interchanges being within close proximity. In order to obtain realistic journey times, the following maps give travel times during AM peak time hours, in this case 08:00 on a typical Tuesday.

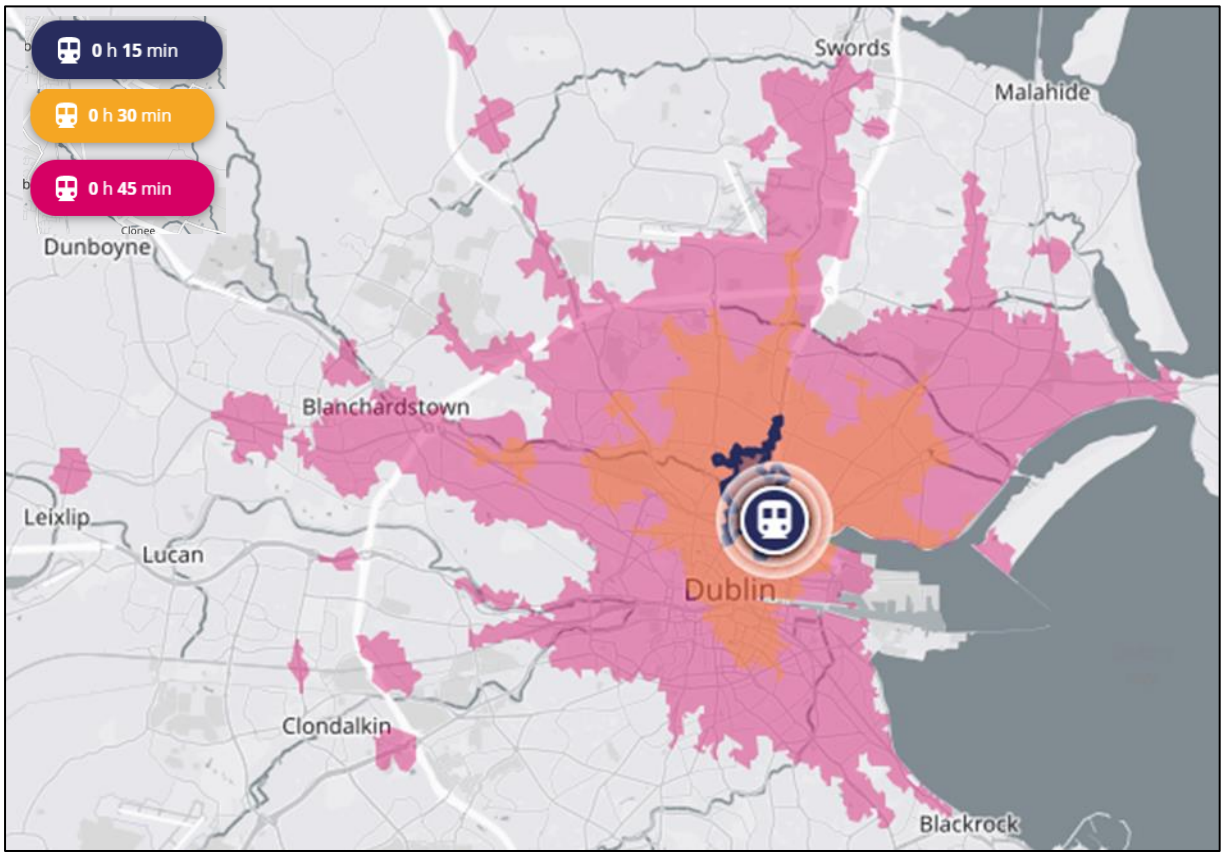


Figure 2.7: Public Transport Accessibility Catchments (Reference: TravelTime)

2.5 PROPOSED TRANSPORTATION INFRASTRUCTURE

2.5.1 Cycle Network Proposals

The subject site is located within the 'Dublin City Centre Sector' within the NTA's Greater Dublin Area Cycle Network Plan (2013). According to this GDA Cycle Network Plan, the following routes have been proposed by the NTA and will be located within the vicinity of the subject site (**Figure 2.8**): -

- **Secondary Route 2B** - *Drumcondra Road - Clonliffe Road - Jones' Road- Mountjoy Square - Parnell Square - O'Connell Street;*
- **Orbital Route NO2** - *Tolka Valley route from Route 1D at Ballybough to Drumcondra, Glasnevin and Finglas South;*
- **NO2 Greenway** - *along the River Tolka / Richmond Road from Fairview to Drumcondra*
- **Primary Route 2A** - *to Swords via Drumcondra, Whitehall and Santry;* and
- **Primary Route 1** - *Beresford Place to the North East Sector via Amiens Street, North Strand and Fairview, with 3 branches along the coastal Clontarf Road, the Howth Road and the Malahide Road.*

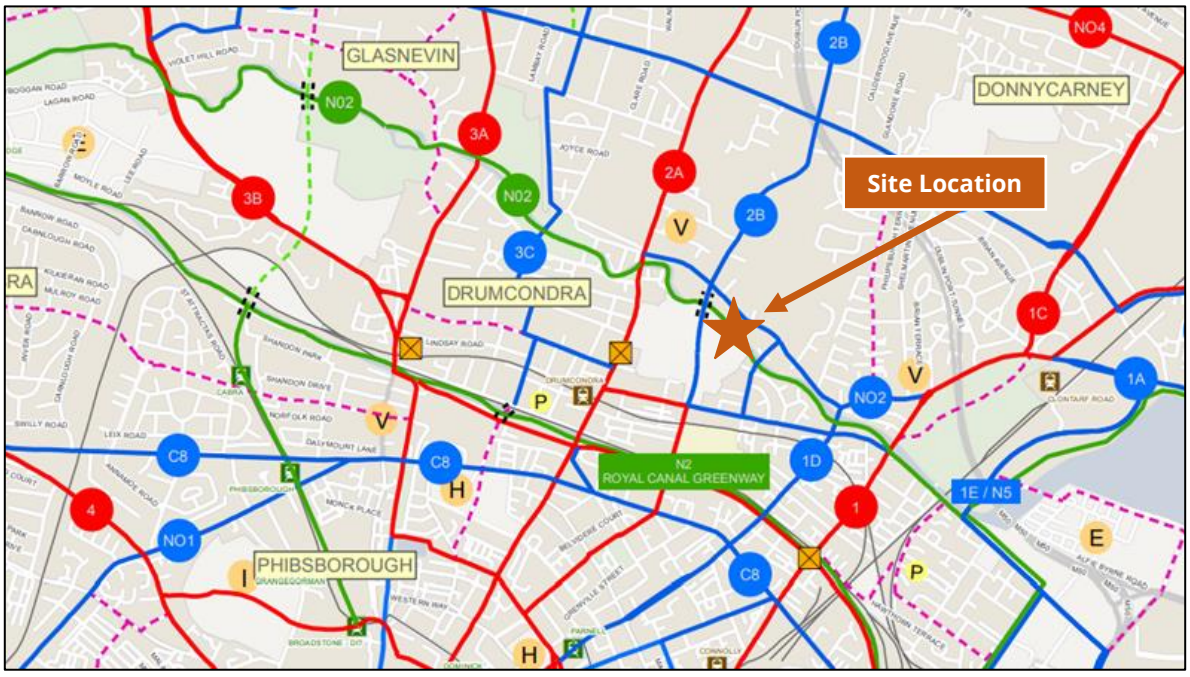


Figure 2.8: Proposed GDA Cycle Routes in Richmond Road (Extract: Sheet N1 GDA Cycle Network Plan 2013)

Greater Dublin Area Cycle Network -2022

The Transport Strategy for the Greater Dublin Area 2022-2042 as compiled by the National Transport Authority sets out the Strategic Transport Plan for the Greater Dublin Area for the period up to 2042. It provides a substantial update and expanse of the 2013 GDA Cycle Network Plan, supported with technical assessment and stakeholder input. The GDA Cycle Network comprises of Primary, Secondary, Feeder, Greenway and Inter-urban routes for the region, including dedicated town networks for all settlements. The revised network forms a key component of the

overall transport network for the region. The 2022 GDA Cycle Network Plan routes within the vicinity of the subject site are indicated in **Figure 2.9**.

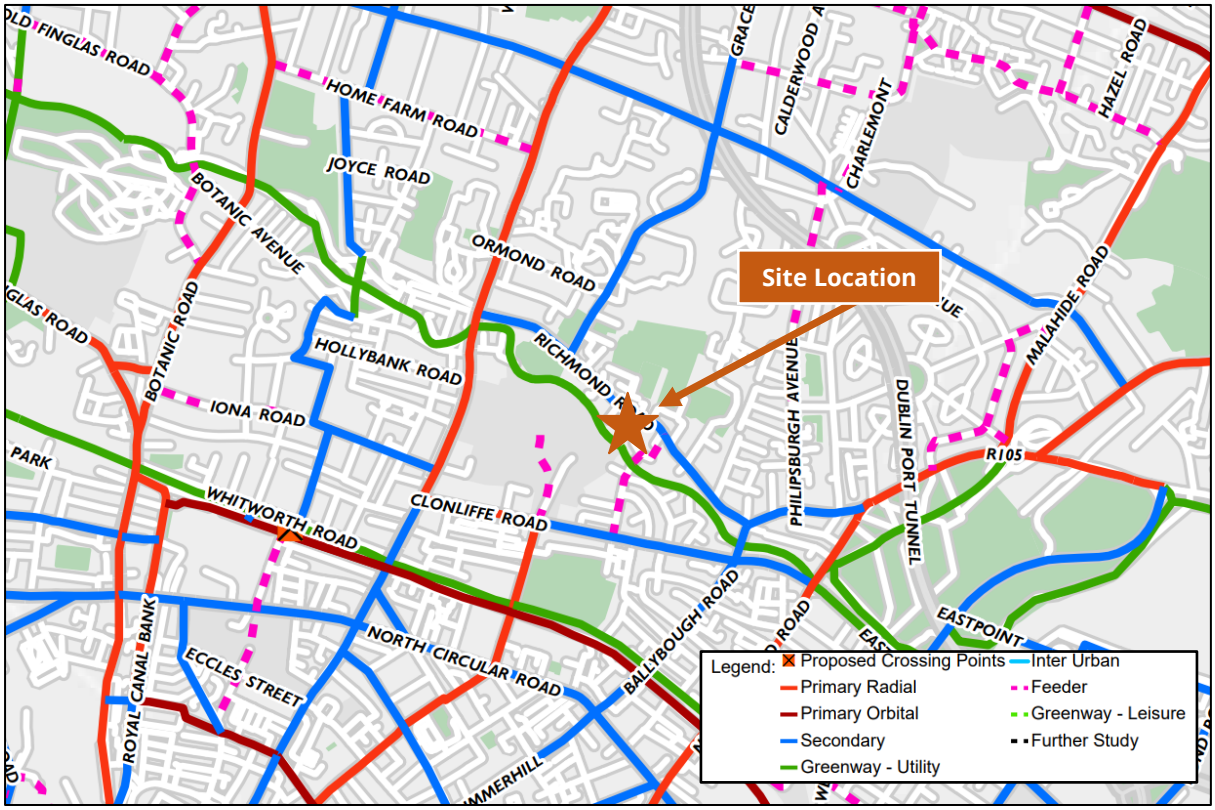


Figure 2.9: Proposed GDA Cycle Routes in Richmond Road (Extract: GDA Cycle Network Plan 2022)

2.5.2 Public Transport Proposals - BusConnects

The National Transport Authority (NTA) has developed a strategic transport plan, known as *BusConnects*, which will transform and overhaul the current bus network to provide a more efficient network. The proposed network will deliver the 'next generation' of bus corridors on the busiest routes and redesign routes with the aim of offering fast, predictable and reliable bus journeys.

This initiative proposes a complete 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;
- Increasing the number of routes where buses will come every 15 minutes or less all day;
- Additional service would be provided at peak hours to limit overcrowding.

- Rolling out new bus stops with better signage and information and increasing the provision of additional bus shelters; and
- Transitioning to a new bus fleet using low emission vehicle technologies.

Under the *BusConnects* proposals, the following high frequency routes will be available within the vicinity of the subject site (Ref. **Figure 2.10**): -

- **A-Spine**: High frequency services every 12 minutes along Drumcondra Road (R132)
  - **A1**: Beaumont - City Centre – Knocklyon
  - **A2**: Dublin Airport - City Centre - Ballinteer - Dundrum
  - **A3**: DCU - City Centre – Tallaght
  - **A4**: Swords - City Centre – Dundrum
- **Radial Route 19**: Proposed to travel from Airport to Parnell Square via Drumcondra Road (R132). This route will have a frequency of every 60 minutes.
- **Radial Route 22**: Will travel from Swords to City Centre via Drumcondra Road. This route will have a frequency of every 15 minutes.
- **Radial Route 73**: Will travel on the R803 from Marino to Walkinstown via City Centre. This route will have a frequency of every 15 minutes.

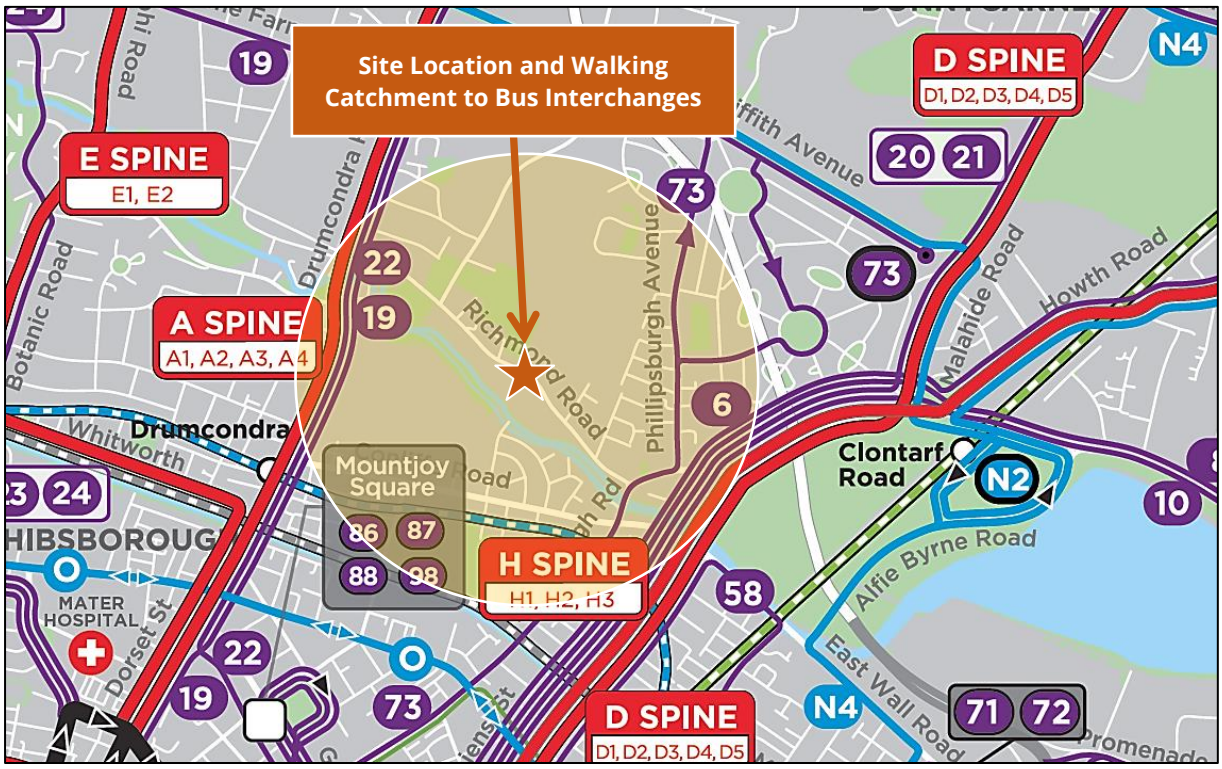


Figure 2.10: Proposed BusConnects Routes (Source: BusConnects)

2.5.3 Road Infrastructure Proposals

Map E of the Dublin City Development Plan 2022-2028 reveals that there are proposals for roads improvements along the length of Richmond Road and also new road running through the Sports Ground west of the proposed development linking Richmond Road and Clonliffe Road identified as a 6-year objective as presented below. The Richmond Road Area Action Plan (2007) proposed to upgrade the existing corridor to a consistent 7.5 m wide carriageway incorporating 1.3 m wide Advisory Cycle Lanes on both sides of 3.75m wide general traffic lanes.

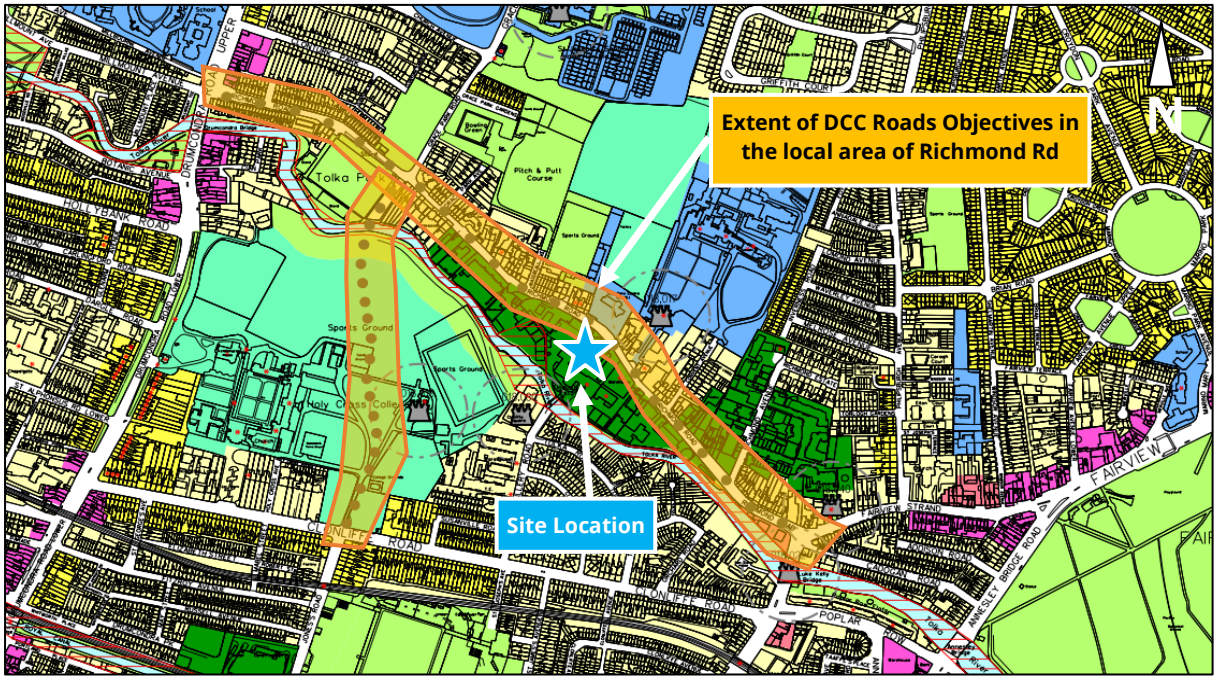


Figure 2.11: Proposed Road Improvements along Richmond Road (Extract: DCC Dev. Plan Zoning Map)

2.5.4 Public Transport - DART + West

The first of the infrastructural projects of the DART + Programme to be delivered will be the DART + West project. This will provide a sustainable, reliable, and more frequent rail service improving capacity to city centre rail corridors. Delivery of this DART+ West will support existing communities and support future sustainable development. It will serve all existing stations along the railway corridor between Maynooth Station and M3 Parkway Station to Connolly Station and to the proposed Spencer Dock Station using electrical power, which has a lower carbon footprint than the current diesel trains. The frequency and quality of service will provide a viable transport alternative for surrounding communities other than private car travel. It aims to promote multi modal transit, active transport, boost regional connectivity and make public transport the

preferred option. The Drumcondra Station is currently within c. 1.3km or c.17-minutes walking catchment of the subject Richmond Road development site. The DART+ programme intends to:

- Expand its current network from 50km in length to over 150km.
- Increase train capacity from the current 6 trains per hour per direction up to 12 trains per hour per direction subject to demand. Passenger capacity will increase from 5,000 in 2019 to 13,200 passengers in 2025.
- Reduce carbon emissions through the deployment of new electric trains.

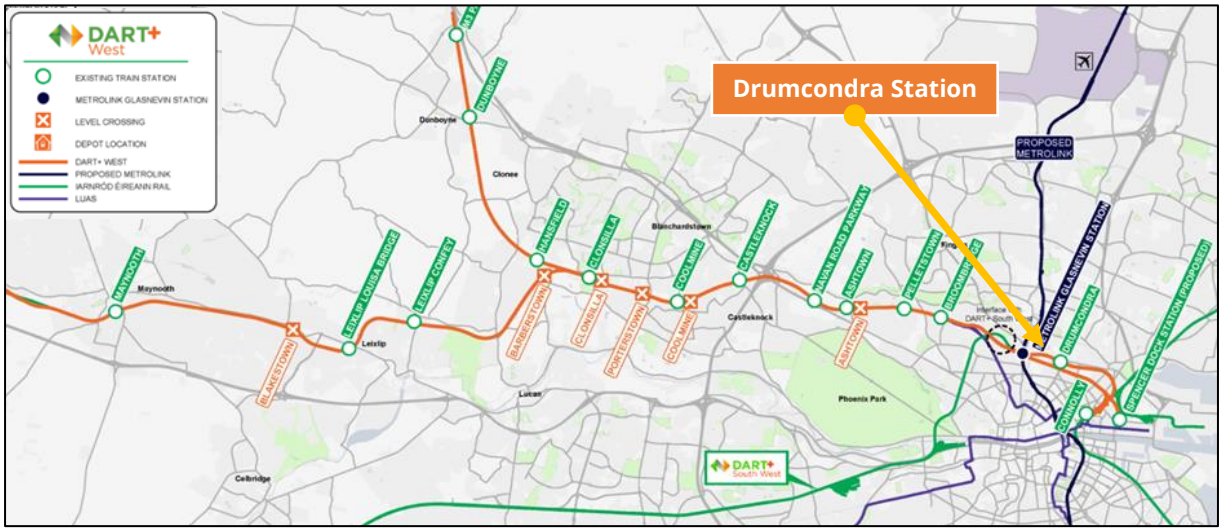


Figure 2.12A: Proposed DART+ West Route Map Network (Source: DART+ Programme - Iarnród Éireann)

The DART+ West project has applied for a Railway Order to An Bord Pleanála on the 29th July 2022 and this Statutory Consultation Statutory Consultation is now closed, as of 28th October 2022. The project will see increase train capacity from the current 6 trains per hour per direction up to 12 trains per hour per direction subject to demand. Accordingly, passenger capacity will increase from 5,000 in 2019 to 13,200 passengers in 2025. Whilst Drumcondra Station is currently only a c.1.3km walk / cycle from the subject site, the delivery of a number of other development schemes (ref. **Figure 2-12B**) has the potential to deliver significant permeability benefits and associated accessibility improvements which will upon completion result in a walk / cycle distance of less than 1km being required.

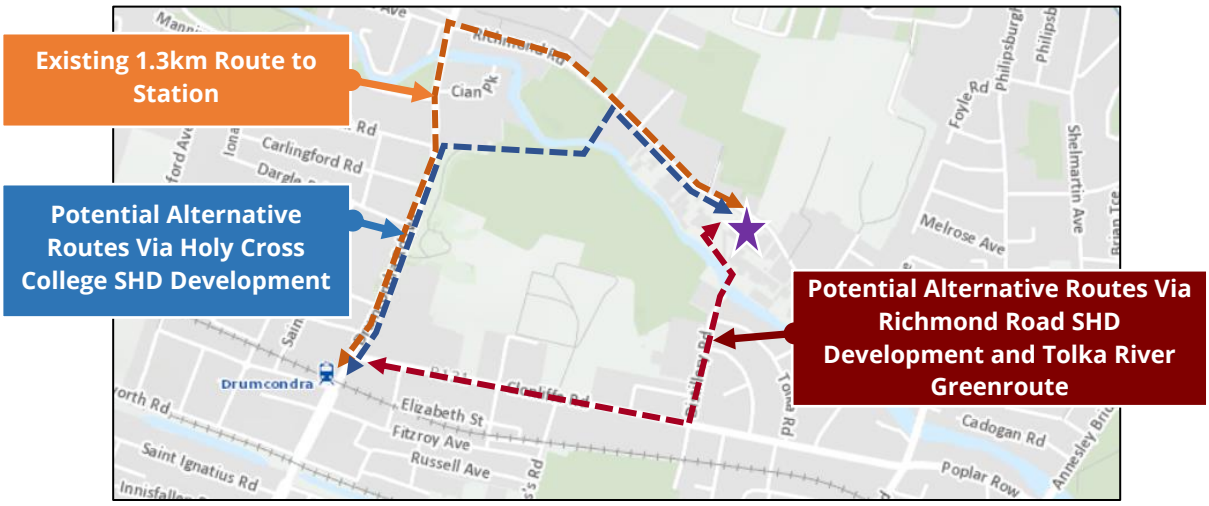


Figure 2.13B: Access Routes to Dart West Interchange at Drumcondra

2.5.5 Public Transport Proposals - Metrolink

The proposed high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish RAIL, dart, Dublin Bus and Luas service creating fully integrated public transport in the Greater Dublin Area is presented in **Figure 2.14** below.

Figure 2.14: Proposed Metrolink Route Map Network

The underground Tunnel has both the Griffith Park and Glasnevin interchanges within the near vicinity of the subject site and accessible within 20 minutes walking distance. The proposed Metrolink will cater for 20,000 passengers per direction per hour providing a connection between Swords and the Dublin City Centre of 25 minutes travel time.

2.6 RSA COLLISION HISTORY

The collision statistics on the Road Safety Authority (RSA) website were reviewed in order to ascertain the safety record of the local road network over the most recent twelve-year period. This includes information for the years 2005 to 2016 inclusive and indicates basic information on all reported incidents. It should be noted that information relating to reported incidents from 2017 onwards is not yet available on the Road Safety Authority (RSA) website.

The RSA records detail only those occasions where the incident was officially recorded such as the Garda being present to formally record details of the incident. According to the RSA website there were six reported incidents within the immediate vicinity of the subject scheme, as detailed in the following paragraphs.

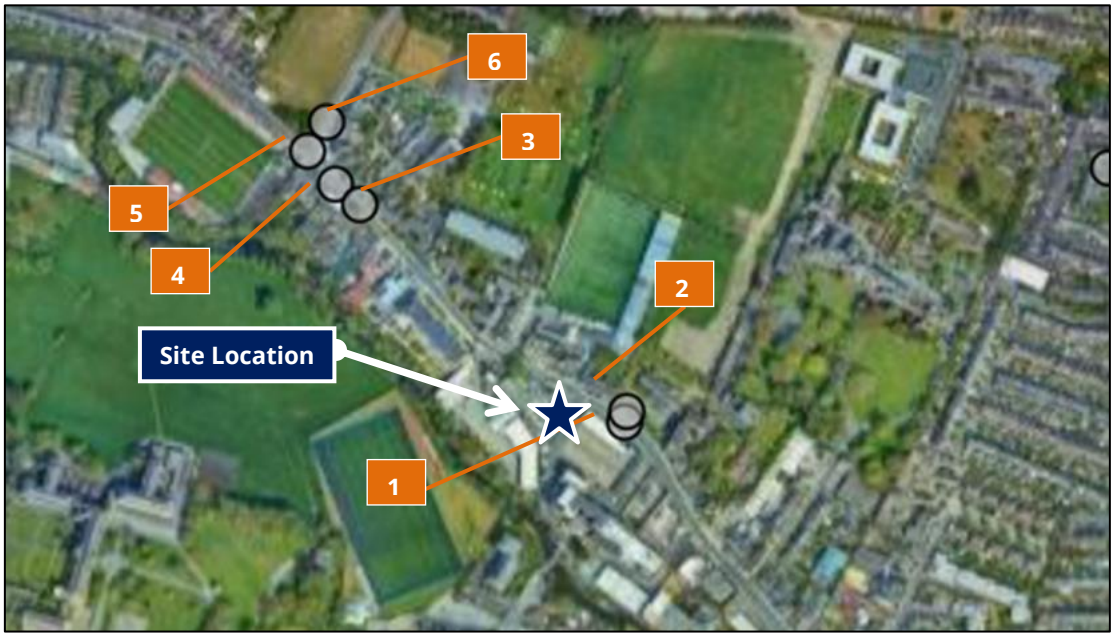


Figure 2.15: Collision Map - (Source: Road Safety Authority)

The review of the RSA data reveals that all incidents recorded along Richmond Road have been classified as 'Minor'.

In reference to **Figure 2.15** above and **Table 2.7** below incident numbers 1 & 2, occurred along the frontage of the subject site whilst incident numbers 3, 4, 5 & 6 occurred in vicinity of the Grace Park Road junction. All incidents resulted in 1 no. minor casualty each.

Ref	Year	Vehicle	Circumstances	Day	Time	Severity	Total Casualties
1	2014	Bicycle	Other	Thurs	10:00-16:00	Minor	1
2	2005	Goods	Pedestrian	Tue	10:00-16:00	Minor	1
3	2010	Goods	Pedestrian	Thurs	16:00-19:00	Minor	1
4	2009	Bus	Pedestrian	Sat	23:00-03:00	Minor	1
5	2012	Car	Pedestrian	Fri	10:00-16:00	Minor	1
6	2012	Car	Angle, both straight	Sun	10:00-16:00	Minor	1

Table 2.7: Collision Records - (Source: Road Safety Authority)

Without the provision of more detailed collision data, DBFL have concluded that there are no apparent significant trends in the collisions occurring on and in the vicinity of the proposed developments site access junction on Richmond Road.

2.7 BASELINE TRAVEL CHARACTERISTICS

In order to develop an understanding for the existing travel trends within the area of the subject development site, the 2016 Census travel data was reviewed. The information below has also been incorporated into the MMP (Mobility Management Plan) which has also been submitted within this planning application. The MMP has been issued to analyse different travel modes and to encourage support more sustainable travel patterns.

This data illustrates how residents within the surrounding residential estates are travelling to work/college or school. **Figure 2.17** below illustrates the existing baseline modal split trends within the surrounding 'Small Areas' (as per CSO classification) of the subject site. This was chosen to provide travel trends for these areas as a collective within the Central Statistics Office's SAPMAP using 2016 census data. The adopted areas as located nearest to the proposed development (and as such with familiar characteristics) from which data is derived for this analysis is shown in **Figure 2.16** below.

Figure 2.16: 2016 CSO SAPMAP Surrounding 'Small Areas'

The local residential areas analysed include the following:

- **1 – Riverwood Apartment, Edgewood Apartment Gracepark Avenue**
- **2 – Garden House Apartments, Charthouse Business Centre**
- **3 - Clonliffe Square Apartments, Belvedere Rugby Club, The Distillery Apartments**
- **4 –Riverview Apartments, Richmond Hall Apartment Block 3-4, Distillery Road, Tolka Road**
- **5 – Richmond Hall Block 1, Richmond House Block 2,Richmond House Block 5**

The current travel trends within the existing residential areas surrounding the subject Richmond Road site are illustrated in **Figure 2.17** below. This graph shows the overall travel trends for trips both to Work and to School/College combined. The modal split observed shows that a high percentage of trips are currently undertaken by sustainable travel modes, which helps form a baseline for sustainable travel trends to be based upon.

