TRANSPORTATION

Project

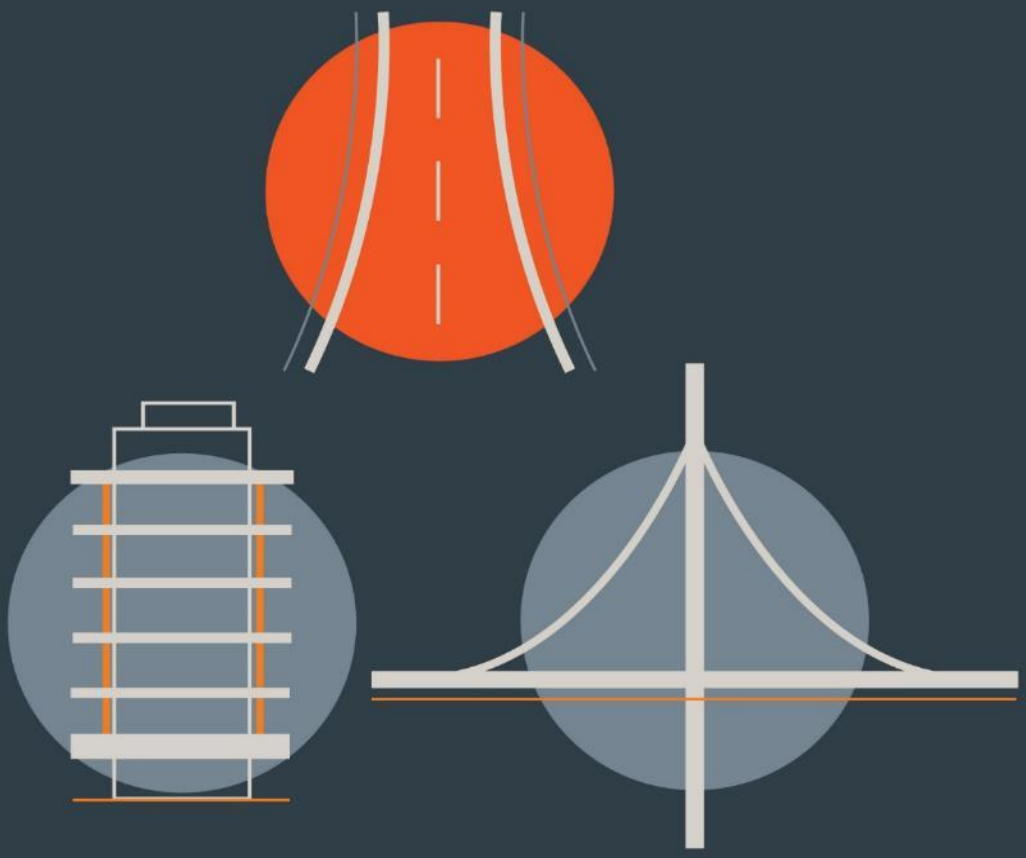
The Ted, Dun Laoghaire, Build To Rent, Tedcastles, Dun Laoghaire, Co. Dublin

Report Title

Traffic and Transport Assessment Report

Client

Ted Living Limited



DBFL CONSULTING ENGINEERS

Document Control

Job Title: Residential & Mixed-Use Development at Tedcastles, Dún Laoghaire, Co. Dublin

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Author: Enrique Marenco Jimenez.

Reviewed by: Kevin Burke, Nick Fenner.

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DBFL Consulting Engineers

Dublin Office
Ormond House
Upper Ormond Quay
Dublin 7

Tel 01 4004000
Email info@dbfl.ie
Web www.dbfl.ie

Waterford Office
Suite 8b The Atrium
Maritana Gate,
Canada Street, Waterford

Tel 051 309500
Email info@dbfl.ie
Web www.dbfl.ie

Cork Office
14 South Mall,
Cork

Tel 021 2024538
Email info@dbfl.ie
Web www.dbfl.ie

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1.0 INTRODUCTION

1.1 BACKGROUND

1.1.1 DBFL Consulting Engineers (DBFL) have been commissioned by Ted Living Limited to prepare a Traffic and Transport Assessment (TTA) for a proposed residential and mixed-use development on a brownfield site located on lands at the former TedCastles site, DunLeary House, Old Dunleary Road, Cumberland Street and Dun Leary Hill, in Dún Laoghaire, Co. Dublin.