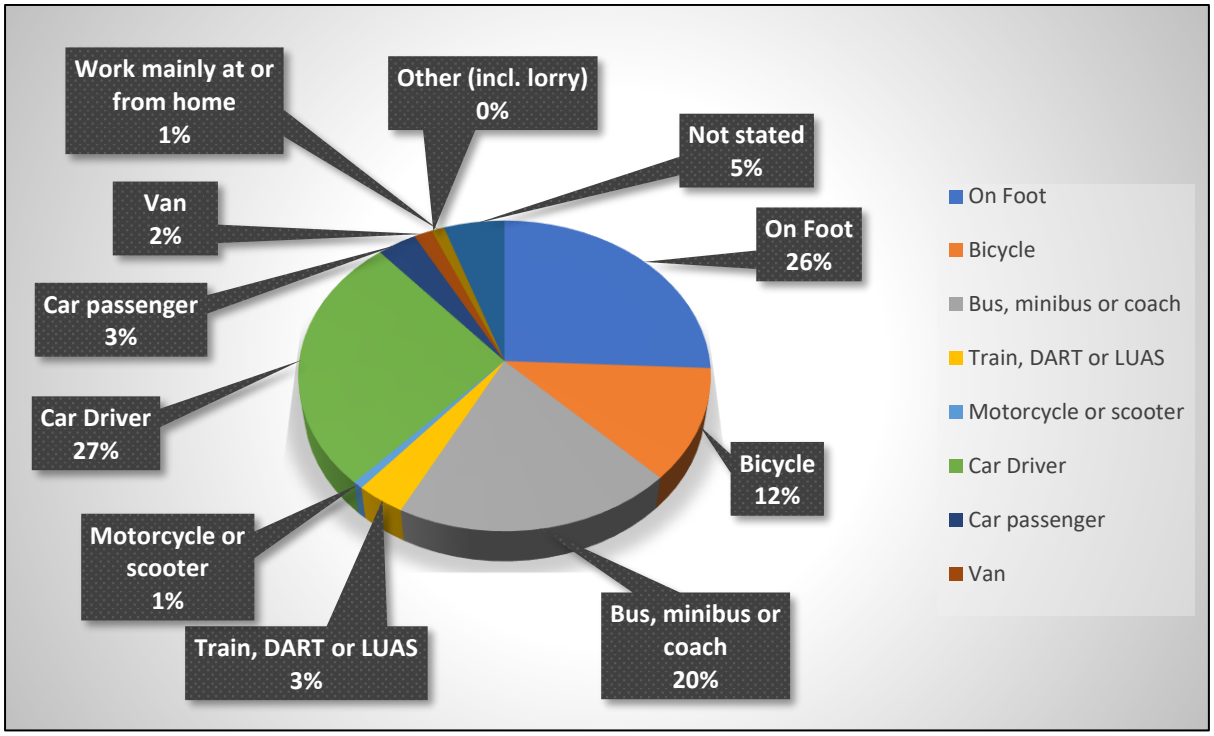


Figure 2.17: Current Modal Split for Neighbouring Urban Areas

Figure 2.18 and **Figure 2.19** below illustrates the 1st Year Target and 5-year Modal Split Target respectively, which have been set out for the proposed development site.

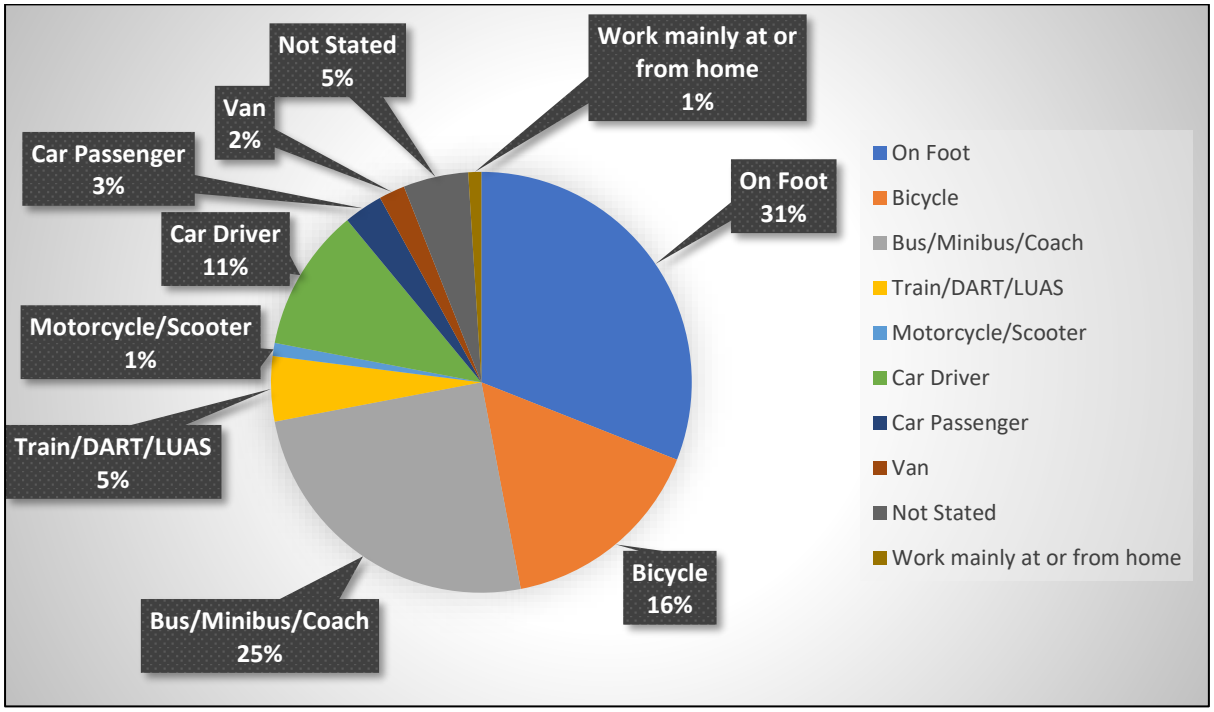


Figure 2.18: 1st Year Modal Split Targets (2025)

Figure 2.18 shows 1st year Modal split target from base travel trends observed in **Figure 2.17**, with the MMP strategy in place to create a modal split shift towards more sustainable options such as walking, cycling, train and buses for trips undertaken to work, school and college. Bus and cycling trips undertaken for these purposes would supplement vehicle trips and allows the development to meet the Smarter Travel national transport policies which state "a maximum of 45% of trips are to be car-based by 2020."

Figure 2.19 below shows 5- year Modal split target which moves further away from private car reliance for trips and aims to further reduce car-based trips undertaken, in accordance with Smarter Travel policies. These trips are supplemented with public transport trips, walking and cycle trips, in this future scenario.

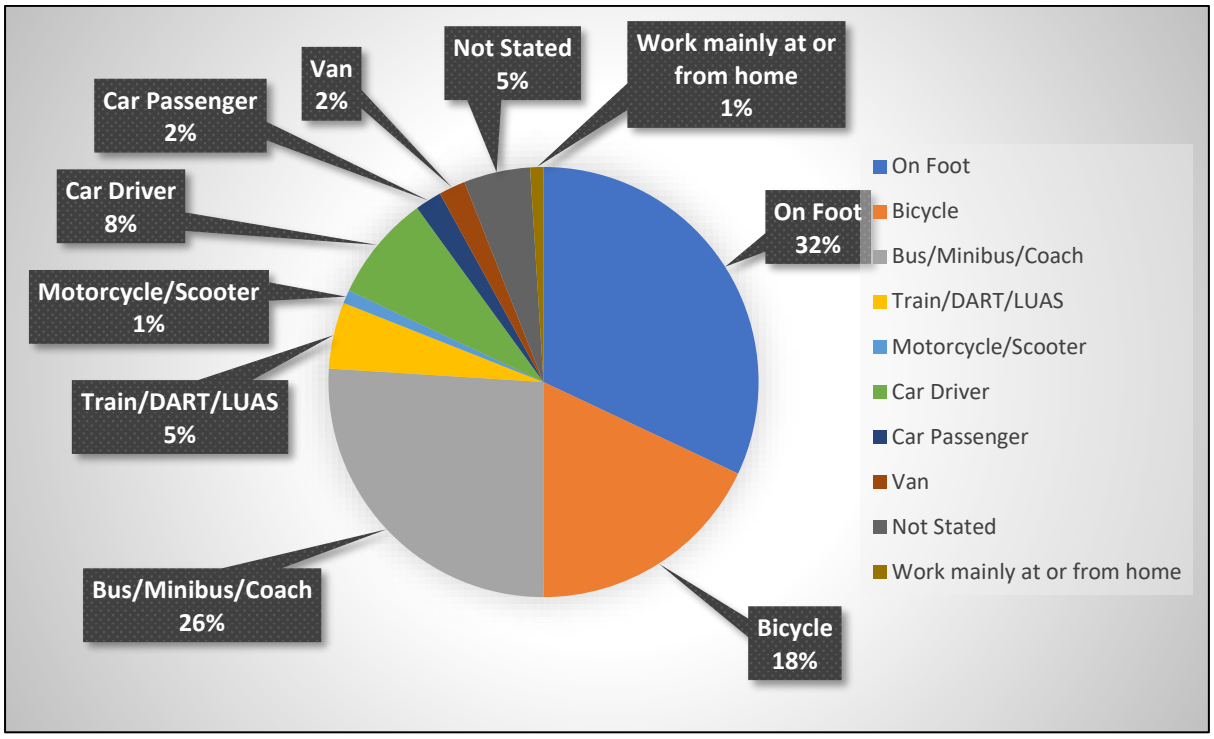


Figure 2.19: 5-Year Modal Split Target (2030)

The key target of this Modal Split Targets will therefore be to reduce single occupancy car-based travel from the subject site from approx. 27% to11% upon the development build-out period (up to the adopted 2025 Opening Design Year). This equates to a 16% overall reduction in single occupancy vehicle trips. 'The Essential Guide to Travel Planning' (DfT (UK) 2008) states that "good travel plans have succeeded in cutting the number of people driving to work by 15%." Reducing car travel by 15% can be made possible not only due to its location but also due to proximity to

local amenities (Lidl and Tesco Metro amongst others), employment (The Mater Hospital) and education facilities (e.g., DCU St Patrick's Campus) as an uptake in walking can further increase.

Given that the proposed development is located at a relatively central location in Dublin and due its close proximity to Drumcondra Road and Fairview Road Bus stop which has several bus services travelling past the site (as discusses in section 3.3.4), the mode share of public transport can be increased from 20% to 25% during the opening year of 2025. Also, with the affinity to Drumcondra Rail Station it is expected to a modal split increase of 2% in using Train.

The above targets are intended to be both realistic and aspirational and to act as a motivation for the MMP in general whilst remaining attainable. These targets are tabulated in **Table 2.8**

Mode of Travel	SAPMAP (Census, 2016)	1st Year Target (2025)	MMP 5-year Target (2030)
On Foot	26%	31%	32%
Bicycle	12%	16%	18%
Bus/Minibus/Coach	20%	25%	26%
Train/DART/LUAS	3%	5%	5%
Motorcycle/Scooter	1%	1%	1%
Car Driver	27%	11%	8%
Car Passenger	3%	3%	2%
Van	2%	2%	2%
Not Stated	5%	5%	5%
Work mainly at or from home	1%	1%	1%
Total	**100%**	**100%**	**100%**

Table 2.8: Mode Share Targets for the Proposed Development

3 POLICY FRAMEWORK

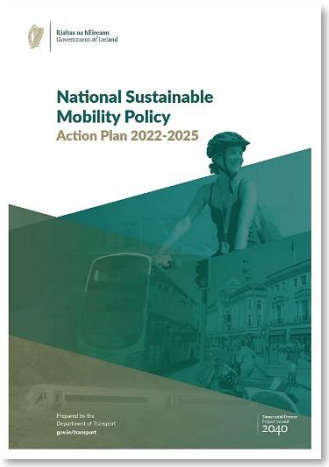
3.1 DEVELOPMENT POLICY

In the context of transportation, the subject site policy framework is influenced by the following key documentations. A common theme through each of these key documents is the emphasis placed upon the importance of travel demand management, with many identifying the need to implement mobility management plans with the objective of promoting sustainable travel patterns. These documents include;

- National Sustainable Mobility Policy Action Plan 2022-2025
- Transport Strategy for the Greater Dublin Area 2016-2035
- Sustainable Urban Housing: Design Standards For New Apartments (2022)
- Dublin City Development Plan 2022-2028
- Richmond Road Area Action Plan (2007)

3.1.1 National Sustainable Mobility Policy Action Plan 2022-2025

The Purpose of this policy is to set out a strategic framework for active travel and public transport to support Ireland's overall requirement to achieve a 51% reduction in carbon emissions by the end of 2030.



The targets are to deliver at least 500,000 additional daily active travel and public transport journeys and achieve a 10% reduction in kilometres driven by fossil fuelled cars by 2030 in line with metrics for transport set out in the Climate Action Plan 2021. Actions contained within this documentation aim to improve and expand sustainable mobility options by providing safe, green, accessible and efficient alternatives to car journeys. Demand management and behavioural changes measures have been included to manage daily travel demand more efficiently to reduce the journeys taken by private car. Action plans include;

- Continue to protect and renew road infrastructure for all road users including sustainable mobility users.

- Transition Dublin Metropolitan (Public Service Obligation - PSO) bus services to low/zero emission bus fleet.
- Develop pedestrian enhancement plans.
- Expand the operation of bike share schemes (including electric bikes).
- Deliver additional cycling infrastructure projects.
- Commence delivery of BusConnects network redesign.
- Expand Smarter Travel Workplaces and Campus Programmes to include:
    - Guidance for more types of companies and campus facilities.
    - Enhanced toolkit for workplace/campus assessment.
    - Support for in-work/in-business/ in-campus cycle uses through subsidised cycle provision for trial periods.
    - Cycle Friendly Employer Certification.
- Ensure all transport operators are contractually obliged to put in place operational procedures to assist people with mobility difficulties.

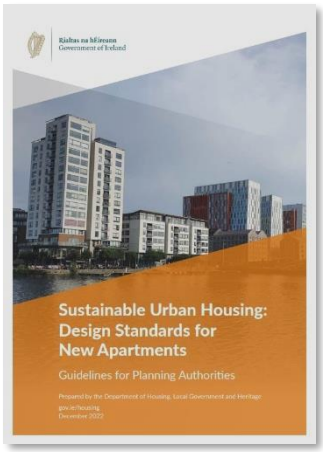
3.1.2 Transport Strategy for the Greater Dublin Area 2016-2035

The Transport Strategy for the Greater Dublin Area 2016 – 2035 is a document compiled by the National Transport Authority which sets out the Strategic Transport Plan for the Greater Dublin Area for the period up to 2035.

The Strategy sets out a clear hierarchy of transport users, commencing with the sustainable modes of travel such as walking, cycling and public transport users at the very top of the hierarchy. The Strategy adopts the general principle that these users should have their safety and convenience needs considered first and that the hierarchy is applied where a large share of travel is (or could be) made by walking, cycling and public transport.

In addition to guiding the development of specific Strategy measures, the NTA encourages that the "*transport user hierarchy should guide engineers, planners and urban designers on the order in which the needs of transport users should be considered in designing new developments or traffic schemes in the Greater Dublin Area*."

3.1.3 Sustainable Urban Housing: Design Standards For New Apartments



This guideline document was initially produced by the Department of Housing, Planning and Local Government (DHPLG) in 2018 with an update released in December 2022. The purpose of this document is to set out standards for apartment focused developments, mainly in response to circumstances that had arisen whereby some local authority standards were at odds with national guidance.

With the demand for housing increasing, this means that there is a need for an absolute minimum of 600,000 new homes in Ireland's cities by 2040. It is therefore critical to ensure that apartment living is an increasingly attractive and desirable housing option for a range of household types and tenures.

These Guidelines apply to all residential developments that include apartments that may be made available for sale, whether for owner occupation or for individual lease.

The DHPLG advocates that cycling provides a flexible, efficient, and attractive transport option for urban living and these guidelines require that this transport mode be fully integrated into the design and operation of all new apartment development schemes.

The quantum of car parking or the requirement for any such provision for apartment developments will vary, having regard to the types of location in cities and towns that may be suitable for apartment development, broadly based on proximity and accessibility criteria. With specific regard to areas classified as 'Intermediate Urban Locations' the guidelines specify that a number of distinct planning criteria may be applied, stating;

"Planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard".

For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure, where possible, the provision of an appropriate number of drop off, service, visitor parking spaces and parking for the mobility impaired. Provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles, cycle parking and secure cycle storage.

3.1.4 Dublin City Development Plan 2022-2028

The Dublin City Development Plan (2022-2028) which came into effect on the 14th of December 2022 sets out how the city will develop to meet the needs of all residents, workers and visitors. The aim of the plan is to improve the quality of life for its citizens, and make sure that Dublin City is an attractive place to live, work and visit. The plan's policies and objectives:

- guide growth and development,
- provide a strategy to achieve proper planning, and
- show how we will achieve sustainable development, that is development that meets our needs now and won't comprise future generations meeting their needs.

In the context of the subject Richmond Road development proposals, the following are the key relevant transport and development objectives set out in the new Development Plan:

Sustainable Mobility

SMTO1 Transition to More Sustainable Travel Modes: "*To achieve and monitor a transition to more sustainable travel modes including walking, cycling and public transport over the lifetime of the development plan, in line with the city mode share targets of 26% walking/cycling/micro mobility; 57% public transport (bus/rail/LUAS); and 17% private (car/van/HGV/motorcycle).*"

Accessibility for All

SMTO2 Improving the Pedestrian Network: "*To improve the pedestrian network and prioritise the introduction of tactile paving, ramps and kerb dishing at appropriate locations, including pedestrian crossings, taxi ranks, bus stops and rail platforms in order to optimise accessibility for all users.*"

Sustainable Modes

SMTO8 Cycling Infrastructure and Routes: *"To improve existing cycleways and bicycle priority measures and cycle parking infrastructure throughout the city and villages, and to create protected cycle lanes, where feasible."*

SMTO12 Cycle Parking Spaces: *" To provide publicly accessible cycle parking spaces, both standard bicycle spaces and non-standard for adapted and cargo bikes, in the city centre and the urban villages,*

and near the entrance to all publicly accessible buildings such as schools, hotels, libraries, theatres, churches etc. as required. "

Micro-Mobility and Shared Mobility

SMTO22 Shared Bike Schemes and Micro-Mobility Schemes: *"To monitor the success of and expand the shared bike schemes and to facilitate the expansion of shared micro-mobility schemes throughout the city, in accordance with ongoing review and new models of operation such as the use of mobility hubs."*

Car Parking

SMT 27 Car Parking in Residential and Mixed Use Developments

(i) "To provide for sustainable levels of car parking and car storage in residential schemes in accordance with development plan car parking standards (see Appendix 5) so as to promote city centre living and reduce the requirement for car parking."

(ii) "To encourage new ways of addressing the transport needs of residents (such as car clubs and mobility hubs) to reduce the requirement for car parking."

(iii) "To safeguard the residential parking component in mixed-use developments."

3.1.5 Richmond Road Area Action Plan

The Planning and Economic Development Department of Dublin City Council published the Richmond Road Area Action Plan (AAP) in April 2007. Whilst primarily associated with former development plans the Action Plan remains available on the DCC website as it continues to have some relevance in regard to topics not addressed in subsequent plans. The Action plan provides guidance for future development with the aim of improving connections and providing a variety of uses within an enhanced public domain including the banks of River Tolka. Reference has been made where relevant in regard to the subject development. The Area Action Plan States the following objective:

7.3(a) – "*To develop and exploit the amenity and recreational value of the Tolka River in the layout and access arrangements for all new development, with the aim of creating both new pedestrian access and a continuous linear park along the river."*

In addition, the Road Area Action Plan introduces the objective to implement enhancements in the form of upgraded pedestrian and road carriageway provision as per the details illustrated in **Figure 3.1**.

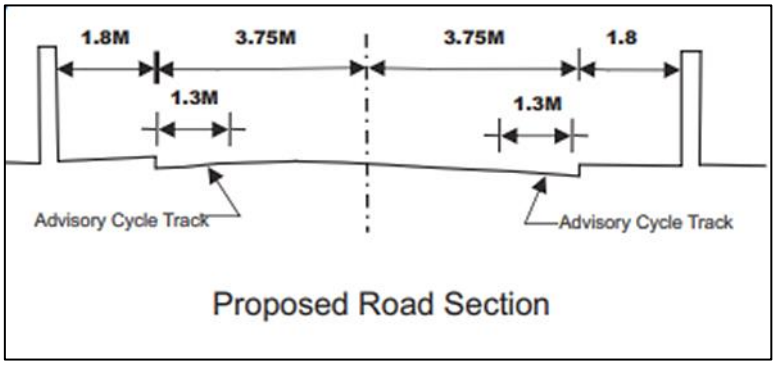


Figure 3.1: Proposed Richmond Road AAA Corridor Enhancements

The Action Plan also proposes the design of pedestrian / cycle routes and access roads that are in close proximity to redevelopment proposals. The designs incorporate active building frontages which aim to overlook the routes in order to ensure good surveillance, lighting scheme and adequate security will be maintained.

The Plan also states that due to *the "significance of the historical streetscape on parts of Richmond Road, there is limited opportunity to achieve adequate road width between 112 and 130 Richmond Road (southside). For the remainder of the road, however, from Drumcondra Road to Luke Kelly Bridge, as part of any redevelopment proposals, a strip of land will be required between 1.5 to 2.5 metres at the following locations:*

- *Between 52 and 68 Richmond Road;*
- *At Tolka Park;*
- *Between 130 to 144 (former Panelling Centre) Richmond Road;*
- *At the Builder's Providers and Leydens retail warehouse, where there is an existing road widening strip;*
- *Between 193 to 219 Richmond Road."*

In response to the above, particularly the fourth bullet point which specifically mentions the subject site, the design of the proposed development has actively safeguarded the opportunity to implement road improvement works along the entire site frontage on Richmond Road.

The specific extent of the road widening works as illustrated in **Figure 4-8** in Chapter 4 (Extract: DBFL Roads Layout Drawing No. 210178-DBFL-RD-SP-DR-C-1200) incorporates footpath widening works along the northern side of the corridor to deliver a footpath minimum width of 1.8m, the provision of 1.5m wide cycle tracks in each direction, and the widening of the road carriageway to 6.0m with a 3.0m wide lane in each direction.

These geometric characteristics have previously been agreed as part of the planning application on the adjoining builder providers site (Richmond Road Phase1). Accordingly, the proposed development works comply fully with the above Action Plan Objective.

3.2 DEVELOPMENT CONTROL

3.2.1 Car Parking Standards

In order to determine the appropriate quantum of vehicle parking for the proposed development, reference will be made to the following guidance: -

- Chapter 4 of Sustainable Urban Housing: Design Standards For New Apartments Guidelines For Planning Authorities, as published by the Department of Housing, Planning and Local Government (DHPLG), December 2022; and
- Table 2 within Appendix 5 of the Dublin City Development Plan (2022-2028).

Department of Housing, Planning and Local Government (DHPLG)

The subject site's location, being within c.1.3km walking distance of Drumcondra DART station and less than c. 800m of a proposed Core BusConnects (CBC) corridor. The site can be classified as an 'Intermediate Urban Location'. In relation to car parking within 'Intermediate Urban Locations', the DHPLG document states:

> ***" In suburban/urban locations served by public transport or close town centres or employment areas and particularly for housing schemes with more than 45 dwellings per hectare net (18 per acre), planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard. "***

Accordingly, the DHPLG design standards provide the opportunity to consider car parking provision (quantum) below the local development management standards maximum requirements.

Dublin City Development Plan 2022-2028

The 2022-2028 Development Plan divides parking areas into three zones and is similar to the zones stated within the 2016-2022 Plan. Parking areas in Dublin City are divided into the following 3 no. zones for the purposes of applying car parking standards:

- Zone 1: Parking Zone 1 is generally within the Canal Cordon and within North Circular Road in recognition of active travel infrastructure and opportunities and where major public transport corridors intersect;
- Zone 2: Parking Zone 2 occurs alongside key public transport corridors and;
- Zone 3: The remainder of the City falls under Parking Zone 3.

Table 2 within Appendix 5 of Volume 2 specifies the requisite level of on-site parking to be provided for residents, staff and visitors for various types of development. These car parking standards shall be generally regarded as the maximum parking provision and parking provision in excess of these maximum standards shall only be permitted in exceptional circumstances. It must be noted that the proposed site falls within Zone 2 of the 2022-2028 Plan.

Maximum car parking standards will be considered in Zone 2 for any site located within a highly accessible location. The Development Plan states that applicants must *"set out a clear case satisfactorily demonstrating a reduction of parking need for the development based on the following criteria:"*

- *"Locational suitability and advantages of the site."*
- *"Proximity to High Frequency Public Transport services (10 minutes' walk)."*
- *"Walking and cycling accessibility/permeability and any improvement to same."*
- *"The range of services and sources of employment available within walking distance of the development."*
- *"Availability of shared mobility."*
- *"Impact on the amenities of surrounding properties or areas including overspill parking."*
- *"Impact on traffic safety including obstruction of other road users."*
- *"Robustness of Mobility Management Plan to support the development."*

The car parking standards as stated by DCC & DHPLG have been outlined in **Table 3-1A** below.

Land Use	No. of Units / GFA (sqm.)	DCC 2022-28 Dev Plan Parking Requirement (Zone 2)		DHPLG Requirements	
		Long Stay	Short Stay	Long Stay	Short Stay
Apartment	**133**	1 / dwelling	-	*"...planning authorities must consider a reduced overall car parking standard..."*	*"...appropriate number of drop off, service, visitor parking spaces and parking for the mobility impaired."*
Retail	**335**	1 per 275 sq.m GFA		N/A	
Artists' Studios	**749**	1 per 275 sq.m GFA (Civic / Community land use closest match)		N/A	
Creche	**156**	1 Per 100 sq.m GFA		N/A	
Gym	**261**	*"Dependent on nature and location of use"*		N/A	

Table 3.1A: Car Parking Standards

Based upon the current DCC development standards, the subject development is permitted to provide up to a 'maximum' of 133 no. residential car parking spaces. Based on the DHPLG guidelines, "*planning authorities must consider a reduced overall car parking standard*".

Land Use	No. of Beds / GFA (sq.m)	DCC 2022-28 Dev Plan Parking Requirement (Zone 2)		DHPLG Requirements	
		Long Stay	Short Stay	Long Stay	Short Stay
Residential (Apartment)	65 no. 1-beds	65	-	< 65	Varies
	68 no. 2-beds	68		< 136	
	Sub Total	***133***	-	***< 133***	***Varies***
Retail	**335 sq.m**	2	-	n/a	n/a
Artists' Studios	**749 sq.m**	3	-	n/a	n/a
Creche	**156 sq.m**	1	-	n/a	n/a
Gym	**261 sq.m**	Zero to 1+	-	n/a	n/a
Sub-Total		**140**	**-**	**<133**	**varies**
Total		**140**		**<133**	

Table 3.2B: Permitted 'Maximum' / Recommended Car Parking Provision

For the non-residential retail and creche units the proposed development could potentially provide up to a 'maximum' of 3 on-site car parking spaces in the subject Zone 2 classification. For the land use 'Gym' the DCC standards state that the provision of car parking is "*Dependent on nature and location of use*". This requirement is ambiguous and is very much subject to site and

operational specific context of the gym proposal. The remaining non-residential land use proposed as part of the subject Richmond Rd redevelopment is an 'Artists' Studios'. Again this land use is not specifically considered by the DCC standards however if the DCC standards land use of 'Civic' or 'Community' was applied the Zone 2 development management standards would permit a maximum of up to 3 car parking spaces to be provided.

Disabled Parking

Section 4.2 of the 2022-28 Development Plan states that at least 5% of the total spaces should be allocated as accessible parking (a minimum provision of at least one space should be provided).

Electric Vehicle Parking

Section 5 within Appendix 5 of the Development Plan states that *"In all new developments, a minimum of 50% of all car parking spaces shall be equipped with fully functional EV Charging Point(s). The remaining spaces shall be designed to facilitate the relevant infrastructure to accommodate future EV charging."*

Shared Mobility

In accordance with Policy SMT24 of the new Development Plan, DCC aims to *"promote the use and expansion of shared mobility to all areas of the city…".* Section 7 within Appendix 5 states that the *"provision of car club parking spaces in all developments will be Supported."* The Plan also states that "*All car club spaces shall be fully equipped with EV infrastructure."*

Motorcycle Parking

DCC Development Plan 2022-28 states that *"New developments shall include provision for motorcycle parking in designated, signposted areas at a rate of 5% of the number of car parking spaces provided* (Section 6 – Appendix 5)."

3.2.2 Cycle Parking Standards

The appropriate level of cycle parking provision for the development proposals is to be provided in reference to both (i) the current 2022-28 DCC Development Plan standards, and (ii) the DHPLG guidelines. The corresponding bicycle parking standards for residential developments are detailed in **Table 3-2.**

Land Use	DCC 2022-28 Dev Plan Requirements (Zone 2)		DHPLG Requirements	
	Long Stay	Short Stay	Long Stay	Short Stay
Apartment	1 space / bedroom	1 space / two apartments	1 space / bedroom	1 space / two units
Retail	1 per 5 staff	1 per 100 sq.m GFA	N/A	
Artists' Studios[1]	1 per 5 staff	1 per 100 sq.m GFA	N/A	
Creche	1 per 5 staff	1 per 10 children	N/A	
Gym	1 per 5 staff	1 per 50 sq.m GFA	N/A	

[1] According to the DCC 2022-28 Dev. Plan, *"for any land use not outlined in Table 1, the default parking rate will be calculated based on those of a comparable use and/or determined as part of a Transport and Traffic Assessment and/or Mobility Management Strategy"*. In the above table we have applied the 'Community' land use standards.

Table 3.3: Bicycle Parking Standards

Based on the cycle parking standards set out in **Table 3-2**, the associated 'residential' cycle parking requirements are summarised in **Table 3-3A**. Based on the current development plan, the subject scheme is required to provide at least 267 no. cycle parking spaces. The DHPLG guidelines also require the provision of 267 no. apartment cycle parking spaces for the residential apartments.

Land Use	No. of Beds / GFA (sq.m)	DCC 2022-28 Dev Plan Parking Requirement (Zone 2)		DHPLG Requirements	
		Long Stay	Short Stay	Long Stay	Short Stay
Apartment Block A (16 Units)	10 no. 1-beds	10	8	10	8
	6 no. 2-beds	12		12	
	Sub Total (16)	**22**	**8**	**22**	**8**
Apartment Block B (61 Units) & Block C (56 Units)	55 no. 1-beds	55	58	55	**58**
	62 no. 2-beds	124		124	
	Sub Total (117)	**179**	**58**	**179**	**58**
Sub-Total Bicycle Parking		**201**	**66**	**201**	**66**
Total Bicycle Parking		**269**		**267**	

Table 3.4A: Developments Residential Cycle Parking Requirements

Land Use	No. of Beds / GFA (sq.m)	DCC 2022-28 Dev Plan Parking Requirement (Zone 2)		DHPLG Requirements	
		Long Stay	Short Stay	Long Stay	Short Stay
Retail	335 sq.m	2[1]	3	n/a	n/a
Artists' Studios[2]	749 sq.m	2[2]	8	n/a	n/a
Creche	156 sq.m	2[3]	5	n/a	n/a
Gym	261 sq.m	1[4]	6	n/a	n/a
Sub-Total Bicycle Parking		**7**	**23**	**0**	**0**
Total Bicycle Parking		**30**		**0**	

Notes : (1)- 10 no. staff for retail, (2)-Applying 'Community' land use standard with 10 staff (3)- 10 staff and 35 children for creche (4)-5 no. staff for Gym

Table 3.5A: Developments Non Residential Bicycle Parking Requirements

DCC Development Plan 2022-2028 requires that bicycle parking be located within 25m of a destination for short-term parking (e.g., a convenience store) and within 50m for long-term parking (parking more than three hours). The Development Plan states that all long-term cycle stands must be weather protected.

4 CHARACTERISTICS OF PROPOSALS

4.1 OVERVIEW

The proposals seek permission for the provision of a development known as 158A Richmond Road at Dublin 3. Malkey Limited intend to apply for permission for development (Large-scale Residential Development (LRD)) at this c. 0.55 hectare site at the former Leydens Wholesalers & Distributors Dublin, No. 158A Richmond Road, Dublin 3, D03 YK12.

The site is bounded to the north-east by Richmond Road, to the west/south-west by No. 146A and Nos. 148-148A Richmond Road (pending application ABP Reg. Ref. TA29N.312352), to the south/south-west by a residential and commercial development (Distillery Lofts) and to the east/south-east by the Former Distillery Warehouse (derelict brick and stone building). Improvement works to Richmond Road are also proposed including carriageway widening up to c. 6 metres in width, the addition of a c. 1.5 metre wide one-way cycle track/lane in both directions, the widening of the northern footpath on Richmond Road to a minimum of c. 1.8 metres and the widening of the southern footpath along the site frontage which varies from c. 2.2 metres to c. 7.87 metres, in addition to a new signal controlled pedestrian crossing facility, all on an area of c. 0.28 hectares. The development site area and road works area will provide a total application site area of c. 0.83 hectares.

The proposed development will principally consist of: a Large-scale Residential Development (LRD) comprising the demolition of existing industrial structures on site (c. 3,359 sq m) and the construction of a mixed-use development including artist studios (c. 749 sq m), a creche (c. 156 sq m), a retail unit (c. 335 sq m), and a gym (c. 262 sq m), and 133 No. residential units (65 No. one bed apartments and 68 No. two bed apartments). The development will be provided in 3 No. blocks ranging in height from part 1 No. to part 10 No. storeys as follows: Block A will be part 1 No. storey to part 4 No. storeys in height, Block B will be part 1 No. storeys to part 10 No. storeys in height (including podium) and Block C will be part 1 No. storeys to part 9 No. storeys in height (including podium). The proposed development has a gross floor area of c. 14,590 sq m and a gross floor space of c. 13,715 sq m.

The development also proposes the construction of: a new c. 204 No. metre long flood wall along the western, southern and south-eastern boundaries of the proposed development with a top of wall level of c. 6.4 metres AOD to c. 7.15 metres AOD (typically c. 1.25 metres to c. 2.3 metres in

height) if required; and new telecommunications infrastructure at roof level of Block B including shrouds, antennas and microwave link dishes (18 No. antennas enclosed in 9 No. shrouds and 6 No. transmission dishes, together with all associated equipment) if required. A flood wall and telecommunications infrastructure are also proposed in the adjoining Strategic Housing Development (SHD) application (pending decision ABP Reg. Ref. TA29N.312352) under the control of the Applicant. If that SHD application is granted and first implemented, no flood wall or telecommunications infrastructure will be required under this application for LRD permission (with soft landscaping provided instead of the flood wall). If the SHD application is refused permission or not first implemented, the proposed flood wall and telecommunications infrastructure in the LRD application will be constructed.

Figure 4.1: Proposed Development Site Layout (Extract of DBFL drawing Roads Layout)

The proposed development also provides ancillary residential amenities and facilities; 25 No. car parking spaces including 13 No. electric vehicle parking spaces, 2 No. mobility impaired spaces and 3 No. car share spaces; 2 No. loading bays; bicycle parking spaces; motorcycle parking spaces;

electric scooter storage; balconies and terraces facing all directions; public and communal open space; hard and soft landscaping; roof gardens; green roofs; boundary treatments; lighting; ESB substation; switchroom; meter room; comms rooms; generator; stores; plant; lift overruns; and all associated works above and below ground. **Figure 4.1** above illustrates the proposed plan layout of the proposed development (Source: DBFL Drawing No. 210178-DBFL-RD-SP-DR-C-1200).

4.2 SITE ACCESS ARRANGEMENTS

4.2.1 Vehicle Access

The subject development will benefit from a single direct vehicular access onto Richmond Road as presented in **Figure 4.2**. Accordingly, with the existing on-site facilities already benefiting from a vehicle access (which is to be relocated eastwards along Richmind Rd as part of the subject development works) no additional vehicle access / egress points are being proposed. The proposed site access will be located to the west of the lightly trafficked privaatre access leading to/from Distillery Lofts and the Stables Apartment complex. The access will take the form of a priority-controlled junction and access is proposed to be secured by a gate to restrict access to permitted residents / service vehicles only. The design of the new access junction, in addition to the internal road, has been actively influenced by and subsequently complies with DMURS. Further details of the site access arrangements have been illustrated in 210178-DBFL-TR-SP-DR-C-1102.

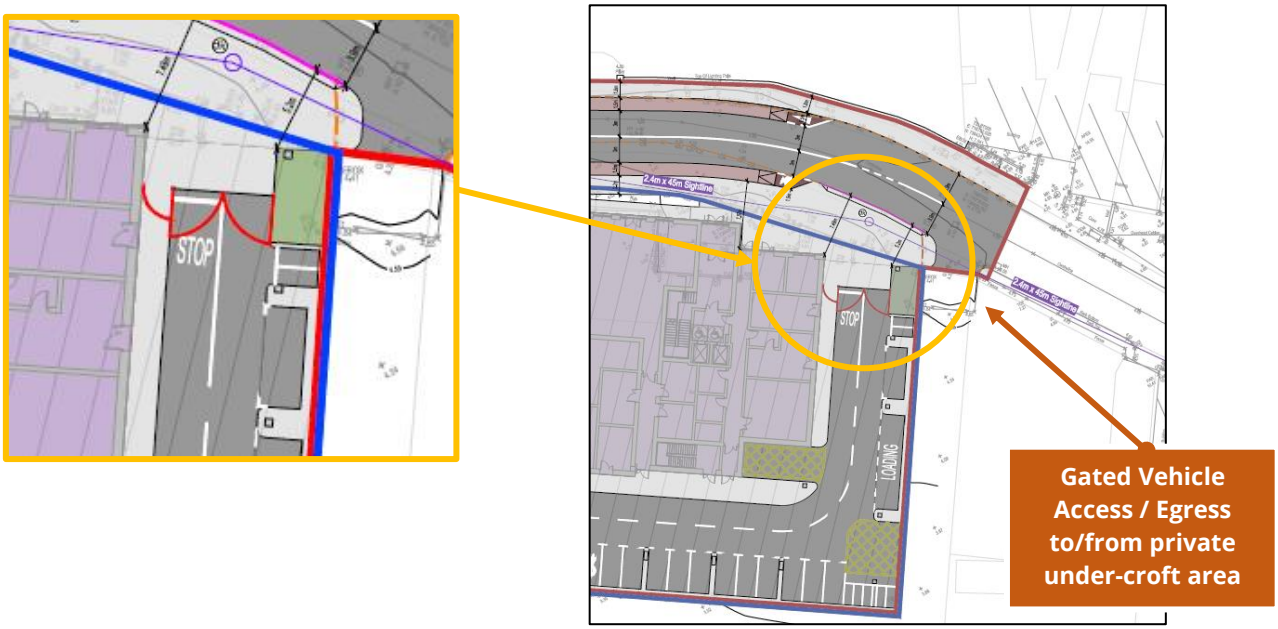


Figure 4.2: Proposed Development's Vehicle Access on Richmond Road

4.2.2 Pedestrian And Cyclist Access Arrangements

The proposed site layout has been designed in reference to NTA Permeability Best Practice Guide(2015) to maximise connectivity to and through pedestrians and cyclists. As illustrated in **Figure 4.3** below (Source: DBFL GA Drawing No. 210178-DBFL-RD-SP-DR-C-1200), pedestrians and cyclists will be able to easily access the site from a number of locations including three locations on Richmond Road.

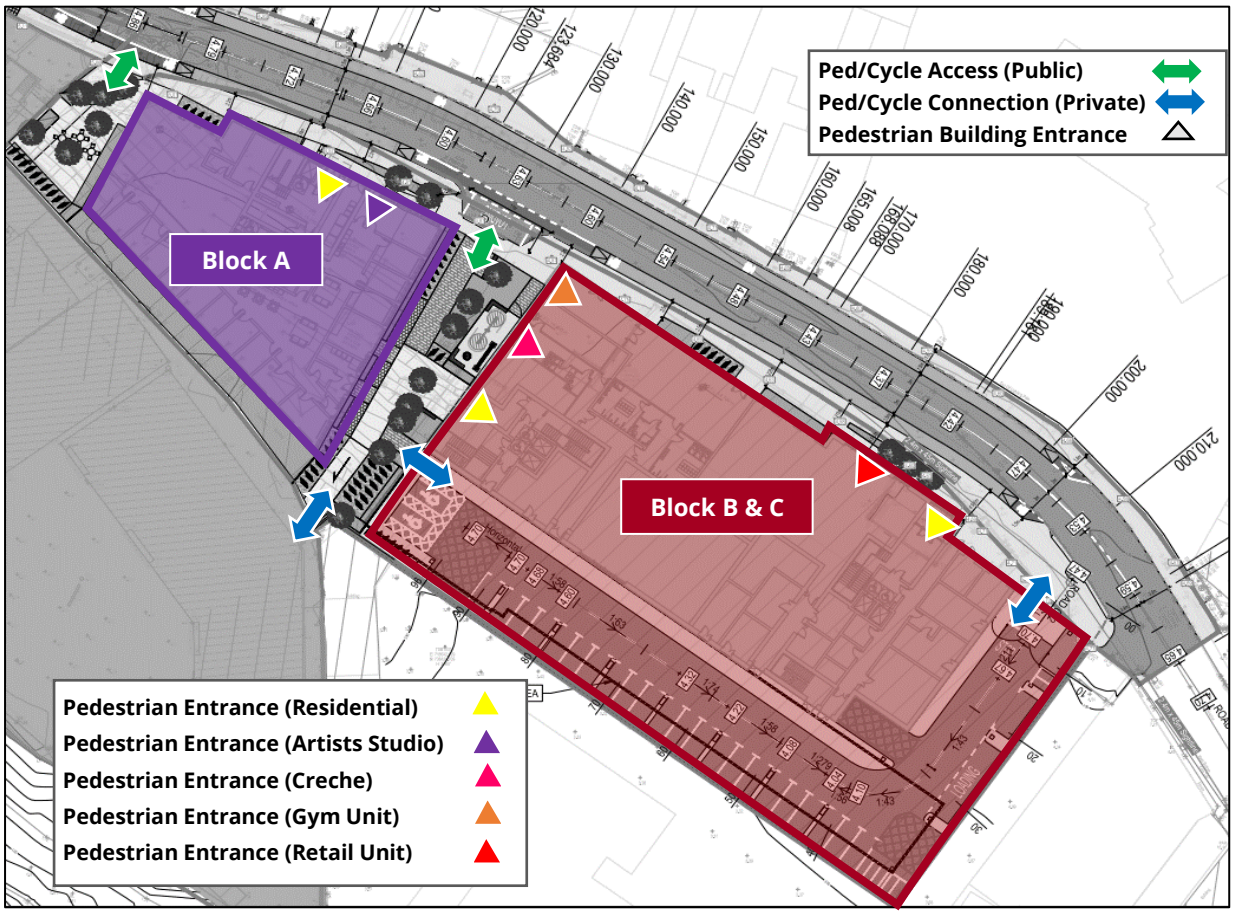


Figure 4.3: Proposed Pedestrian / Cycle Access and Connection Locations

A permeable connection is proposed with the adjacent SHD development (ABP Pl. Ref. 312352) to the south (and onwards to/from the emerging Tolka River Greenway) for residents of the proposed development thereby maximising permeability for active travel modes of travel. Only residents will have access, via a controlled gated (fob / code controlled) access between both the subject site and the adjacent Richmond Road SHD (Phase 1) site. Members of the public will be facilitated access to the Tolka River Greenway via a dedicated active travel route located a short distance to the west along the western boundary of the neighbouring Phase 1 SHD scheme.

4.3 SERVICE ACCESS ARRANGEMENTS

4.3.1 Waste Collection

Further details of the waste collection strategy are detailed in the accompanying AWN report. All waste collection activities will be undertaken internally within the under croft area. This area has subsequently been auto tracked to ensure ease of movement for refuse vehicles. Refuse vehicles will be able to enter / exit the site via the main priority controlled site access junction. The inbound / outbound turning movements will be accommodated as presented below.

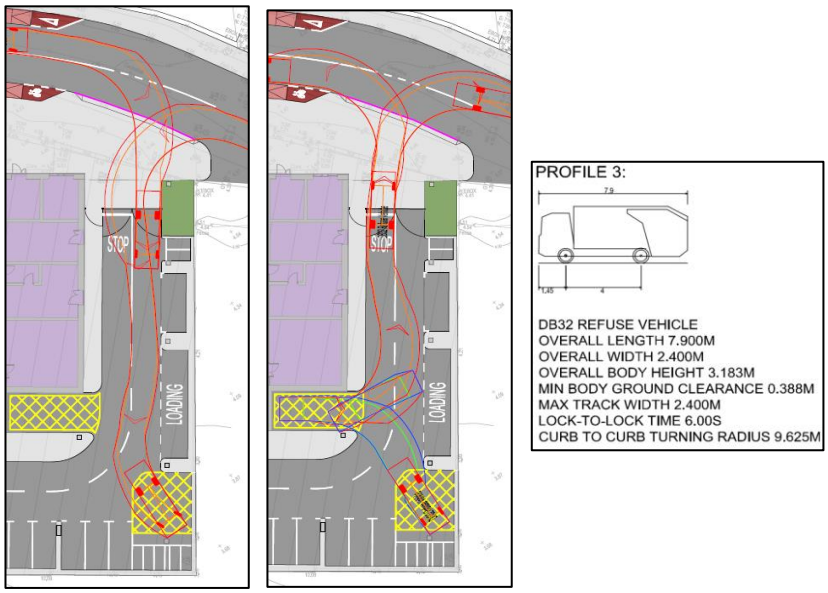


Figure 4.4: Refuse Vehicle Access Arrangements (Refuse Vehicle Type DB32)

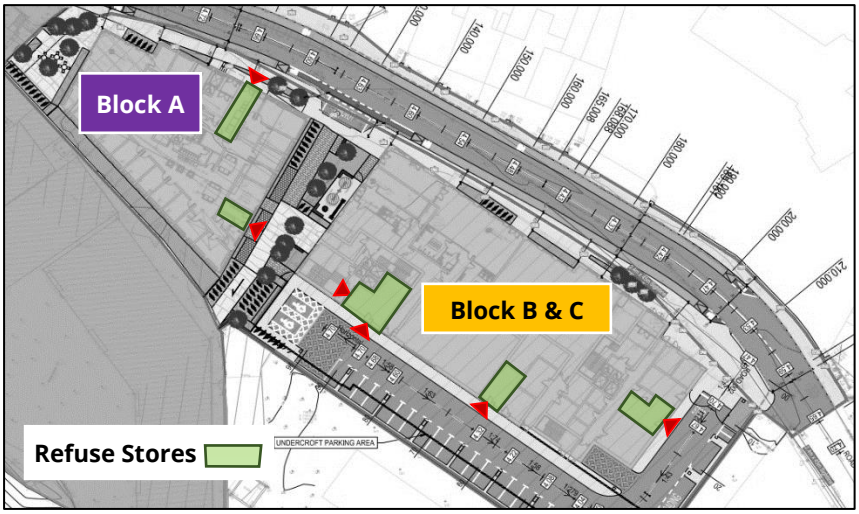


Figure 4.5: Internal Refuse Store Locations at Ground Floor Level

Figure 4.4 above (DBFL Drawing No. 210178-DBFL-TR-SP-DR-C-1103) illustrates a swept path analysis of a refuse vehicle (Type DB32). There are a number of internal refuse stores proposed to serve each block and all will be accessible from surface level as presented in **Figure 4.5.**

4.3.2 Retail / Delivery Collection

All delivery vehicles will required access the site to service the commercial element of the development. In order to facilitate these servicing / delivery activities, the scheme proposals incorporate a dedicated loading bay and located within the developments private under croft area. Turning movements will be similar to that of refuse vehicle movements and a swept path analysis of a 7.1m rigid lorry has been carried out and is illustrated below in **Figure 4.6** (DBFL Drawing No. 210178-DBFL-TR-SP-DR-C-1103).

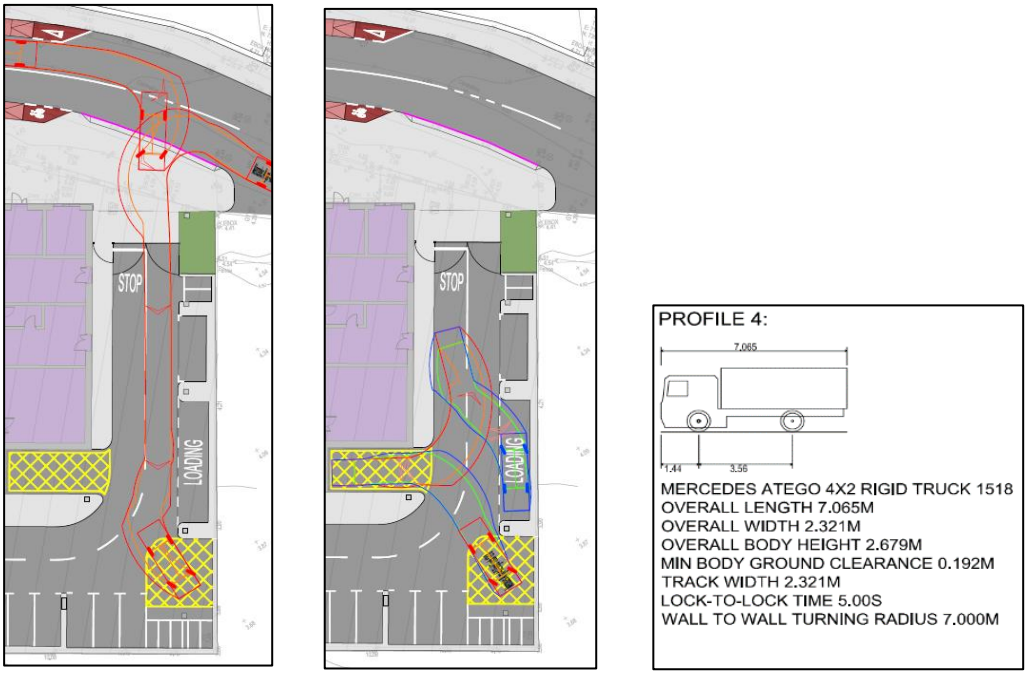


Figure 4.6: Delivery Access Arrangements (7.1m Rigid Vehicle)

4.3.3 Emergency Vehicle Access Arrangements

An emergency vehicle can access the subject site at the proposed 'plaza' area between Block A and Block B. A swept path analysis for a fire appliance (Type DB32) was undertaken at this emergency vehicle access between Block A and Block B as illustrated in **Figure 4.7**. A high reach fire tender vehicle will be too high to gain access to the development private enclosed under croft area.

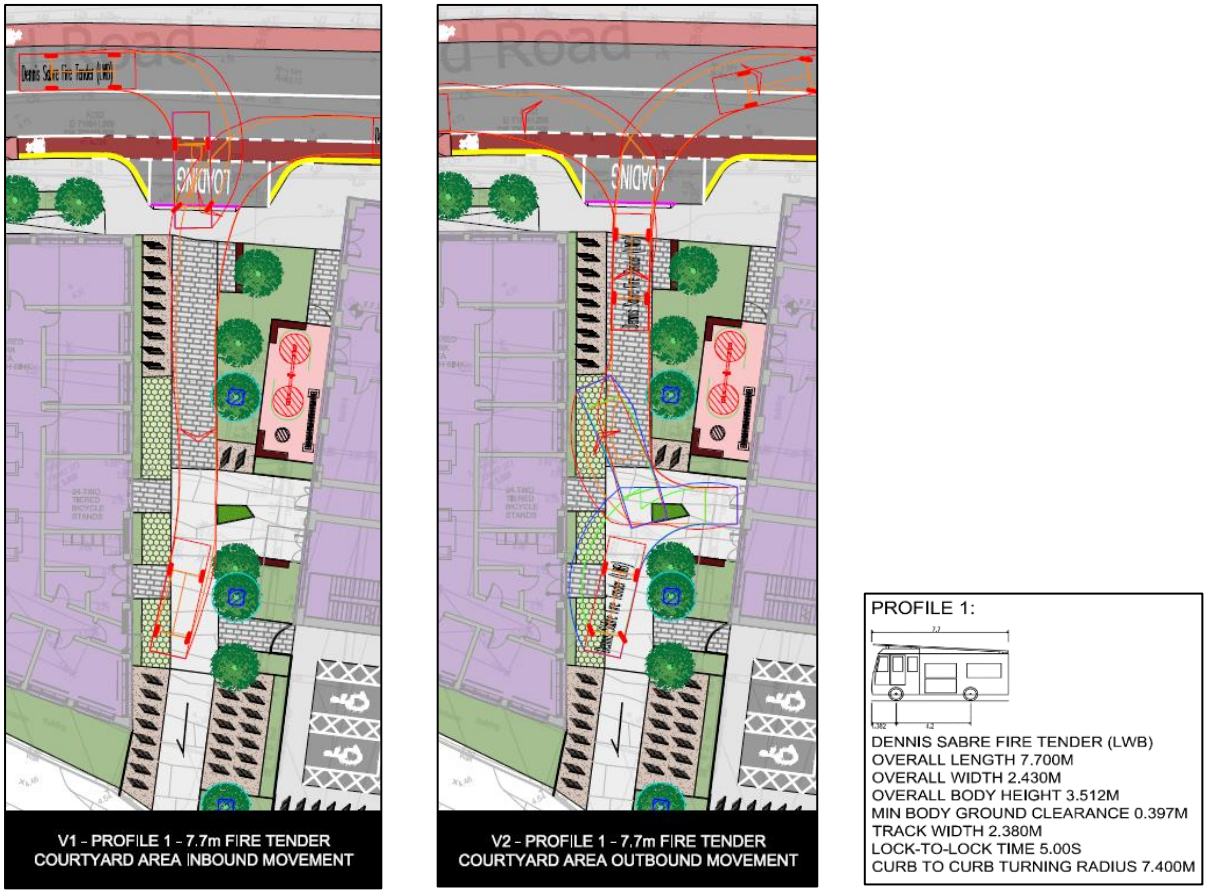


Figure 4.7: Fire Appliance Access Arrangements (Fire Appliance Type DB32)

4.3.4 Accessibility of Disabled Bays & U-Turn Arrangement

The two number disabled bays provided south of Block B can be easily accessed. A swept path analysis for a large car was undertaken at the disabled bays and turning area which proved to be no issues with accessibility or manoeuvrability as illustrated in **Figure 4.8A and Figure 4.8B** (DBFL Drawing No. 210178-DBFL-TR-SP-DR-C-1103)**.**

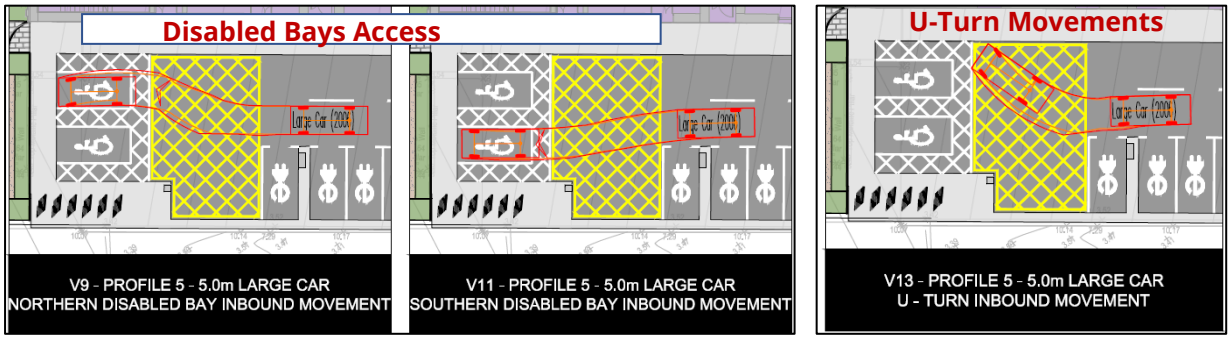


Figure 4.8A: Large Car (5.0m) Access Arrangements

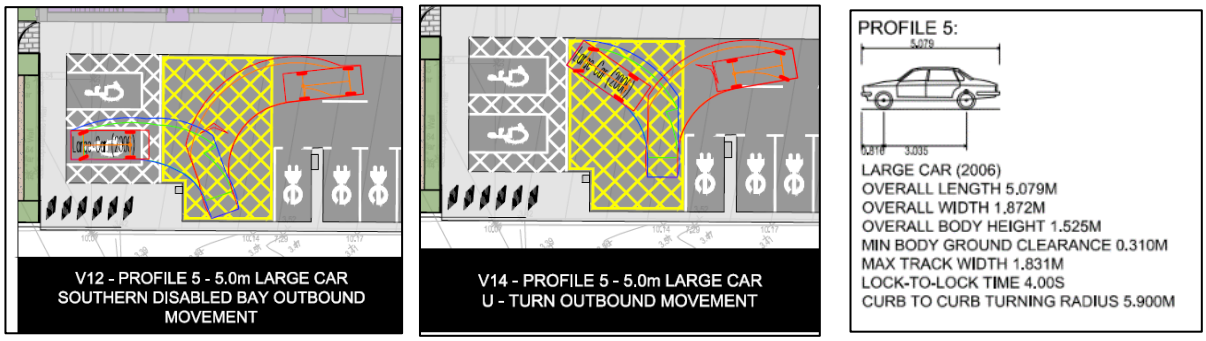


Figure 4.8 B: Large Car (5.0m) Access and U-Turn Arrangements

4.4 RICHMOND ROAD UPGRADES

Further to discussions with the local transportation / roads officers the development proposals includes for the implementation of infrastructure enhancements along a length of approx. 225m externally on Richmond Road corridor (including across the entire frontage of the subject Leydens site AND the adjoining SHD site to the west). These off-site works comprise improved footways, the implementation of dedicated cycle infrastructure, introduction of standard 3.0 general traffic lanes and a new signal controlled pedestrian crossing (*DBFL Roads Layout Drawing No. 210178-DBFL-RD-SP-DR-C-1200*. Ref. **Figure 4.9**).

Figure 4.9: Proposed Pedestrian and Cyclist Infrastructure Upgrades on Richmond Road

The provision of dedicated high-quality pedestrian footways will be provided to the north and south of the corridor in addition to the provision of segregated raised cycle tracks (1.5m wide) on both sides of the corridor as agreed with the local transportation / roads officers. A signalised pedestrian crossing is proposed approx. 40m north-west of Block A in response to a previous request for same raised by DCC during the planning process for the adjoining SHD development (Phase 1). It is noted that some of these upgrades were initially incorporated within the adjoining SHD development (ABP Pl. Ref. 312352) but has now been included within the subject application in order that these road upgrades are independent of the SHD development (i.e., will be delivered regardless of the SHD development planning application outcome).

4.5 CAR PARKING

4.5.1 Proposed Provision

The development proposes a total of 25 no. car parking spaces (Ref. ***Figure 4.11*).** With regard to the development schedule, the associated car parking requirements and the parking provision is outlined in ***Including** 3 No. dedicated GoCAR car share space

Table 4.1 below. The proposed car parking provision does not exceed DCC's maximum car parking standards. With the exception of 1 bay being assigned to the proposed creche unit the on-site car ping is being allocated to the residents (including car share bays) and equates to a parking ratio of 0.18 spaces per residential unit. A total of 3 No. car-share space will be located on the site in addition a dedicated set down parking bay proposed along Richmond Road.

Land Use	No. of Units / GFA (m^2)	Dev. Plan Requirement	DHPLG Requirement	Proposed Car Parking
Apartments	133 Units	133	Reduced Provision	24*
Retail	335 m^2	1	N/A	0
Artists' Studios	749 m^2	3	N/A	0
Creche	156 m^2	2	N/A	1
Gym	261 m^2	Zero to 1+	N/A	0
Total Car Parking		**139+**	**-**	**25**

**Including 3 No. dedicated GoCAR car share space*

Table 4.1: DCC Car Parking Requirements versus Proposed Provision

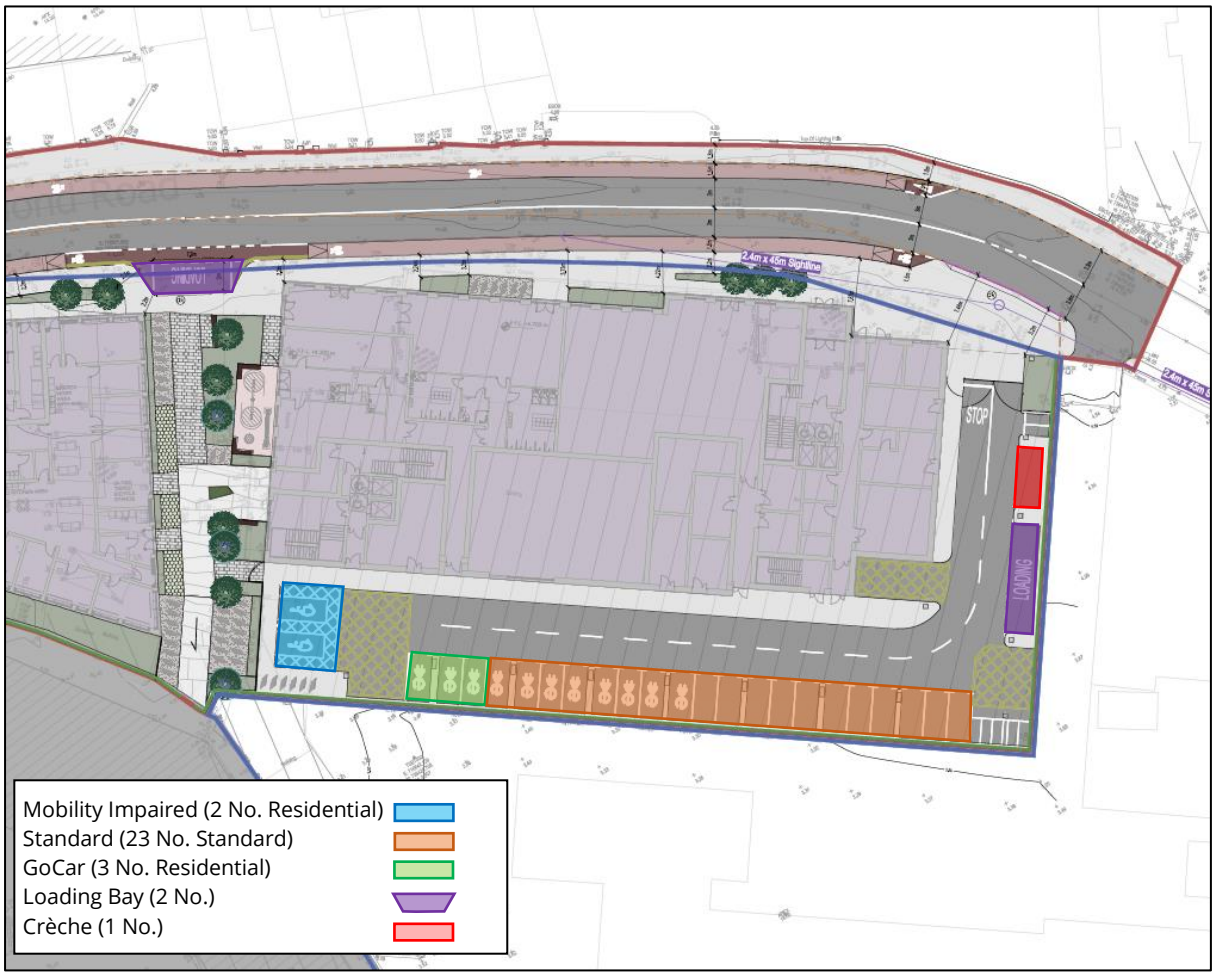


Figure 4-10: Proposed Parking Locations

The breakdown of residential car parking is detailed below. It is noted that with the exception of single car parking being assigned to the creche, no additional car parking is to be assigned to the non-residential elements of the proposed development. It is intended that these units will predominantly serve the local catchment area and will be accessible via sustainable modes of travel that include active travel modes such as walking and cycling.

- 23 no. standard (incorporating 22 no. 5m x 2.5m perpendicular bays and 1 no. 6mx2.5m parallel bay) car parking spaces, and
- 2 no. mobility impaired spaces.

The assignment of the proposed developments parking facilities is as follows:

- 24 no. bays assigned to residential units incorporating 3 no. GoCar spaces and 2 disabled spaces.
- 1 no. creche space,
- 1 no. on-street Loading Bay (size to accommodate LGV),
- 1 no. on-site internal Loading Bay (size to accommodate HGV), and

Electric Vehicle Parking

A total of 13 no. electric vehicle (EV) parking spaces will be provided for residents. The proposals meet DCC Development Plan 2022-28 which states that *"a minimum of 50% of all car parking spaces shall be equipped with fully functional EV Charging Point(s)"*.

The remaining parking spaces will benefit from having EV ducting infrastructure which would thereby enable retro-fitting of charging points in the future as and when they may be required. The proposed GoCar car-share parking space will also be integrated with an EV charging point.

Figure 4.10: EV Parking Locations

Mobility Impaired Parking

The scheme is proposed to provide 2 no. mobility impaired spaces. This equates to approx. 8.6% of all the total spaces provided and exceeds DCC's requirement which states that *"at least 5% of*

the total spaces should be allocated as accessible parking". Both disabled bays will be integrated with EV charging points.