1.1.2 The proposed development at the former Ted Castles site and Dun Leary House (a proposed Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary Hill, Dun Laoghaire will consist of:

1.1.3 The provision of 146 no. apartment units (Build to Rent) and all associated ancillary facilities (including residential amenities) in a building with an overall height ranging from 6 storeys (with set backs from 4th & 5th storey) addressing Dun Leary Hill, to 5 and 8 storeys (with set back from 7th storey) addressing Old Dun Leary Road and 6-7 storeys (with set backs at 8th storey) addressing Cumberland Street. The proposal provides for private and communal open spaces in the form of balconies and terraces throughout;

- A retail unit (c.290m^2) at ground floor level addressing Old Dun Leary Road and Cumberland Street;

- The refurbishment, partial removal and adaptation of a 4 storey building on site known as "Dun Leary House" (a proposed Protected Structure) to provide co-working office suites (c.247m^2) at Levels 01,02 and 03. The works will include partial removal of original walls and floors, removal of non original extensions to Dun Leary House, repointing and repair of brickwork and granite fabric, reinstatement of timber sash windows, removal of existing roof, alterations and reinstatement of internal floor layouts, reinstatement of entrance point on Dun Leary Hill, removal of non-original level 00 and linking the existing building to the new development from level 00 to level 03 with the construction of 3 new floors of development (with set back at roof level) above the existing building. It is proposed to repair, reinstate and improve the existing boundary treatment to Dun Leary House;

- Provision of 52 no. car parking spaces in total - 44 no. car parking spaces provided at level 00. At Cumberland Street 11 no. existing on street car parking spaces will be removed and 8 no. on street car parking spaces provided. Provision of 277 bicycle parking spaces (94 no. cycle parking spaces accommodated in bicycle stands and 183 no. long term bicycle parking spaces within a secure storage area) and 4 no. motorbike parking spaces, all at Level 00. A new vehicular entrance/cycle path (off the Old Dun Leary Road), ancillary plant areas, ESB substation and storage areas;
- Extensive hard and soft landscaping throughout, green roof, public lighting, signage, boundary treatments and public realm improvements;
- The demolition of the existing open fronted shed on site and all associated ancillary site services and site development works.

1.1.4 The extent of the site layout is detailed in the attached Architectural Design Statement and drawings prepared by MOLA Architecture.

1.2 SCOPE

1.2.1 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.

1.2.2 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.

1.2.3 This TTA has been prepared in reference to the requirements of the National Roads Authority "Traffic and Transportation Assessment Guidelines". Reference has also been made to the "Dún Laoghaire Rathdown County Development Plan 2016-2022".

1.3 METHODOLOGY

1.3.1 Our 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) National Road Authority;
- *'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);
- *Dún Laoghaire Rathdown County Development Plan 2016-2022; and*
- *Sustainable Urban Housing: Design Standards for New Apartments 2020.*

1.3.2 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**: Junction traffic counts were undertaken and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed residential development.
- **Trip Generation**: A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed 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 catchments area of the

development, a distribution exercise has been undertaken to assign site generated vehicle trips across the local road network.

- **Network Impact Assessment:** A detailed assessment has been undertaken that quantifies the level of impact on the local road network as a result of the proposed developments generated trips. This assessment concludes whether any junctions on the network are required for further analysis.

1.4 REPORT STRUCTURE

1.4.1 The structure of the report responds to the various stages of this assessment including the key tasks summarised below.

1.4.2 **Section 2** of this report describes the existing conditions at the proposed development location and surrounding area.

1.4.3 The relevant transportation policies that influence the design and appraisal of the subject development proposals are highlighted within **Section 3.**

1.4.4 **Section 4** provides a summary of the development's proposals, describing the nature of the development, future transport proposals and their impacts on the development.

1.4.5 **Section 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.

1.4.6 The potential traffic impact of the proposals assessed for the 2023 Opening Year, 2028 Interim Year and the 2038 Horizon Year are also summarised within **Section 5**.

1.4.7 An overview of the Construction Phase is outlined in **Section 6**.

1.4.8 The main conclusions and recommendations derived from the analysis are summarised in **Section 7**.

2.0 RECEIVING ENVIRONMENT

2.1 LOCATION

2.1.1 The proposed development site is located in Dún Laoghaire in County Dublin. The general location of the site is shown in **Figure 2.1** below. The site is located within close proximity to Dun Laoghaire Town Centre and to Dun Laoghaire Harbour.

2.1.2 The development is located within an area that offers excellent accessibility in terms of public transport travel including rail and bus services and high-quality cycle provision as a result of the recent implementation of the Coastal Mobility Route (CMR).

Figure 2.1: Indicative Site Location (Source : www.osi.ie)

2.1.3 The development site is fronted to the north by the N31, Old Dunleary Road. This road provides links to the N31 and N11 National Roads.

2.1.4 **Figure 2.2** indicatively shows the extent of the subject site boundary and neighbouring lands.