Car Club (GoCar)

The subject scheme proposes include 3 no. car club spaces on-site internally at under croft level. Managed by a specialised private operator (i.e. GoCar) all residents will have the option to become members of the car share service. On becoming members, residents can then book cars online or via the app for as little as an hour, then unlock with their phone or GoCAR. The keys are in the car, with fuel, insurance and city parking all included. The benefits of such car sharing services include:-

- the reduction of the number of cars on the road and therefore traffic congestion, noise and air pollution;
- minimised demand for car parking and frees up land traditionally used for private parking spaces;
- increased use of public transport, walking and cycling as the need for car ownership is reduced; and

Car sharing allows those who cannot afford a car the opportunity to drive, thereby encouraging social inclusivity. These 3 car share vehicles will only be accessible to residents of the scheme proposals (and not the general public) thereby maximising their availability to residents of the subject residential development.

On-Street Loading / Collection Bay

The proposals also provide one on-street indented kerbside 'loading bay' on the southern side of the Richmond Road carriageway and located between the developments Block A and Block B / C (Ref. *Figure 4.11*). Whilst all servicing activities for the proposed retail unit and all waste collection practices will be undertaken internally on-site utilizing the dedicated internal Loading Bay within the development under croft area, this on-street facility offers opportunity for the likes of taxi collection / pick-ups and courier delivery's to the proposed residential development. With the objective of maximizing the availability of this on-street bay, which has been designed to accommodate a Light Goods Vehicle such as a Ford Transit sized vehicle; it is proposed that duration of stay regulations (e.g. maximum stay 10 or 15 minutes) are applied (at the time when the Loading Regulations are applicable) subject to the local roads authorities agreement. The

proposed on-street loading bay in this location provides convenient access to all pedestrian entrances to the various units in Block A and Block B/C.

Figure 4.11: Proposed On-Street Loading Bay Location

To enable this kerbside bay to accommodate drop-off / collection activities at the crèche unit the following regulation times are proposed subject to the agreement with the local roads authority;

- Loading Bay Regulations – 00:00 to 07:30; 09:30 to 16:30 and 18:30 to 24:00
- Informal Drop-Off Bay – 07:31 to 09:29 and again between 16:31 to 18:29

4.5.2 Parking Management Regime

Car Parking Quantum and Under Croft Access Controls

The total provision of 25 no. on-site car parking spaces (24 assigned to the residential units and 1 no. spaces assigned to the creche) within the proposed under croft area has previously been introduced in the previous section. These on-site spaces (incorporating dedicated disabled, EV and Car Share spaces) will be located in a private off-street area for which gate controls will ensure that only permitted users have the ability to gain access to / from the under coft area via its gate controls (at provided at both the pedestrian and vehicle entrance points to/from the private under croft area).

Development Strategy / Marketing

A key component in the effective operation of on–site car parking is an active and enforced parking management strategy. This strategy will be implemented by the management company who will be responsible for the control of parking and access within the internal basement parking area as well as the allocation of the parking spaces.

It is intended that the proposed development is, in relative terms, 'car-lite' when compared to DCC's development management standards. The business plan for the development recognises that the proposed restricted car parking provision (criteria 0.18 spaces per residential unit) will limit the overall number of future residents with a car, however the provision is considered more than sufficient to support a viable business strategy.

Accordingly, the proposed developments on-site car parking spaces will remain within the control of the appointed management company. A management regime will be implemented by the development's management company to control access to these on-site apartment car parking bays thereby actively managing the availability of on-site car parking for each of the following user profiles;

- Residents of the proposed development,
- Staff based at the proposed development (creche), and
- non-residential activities on site (e.g. servicing).

All marketing material, including the MMP's 'Welcome Pack' will publicize the availability and access arrangements to the on-site parking facilities; making it clear that the developments on-site parking facilities will remain within the control of the appointed management company. A management regime will be implemented by the development's management company to control access to the on-site apartment car parking bays thereby actively managing the availability of on-site car parking for residents. The management company will be responsible for the day-to-day management of car parking operations.

Nevertheless, all residents of the proposed residential apartment scheme will have the opportunity to apply to the on-site management company for a residents car parking permit which can be updated weekly, fortnightly, monthly, quarterly or annually. A charge will be applied to obtain a parking permit which covers the associated management costs, discouraging long term usage of the car parking space.

Residents will be encouraged to travel by sustainable modes of travels such as walking and cycling. The proposed *BusConnects* routes nearby will also benefit future residents which aim to provide high frequency services (e.g., every 12 minutes along Drumcondra Road approx. 10 minutes by walk) and should reduce the need for car ownership in locations such as the subject Richmond Road site. In addition, the proposed 3 car-share space being provided by GoCar has the potential

to replace approx. 20 private car journeys. Accordingly, it could be argued that the provision of 3 dedicated on-site GoCar vehicle within the scheme has the potential to negate the need for 60 private car parking spaces as well as subsequently reduce car dependency, congestion, noise and air pollution. The provision of 3 car share vehicles could subsequently be argued to replace 60 private car share journeys and accordingly associated car parking spaces.

In addition, a high provision of residential cycle parking spaces is proposed (as will be discussed in more detail below) and therefore further reduces the reliance on the private car for daily travel requirements.

Taking the above factors into account as well as the requirement for "*planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard*' as set out in the DHPLG guidelines (December 2022) for new apartments, it is considered that the provision of 25 no. car parking spaces is considered appropriate and represents a sustainable approach given the location of the subject site.

4.6 MOTORCYCLE PARKING

A total of 7 no. motorcycle parking spaces have been provided and equates to approx. 28% of all the total car parking spaces provided. These spaces will be located east of Block C as shown in **Figure 4.12**. The proposals exceed the parking standards (5%) stated within DCC Development Plan.

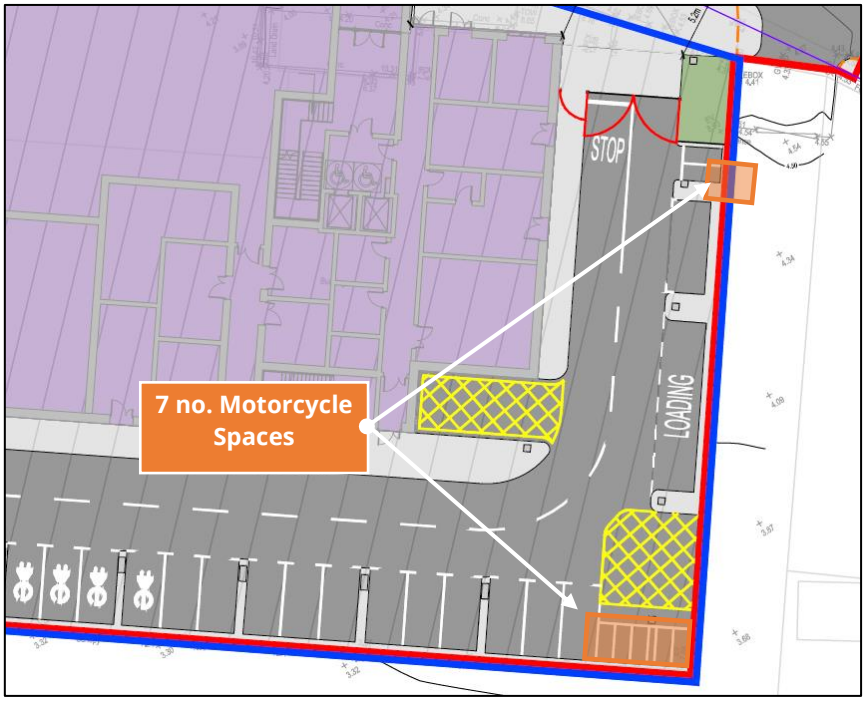


Figure 4.12: Proposed Motorcycle Parking Location

4.7 Bicycle Parking Management

The proposals include the provision of a total of 424 no. on-site bicycle parking spaces comprising 336 no. 'long-term' residential / non-residential spaces and 88 no. 'short-term' visitor stay spaces. Shown below in **Table 4-2** is the proposed cycle parking spaces compared to both DCC's Development Plan requirements and DHPLG's requirements. In addition the cycle parking, provision has also been made for the storage of 10 no. electric scooters.

The type and quantum of cycle parking spaces provided is as follows:

- 304 no. residential spaces
- 30 no. sheltered spaces comprising
  - 14 no. spaces allocated for the Artist's Studio
  - 5 no. staff parking spaces allocated for the Retail Unit and
  - 7 no. parking space allocated for creche
  - 4 no. space allocated for gym
- 88 no. visitor spaces
- 2 no. cargo bike spaces

Land Use	Unit Type & No. or GFA (sqm)		DCC Dev Plan Parking Requirement (Zone 2)		DHPLG Requirements		Development Proposals	
	1 Bed	2 Bed	Long Stay	Short Stay	Long Stay	Short Stay	Long Stay	Short Stay
Block A	10	6	22	8	22	8	24	8
Block B & C	55	62	179	58	91	58	282*	57
Residential Total	**65**	**68**	**201**	**66**	**201**	**66**	**306**	**65**
Retail	335 sqm		2	3	-	-	5	3
Artist's Studio	749 sqm		2	8	-	-	14	8
Creche	156 sqm		2	5	-	-	7	6
Gym	261 sqm		1	6	-	-	4	6
Non Residential Total			**7**	**22**	**-**	**-**	**30**	**23**
Sub-Total Bicycle Parking			**208**	**88**	**201** *(208)*	**66** *(88)*	**336**	**88**
Total Bicycle Parking			**296**		**267** *(296)*		**424**	

* Including 2 No. Cargo Bike Spaces

Table 4.2: Comparison of Cycle Parking Requirements and Proposed Provision

4.7.1 Long-Stay Cycle Parking

Residential Apartment Long-Stay Cycle Parking

For residents, the development provides 306 no. long-term cycle spaces (24 for Block A and 282 for B&C). This equates to 2.3 spaces per unit. These spaces are to be located within a secured bicycle store which is to be located between Block B and Block C as shown in **Figure 4.13**. A total of 304 no. long-stay parking spaces will be accommodated by way of semi-vertical bike storage racks similar in nature to the facilities illustrated in **Figure 4-15**.

The 2 no. remaining long stay cycle parking spaces will be capable of accommodating cargo bikes. These will have a footprint of 3.5m x 2.0m wide with > 2.0m pedestrian clearance widths outside the bike's parking. Also, 10 no. electrical scooter spaces are provided within Block B&C.

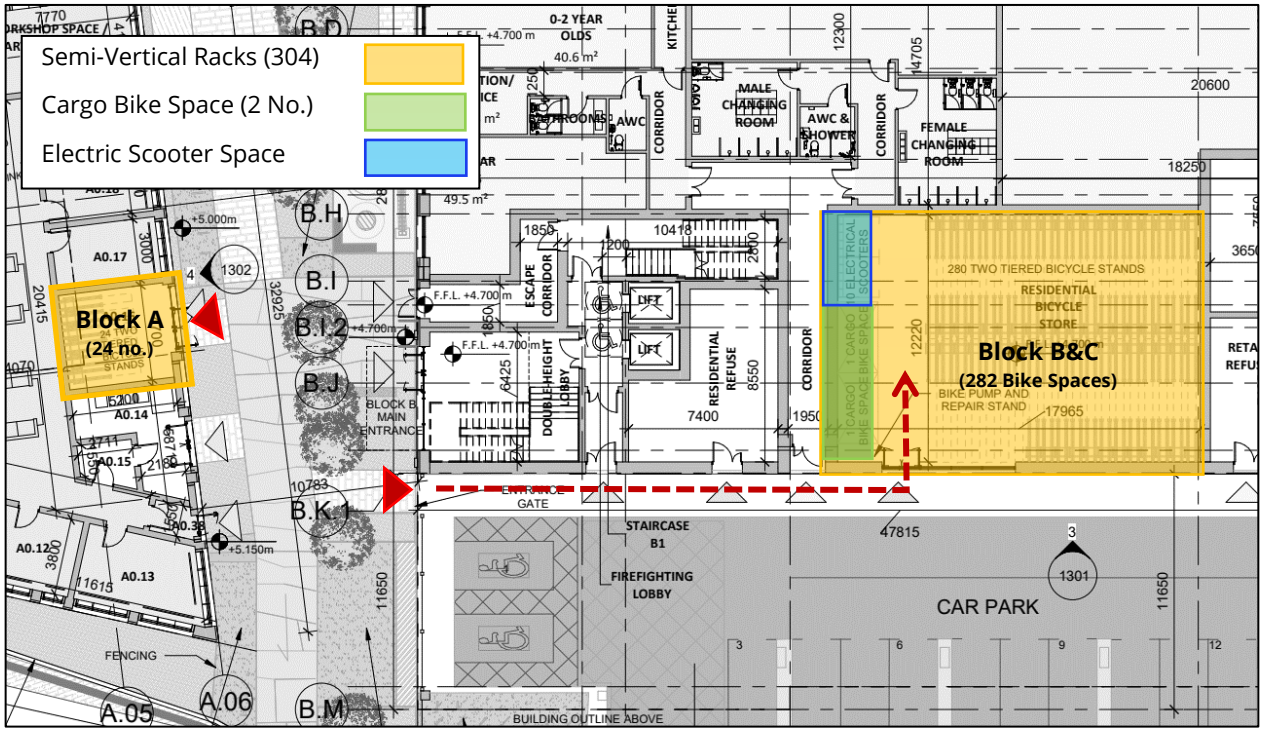


Figure 4.13: Long-Stay Residential Cycle Parking Location – Blocks A/ B/C

External access to the secure weather protected residents long term bicycle parking stores will be via the central plaza area. Gate / door controls will manage access to this private facilities thereby ensuring only residents (and staff to the separate staff long stay car parking in the under croft area) gain access to this private secure area.

Figure 4.14: Semi-Vertical Rack Cycle Parking (Source: Castit Ltd.)

A bicycle pump and repair station is to be implemented within the long-stay bicycle parking storage area. This pump and repair stand will allow for a self-service facility. The stand will include all necessary tools to fix up a bike (pump to inflate the wheels, Allen keys of 3,4,5mm, spanner, pliers, a Philips screwdriver, 2 levers to remove the wheel cover). The tools are attached to the stand through steel cables. In order to avail the station, one can lift the bike and place it's frame onto the bike repair stand (Ref. **Figure 4-14**).

Figure 4.15: Typical Bike Pump and Repair Stand (Source: Bike Dock Solutions)

Retail Unit Long-Stay Cycle Parking

A total of 16 no. long stay spaces will be provided for staff at the proposed retail / gym / creche units as located at ground floor level. These spaces, in the form of Sheffield Stands, will be weather protected located to the eastern edge of the site (Ref.

Figure 4.16).

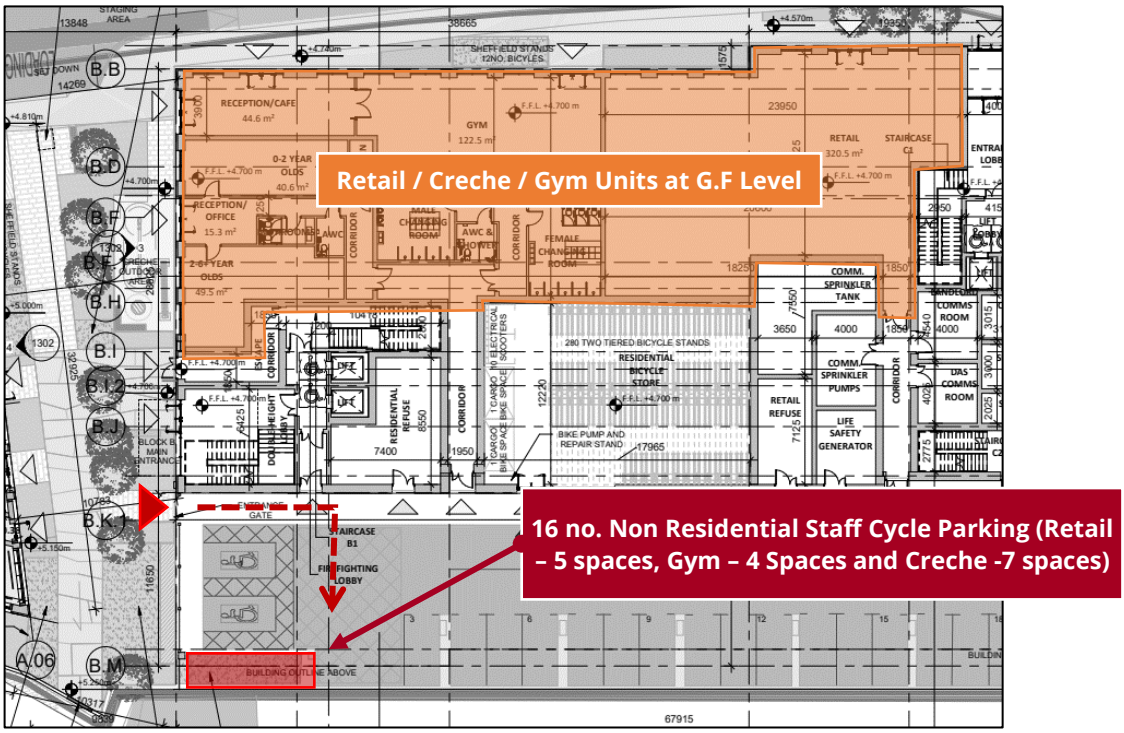


Figure 4.16: Block B/C Non-Residential Long Term Cycle Parking

Artist's Studio Long-Stay Cycle Parking

A total of 14 no. long stay spaces will be provided for occupants at the proposed artist studio located west of Block A. These sheltered Sheffield stands are located to the western edge of the site (Ref. **Figure 4.17**).

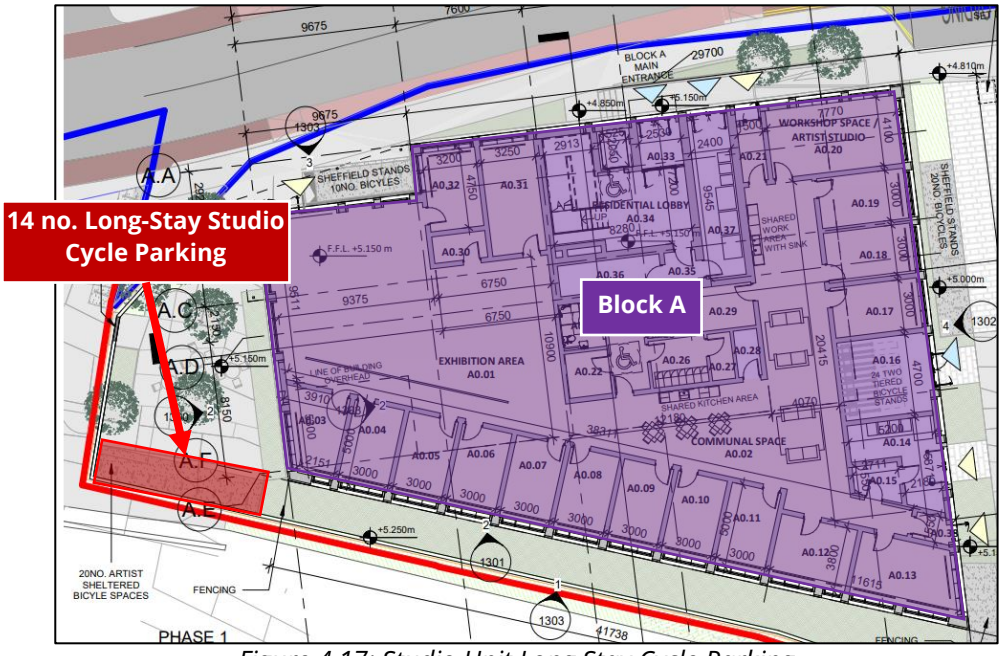


Figure 4.17: Studio Unit Long Stay Cycle Parking

Creche Long-Stay Cycle Parking

A total of 7 no. long stay spaces will be provided for staff of creche. These are located in the Non-Residential long stay cycle hub in Block C. (Ref. **Figure 4.17**).

4.7.2 Short-Stay Cycle Parking

The subject scheme proposes a total of 88 no. external visitor cycle parking, all of which will be in the form of Sheffield Stands. These visitor cycle spaces are to be located within the open central plaza area between Block A and Block B. A number of spaces will be situated on the northern boundary of the site, along the frontage of Richmond Road. These spaces will be well overlooked, thereby offering a high degree of passive surveillance.

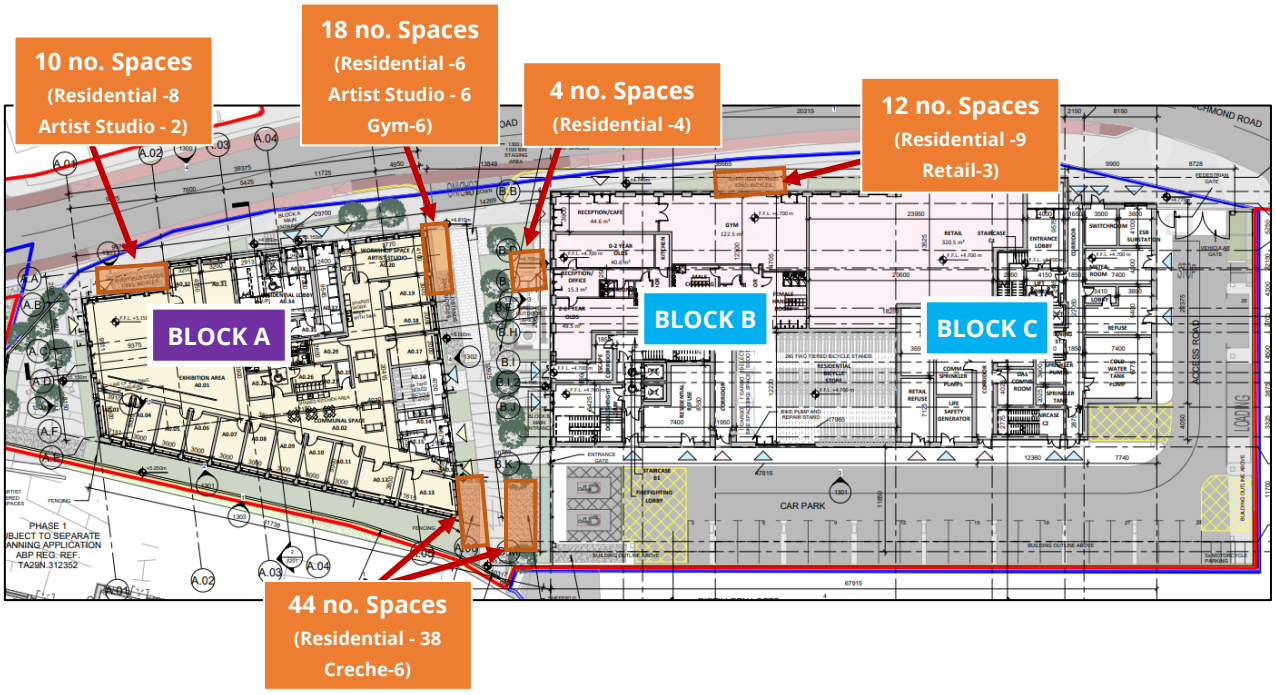


Figure 4.18: Proposed Short Stay Cycle Parking Locations

The total cycle parking provision of 424 no. cycle parking spaces exceeds both DCC's Development Plan 2022-28 as well as the DHPLG Guidelines. The provision is 128 spaces higher than DCC's Development Plan standards and 157 spaces higher than DHPLG's guidelines. Accordingly, the design approach taken in regards to the specification of cycle parking on-site, in the context of the

site's accessibility characteristics (including the proposed car parking provision), is considered appropriate considering the provision (for residents) equates to 2.3 spaces per unit.

5 TRIP GENERATION AND DISTRIBUTION

5.1 INTRODUCTION

The following section outlines the predicted impact that the proposed development could potentially generate upon the external public road network. In order to analyse and assess the impact of the proposed development on the surrounding road network, a traffic generation and distribution model (MS Excel based) of the following key junctions was created.

5.2 TRAFFIC SURVEYS

With the objective of establishing the existing up to date local road networks traffic characteristics and subsequently enable the identification of the potential impact by the development, traffic surveys were undertaken by the independent specialist survey firm IDASO Ltd.

With the objective of quantifying existing 'baseline' traffic characteristics across the surrounding local road network, vehicle turning count surveys were undertaken at the R132 /Richmond Road / Millmount Ave signal-controlled junction and the R803 / Richmond Road signal-controlled junction in February 2020 (pre Covid-19 travel restrictions).

For an accurate and relevant representation of the vehicular movement surrounding the subject development, DBFL commissioned additional traffic surveys which were undertaken Tracsis in May 2021 (to establish speeds) and June 2022 (to establish vehicle volumes at the Distillery Lofts and the Stables Apartment complex access).

The 2021 surveys included a junction turning count (JTC) survey at the site access to the adjacent SHD development lands to the northwest on Richmond Road and an automatic traffic count (ATC) survey between the R132 /Richmond Road / Millmount Avenue signal-controlled junction and the Grace Park Road junction. The ATC survey allowed for the calculation of a conversion factor (to be applied to the recorded site access JTC traffic flows) thereby converting the 2021 flows to corresponding, pre-Covid-19 vehicle movements in February 2020.

The 2022 survey was undertaken at along the frontage of the gated access of the Lofts Apartments, approx. 172m south-east of the May 2021 surveys commissioned for the Richmond Road SHD. This site access is located immediately to the southeast of the proposed site access.

The surveys established that the local network's AM and PM peak hours occurred between 07:15 – 08.15 and 18:00 – 19:00, respectively.

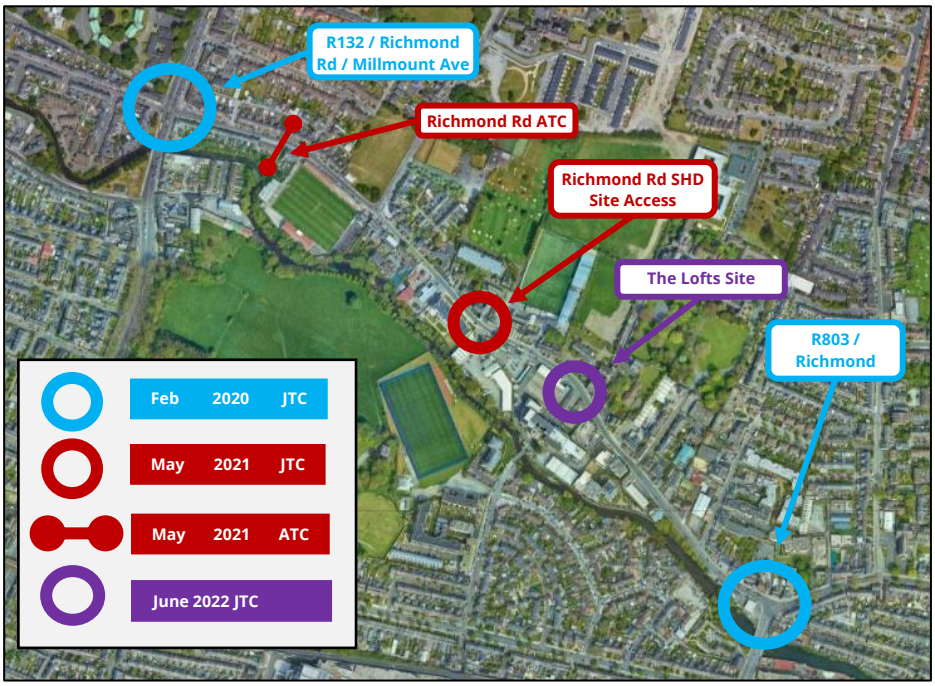


Figure 5.1: Traffic Survey Locations

5.3 TRIP GENERATION

5.3.1 Proposed Development Trips

Car Based Trips

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

A review of trip generation factors contained within the TRICS database was carried out. TRICS data is primarily UK based, although a number of Irish sites have recently been included and the number of Irish sites continues to expand. Nevertheless, DBFL considers that TRICS will provide a reasonable indication of traffic generation from the proposed development.

Notwithstanding the above, internal research undertaken by TRICS has shown that there is no direct evidence of trip rate variation by country or region. The use of English, Scottish or Welsh data can be equally applicable to Ireland if users take into account important site selection filtering

factors such as levels of population, location type, local public transport provision, and development size and car ownership level, amongst others.

Data supplied for inclusion in TRICS undergoes a procedure of validation testing, and there is no evidence from this procedure suggesting that data from Ireland bears any significant fundamental differences to that from the other countries included. Consequently, DBFL considers that TRICS will provide a reasonable indication of traffic generation from the proposed development.

The vehicle trip generation exercise has selected the closest available land use category available (Flats Privately Owned) in the TRICS database for apartment sites based in the Dublin City. It is noted that, due to the reduced car parking provision proposed, any TRICS derived trip rates generally overestimates the number of vehicle trips that a subject development can potentially generate. Accordingly, the following vehicle trip rates have been reduced to 30% of the TRIC's predicted trip rates in order to take into account the proposed reduced car parking provision.

This reduction has been derived taking cognisance of the number of car parking spaces proposed at the subject site (24+1 Creche) no. spaces and the maximum number of parking spaces required by DCC (140 no. spaces as per the current 2022-2028 Dev Plan standard). A parking ratio of 0.18 (18%) is obtained. However, for a robust analysis, this ratio has been increased to 30%.

Table 5-1 below summarises the vehicle trip rates incorporated into the subject assessment during the morning and evening peak hour periods.

TRICS Rate	AM Peak Hour (07:15 - 08:15)			PM Peak Hour (18:00 - 19:00)		
	Arr	Dep	Two-Way	Arr	Dep	Two-Way
Apartment (Privately Owned) *	0.018	0.071	0.089	0.060	0.030	0.090

* Adopted TRICS Trip Rates reduced by 30%

Table 5.1: Proposed Development Trip Rates (TRICS)

Table 5-2 below summarises the predicted AM and PM peak hour traffic generated by the proposed development in the 2025 Opening Year.

Vehicle Trips	AM Peak Hour (07:15 - 08:15)			PM Peak Hour (18:00 - 19:00)		
	Arr	Dep	Two-Way	Arr	Dep	Two-Way
Apartment (Privately Owned)	2	9	11	8	4	12

Table 5.2: Potential Vehicle Trips at Opening Year 2025

Sustainable Travel Trips

In reference to the baseline modal split data presented in section 2.7 (Census Data) for the local Richmond Road area adjoining the site, it has been possible to estimate the number of trips undertaken by sustainable modes of travel that the committed development could generate. The predicted AM peak period trips are presented in **Table 5.3** below by mode of travel.

Peak Period	PT Rail Trips	PT Bus Trips	Cycling	Walking
AM 07:15-08:15	6	31	20	38
Total	**6**	**31**	**20**	**38**

Table 5.3: Potential Development Trips by Sustainable Modes of Travel

5.3.2 Committed Development Trips

Introduction

Following a review of the DCC's online planning portal, DBFL have established the extent of existing third-party development, as located within the area of influence of the subject site, which currently benefit from a planning permission but have yet to be constructed/occupied. DBFL have subsequently included the following third-party development proposals as 'committed developments' within the network assessment.

Richmond Road SHD

To the immediate west lies Richmond Road SHD (An Bord Pleanála Pl. Ref. 312352). This scheme, by the applicant Birkey Limited (a group company of Malkey Limited - the applicant of this LRD), proposes 183 no. build-to-rent apartments and 1 no. café/retail unit (157 sq.m) at ground floor level.

DBFL analysed the following trip generation rates for the proposed development schedule, as shown in **Table 5.4** below. These vehicle trips were added to the subject developments Traffic Model in order to assess the impact of the potential committed development on the surrounding road network in addition to the subject developments impact.

Land Use	No. of Units	AM Peak Hour (07:15-08:15)			PM Peak Hour (18:00 - 19:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Richmond Rd SHD	**183**	14	37	51	41	18	59

Table 5.4: Proposed Richmond Road SHD Development Potential Vehicle Trips

Holy Cross College SHD

The lands located to the west, across the Tolka River, will consist of 1,614 built-to-rent residential units and the scheme is known as the Holy Cross College Lands Development (An Bord Pleanála Pl. Ref. 312352). Permission for the scheme was granted in November 2021.

DBFL have acknowledged the existence of this scheme and has incorporated this within its traffic generation and distribution model. Trip generation from this site has been obtained from the development's third-party TTA and in order to perform a robust analysis, a small percentage of the traffic generated from this development has been allowed to travel past the subject Richmond Road development's proposed site access.

The location of the abovementioned committed developments included within the assessment relative to the subject development is presented in **Figure 5.2**.

Figure 5.2: Location of Committed Developments in relation to Subject Site (Indicative Boundaries)

5.4 TRIP DISTRIBUTION & ASSIGNMENT

The associated vehicle trips have been assigned to the surrounding road network based on the surveyed traffic movements passing the site. It is assumed that proposed development will be complete by 2025. This also includes the adjacent committed development's road upgrades.

The distribution of proposed development traffic as proposed by DBFL is included in **Appendix B** of this report. The subject development trips have been distributed to the surrounding road network based on the existing observed traffic movements.

5.5 TRAFFIC GROWTH

The TTA adopts an Opening Design Year of 2025, Interim Year of 2030 (+5 years) and Future Horizon Year of 2040 (+15 years) as per TII guidelines. Although traffic growth may not increase at the rates once predicted, to ensure a robust analysis of the impact of traffic upon the local road network we have adopted growth rates using the Transport Infrastructure Ireland (TII) "Travel Demand Projections".

Table 6.1 (Unit 5.3 – Travel Demand Projections) within the TII Project Appraisal Guidelines provides Link-Based Annual Traffic Growth Factors for the different regions within Ireland. The subject site lies within 'Dublin Metropolitan Area' with the growth factors as outlined within **Table 5.5** below:

Metropolitan Area	Low Sensitivity Growth				Central Growth				High Sensitivity Growth			
	2016-2030		2030-2040		2016-2030		2030-2040		2016-2030		2030-2040	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Dublin	1.0146	1.028	1.0034	10.116	1.0162	1.0295	1.0051	1.0136	1.0191	1.0328	1.0087	1.0172

Table 5.5: Link-Based Growth Rates: Annual Growth Factors (Extract: Table 6.1 PAG Unit 5.3)

Applying the annual factors (Central Growth) as outlined above for the adopted Opening, Interim and Horizon Years, the following growth rates have been adopted to establish corresponding baseline network flows: -

- 2020 to 2025 – 1.083 (or 8.26%);
- 2020 to 2030 – 1.172 (or 17.20%) and
- 2020 to 2040 – 1.248 (or 24.80%).

5.6 ASSESSMENT SCOPE

Assessment Scenarios

Two different traffic scenarios have been assessed, namely (a) the 'Do-Minimum' (Do-Nothing) traffic characteristics and (b) the 'Post Development' (Do-Something) traffic characteristics.

The 'Base' traffic scenario takes into account the potential level of traffic that could be generated by the 'committed developments' in addition to the existing flows (with TII growth rates applied) travelling across the network.

The proposed development traffic flows are then added to the network's 'Do Nothing' (Base + Committed Development) traffic flows to establish the new 'Post Development' traffic flows. In summary, the following scenarios have been investigated:

Do-Nothing

- A1 – 2025 Opening Year Base Flows + Committed Developments
- A2 – 2030 Interim Year Base Flows + Committed Developments
- A3 – 2040 Future Year Base Flows + Committed Developments

Do-Something

- B1 – 2025 Do-Nothing (A1) + Proposed Development Flows
- B2 – 2030 Do-Nothing (A2) + Proposed Development Flows
- B3 – 2040 Do-Nothing (A3) + Proposed Development Flows

The following figures as included in **Appendix A** present the vehicle flows across the local road network for each of the adopted development scenarios: -

- Figure 11 – 2025 Do-Nothing (A1)
- Figure 12 – 2030 Do-Nothing (A2)
- Figure 13 – 2040 Do-Nothing (A3)
- Figure 14 – 2025 Do-Something (B1)
- Figure 15 – 2030 Do-Something (B2)
- Figure 16 – 2040 Do-Something (B3)

5.7 ASSESSMENT SCOPE

The Transport infrastructure Ireland document 'Traffic and Transport Assessments Guidelines' states that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks, respectively.

Table 5.6 and **Figure 5.3** below detail the percentage increase of two-way vehicle trips to/from the proposed development site that will travel through the junctions assessed in the Opening Year and Future Year scenarios. The development scenarios considered full construction and occupation of both the proposed and committed developments by the 2030 Interim Year, to show how the development may impact the network across design years. Percentage impacts were calculated for the impact of the development in "Do-Nothing" Scenarios vs "Do-Something" scenarios for the corresponding years.

Junction ID	Junction	Design Year	Percentage Impact	
			AM	PM
J1	Proposed Site Access	2025	1.56%	1.64%
		2030	1.44%	1.51%
		2040	1.35%	1.42%
J2	Drumcondra Road Lower (N1) / Richmond Road / Millmount Avenue	2025	0.24%	0.23%
		2030	0.23%	0.21%
		2040	0.21%	0.20%
J3	Richmond Road / Fairview Strand (R803) / Luke Kelly Bridge (R803)	2025	0.26%	0.31%
		2030	0.24%	0.28%
		2040	0.23%	0.27%

Table 5.6: Network Impact Through Key Off Site Junctions

The network impact assessment predicts that the two off-site junctions as well as the proposed site access are well below the 10% threshold for normal networks (and 5% on congested networks) and does not therefore require further assessment based on the guidelines. However, to ensure a robust assessment, the proposed Richmond Road site access junction has been subject to a detailed junction analysis, and this has been discussed in the following Chapter.

Figure 5.3: Increase in Vehicle Trips Generated at Site Access and Key Off Site Junctions (2040 Do-Something)

5.8 PUBLIC TRANSPORT NETWORK IMPACT

The capacity of the existing 2023 public transport networks serving subject site has been quantified previously in Section 2.3 whilst the demand that the proposed development is predicted to generate is presented in Section 5.3.s

The following section establishes the scale of impact that the proposed development is predicted to generate upon the public transport networks and quantifies the capacity of the public transport network to accommodate the proposed development. The Rail and Bus public transport networks are initially considered separately in the following section.

Bus

With proposed modal split of 25% in Public transport for the opening year 2025 (as discussed in section 2.7), the total estimated Bus trips will be 31 trips (25% of 121 Person Trips). Majority of bus trips will be served from the nearest bus stop on R132 Drumcondra Road (which is 20 Trips) and R803 and R05 Fairview Road corridor will serve 11 Bus trips generated from the proposed

development. Assuming 90% of the trips are inbound to city centre and 10% are outbound, the predicted impact due to proposed development is illustrated in **Table 5.7.**

	R132 Drumcondra Corridor		R803 and R05 Fairview Corridor	
	Inbound	**Outbound**	**Inbound**	**Outbound**
Net Capacity	2492	2225	3916	4094
Development Demand	18	2	10	1
Predicted Impact	**0.72%**	**0.09%**	**0.26%**	**0.02%**

Table 5.7: Predicted Impact on Bus Transport network (Weekday AM Peak hour)

Rail

With proposed modal split of 5% in Rail transport for the opening year 2025 (as discussed in section 2.7), the total estimated Rail trips will be 6 trips (5% of 121 Person Trips). The trips will be served from the nearest Drumcondra Railway Station on R132 Drumcondra Road. Assuming 90% of the trips are inbound and 10% are outbound, the predicted impact due to proposed development is illustrated in Error! Reference source not found..

Drumcondra Rail Station		
	Inbound	**Outbound**
Net Capacity	2370	1059
Development Demand	5	1
Predicted Impact	**0.21%**	**0.09%**

Table 5.8: Predicted Impact on Rail Transport network (Weekday AM Peak hour)

6 NETWORK ANALYSIS

6.1 INTRODUCTION

The operational assessment of the proposed Richmond Road site access has been undertaken using the Transport Research Laboratory (TRL) computer package PICADY. When considering priority-controlled junctions, a Ratio of Flow to Capacity (RFC) of greater than 0.85 would indicate a junction to be approaching capacity, as operation above this RFC value is poor and deteriorates quickly.

For the PICADY analyses, a 90-minute AM and PM period has been simulated, from 07:00 to 08:30 and 17:45 to 19:15, respectively. The traffic flows were entered using an Origin-Destination table for the peak hours.

In order to analyse and assess the impact of the proposed development on the surrounding road network, a traffic model of the junctions was analysed for the schemes Opening Year (2025), Interim Year (2030) and Future Year (2040).

6.2 JUNCTION 1: PROPOSED SITE ACCESS

The proposed three arm priority-controlled junction located on Richmond Road for the proposed development has been analysed for the modelling scenarios. The results of the operational assessment of this junction during both the weekday morning and evening peaks of the "Do-Something" scenarios are summarised in **Table 6.1** below respectively. As the site access for the subject site has not been built yet, a PICADY analysis for the "Do Nothing" Scenario has been omitted. The three arms of the junction (Ref **Figure 6.1)** were labelled as follows within the PICADY model:

- Arm A: Richmond Rd (SE)
- Arm B: Proposed Site Access
- Arm C: Richmond Rd (NW)

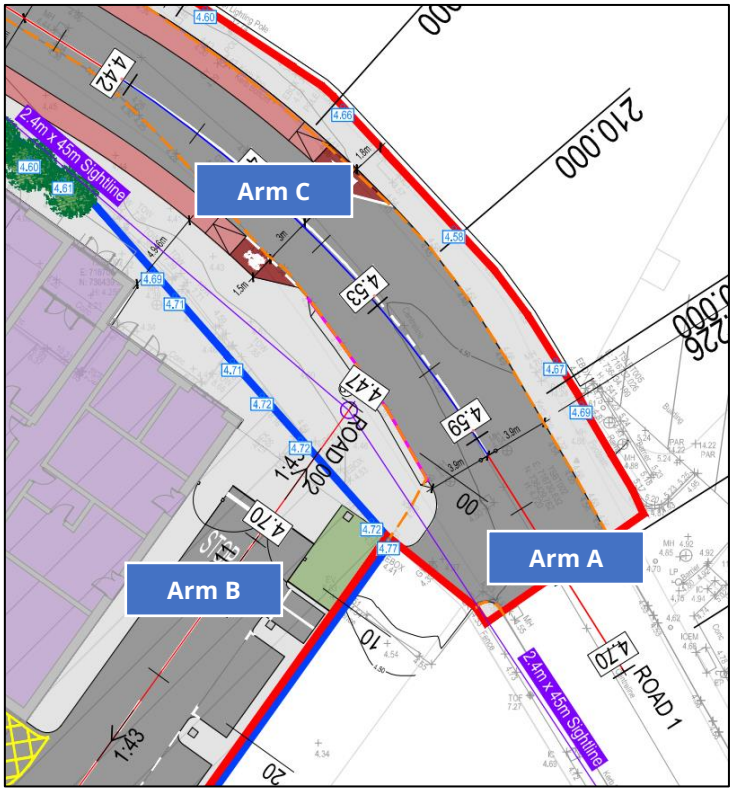


Figure 6.1: Proposed Development Site Access

Do-Something

In the Do-Something scenario, the PICADY results (**Table 6.1**) indicate that the proposed site access will operate with significant reserve capacity during both the Opening and Future design year scenarios.

During the 2025 AM peak hour, the junction operates with a maximum RFC value of 0.02 and experiences a delay of 10.26 seconds which is recorded on Arm B. In the PM, Arm C experiences a maximum RFC of 0.01 and a corresponding delay of 5.14 seconds.

During the 2030 AM peak hours, Arm B operates with a maximum RFC value of 0.02 Arm B and a corresponding delay of 10.58 seconds. In the PM peak hour, Arm C operates a maximum RFC value of 0.01 with a delay of 5.09 seconds.

Similarly, in the 2040 scenario, a maximum RFC of 0.02 and a delay of 10.86 seconds can be seen during the AM peak hour while the PM peak hour, a maximum RFC of 0.01 and a delay of 5.04 seconds is observed on the Arm C.

The PICADY analysis of this proposed priority-controlled Site Access junction on Richmond Road reveals that this junction will operate with significant reserve capacity during both the adopted 2025 Opening Year, 2030 Interim Year and 2040 Future Horizon Design Years.

Year Scenario	Period	Stream	Queue (pcu)	Delay (s)	RFC
DS 2025	AM Peak	B-C	0.0	6.30	0.01
		B-A	0.0	10.26	0.02
		C-AB	0.0	4.15	0.00
	PM Peak	B-C	0.0	0.00	0.00
		B-A	0.0	0.00	0.00
		C-AB	0.0	5.14	0.01
DS 2030	AM Peak	B-C	0.0	6.34	0.01
		B-A	0.0	10.58	0.02
		C-AB	0.0	4.06	0.00
	PM Peak	B-C	0.0	0.00	0.00
		B-A	0.0	0.00	0.00
		C-AB	0.0	5.09	0.01
DS 2040	AM Peak	B-C	0.0	6.30	0.01
		B-A	0.0	10.86	0.02
		C-AB	0.0	3.99	0.00
	PM Peak	B-C	0.0	0.00	0.00
		B-A	0.0	0.00	0.00
		C-AB	0.0	5.04	0.01

Table 6.1: PICADY Do-Something Analysis for Subject Site Access

7 RESPONSE TO DCC'S LRD OPINION

7.1 INTRODUCTION

This section provides responses to a number of queries / comments raised by Dublin City Council Transportation Planning officers as detailed within the LRD Opinion Report compiled by DCC.

7.2 DCC COMMENT 3I

Comment Raised

"A letter of consent from DCC for works undertaken on DCC lands and shown within the application red line boundary will be required to be submitted with the LRD application. The applicant is advised to allow at least 14 working days for the issuing of a letter of consent following the agreement in principle to the works with DCC"

DBFL Response

A letter of consent has been obtained from DCC and accompanies the LRD application. The letter is included in Appendix E of this report.

7.3 DCC COMMENT 3II

Comment Raised

The applicant is requested to demonstrate in the TTA how the proposed development will not preclude future road improvement works on Richmond Road.

DBFL Response

As detailed in section 4.4 of the submitted TTA Report and illustrated in DBFL drawing 210178-DBFL-TR-SP-DR-C-1102 the scheme proposals include the delivery of the Richmond Road enhancement works along the length of the site frontage controlled by the applicant. The works by the applicant include temporary tie-in arrangements with the existing off-site road infrastructure (beyond the site frontage). Viewport 2 in DBFL drawing 210178-DBFL-TR-SP-DR-C-1102 illustrates the enhancement works by the application integrated with the future road improvements as undertaken by DCC in the future to the northwest and southeast of the applicants works on Richmond Road.

7.4 DCC COMMENT 3III

Comment Raised

Demonstrate the connectivity of the public footpath on Richmond Road and surrounding public realm with the neighbouring sites east and west of the subject site.

DBFL Response

See page 22 of RKD architects report entitled *Architectural and Urban Design Statement* (22001-RKD-ZZ-ZZ-RP-A-3000) which accompanies the planning architects.

7.5 DCC COMMENT 3iv

Comment Raised

Car Parking Provision requires review:

Submit a letter of commitment from a car share provider stating the intention to provide service.

DBFL Response

A letter of support has been obtained from operator GoCar and accompanies the application. It is proposed to locate 3 number car share vehicles (an increase from preplanning stage) on-site for the sole use of residents of the proposed development.

7.6 DCC COMMENT 3v

Comment Raised

Car parking allocation is significantly below the maximum standards outlined in the CDP 2016-2022 (and the approved 2022-2028 Plan). The applicant is advised to review the car parking quantum and allocation and submit a comprehensive rationale for the proposed parking provision.

DBFL Response

The scheme proposals have been revisited with the number of on-site car parking spaces increased in parallel with the number of car share vehicles proposed. Details of the new car parking arrangements and proposed allocation are detailed in Section 4.5 of the submitted TTA.

7.7 DCC COMMENT 3vi

Comment Raised

Submit a Car Parking Management Plan to include details of how parking spaces will be allocated to users.

DBFL Response

Details of the proposed car parking management regime are detailed in section 4.5 of the submitted TTA report. Additional information can be provided prior to the commencement of development if required once the management company has been identified

7.8 DCC COMMENT 3vii

Comment Raised

Increased sustainable transport measures should be considered to support the significantly reduced car parking provision.

DBFL Response

The scheme proposals have been revisited and now include the following addition interventions with the objective of enhancing the ease of access and uptake of sustainable travel options;

- The number of car share vehicles for on site has been increased from 1 to 3 vehicles with dedicated car bays assigned.
- In agreement with GoCar operator these 3 car share vehicles will be made available solely for the use of the residential units subsequently maximising the availability of a car share vehicle for residents and further reducing the need to own a private motor car.
- The scheme design has been amended to purposely enhance access (and reduce walking distance) to / from the residents (and staff|) long term bicycle parking. Both blocks now incorporate dedicated secure internal gated store areas for the sole use of residents. In addition dedicated secure cycle parking is also provided for staff employed in the developments gym,retail and creche units as detailed in section 4.5.1
- The residents bike store areas now include the provision of cargo bike parking, electric scooter parking / lockers and Bicycle Pump / Repair Stations.

- The revised quantum of long term residents bicycle parking of 304 is criteria 50% more than the minimum required in reference to DCC and national DHPLG's standards.
- The redesigned bike stores include the ability to charge electric bicycles.

7.9 DCC COMMENT 3viii

Comment Raised

Provide details in relation to the proposed set-down at Richmond Road. The applicant is advised that a 'set down' area is not recognised under the Traffic Signs Manual. The applicant should propose a suitable alternative. The applicant is also advised to note that all designated on-street parking/loading bays are for public use and cannot be allocated or reserved for private use. Any forthcoming LRD application should demonstrate that the site is able to fulfil its own servicing and operations demands without impacting on the public road.

DBFL Response

The originally proposed kerbside indented 'set-down' area on Richmond Road has been replaced by a loading bays which is recognised and regulated by the Traffic Signs Manual. Furthermore a new dedicated loading bay has been designed into the amended scheme proposals and located with the under-croft area of Block B/C. All servicing of the proposed retail unit and all waste collection activities for the entire development will be undertaken via this internal area in the under-croft area. Further details are provided in section 4.3.

7.10 DCC COMMENT 3ix

Comment Raised

Bicycle Parking proposals requires review.

The total number of bicycle parking shall be reconsidered for the development.

DBFL Response

The approach to the provision (quantum, design and access) has been revisited as requested. The updated proposals are discussed in section 4.7 of the Traffic and Transportation Assessment Report and RKD architects drawing 22001-RKD-ZZ-00-DR-A-1100. As detailed in section 4.7 a total

quantum of 88 short term (65 residents, 23 non-residential) and 336 long term bicycle spaces are now provided the total of which exceeds the minimum development standards.

7.11 DCC COMMENT 3x

Comment Raised

Review potential conflict of the long stay retail bicycle parking area and safety of users having regard to the proximity and opening direction of the main vehicular entrance gates.

DBFL Response

The long stay retail cycle parking has been relocated to the western end of the under croft parking area in a position adjacent to the two mobility impaired car parking bays. This new location is convenient to the pedestrian / cycle gate controls that manage access to/from the private under croft area. Reference section 4.7 of the Traffic and Transportation Assessment Report which presents the new position for the staff (retail, gym and creche) long term parking in the under croft area adjoining the two disabled car parking bays.

7.12 DCC COMMENT 3xi

Comment Raised

Demonstrate that all long-term resident parking is secure, accessible only via key/fob access and separated from visitor spaces.

DBFL Response

The updated proposals are discussed in section 4.7 of the Traffic and Transportation Assessment Report and illustrated in RKD architects drawing 22001-RKD-ZZ-00-DR-A-1100 and Mitchell & Associates Landscape Drawing RIC0001-MA-XX-XX-DR-L-105. All long-term bicycle parking for residents are now located in secure in-site internal store areas within which only residents can gain access to. All long erm parking for the staff (retail, gym and creche) are now located in a designated area within the private under croft area for which a gated access restricts all other users.

7.13 DCC COMMENT -xx-xx-dr-l-105

Comment Raised

Ensure adequate bicycle parking facilities are provided within each block to reflect the number of residents within that block. An updated table should be provided that details the quantum of cycle parking provided within each apartment block relative to the number of units/bedrooms within the said block.

DBFL Response

Reference section 4.7 of the Traffic and Transportation Assessment Report which details the amended cycle parking arrangements.

7.14 DCC COMMENT xiii

Comment Raised

Where a central bicycle parking compound is proposed, submit a robust rationale for same and demonstrate connectivity, functionality, safety and convenience of users from Block A to bicycle store.

DBFL Response

The amended proposals now incorporate a dedicated cycle parking store (long term) for residents in Block A. Block A residents will no longer need to use the Block B/C bike store. Reference section 4.7 of the Traffic and Transportation Assessment Report which details the amended cycle parking arrangements.

7.15 DCC COMMENT xiv

Comment Raised

Details of the management/operation of the 14 No. visitor bicycle parking spaces are located in the gated area between Blocks A & B.

DBFL Response

These spaces have been relocated to the external courtyard and are no longer located within a gated area. Reference section 4.7 of the Traffic and Transportation Assessment Report which details the amended cycle parking arrangements

7.16 DCC COMMENT xv

Comment Raised

Ensure consistency throughout the documentation, including the TTA and Planning Report, with respect to the quantum and type of cycle spaces proposed.

DBFL Response

Noted. Reference section 4.7 of the Traffic and Transportation Assessment Report which details the amended cycle parking arrangements.

7.17 DCC COMMENT xvi

Comment Raised

Servicing & Operations requires review.

A swept path analysis demonstrating the functionality of vehicles to enter and egress the accessible/disabled parking bays is to be submitted.

DBFL Response

Reference DBFL drawing 210178-DBFL-TR-SP-DR-C-1103 which demonstrates that private motor vehicles can readily gain access onto and from the two on-site disabled parking bays.

7.18 DCC COMMENT xvii

Comment Raised

A swept path analysis with a fire tender accessing, manoeuvring and egressing the site along the eastern internal access and parking area.

DBFL Response

Reference DBFL drawing 210178-DBFL-TR-SP-DR-C-1103 which illustrates the requested swept path analysis for a fire tender.

7.19 DCC COMMENT xviii

Comment Raised

Clarity is required regarding the turning area where vehicles appear to be encroaching on and manoeuvring onto the footpath within the car parking area.

DBFL Response

Reference DBFL drawing 210178-DBFL-TR-SP-DR-C-1103 which illustrates the requested updated swept path analysis for the vehicle turning area. demonstrating in **Figure 7.1** below (extract of DBFL drawing) the vehicles can now access and egress this area without the vehicles wheels mounting the footpath area.

Figure 7.1: Swept path analysis for the vehicle turning area

7.20 DCC COMMENT xix

Comment Raised

Clarity is required regarding how the refuse collection will operate and be managed for Block A, as no bins shall be placed on the public footpath on Richmond Road.

DBFL Response

The bin store for Block A has been relocated to the eastern ground floor elevation of Block A. All waste collection activities are to be undertaken on-site within the under-croft area of Block B/C as detailed in the accompanying Servicing and Operations Management Plan report compiled by AWN Consulting.

7.21 DCC COMMENT xx

Comment Raised

Submit a Servicing and Operations Management Plan to include details of all anticipated servicing and operational requirements for the residential, commercial and cultural components of the development.

DBFL Response

A Servicing and Operations Management Plan report as compiled by AWN Consulting accompanies the planning application.

7.22 DCC COMMENT xxi

Comment Raised

It is recommended that a further setback of blocks should be considered, having regard to the close proximity of the building edge to the proposed public footpath. No element of the development including terraces and balconies should encroach across or overhang public lands and/or lands to be taken in charge.

DBFL Response

The proposed Richmond Road enhancement works arrangements have been revised to ensure there is sufficient space to increase the width of the southern footpath. The applicant confirms that no element of the development including terraces and balconies will encroach across or overhang public lands and/or lands to be taken in charge. See RKD drawing 22001-RKD-ZZ-ZZ-DR-A-1003.

Reference DBFL drawing 210178-DBFL-RD-SP-DR-C-1200 which demonstrates that the available pedestrian footpath width along the southern side of Richmond Road has been increased from the previous 2m and now varies in width from 2.2m absolute minimum but generally wider along the frontage width available footpath width up to 4.96m.

7.23 DCC COMMENT xxii

Comment Raised

The gated access should be sufficiently set back to clear the kerb edge and avoid stoppages on the main carriageway resulting from vehicles entering the site and allow sufficient pedestrian clearway.

DBFL Response

The proposed gate has been revised and set back into the site to ensure there is sufficient space for a private motor vehicle to clear the kerb edge and subsequently avoid stoppages on the main carriageway and maintain a clear pedestrian route (on the footpath) whilst the inbound vehicle is waiting for the security gates to open. The adjacent cycle parking has also been moved so not to conflict when the gate in its open position. Reference DBFL drawing 210178-DBFL-RD-SP-DR-C-1200.

7.24 DCC COMMENT xxiii

Comment Raised

Clarify and demonstrate the connectivity between the proposed LRD and the adjoining proposed SHD development to the west and southwest.

DBFL Response

See pages 22 in the in 22001-RKD-ZZ-ZZ-RP-A-3000 Architectural and Urban Design Statement.

7.25 DCC COMMENT xxiv

Comment Raised

Outline any lands for Taking in Charge by Dublin City Council.

DBFL Response

See RKD drawing 22001-RKD-ZZ-ZZ-DR-A-1003.

8 SUMMARY AND CONCLUSION

8.1 OVERVIEW

DBFL Consulting Engineers (DBFL) has been commissioned to prepare a Traffic and Transport Assessment (TTA) for a proposed development known as 158A Richmond Road. Malkey Limited intends to apply for permission for development (Large-scale Residential Development (LRD)) at this c. 0.55 hectare site at former Leyden's Wholesalers & Distributors Dublin, No. 158A Richmond Road, Dublin 3, D03 YK12.

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 transport impact generated as a result of the proposed development. Our methodology incorporated a number of key inter-related stages, including;

- Site Audit,
- Planning File Review,
- Policy Review,
- Commissioning and Analysis of Traffic Surveys,
- Trip Generation, Distribution and Assignment, and Network Impact
- Network Analysis.

Based upon the information and analysis detailed within this TTA, it has been demonstrated that:

- 158A Richmond Road will be ideally situated to benefit from a comprehensive range of public transport, bus and rail connections which result in the site benefiting from very good accessibility levels. Furthermore, the range and proximity of a number of public transport service and infrastructure enhancements will, when implemented, further enhances the sustainability characteristics of the site.
- The subject site will benefit from the enhanced accessibility levels delivered by the emerging *DART+ West* via Drumcondra Railway Interchange and NTA's *BusConnects* proposals on both the R132 (Drumcondra Road Lower to the west) and R803 (to the east) corridors.
- The NTA's Cycle Network Plan for the Greater Dublin Area will enhance the attraction of cycling and includes proposals for the provision of a Greenway route along the Tolka

Riverbank through the subject site and along Richmond Road which will provide additional permeability and convenient connections.

- The proposed car parking provision complies with the development plan standards and does not exceed DCC's maximum car parking requirement of 140 no. spaces. 24 no. spaces will be allocated to residents (and 1 no. space for creche) which equates to a parking ratio of 0.18 spaces per residential unit. The provision also includes 3 car-share space (provided by GoCar) that will be located at the site.
- The proposals include the provision of a total of 424 no. on-site bicycle parking spaces comprising 336 no. 'long-term' residential spaces and 88 no. 'short-term' visitor stay spaces. The provision exceeds both DCC's Development Plan 2022-28 and as well as the DHPLG Guidelines. This is considered appropriate considering the provision (306 no. long-term cycle spaces for residents) equates to 2.3 spaces per unit.
- The development proposals include the provision of 10 no. electric scooter spaces at the storage facilities within the long-term bicycles store facility located at ground floor. The facility allows safe storage and is both weather / theft protected.
- The scheme also includes the provision of dedicated high-quality pedestrian footways (2.0m wide) and cycle tracks (1.5m wide) which will be provided as part of the Richmond Road upgrades (over a length of approx. 225m) delivered as part of the subject development. A signalised pedestrian crossing will be located approx. 40m north-west of Block A. It is noted that these upgrades were initially incorporated within the adjoining SHD development application (ABP Pl. Ref. 312352) but has now been included within the subject development application in order that these road upgrades are independent of the delivery / approval of the adjacent SHD application (i.e., can be built regardless of the adjoining SHD development' planning decision).
- The predicted resulting percentage increase in traffic flows as a result of the traffic generated by the proposed development is established as being well below the 10% threshold (5% for congested networks) at the adjacent local key junctions (even in the adopted worst case scenario). Neither of the two key off-site junctions assessed exceed the threshold and therefore no further operational assessments is required at these junctions. Accordingly, the proposed site access junction on Richmond Road has been subject to a more detailed junction analysis.

- The junction analysis of the proposed priority-controlled Site Access junction on Richmond Road reveals that this junction will operate with significant reserve capacity in the adopted 2025 Opening Year, 2030 Interim Year and 2040 Future Horizon Design Years.

8.2 CONCLUSION

In conclusion, DBFL believes that the opportunity is available, in terms of transport and traffic, for the local authority to consider favourably the proposed development on the subject site.

It is concluded that there are no traffic or transportation related reasons that should prevent the granting of planning permission for the proposed 158A Richmond Road proposed development.

Appendix A: TRICS Database Outputs

Calculation Reference: AUDIT-638801-210526-0539

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

15	GREATER DUBLIN	
	DL DUBLIN	7 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:	20 to 332 (units:)
Range Selected by User:	18 to 372 (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: Include all surveys

Date Range: 01/01/13 to 23/10/20

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	5 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	7 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)	5
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	6
Built-Up Zone	1

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.

Secondary Filtering selection:

Use Class:

C3	7 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 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:

20,001 to 25,000	1 days
25,001 to 50,000	6 days

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

Population within 5 miles:

250,001 to 500,000	1 days
500,001 or More	6 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	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	7 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	7 days

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

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

LIST OF SITES relevant to selection parameters

1 DL-03-C-11 BLOCK OF FLATS DUBLIN
WYCKHAM WAY
DUBLIN
DUNDRUM
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total No of Dwellings: 96
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

2 DL-03-C-12 BLOCK OF FLATS DUBLIN
BOOTERSTOWN AVENUE
DUBLIN

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 47
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

3 DL-03-C-13 BLOCK OF FLATS DUBLIN
SANDYFORD ROAD
DUBLIN

Neighbourhood Centre (PPS6 Local Centre)
Built-Up Zone
Total No of Dwellings: 52
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

4 DL-03-C-14 BLOCKS OF FLATS DUBLIN
BALLINTEER ROAD
DUBLIN
DUNDRUM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 140
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

5 DL-03-C-15 BLOCKS OF FLATS DUBLIN
MONKSTOWN ROAD
DUBLIN
MONKSTOWN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 20
Survey date: WEDNESDAY *01/10/14* *Survey Type: MANUAL*

6 DL-03-C-16 BLOCKS OF FLATS DUBLIN
BOTANIC AVENUE
DUBLIN
DRUMCONDRA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 31
Survey date: TUESDAY *22/11/16* *Survey Type: MANUAL*

7 DL-03-C-17 BLOCKS OF FLATS DUBLIN
FINGLAS ROAD
DUBLIN
FINGLAS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 332
Survey date: FRIDAY *23/10/20* *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/C - FLATS PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	7	103	0.054	7	103	0.224	7	103	0.278
08:00 - 09:00	7	103	0.079	7	103	0.276	7	103	0.355
09:00 - 10:00	7	103	0.079	7	103	0.078	7	103	0.157
10:00 - 11:00	7	103	0.038	7	103	0.061	7	103	0.099
11:00 - 12:00	7	103	0.045	7	103	0.067	7	103	0.112
12:00 - 13:00	7	103	0.063	7	103	0.084	7	103	0.147
13:00 - 14:00	7	103	0.093	7	103	0.089	7	103	0.182
14:00 - 15:00	7	103	0.127	7	103	0.088	7	103	0.215
15:00 - 16:00	7	103	0.106	7	103	0.075	7	103	0.181
16:00 - 17:00	7	103	0.124	7	103	0.061	7	103	0.185
17:00 - 18:00	7	103	0.187	7	103	0.079	7	103	0.266
18:00 - 19:00	7	103	0.201	7	103	0.099	7	103	0.300
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.196			1.281			2.477

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:	20 - 332 (units:)
Survey date date range:	01/01/13 - 23/10/20
Number of weekdays (Monday-Friday):	7
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.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
CARS
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	7	103	0.021	7	103	0.075	7	103	0.096
08:00 - 09:00	7	103	0.039	7	103	0.113	7	103	0.152
09:00 - 10:00	7	103	0.052	7	103	0.022	7	103	0.074
10:00 - 11:00	7	103	0.024	7	103	0.021	7	103	0.045
11:00 - 12:00	7	103	0.025	7	103	0.042	7	103	0.067
12:00 - 13:00	7	103	0.024	7	103	0.038	7	103	0.062
13:00 - 14:00	7	103	0.047	7	103	0.049	7	103	0.096
14:00 - 15:00	7	103	0.068	7	103	0.052	7	103	0.120
15:00 - 16:00	7	103	0.057	7	103	0.043	7	103	0.100
16:00 - 17:00	7	103	0.056	7	103	0.029	7	103	0.085
17:00 - 18:00	7	103	0.081	7	103	0.052	7	103	0.133
18:00 - 19:00	7	103	0.054	7	103	0.047	7	103	0.101
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.548			0.583			1.131

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

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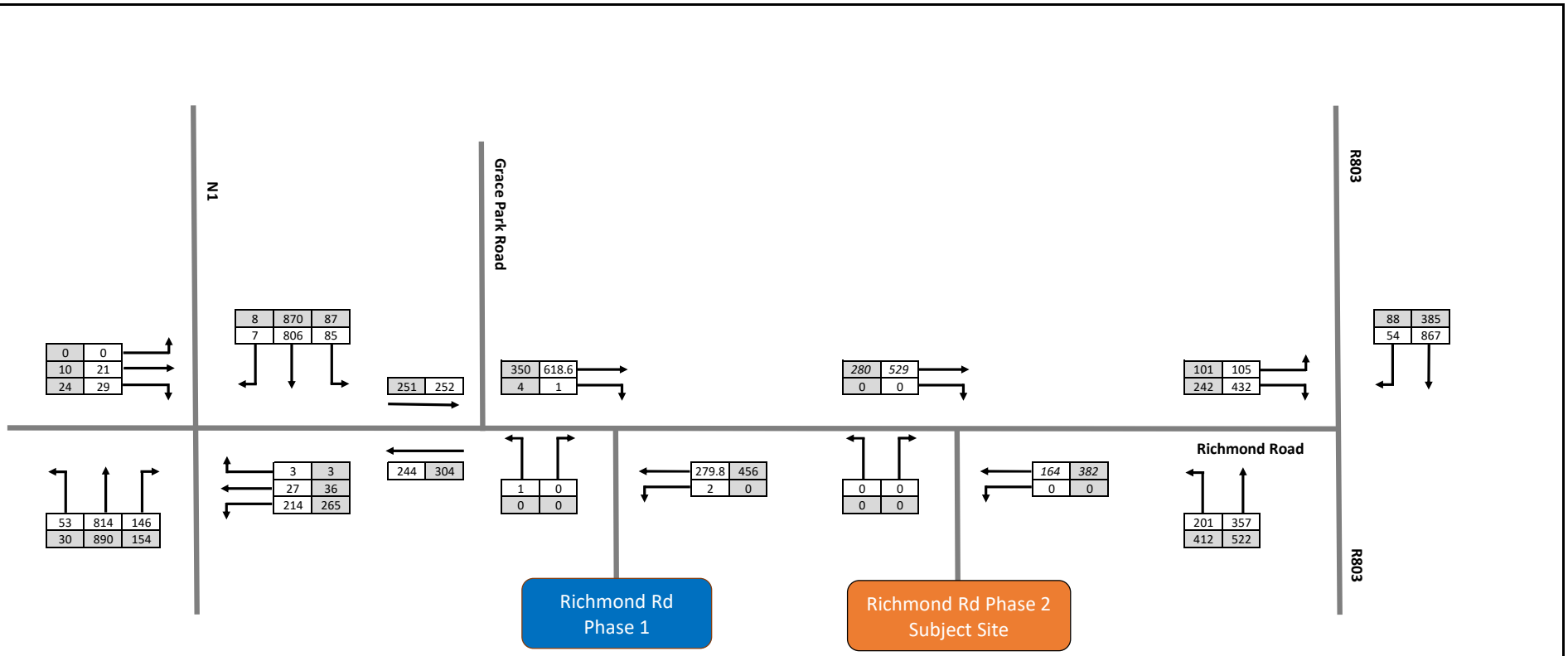
Appendix B: Traffic Flow Diagrams



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Project : Proposed Residential Development, Richmond Road, Dublin

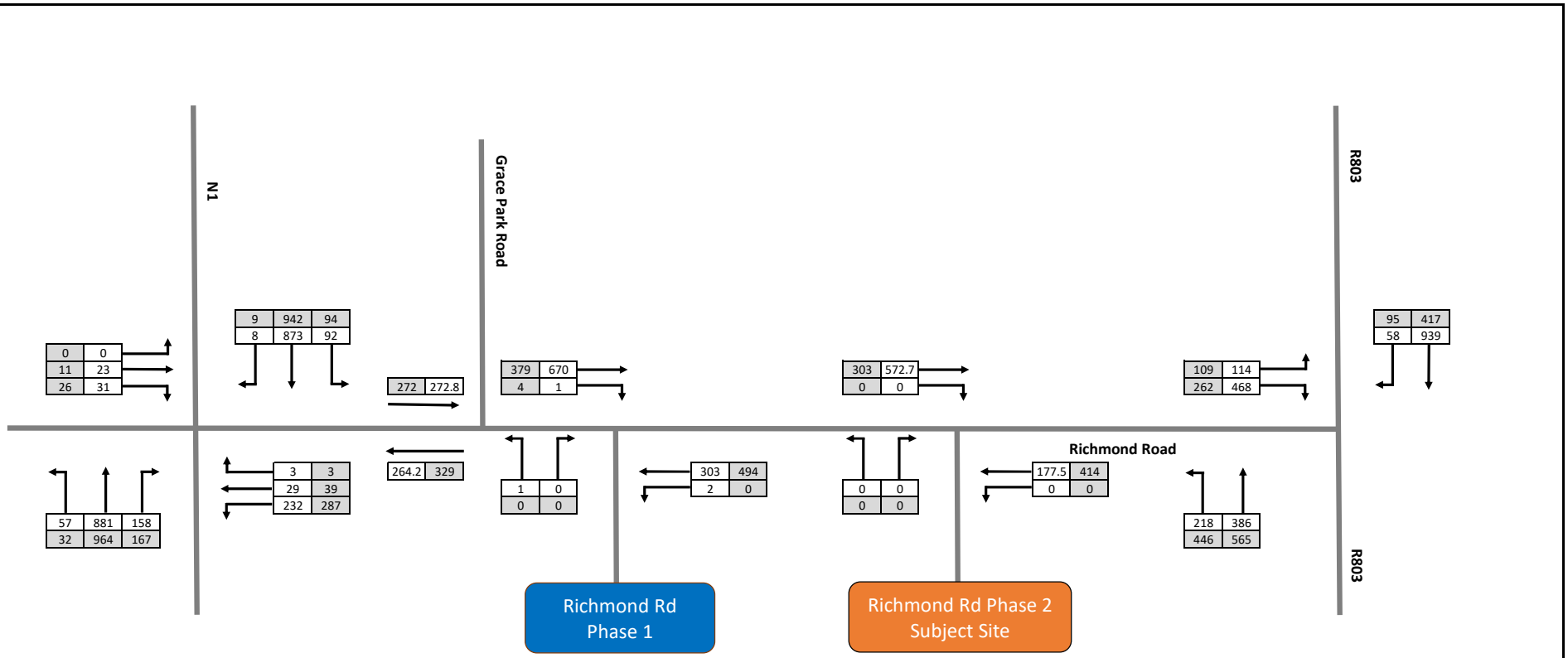
DRG. Title : Network Traffic Flows - PCU's
2020 Base Flows *(2022 Base Flows)*

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	24/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
1	-



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Project : Proposed Residential Development
158A Richmond Road

DRG. Title : Base Flow 2025

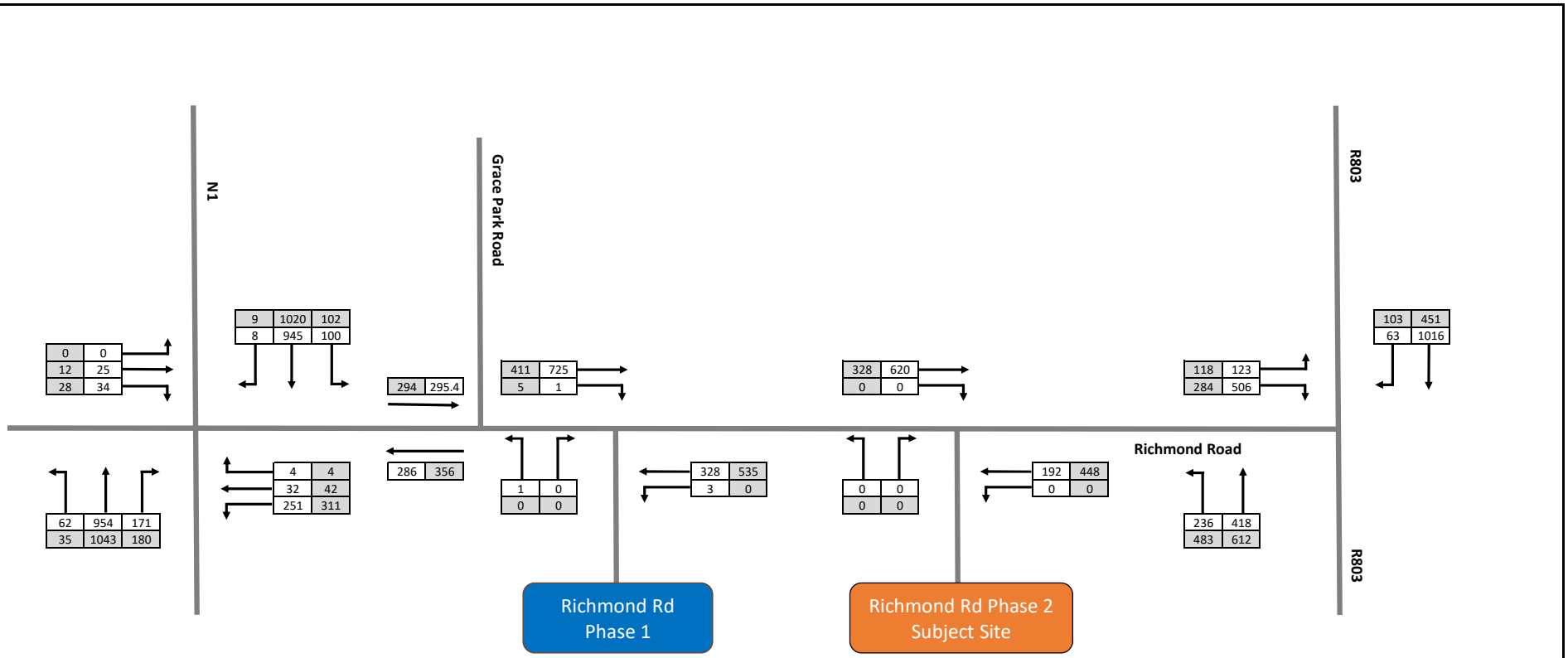
Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	24/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure: 2

Rev: -



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Project : Proposed Residential Development
158A Richmond Road

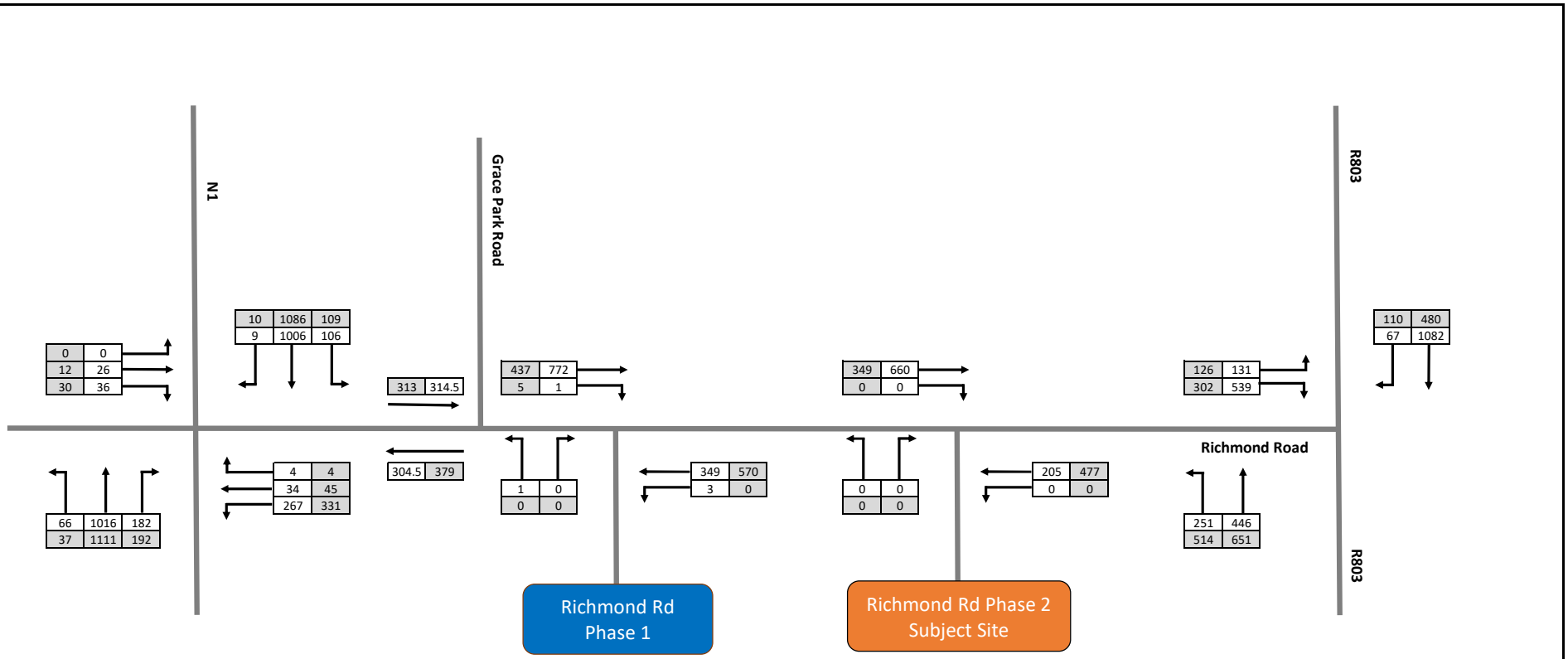
DRG. Title : Base Flow 2030

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	24/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
3	-



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Project : Proposed Residential Development
158A Richmond Road

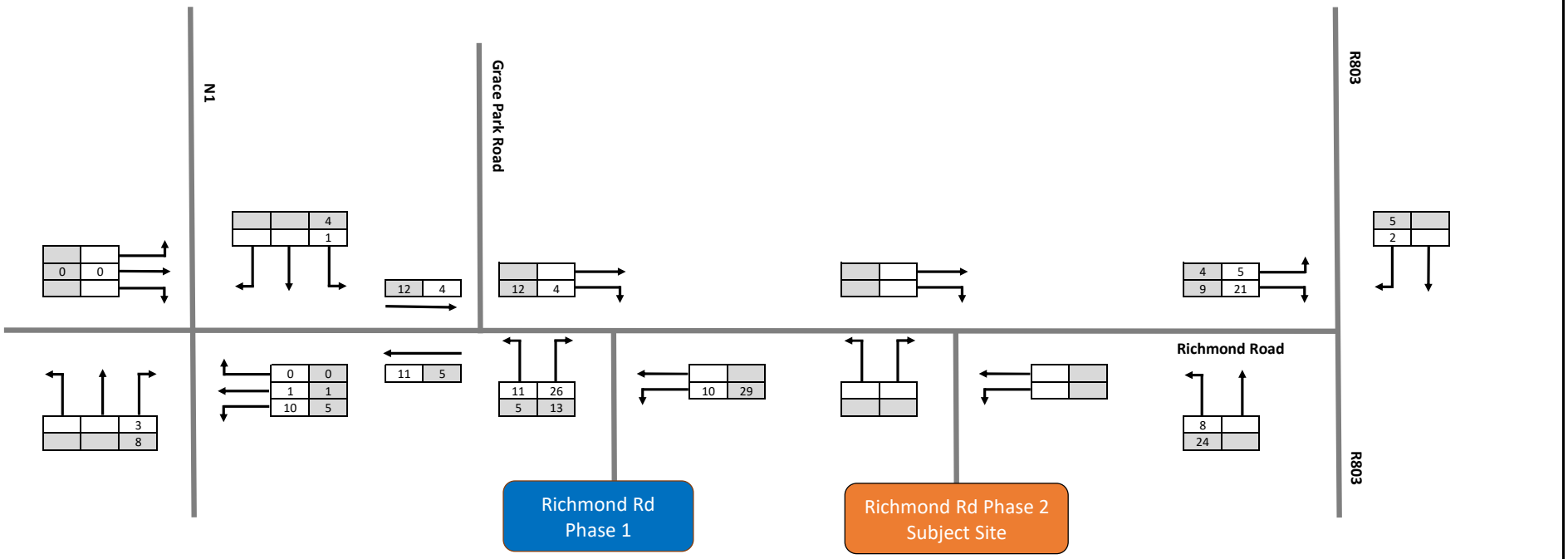
DRG. Title : Base Flow 2040

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	24/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
4	-



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Project :
Proposed Residential Development
158A Richmond Road

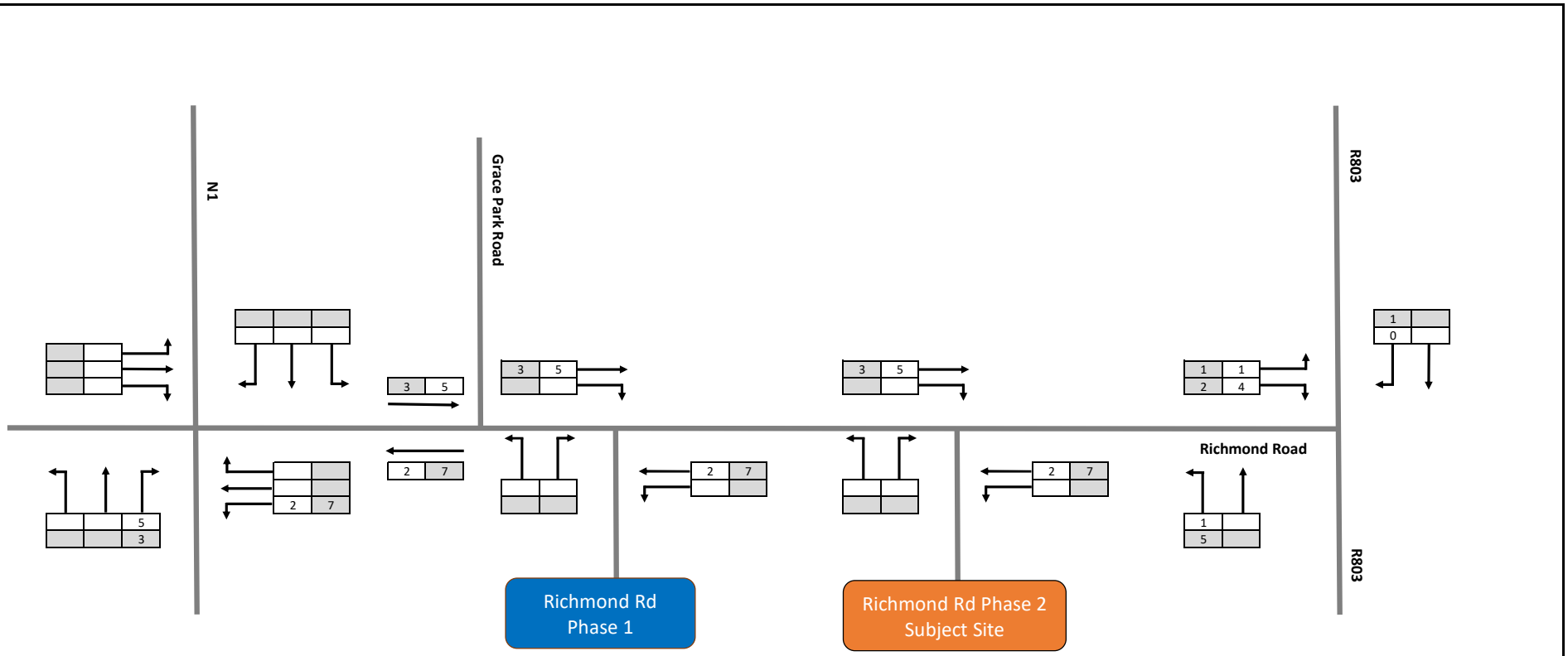
DRG. Title :
Richmond Road Phase 1 Committed Development Trips

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
6	-



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Project :
Proposed Residential Development
158A Richmond Road

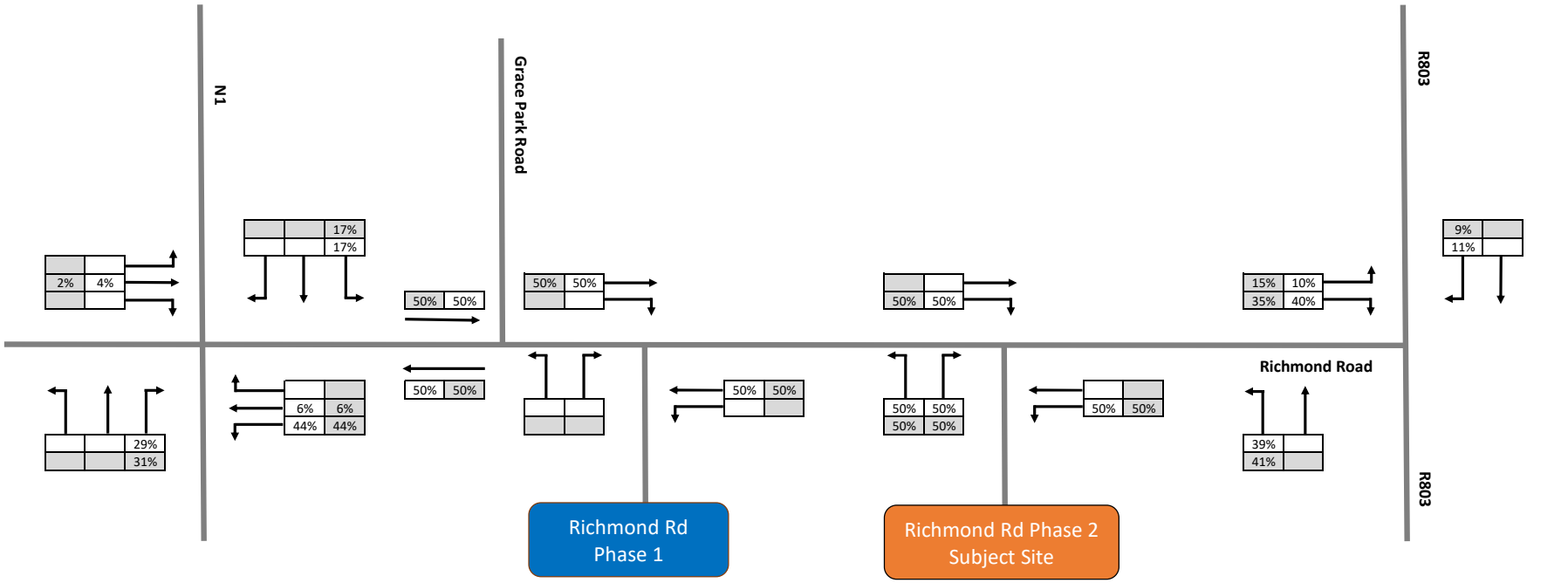
DRG. Title :
Holy Cross College SHD (ABP-310860-21) Committed Development Trips

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	29/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
8	-



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Project : Proposed Residential Development
158A Richmond Road

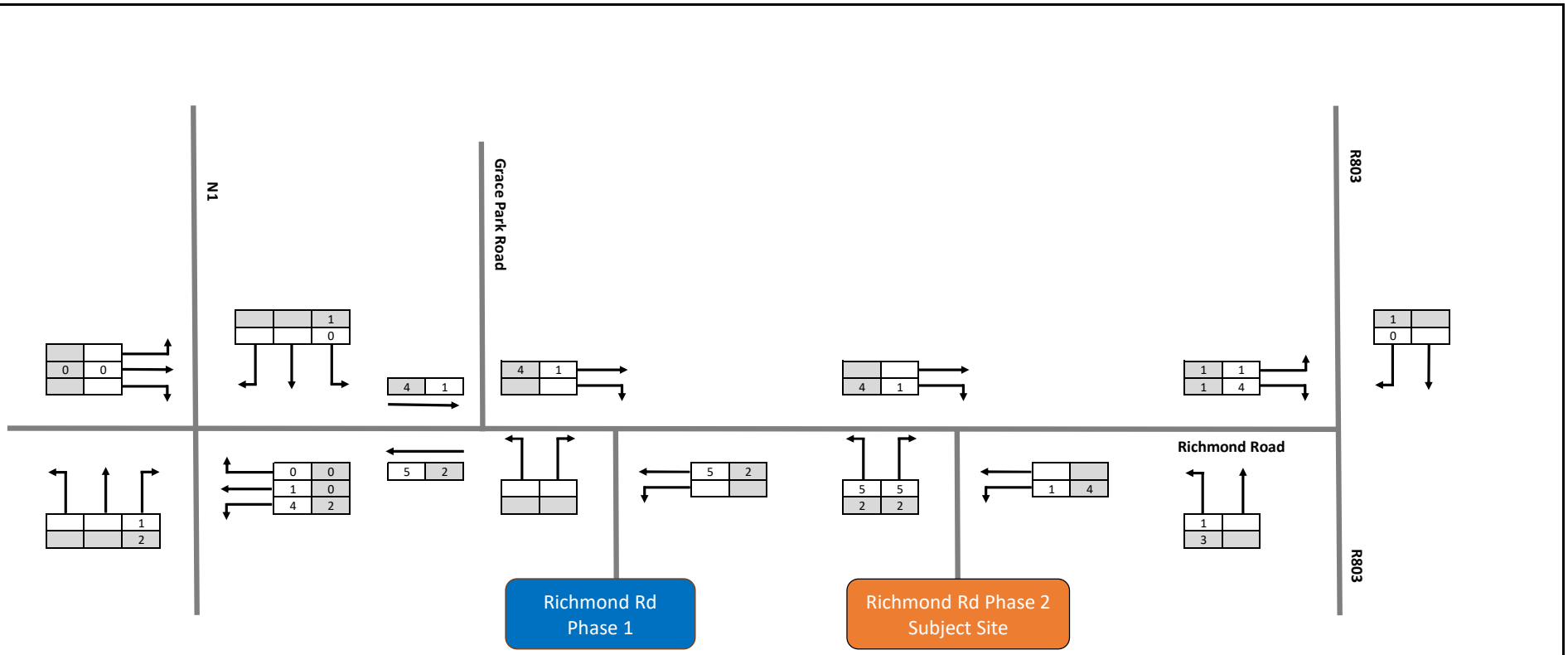
DRG. Title : 158A Richmond Road Development Trip Distribution

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
9	-



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website: www.dbfl.ie

Project : Proposed Residential Development
158A Richmond Road

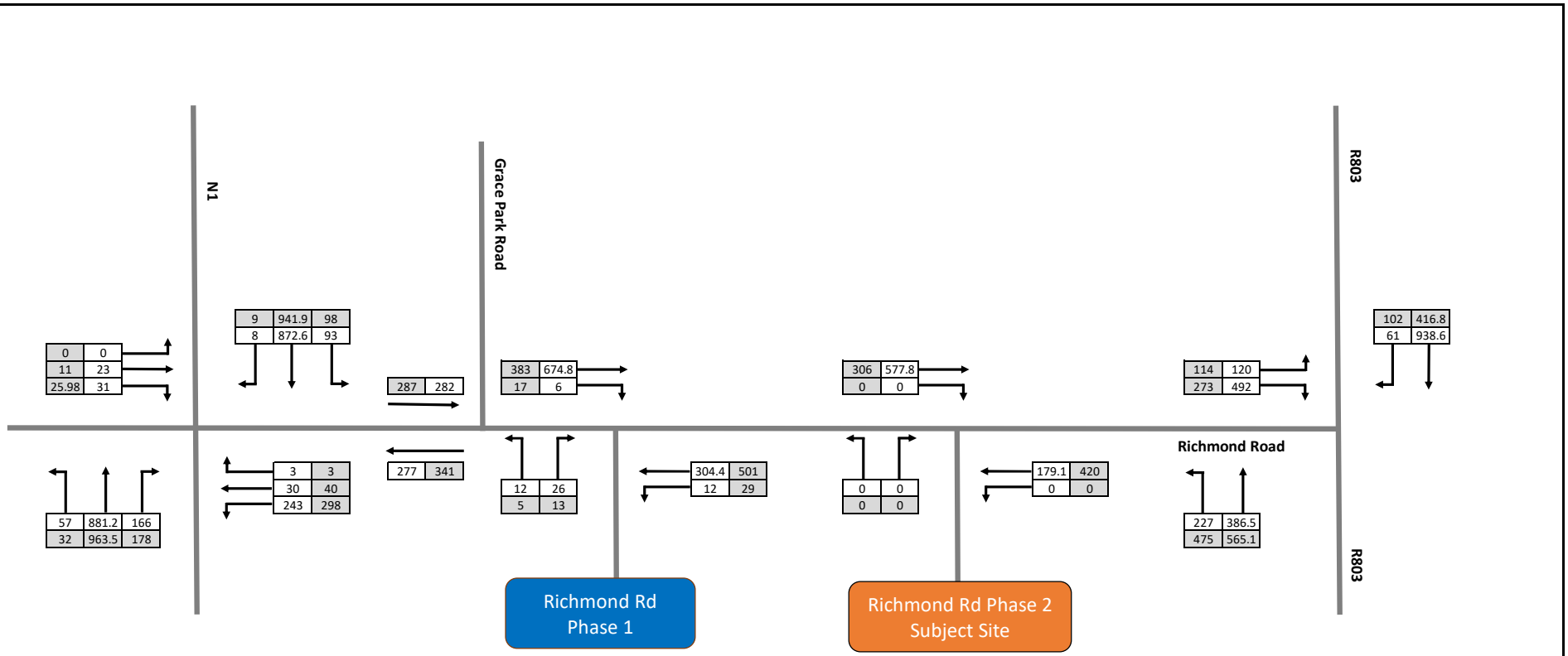
DRG. Title : 158A Richmond Road Phase Development Trips

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
10	-



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Project : Proposed Residential Development
158A Richmond Road

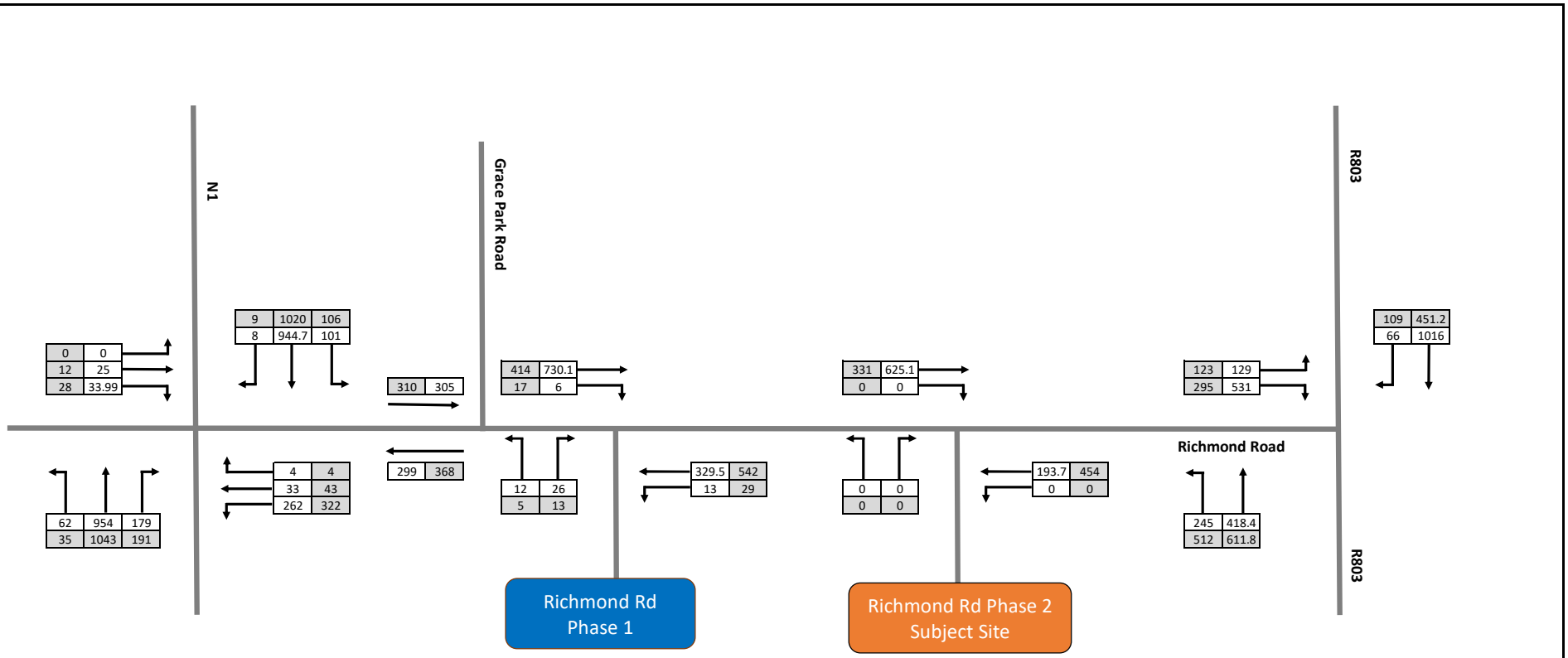
DRG. Title : Do Nothing 2025

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure:	Rev:
11	-



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Project : Proposed Residential Development
158A Richmond Road

DRG. Title : Do Nothing 2030

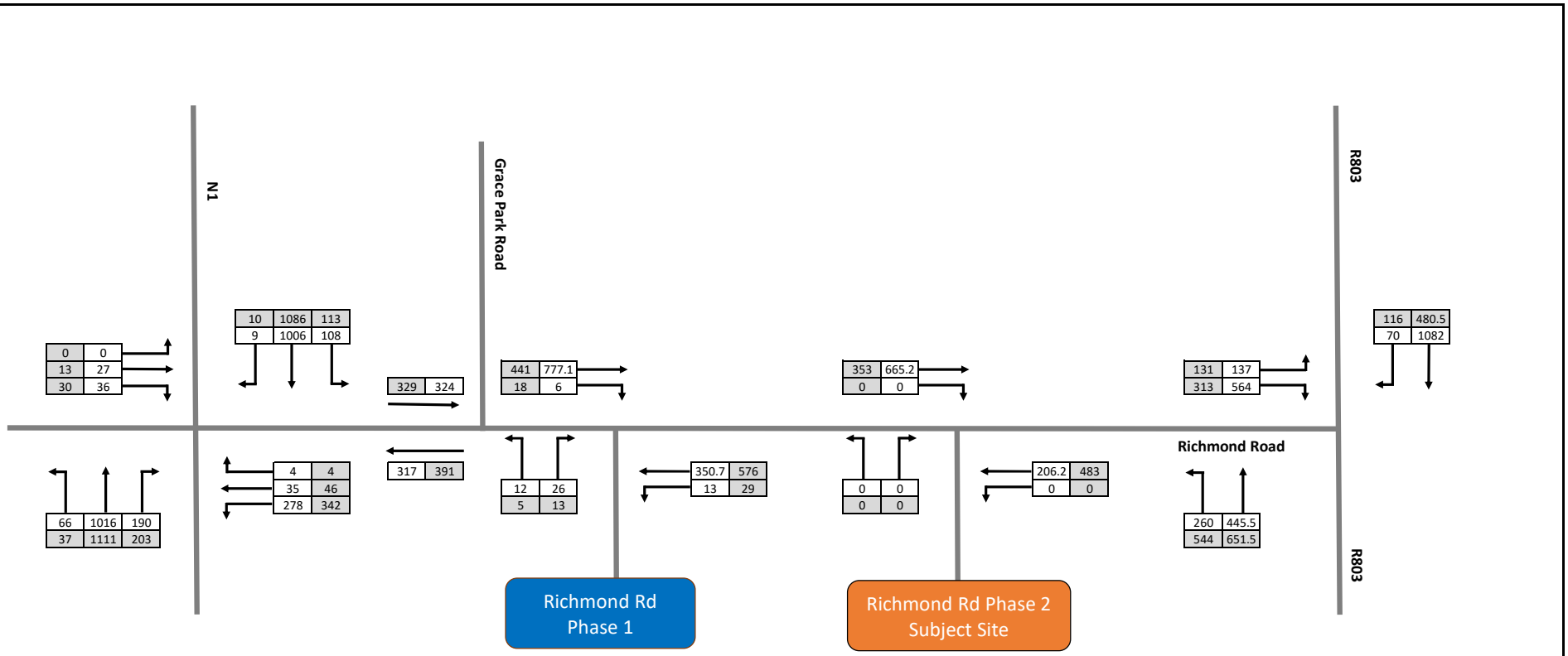
Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure: 12

Rev: -



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Project : Proposed Residential Development
158A Richmond Road

DRG. Title : Do Nothing 2040

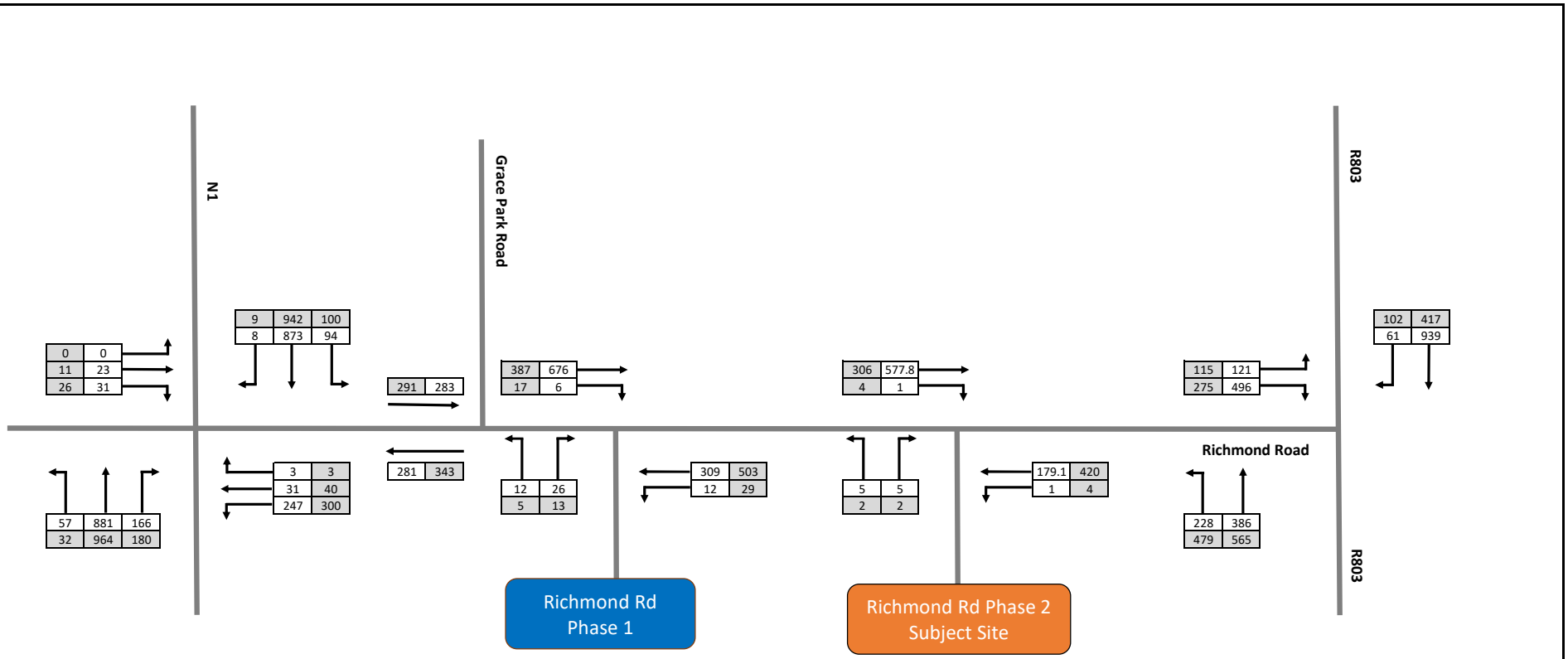
Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure: 13

Rev: -



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Project : Proposed Residential Development, 158A Richmond Road

DRG. Title : Do Something 2025

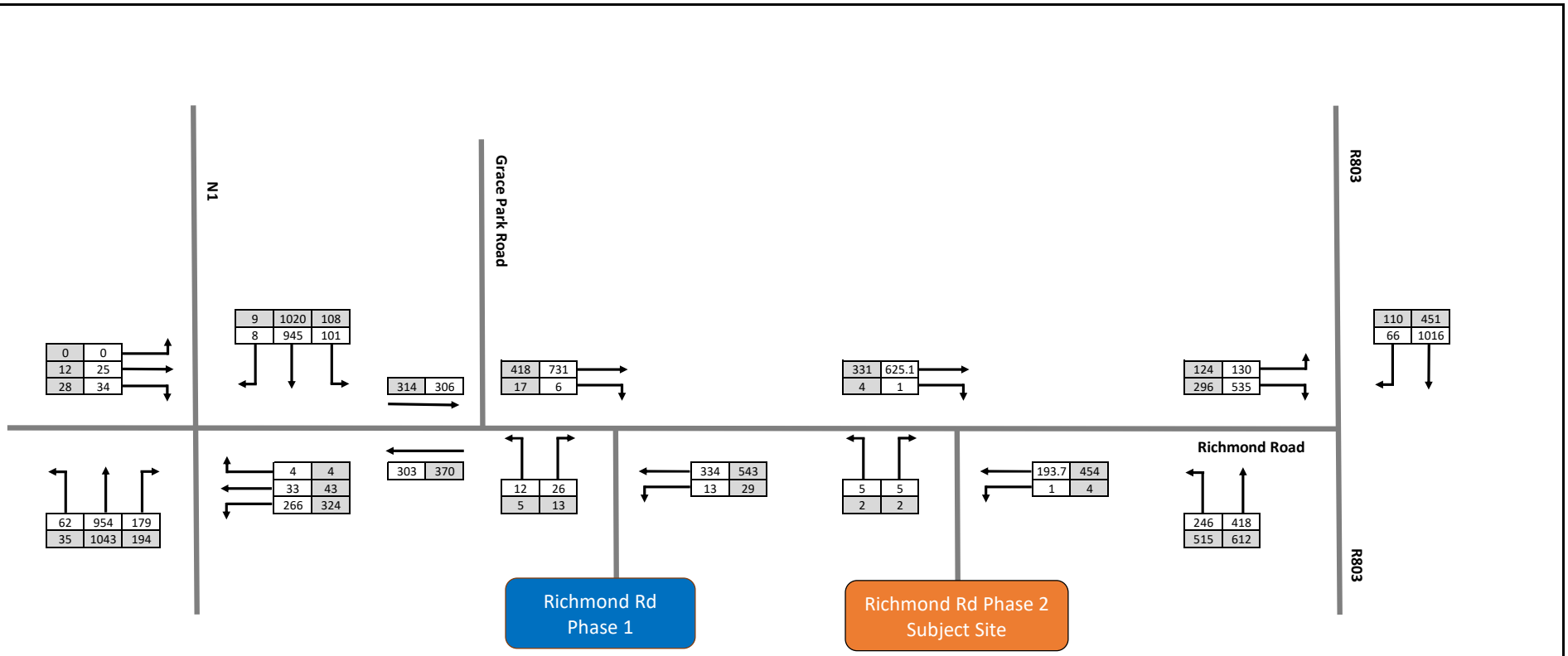
Key:
- AM Peak Hour (07:15 to 08:15)
- PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure: 14

Rev: -



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website: www.dbfl.ie

Project : Proposed Residential Development
158A Richmond Road

DRG. Title : Do Something 2030

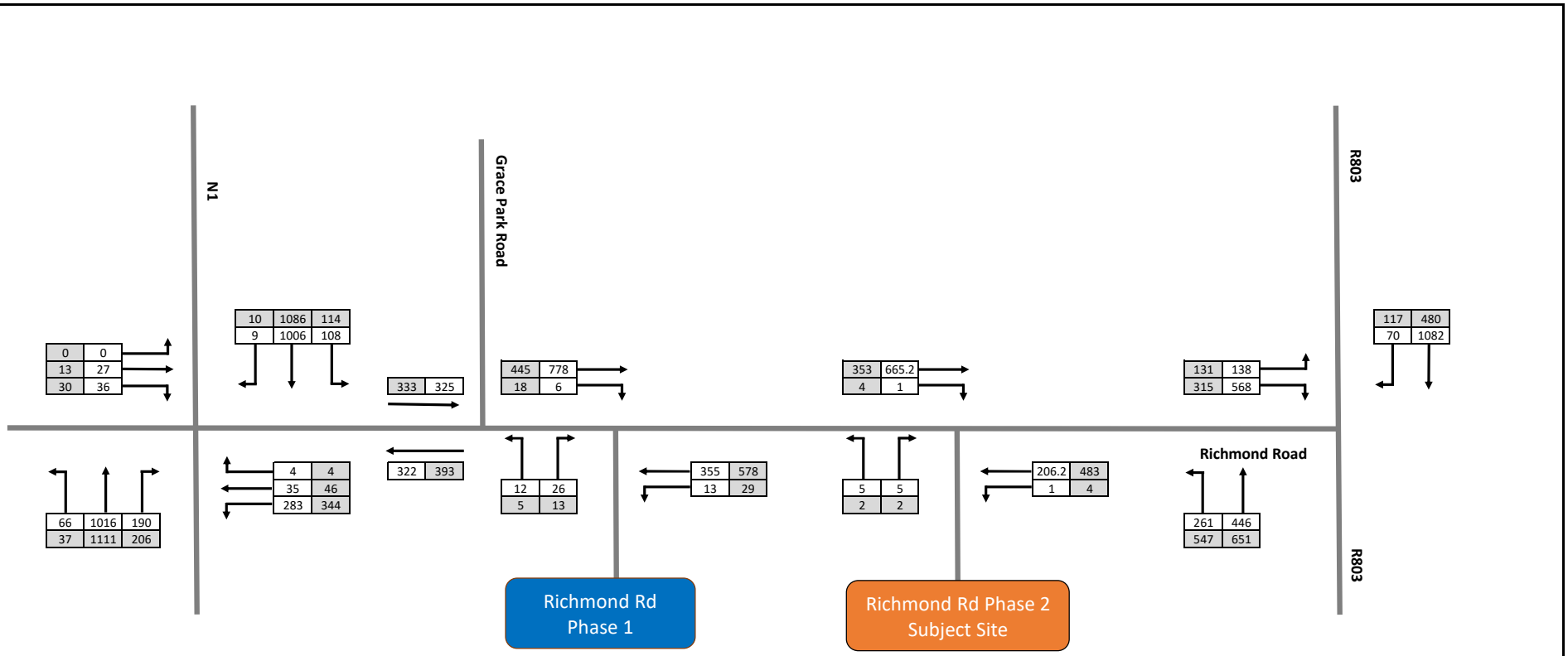
Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure: 15

Rev: -



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Project : Proposed Residential Development
158A Richmond Road

DRG. Title : Do Something 2040

Key:
AM Peak Hour (07:15 to 08:15)
PM Peak Hour (18:00 to 19:00)

Dwn:	Ckd:	Date:
DG	TJ	25/08/2022

Ref: G:\2021\p210178\Calcs\Excel\Traffic

Figure: 16

Rev: -

Appendix C: PICADY Output File

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Proposed Site Access.j9
Path: G:\2021\p210178\Calcs\picady
Report generation date: 30/08/2022 15:18:29

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	Do-Nothing - DN 2025							
Stream B-C	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream B-A	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-AB	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-A								
Stream A-B								
Stream A-C								
	Do-Nothing - DN 2030							
Stream B-C	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream B-A	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-AB	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-A								
Stream A-B								
Stream A-C								
	Do-Nothing - DN 2040							
Stream B-C	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream B-A	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-AB	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-A								
Stream A-B								
Stream A-C								

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	Do-Something - DS 2025							
Stream B-C	0.0	6.30	0.01	A	0.0	0.00	0.00	A
Stream B-A	0.0	10.26	0.02	B	0.0	0.00	0.00	A
Stream C-AB	0.0	4.15	0.00	A	0.0	5.14	0.01	A
Stream C-A								
Stream A-B								
Stream A-C								
	Do-Something - DS 2030							
Stream B-C	0.0	6.34	0.01	A	0.0	0.00	0.00	A
Stream B-A	0.0	10.58	0.02	B	0.0	0.00	0.00	A
Stream C-AB	0.0	4.06	0.00	A	0.0	5.09	0.01	A
Stream C-A								
Stream A-B								
Stream A-C								
	Do-Something - DS 2040							
Stream B-C	0.0	6.38	0.01	A	0.0	0.00	0.00	A
Stream B-A	0.0	10.86	0.02	B	0.0	0.00	0.00	A
Stream C-AB	0.0	3.99	0.00	A	0.0	5.04	0.01	A
Stream C-A								
Stream A-B								
Stream A-C								

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

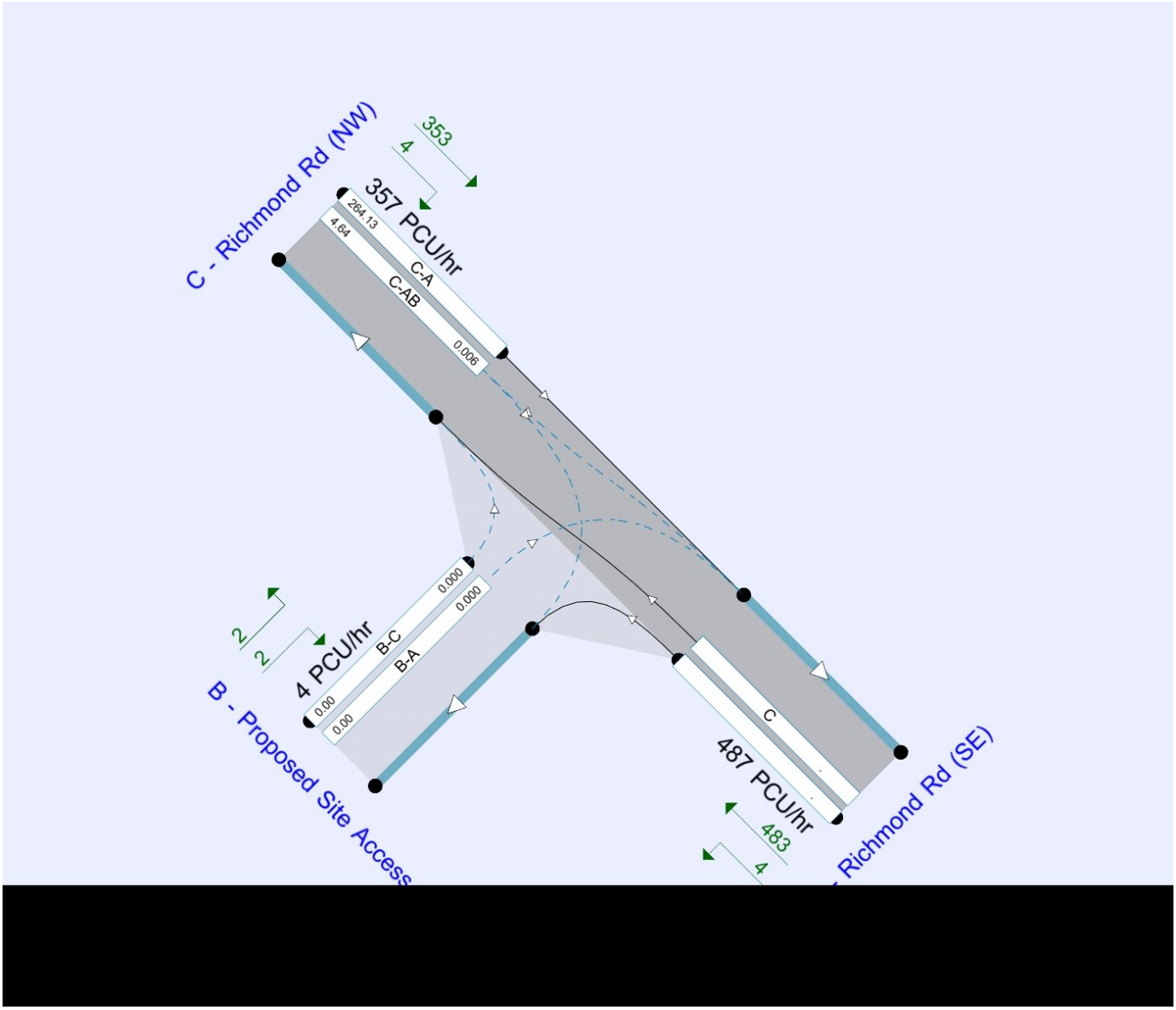
File summary

File Description

Title	Richmond Rd Phase 2
Location	Richmond Rd, Dublin 3
Site number	
Date	30/08/2022
Version	
Status	Proposed
Identifier	
Client	Hollybrook Homes
Jobnumber	210178
Enumerator	HEADOFFICE"GillD
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
DN 2025	AM	ONE HOUR	07:00	08:30	15	✓
DN 2025	PM	ONE HOUR	17:45	19:15	15	✓
DN 2030	AM	ONE HOUR	07:00	08:30	15	✓
DN 2030	PM	ONE HOUR	17:45	19:15	15	✓
DN 2040	AM	ONE HOUR	07:00	08:30	15	✓
DN 2040	PM	ONE HOUR	17:45	19:15	15	✓
DS 2025	AM	ONE HOUR	07:00	08:30	15	✓
DS 2025	PM	ONE HOUR	17:45	19:15	15	✓
DS 2030	AM	ONE HOUR	07:00	08:30	15	✓
DS 2030	PM	ONE HOUR	17:45	19:15	15	✓
DS 2040	AM	ONE HOUR	07:00	08:30	15	✓
DS 2040	PM	ONE HOUR	17:45	19:15	15	✓

Do-Nothing - DN 2025, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set (s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Do-Nothing	✓	✓	D1,D2,D3,D4,D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D1	DN 2025	AM	ONE HOUR	07:00	08:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	179.00	100.000
B - Proposed Site Access		ONE HOUR	✓	0.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	578.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	0.000	179.000
	B - Proposed Site Access	0.000	0.000	0.000
	C - Richmond Rd (NW)	578.000	0.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.00	1.00
	B - Proposed Site Access	0.33	0.33	0.33
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					530.38	795.57
A-B					0.00	0.00
A-C					164.25	246.38

Main Results for each time segment

Main results: (07:00-07:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	594.11	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	397.82	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	588.89	0.000	0.00	0.0	0.0	0.000	A
C-A	435.15	435.15	108.79	0.00			435.15				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	134.76	134.76	33.69	0.00			134.76				

Main results: (07:15-07:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	587.96	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	380.60	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	582.80	0.000	0.00	0.0	0.0	0.000	A
C-A	519.61	519.61	129.90	0.00			519.61				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	160.92	160.92	40.23	0.00			160.92				

Main results: (07:30-07:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	579.46	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	356.79	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	574.37	0.000	0.00	0.0	0.0	0.000	A
C-A	636.39	636.39	159.10	0.00			636.39				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	197.08	197.08	49.27	0.00			197.08				

Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	579.46	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	356.79	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	574.37	0.000	0.00	0.0	0.0	0.000	A
C-A	636.39	636.39	159.10	0.00			636.39				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	197.08	197.08	49.27	0.00			197.08				

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	587.96	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	380.60	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	582.80	0.000	0.00	0.0	0.0	0.000	A
C-A	519.61	519.61	129.90	0.00			519.61				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	160.92	160.92	40.23	0.00			160.92				

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	594.11	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	397.82	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	588.89	0.000	0.00	0.0	0.0	0.000	A
C-A	435.15	435.15	108.79	0.00			435.15				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	134.76	134.76	33.69	0.00			134.76				

Do-Nothing - DN 2025, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set (s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Do-Nothing	✓	✓	D1,D2,D3,D4,D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D2	DN 2025	PM	ONE HOUR	17:45	19:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	420.00	100.000
B - Proposed Site Access		ONE HOUR	✓	0.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	306.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	0.000	420.000
	B - Proposed Site Access	0.000	0.000	0.000
	C - Richmond Rd (NW)	306.000	0.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.00	1.00
	B - Proposed Site Access	0.33	0.33	0.33
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					280.79	421.19
A-B					0.00	0.00
A-C					385.40	578.10

Main Results for each time segment

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	551.46	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	386.40	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	546.61	0.000	0.00	0.0	0.0	0.000	A
C-A	230.37	230.37	57.59	0.00			230.37				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	316.20	316.20	79.05	0.00			316.20				

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	537.03	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	366.96	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	532.31	0.000	0.00	0.0	0.0	0.000	A
C-A	275.09	275.09	68.77	0.00			275.09				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	377.57	377.57	94.39	0.00			377.57				

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	517.08	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	340.09	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	512.54	0.000	0.00	0.0	0.0	0.000	A
C-A	336.91	336.91	84.23	0.00			336.91				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	462.43	462.43	115.61	0.00			462.43				

Main results: (18:30-18:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	517.08	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	340.09	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	512.54	0.000	0.00	0.0	0.0	0.000	A
C-A	336.91	336.91	84.23	0.00			336.91				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	462.43	462.43	115.61	0.00			462.43				

Main results: (18:45-19:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	537.03	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	366.96	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	532.31	0.000	0.00	0.0	0.0	0.000	A
C-A	275.09	275.09	68.77	0.00			275.09				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	377.57	377.57	94.39	0.00			377.57				

Main results: (19:00-19:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	551.46	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	386.40	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	546.61	0.000	0.00	0.0	0.0	0.000	A
C-A	230.37	230.37	57.59	0.00			230.37				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	316.20	316.20	79.05	0.00			316.20				

Do-Nothing - DN 2030, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set (s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Do-Nothing	✓	✓	D1,D2,D3,D4,D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D3	DN 2030	AM	ONE HOUR	07:00	08:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	194.00	100.000
B - Proposed Site Access		ONE HOUR	✓	0.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	625.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	0.000	194.000
	B - Proposed Site Access	0.000	0.000	0.000
	C - Richmond Rd (NW)	625.000	0.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.00	1.00
	B - Proposed Site Access	0.33	0.33	0.33
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					573.51	860.27
A-B					0.00	0.00
A-C					178.02	267.03

Main Results for each time segment

Main results: (07:00-07:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	591.46	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	390.54	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	586.26	0.000	0.00	0.0	0.0	0.000	A
C-A	470.53	470.53	117.63	0.00			470.53				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	146.05	146.05	36.51	0.00			146.05				

Main results: (07:15-07:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	584.79	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	371.90	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	579.65	0.000	0.00	0.0	0.0	0.000	A
C-A	561.86	561.86	140.47	0.00			561.86				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	174.40	174.40	43.60	0.00			174.40				

Main results: (07:30-07:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	575.58	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	346.14	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	570.52	0.000	0.00	0.0	0.0	0.000	A
C-A	688.14	688.14	172.03	0.00			688.14				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	213.60	213.60	53.40	0.00			213.60				

Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	575.58	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	346.14	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	570.52	0.000	0.00	0.0	0.0	0.000	A
C-A	688.14	688.14	172.03	0.00			688.14				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	213.60	213.60	53.40	0.00			213.60				

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	584.79	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	371.90	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	579.65	0.000	0.00	0.0	0.0	0.000	A
C-A	561.86	561.86	140.47	0.00			561.86				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	174.40	174.40	43.60	0.00			174.40				

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	591.46	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	390.54	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	586.26	0.000	0.00	0.0	0.0	0.000	A
C-A	470.53	470.53	117.63	0.00			470.53				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	146.05	146.05	36.51	0.00			146.05				

Do-Nothing - DN 2030, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set (s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Do-Nothing	✓	✓	D1,D2,D3,D4,D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D4	DN 2030	PM	ONE HOUR	17:45	19:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	454.00	100.000
B - Proposed Site Access		ONE HOUR	✓	0.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	331.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	0.000	454.000
	B - Proposed Site Access	0.000	0.000	0.000
	C - Richmond Rd (NW)	331.000	0.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.00	1.00
	B - Proposed Site Access	0.33	0.33	0.33
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					303.73	455.60
A-B					0.00	0.00
A-C					416.60	624.90

Main Results for each time segment

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	545.44	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	378.27	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	540.65	0.000	0.00	0.0	0.0	0.000	A
C-A	249.19	249.19	62.30	0.00			249.19				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	341.80	341.80	85.45	0.00			341.80				

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	529.85	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	357.25	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	525.19	0.000	0.00	0.0	0.0	0.000	A
C-A	297.56	297.56	74.39	0.00			297.56				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	408.14	408.14	102.03	0.00			408.14				

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	508.28	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	328.20	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	503.82	0.000	0.00	0.0	0.0	0.000	A
C-A	364.44	364.44	91.11	0.00			364.44				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	499.86	499.86	124.97	0.00			499.86				

Main results: (18:30-18:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	508.28	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	328.20	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	503.82	0.000	0.00	0.0	0.0	0.000	A
C-A	364.44	364.44	91.11	0.00			364.44				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	499.86	499.86	124.97	0.00			499.86				

Main results: (18:45-19:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	529.85	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	357.25	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	525.19	0.000	0.00	0.0	0.0	0.000	A
C-A	297.56	297.56	74.39	0.00			297.56				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	408.14	408.14	102.03	0.00			408.14				

Main results: (19:00-19:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	545.44	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	378.27	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	540.65	0.000	0.00	0.0	0.0	0.000	A
C-A	249.19	249.19	62.30	0.00			249.19				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	341.80	341.80	85.45	0.00			341.80				

Do-Nothing - DN 2040, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set (s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Do-Nothing	✓	✓	D1,D2,D3,D4,D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D5	DN 2040	AM	ONE HOUR	07:00	08:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	206.00	100.000
B - Proposed Site Access		ONE HOUR	✓	0.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	665.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	0.000	206.000
	B - Proposed Site Access	0.000	0.000	0.000
	C - Richmond Rd (NW)	665.000	0.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.00	1.00
	B - Proposed Site Access	0.33	0.33	0.33
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					610.22	915.32
A-B					0.00	0.00
A-C					189.03	283.54

Main Results for each time segment

Main results: (07:00-07:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	589.33	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	384.46	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	584.15	0.000	0.00	0.0	0.0	0.000	A
C-A	500.65	500.65	125.16	0.00			500.65				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	155.09	155.09	38.77	0.00			155.09				

Main results: (07:15-07:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	582.26	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	364.65	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	577.14	0.000	0.00	0.0	0.0	0.000	A
C-A	597.82	597.82	149.46	0.00			597.82				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	185.19	185.19	46.30	0.00			185.19				

Main results: (07:30-07:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	572.47	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	337.25	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	567.44	0.000	0.00	0.0	0.0	0.000	A
C-A	732.18	732.18	183.04	0.00			732.18				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	226.81	226.81	56.70	0.00			226.81				

Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	572.47	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	337.25	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	567.44	0.000	0.00	0.0	0.0	0.000	A
C-A	732.18	732.18	183.04	0.00			732.18				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	226.81	226.81	56.70	0.00			226.81				

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	582.26	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	364.65	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	577.14	0.000	0.00	0.0	0.0	0.000	A
C-A	597.82	597.82	149.46	0.00			597.82				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	185.19	185.19	46.30	0.00			185.19				

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	589.33	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	384.46	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	584.15	0.000	0.00	0.0	0.0	0.000	A
C-A	500.65	500.65	125.16	0.00			500.65				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	155.09	155.09	38.77	0.00			155.09				

Do-Nothing - DN 2040, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set (s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Do-Nothing	✓	✓	D1,D2,D3,D4,D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D6	DN 2040	PM	ONE HOUR	17:45	19:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	483.00	100.000
B - Proposed Site Access		ONE HOUR	✓	0.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	353.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	0.000	483.000
	B - Proposed Site Access	0.000	0.000	0.000
	C - Richmond Rd (NW)	353.000	0.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.00	1.00
	B - Proposed Site Access	0.33	0.33	0.33
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					323.92	485.88
A-B					0.00	0.00
A-C					443.21	664.81

Main Results for each time segment

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	540.31	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	371.26	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	535.56	0.000	0.00	0.0	0.0	0.000	A
C-A	265.76	265.76	66.44	0.00			265.76				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	363.63	363.63	90.91	0.00			363.63				

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	523.72	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	348.89	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	519.12	0.000	0.00	0.0	0.0	0.000	A
C-A	317.34	317.34	79.33	0.00			317.34				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	434.21	434.21	108.55	0.00			434.21				

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	500.78	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	317.95	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	496.38	0.000	0.00	0.0	0.0	0.000	A
C-A	388.66	388.66	97.17	0.00			388.66				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	531.79	531.79	132.95	0.00			531.79				

Main results: (18:30-18:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	500.78	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	317.95	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	496.38	0.000	0.00	0.0	0.0	0.000	A
C-A	388.66	388.66	97.17	0.00			388.66				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	531.79	531.79	132.95	0.00			531.79				

Main results: (18:45-19:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	523.72	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	348.89	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	519.12	0.000	0.00	0.0	0.0	0.000	A
C-A	317.34	317.34	79.33	0.00			317.34				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	434.21	434.21	108.55	0.00			434.21				

Main results: (19:00-19:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	540.31	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	371.26	0.000	0.00	0.0	0.0	0.000	A
C-AB	0.00	0.00	0.00	0.00	535.56	0.000	0.00	0.0	0.0	0.000	A
C-A	265.76	265.76	66.44	0.00			265.76				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	363.63	363.63	90.91	0.00			363.63				

Do-Something - DS 2025, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Do-Something	✓	✓	D7,D8,D9,D10,D11,D12	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.12	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D7	DS 2025	AM	ONE HOUR	07:00	08:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	180.00	100.000
B - Proposed Site Access		ONE HOUR	✓	10.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	579.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	1.000	179.000
	B - Proposed Site Access	5.000	0.000	5.000
	C - Richmond Rd (NW)	578.000	1.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.01	0.99
	B - Proposed Site Access	0.50	0.00	0.50
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.01	6.30	0.0	A	4.59	6.88
B-A	0.02	10.26	0.0	B	4.59	6.88
C-AB	0.00	4.15	0.0	A	1.91	2.86
C-A					529.39	794.09
A-B					0.92	1.38
A-C					164.25	246.38

Main Results for each time segment

Main results: (07:00-07:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	3.76	3.76	0.94	0.00	592.64	0.006	3.74	0.0	0.0	6.112	A
B-A	3.76	3.76	0.94	0.00	397.52	0.009	3.73	0.0	0.0	9.142	A
C-AB	1.38	1.38	0.34	0.00	868.38	0.002	1.37	0.0	0.0	4.151	A
C-A	434.52	434.52	108.63	0.00			434.52				
A-B	0.75	0.75	0.19	0.00			0.75				
A-C	134.76	134.76	33.69	0.00			134.76				

Main results: (07:15-07:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	4.49	4.49	1.12	0.00	585.89	0.008	4.49	0.0	0.0	6.191	A
B-A	4.49	4.49	1.12	0.00	380.40	0.012	4.49	0.0	0.0	9.576	A
C-AB	1.82	1.82	0.45	0.00	912.68	0.002	1.82	0.0	0.0	3.952	A
C-A	518.69	518.69	129.67	0.00			518.69				
A-B	0.90	0.90	0.22	0.00			0.90				
A-C	160.92	160.92	40.23	0.00			160.92				

Main results: (07:30-07:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	5.51	5.51	1.38	0.00	576.85	0.010	5.50	0.0	0.0	6.300	A
B-A	5.51	5.51	1.38	0.00	356.51	0.015	5.49	0.0	0.0	10.255	B
C-AB	2.53	2.53	0.63	0.00	970.89	0.003	2.52	0.0	0.0	3.716	A
C-A	634.97	634.97	158.74	0.00			634.97				
A-B	1.10	1.10	0.28	0.00			1.10				
A-C	197.08	197.08	49.27	0.00			197.08				

Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	5.51	5.51	1.38	0.00	576.73	0.010	5.50	0.0	0.0	6.301	A
B-A	5.51	5.51	1.38	0.00	356.58	0.015	5.50	0.0	0.0	10.253	B
C-AB	2.53	2.53	0.63	0.00	970.89	0.003	2.53	0.0	0.0	3.716	A
C-A	634.96	634.96	158.74	0.00			634.96				
A-B	1.10	1.10	0.28	0.00			1.10				
A-C	197.08	197.08	49.27	0.00			197.08				

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	4.49	4.49	1.12	0.00	585.67	0.008	4.50	0.0	0.0	6.193	A
B-A	4.49	4.49	1.12	0.00	380.54	0.012	4.51	0.0	0.0	9.573	A
C-AB	1.82	1.82	0.45	0.00	912.68	0.002	1.82	0.0	0.0	3.953	A
C-A	518.69	518.69	129.67	0.00			518.69				
A-B	0.90	0.90	0.22	0.00			0.90				
A-C	160.92	160.92	40.23	0.00			160.92				

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	3.76	3.76	0.94	0.00	592.23	0.006	3.77	0.0	0.0	6.117	A
B-A	3.76	3.76	0.94	0.00	397.79	0.009	3.77	0.0	0.0	9.138	A
C-AB	1.38	1.38	0.35	0.00	868.38	0.002	1.38	0.0	0.0	4.153	A
C-A	434.52	434.52	108.63	0.00			434.52				
A-B	0.75	0.75	0.19	0.00			0.75				
A-C	134.76	134.76	33.69	0.00			134.76				

Do-Something - DS 2025, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Do-Something	✓	✓	D7,D8,D9,D10,D11,D12	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.04	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D8	DS 2025	PM	ONE HOUR	17:45	19:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	424.00	100.000
B - Proposed Site Access		ONE HOUR	✓	4.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	310.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	4.000	420.000
	B - Proposed Site Access	2.000	0.000	2.000
	C - Richmond Rd (NW)	306.000	4.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.01	0.99
	B - Proposed Site Access	0.50	0.00	0.50
	C - Richmond Rd (NW)	0.99	0.01	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.01	5.14	0.0	A	5.89	8.83
C-A					278.57	417.86
A-B					3.67	5.51
A-C					385.40	578.10

Main Results for each time segment

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	551.18	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	385.21	0.000	0.00	0.0	0.0	0.000	A
C-AB	4.38	4.38	1.10	0.00	704.12	0.006	4.35	0.0	0.0	5.144	A
C-A	229.00	229.00	57.25	0.00			229.00				
A-B	3.01	3.01	0.75	0.00			3.01				
A-C	316.20	316.20	79.05	0.00			316.20				

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	536.70	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	365.53	0.000	0.00	0.0	0.0	0.000	A
C-AB	5.64	5.64	1.41	0.00	721.49	0.008	5.63	0.0	0.0	5.028	A
C-A	273.05	273.05	68.26	0.00			273.05				
A-B	3.60	3.60	0.90	0.00			3.60				
A-C	377.57	377.57	94.39	0.00			377.57				

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	516.67	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	338.33	0.000	0.00	0.0	0.0	0.000	A
C-AB	7.64	7.64	1.91	0.00	745.78	0.010	7.63	0.0	0.0	4.876	A
C-A	333.68	333.68	83.42	0.00			333.68				
A-B	4.40	4.40	1.10	0.00			4.40				
A-C	462.43	462.43	115.61	0.00			462.43				

Main results: (18:30-18:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	516.67	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	338.33	0.000	0.00	0.0	0.0	0.000	A
C-AB	7.64	7.64	1.91	0.00	745.78	0.010	7.64	0.0	0.0	4.876	A
C-A	333.67	333.67	83.42	0.00			333.67				
A-B	4.40	4.40	1.10	0.00			4.40				
A-C	462.43	462.43	115.61	0.00			462.43				

Main results: (18:45-19:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	536.70	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	365.53	0.000	0.00	0.0	0.0	0.000	A
C-AB	5.64	5.64	1.41	0.00	721.50	0.008	5.65	0.0	0.0	5.028	A
C-A	273.04	273.04	68.26	0.00			273.04				
A-B	3.60	3.60	0.90	0.00			3.60				
A-C	377.57	377.57	94.39	0.00			377.57				

Main results: (19:00-19:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	551.18	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	385.20	0.000	0.00	0.0	0.0	0.000	A
C-AB	4.39	4.39	1.10	0.00	704.13	0.006	4.40	0.0	0.0	5.144	A
C-A	228.99	228.99	57.25	0.00			228.99				
A-B	3.01	3.01	0.75	0.00			3.01				
A-C	316.20	316.20	79.05	0.00			316.20				

Do-Something - DS 2030, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Do-Something	✓	✓	D7,D8,D9,D10,D11,D12	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.11	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D9	DS 2030	AM	ONE HOUR	07:00	08:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	195.00	100.000
B - Proposed Site Access		ONE HOUR	✓	10.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	626.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	1.000	194.000
	B - Proposed Site Access	5.000	0.000	5.000
	C - Richmond Rd (NW)	625.000	1.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.01	0.99
	B - Proposed Site Access	0.50	0.00	0.50
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.01	6.34	0.0	A	4.59	6.88
B-A	0.02	10.58	0.0	B	4.59	6.88
C-AB	0.00	4.06	0.0	A	2.00	3.00
C-A					572.43	858.64
A-B					0.92	1.38
A-C					178.02	267.03

Main Results for each time segment

Main results: (07:00-07:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	3.76	3.76	0.94	0.00	589.96	0.006	3.74	0.0	0.0	6.140	A
B-A	3.76	3.76	0.94	0.00	390.24	0.010	3.73	0.0	0.0	9.312	A
C-AB	1.44	1.44	0.36	0.00	887.10	0.002	1.43	0.0	0.0	4.064	A
C-A	469.85	469.85	117.46	0.00			469.85				
A-B	0.75	0.75	0.19	0.00			0.75				
A-C	146.05	146.05	36.51	0.00			146.05				

Main results: (07:15-07:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	4.49	4.49	1.12	0.00	582.68	0.008	4.49	0.0	0.0	6.225	A
B-A	4.49	4.49	1.12	0.00	371.70	0.012	4.49	0.0	0.0	9.803	A
C-AB	1.91	1.91	0.48	0.00	934.10	0.002	1.90	0.0	0.0	3.861	A
C-A	560.86	560.86	140.21	0.00			560.86				
A-B	0.90	0.90	0.22	0.00			0.90				
A-C	174.40	174.40	43.60	0.00			174.40				

Main results: (07:30-07:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	5.51	5.51	1.38	0.00	572.90	0.010	5.50	0.0	0.0	6.344	A
B-A	5.51	5.51	1.38	0.00	345.86	0.016	5.49	0.0	0.0	10.576	B
C-AB	2.66	2.66	0.67	0.00	995.44	0.003	2.66	0.0	0.0	3.625	A
C-A	686.58	686.58	171.64	0.00			686.58				
A-B	1.10	1.10	0.28	0.00			1.10				
A-C	213.60	213.60	53.40	0.00			213.60				

Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	5.51	5.51	1.38	0.00	572.77	0.010	5.50	0.0	0.0	6.345	A
B-A	5.51	5.51	1.38	0.00	345.93	0.016	5.50	0.0	0.0	10.574	B
C-AB	2.66	2.66	0.67	0.00	995.44	0.003	2.66	0.0	0.0	3.625	A
C-A	686.58	686.58	171.64	0.00			686.58				
A-B	1.10	1.10	0.28	0.00			1.10				
A-C	213.60	213.60	53.40	0.00			213.60				

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	4.49	4.49	1.12	0.00	582.44	0.008	4.50	0.0	0.0	6.230	A
B-A	4.49	4.49	1.12	0.00	371.85	0.012	4.51	0.0	0.0	9.802	A
C-AB	1.91	1.91	0.48	0.00	934.10	0.002	1.91	0.0	0.0	3.861	A
C-A	560.85	560.85	140.21	0.00			560.85				
A-B	0.90	0.90	0.22	0.00			0.90				
A-C	174.40	174.40	43.60	0.00			174.40				

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	3.76	3.76	0.94	0.00	589.53	0.006	3.77	0.0	0.0	6.147	A
B-A	3.76	3.76	0.94	0.00	390.51	0.010	3.77	0.0	0.0	9.310	A
C-AB	1.44	1.44	0.36	0.00	887.11	0.002	1.44	0.0	0.0	4.064	A
C-A	469.84	469.84	117.46	0.00			469.84				
A-B	0.75	0.75	0.19	0.00			0.75				
A-C	146.05	146.05	36.51	0.00			146.05				

Do-Something - DS 2030, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Do-Something	✓	✓	D7,D8,D9,D10,D11,D12	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.04	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D10	DS 2030	PM	ONE HOUR	17:45	19:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	458.00	100.000
B - Proposed Site Access		ONE HOUR	✓	4.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	335.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	4.000	454.000
	B - Proposed Site Access	2.000	0.000	2.000
	C - Richmond Rd (NW)	331.000	4.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.01	0.99
	B - Proposed Site Access	0.50	0.00	0.50
	C - Richmond Rd (NW)	0.99	0.01	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.01	5.09	0.0	A	6.12	9.18
C-A					301.28	451.92
A-B					3.67	5.51
A-C					416.60	624.90

Main Results for each time segment

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	545.16	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	377.07	0.000	0.00	0.0	0.0	0.000	A
C-AB	4.52	4.52	1.13	0.00	711.50	0.006	4.49	0.0	0.0	5.091	A
C-A	247.69	247.69	61.92	0.00			247.69				
A-B	3.01	3.01	0.75	0.00			3.01				
A-C	341.80	341.80	85.45	0.00			341.80				

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	529.51	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	355.82	0.000	0.00	0.0	0.0	0.000	A
C-AB	5.85	5.85	1.46	0.00	730.41	0.008	5.84	0.0	0.0	4.968	A
C-A	295.31	295.31	73.83	0.00			295.31				
A-B	3.60	3.60	0.90	0.00			3.60				
A-C	408.14	408.14	102.03	0.00			408.14				

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	507.87	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	326.44	0.000	0.00	0.0	0.0	0.000	A
C-AB	7.99	7.99	2.00	0.00	756.78	0.011	7.98	0.0	0.0	4.807	A
C-A	360.85	360.85	90.21	0.00			360.85				
A-B	4.40	4.40	1.10	0.00			4.40				
A-C	499.86	499.86	124.97	0.00			499.86				

Main results: (18:30-18:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	507.87	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	326.44	0.000	0.00	0.0	0.0	0.000	A
C-AB	7.99	7.99	2.00	0.00	756.79	0.011	7.99	0.0	0.0	4.809	A
C-A	360.85	360.85	90.21	0.00			360.85				
A-B	4.40	4.40	1.10	0.00			4.40				
A-C	499.86	499.86	124.97	0.00			499.86				

Main results: (18:45-19:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	529.51	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	355.82	0.000	0.00	0.0	0.0	0.000	A
C-AB	5.85	5.85	1.46	0.00	730.41	0.008	5.86	0.0	0.0	4.970	A
C-A	295.31	295.31	73.83	0.00			295.31				
A-B	3.60	3.60	0.90	0.00			3.60				
A-C	408.14	408.14	102.03	0.00			408.14				

Main results: (19:00-19:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	545.16	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	377.07	0.000	0.00	0.0	0.0	0.000	A
C-AB	4.53	4.53	1.13	0.00	711.51	0.006	4.54	0.0	0.0	5.093	A
C-A	247.68	247.68	61.92	0.00			247.68				
A-B	3.01	3.01	0.75	0.00			3.01				
A-C	341.80	341.80	85.45	0.00			341.80				

Do-Something - DS 2040, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Do-Something	✓	✓	D7,D8,D9,D10,D11,D12	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.11	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D11	DS 2040	AM	ONE HOUR	07:00	08:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	207.00	100.000
B - Proposed Site Access		ONE HOUR	✓	10.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	666.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	1.000	206.000
	B - Proposed Site Access	5.000	0.000	5.000
	C - Richmond Rd (NW)	665.000	1.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.00	1.00
	B - Proposed Site Access	0.50	0.00	0.50
	C - Richmond Rd (NW)	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.01	6.38	0.0	A	4.59	6.88
B-A	0.02	10.86	0.0	B	4.59	6.88
C-AB	0.00	3.99	0.0	A	2.08	3.13
C-A					609.05	913.57
A-B					0.92	1.38
A-C					189.03	283.54

Main Results for each time segment

Main results: (07:00-07:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	3.76	3.76	0.94	0.00	587.82	0.006	3.74	0.0	0.0	6.163	A
B-A	3.76	3.76	0.94	0.00	384.16	0.010	3.73	0.0	0.0	9.461	A
C-AB	1.49	1.49	0.37	0.00	902.90	0.002	1.48	0.0	0.0	3.993	A
C-A	499.91	499.91	124.98	0.00			499.91				
A-B	0.75	0.75	0.19	0.00			0.75				
A-C	155.09	155.09	38.77	0.00			155.09				

Main results: (07:15-07:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	4.49	4.49	1.12	0.00	580.11	0.008	4.49	0.0	0.0	6.253	A
B-A	4.49	4.49	1.12	0.00	364.45	0.012	4.48	0.0	0.0	10.000	B
C-AB	1.98	1.98	0.50	0.00	952.08	0.002	1.98	0.0	0.0	3.788	A
C-A	596.74	596.74	149.19	0.00			596.74				
A-B	0.90	0.90	0.22	0.00			0.90				
A-C	185.19	185.19	46.30	0.00			185.19				

Main results: (07:30-07:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	5.51	5.51	1.38	0.00	569.73	0.010	5.50	0.0	0.0	6.379	A
B-A	5.51	5.51	1.38	0.00	336.98	0.016	5.49	0.0	0.0	10.860	B
C-AB	2.78	2.78	0.70	0.00	1015.88	0.003	2.78	0.0	0.0	3.552	A
C-A	730.50	730.50	182.62	0.00			730.50				
A-B	1.10	1.10	0.28	0.00			1.10				
A-C	226.81	226.81	56.70	0.00			226.81				

Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	5.51	5.51	1.38	0.00	569.60	0.010	5.50	0.0	0.0	6.381	A
B-A	5.51	5.51	1.38	0.00	337.05	0.016	5.50	0.0	0.0	10.857	B
C-AB	2.78	2.78	0.70	0.00	1015.88	0.003	2.78	0.0	0.0	3.552	A
C-A	730.50	730.50	182.62	0.00			730.50				
A-B	1.10	1.10	0.28	0.00			1.10				
A-C	226.81	226.81	56.70	0.00			226.81				

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	4.49	4.49	1.12	0.00	579.85	0.008	4.50	0.0	0.0	6.258	A
B-A	4.49	4.49	1.12	0.00	364.60	0.012	4.51	0.0	0.0	9.999	A
C-AB	1.98	1.98	0.50	0.00	952.08	0.002	1.98	0.0	0.0	3.791	A
C-A	596.74	596.74	149.18	0.00			596.74				
A-B	0.90	0.90	0.22	0.00			0.90				
A-C	185.19	185.19	46.30	0.00			185.19				

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	3.76	3.76	0.94	0.00	587.37	0.006	3.77	0.0	0.0	6.167	A
B-A	3.76	3.76	0.94	0.00	384.44	0.010	3.77	0.0	0.0	9.458	A
C-AB	1.49	1.49	0.37	0.00	902.90	0.002	1.49	0.0	0.0	3.995	A
C-A	499.91	499.91	124.98	0.00			499.91				
A-B	0.75	0.75	0.19	0.00			0.75				
A-C	155.09	155.09	38.77	0.00			155.09				

Do-Something - DS 2040, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set (s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Do-Something	✓	✓	D7,D8,D9,D10,D11,D12	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1 - Richmond Rd Ph 2 Site Access	Richmond Rd Ph 2 Site Access	T-Junction	Two-way	0.04	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Richmond Rd (SE)		Major
B	Proposed Site Access		Minor
C	Richmond Rd (NW)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Richmond Rd (NW)	6.70			80.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Proposed Site Access	One lane plus flare	5.80	3.02	3.00	3.00	3.00		1.00	23	13

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	486.541	0.086	0.217	0.137	0.310
1	B-C	625.792	0.093	0.235	-	-
1	C-B	620.292	0.233	0.233	-	-

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	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D12	DS 2040	PM	ONE HOUR	17:45	19:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Richmond Rd (SE)		ONE HOUR	✓	487.00	100.000
B - Proposed Site Access		ONE HOUR	✓	4.00	100.000
C - Richmond Rd (NW)		ONE HOUR	✓	357.00	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.000	4.000	483.000
	B - Proposed Site Access	2.000	0.000	2.000
	C - Richmond Rd (NW)	353.000	4.000	0.000

Proportions

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0.00	0.01	0.99
	B - Proposed Site Access	0.50	0.00	0.50
	C - Richmond Rd (NW)	0.99	0.01	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	0	0	0
	B - Proposed Site Access	0	0	0
	C - Richmond Rd (NW)	0	0	0

Average PCU Per Veh

		To		
		A - Richmond Rd (SE)	B - Proposed Site Access	C - Richmond Rd (NW)
From	A - Richmond Rd (SE)	1.000	1.000	1.000
	B - Proposed Site Access	1.000	1.000	1.000
	C - Richmond Rd (NW)	1.000	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.00	0.00	0.0	A	0.00	0.00
B-A	0.00	0.00	0.0	A	0.00	0.00
C-AB	0.01	5.04	0.0	A	6.33	9.50
C-A					321.26	481.89
A-B					3.67	5.51
A-C					443.21	664.81

Main Results for each time segment

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	540.03	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	370.07	0.000	0.00	0.0	0.0	0.000	A
C-AB	4.64	4.64	1.16	0.00	718.17	0.006	4.61	0.0	0.0	5.044	A
C-A	264.13	264.13	66.03	0.00			264.13				
A-B	3.01	3.01	0.75	0.00			3.01				
A-C	363.63	363.63	90.91	0.00			363.63				

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	523.38	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	347.46	0.000	0.00	0.0	0.0	0.000	A
C-AB	6.04	6.04	1.51	0.00	738.43	0.008	6.03	0.0	0.0	4.914	A
C-A	314.90	314.90	78.72	0.00			314.90				
A-B	3.60	3.60	0.90	0.00			3.60				
A-C	434.21	434.21	108.55	0.00			434.21				

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	500.37	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	316.20	0.000	0.00	0.0	0.0	0.000	A
C-AB	8.31	8.31	2.08	0.00	766.66	0.011	8.29	0.0	0.0	4.746	A
C-A	384.76	384.76	96.19	0.00			384.76				
A-B	4.40	4.40	1.10	0.00			4.40				
A-C	531.79	531.79	132.95	0.00			531.79				

Main results: (18:30-18:45)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	500.37	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	316.20	0.000	0.00	0.0	0.0	0.000	A
C-AB	8.31	8.31	2.08	0.00	766.67	0.011	8.31	0.0	0.0	4.746	A
C-A	384.75	384.75	96.19	0.00			384.75				
A-B	4.40	4.40	1.10	0.00			4.40				
A-C	531.79	531.79	132.95	0.00			531.79				

Main results: (18:45-19:00)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	523.38	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	347.45	0.000	0.00	0.0	0.0	0.000	A
C-AB	6.04	6.04	1.51	0.00	738.44	0.008	6.06	0.0	0.0	4.917	A
C-A	314.89	314.89	78.72	0.00			314.89				
A-B	3.60	3.60	0.90	0.00			3.60				
A-C	434.21	434.21	108.55	0.00			434.21				

Main results: (19:00-19:15)

Stream	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	0.00	0.00	0.00	0.00	540.03	0.000	0.00	0.0	0.0	0.000	A
B-A	0.00	0.00	0.00	0.00	370.06	0.000	0.00	0.0	0.0	0.000	A
C-AB	4.65	4.65	1.16	0.00	718.18	0.006	4.66	0.0	0.0	5.045	A
C-A	264.12	264.12	66.03	0.00			264.12				
A-B	3.01	3.01	0.75	0.00			3.01				
A-C	363.63	363.63	90.91	0.00			363.63				

Appendix D: GoCAR Letter of Support

Malkey Limited C/O COONEY CAREY CONSULTING LIMITED,
THE COURTYARD,
CARMANHALL ROAD SANDYFORD,
DUBLIN 18 IRELAND,
SANDYFORD, DUBLIN,
IRELAND

19/1/2023

To Whom It May Concern,

This is a letter to confirm that GoCar will look to provide a car sharing service at the proposed LRD at Leydens Cash and Carry site at No. 158A Richmond Road, Dublin 3. The development will comprise of 133 No. residential units (65 No. one bed units and 68 No. two bed units) with 3 No. car sharing spaces for resident use only. GoCar representatives have discussed the project with representatives of DPFL Consulting Engineers who are the engineers for the project and are excited to provide a car sharing service at the proposed location. It is the intention for GoCar to supply at least one Electric Vehicle if possible, the remaining two will be low-emissions petrol vehicles.

GoCar is Ireland's leading car sharing service with over 80,000 members and over 880 cars and vans on fleet.
Car sharing is a sustainable community service. Each GoCar which is placed in a community has the potential to replace the journeys of up to 15 private vehicles. With the addition of Electric Vehicles and Vans to the GoCar fleet it gives members the ability to choose from different vehicles depending on their journey needs.

The Department of Housing's Design Standards for New Apartments - Guidelines for Planning Authorities 2020 outline: "For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure... provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles."

By allowing multiple people to use the same vehicle at different times, car sharing reduces car ownership, car dependency, congestion, noise, and air pollution. It frees up land which would otherwise be used for additional parking spaces. Most GoCar users only use a car when necessary and walk and use public transport more often than car owners.

By having GoCar car sharing vehicles in a development such as this, the residents therein will have access to pay-as-you-go driving, near their homes, which will increase usership of the service and in-turn decrease the requirement for car ownership.

I trust that this information is satisfactory. For any queries, please do not hesitate to contact me.

Rob Montgomery
Revenue and Growth Manager
GoCar Carsharing Ltd
Mobile: 086 609 7096
E: robert.montgomery@gocar.ie

Appendix E: DCC Letter of Consent

Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

Environment and Transportation Department,
Civic Offices, Wood Quay, Dublin 8

Roinn Comhshaoil agus Iompair, Oifigí na Cathrach
An Ché Adhmaid, Baile Átha Cliath 8
T.(01) 2222046 E: transportplanning@dublincity.ie

Malkey Limited
c/o Cooney Carey Consulting Limited,
The Courtyard,
Carmanhall road
Sandyford
Dublin 18

20 February 2023

Re: Letter of Consent to Large Scale Residential Development Application

Site: Lands at 158A, Richmond Road, Drumcondra, Dublin 3.

To Whom It May Concern,

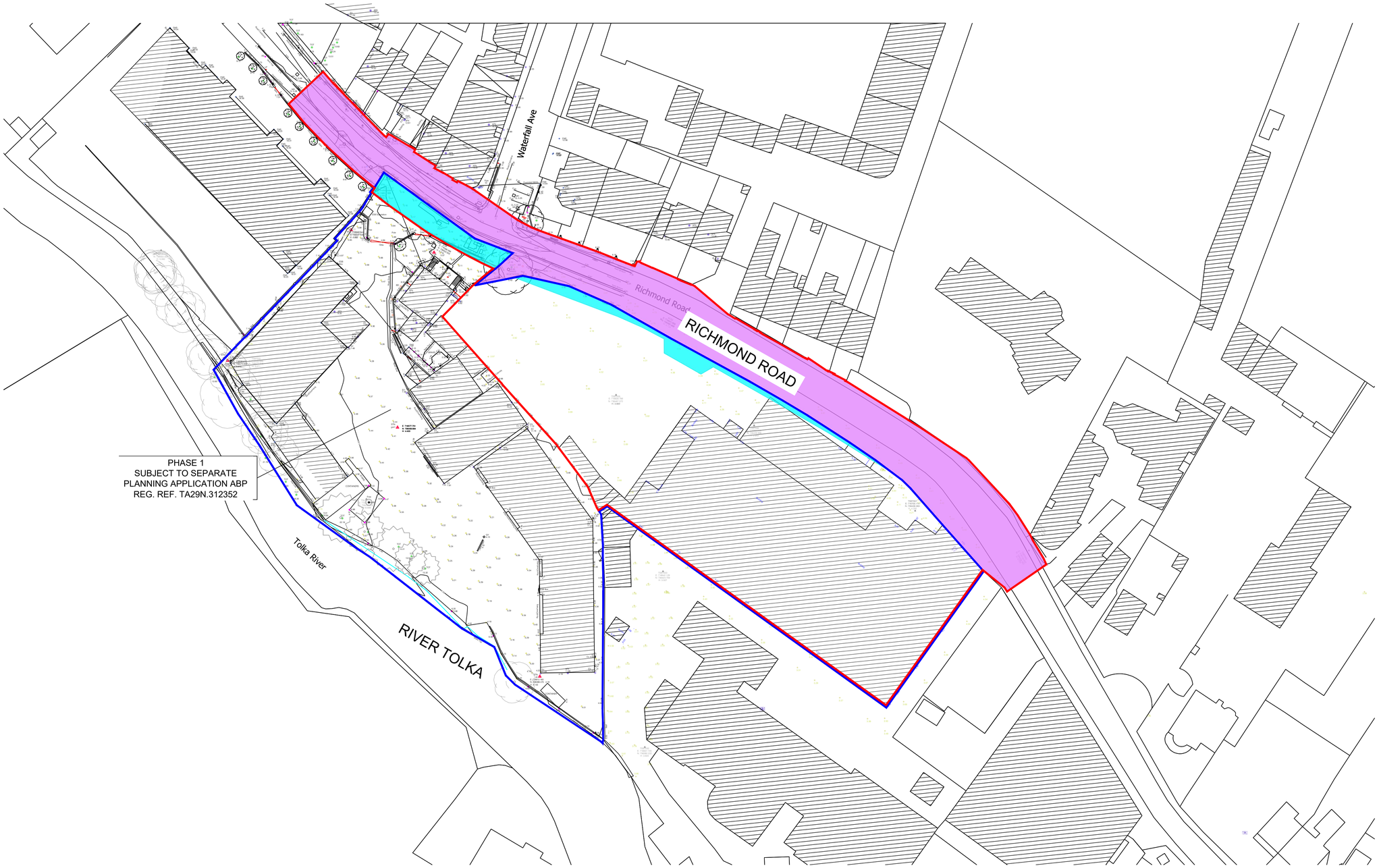
I refer to the above intended planning application, the site of which includes lands in the control of Dublin City Council, specifically 0.2542 ha. of lands located within the footpath, verge and roadway on Richmond Road as marked in purple and as indicated hatched on attached RKD Architects drawing 22001-RKD-ZZ-ZZ-DR-A-1004.

I wish to confirm that the City Council has no objection to the inclusion of these lands for the purpose of making a planning application. This is without prejudice to the outcome of the planning application process.

In the event that planning permission is granted and the development requires acquisition of Dublin City Council property including air rights, disposal will be subject to terms and conditions agreed with the Chief Valuer's Office. Any disposal of Dublin City Council property is also subject to Council approval under Section 183 of the Local Government Act 2001 (as amended).

Yours faithfully,

Dermot Collins
Executive Manager



1 1004_ EXISTING SITE PLAN _ LAND OWNERSHIP

1 : 500

All dimensions to be checked on site. Figured dimensions take preference over scaled dimensions. Any errors or descrepancies to be reported to the Architects.This drawing may not be edited or modified by the recipient.

A1

Notes:
ALL LEVELS ARE SHOWN TO THE IRISH TRANSVERSE MERCATOR (ITM) AND ARE DISPLAYED IN METRES (m)

ALL LEVELS SHOWN RELATES TO THE MALIN HEAD DATUM

ALL DIMENSIONS SHOWN ARE IN MILLIMETRES

LEGEND

- SITE APPLICATION AREA
- LAND UNDER THE OWNERSHIP OF THE APPLICANT

SITE DEVELOPMENT AREA = 0.55 ha

- LAND TO BE TAKEN-IN-CHARGE BY DCC (357.8M2)
- ROADWORKS ON DCC LANDS (2542.2M2)

N

Rev.	Date	Description
P1	13/01/23	ISSUED FOR PLANNING

MALKEY LIMITED

STATUS: PLANNING

PROJECT: 158A RICHMOND ROAD

PROJECT ADDRESS: 158A RICHMOND ROAD DUBLIN 3

DWG TITLE: EXISTING SITE PLAN - LAND OWNERSHIP

DWG NO.: 22001-RKD-ZZ-00-DR-A-1004

REV.	STATUS	PROJECT NO.	22001
P1	A3	SCALE	1 : 500
DATE JAN 2023	DRN JB	CHK HB	

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