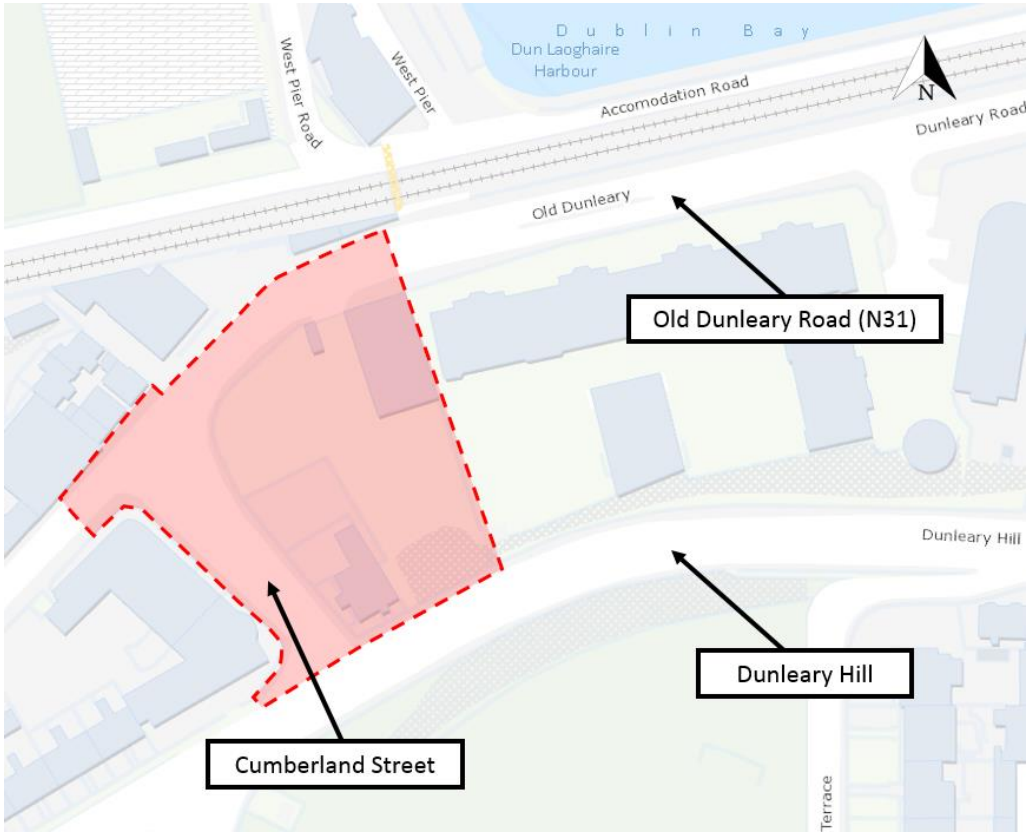


Figure 2.2: Site Boundary (Source: www.osi.ie)

2.2 LAND USE

2.2.1 The development site is an existing brownfield site which is currently occupied by a warehouse, a hardstanding, and a building. The Dun Leary House (a proposed Protected Structure) is located within the southwestern part of the site and its vehicular access is currently located to the north west of the site fronting onto the Old Dunleary Road.

2.2.2 The land is zoned within the Dun Laoghaire Rathdown Development Plan 2016 – 2022 under Zoning Objective NC 'to protect, provide for and-or improve mixed-use neighbourhood centre facilities', which may be seen in **Figure 2.3**.

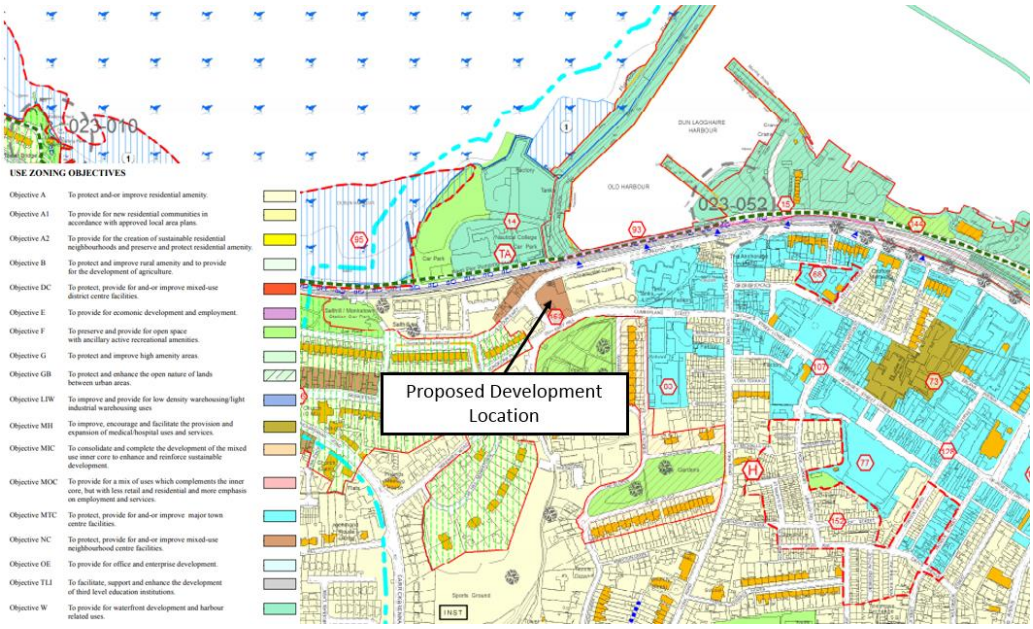


Figure 2.3: Zoning Map Extract from DLRCC Development Plan 2016-2022

2.3 EXISTING TRANSPORTATION INFRASTRUCTURE

Road Network

2.3.1 The proposed development site is bounded to the north by the N31 Old Dunleary Road and to the west and south by Cumberland Street.

2.3.2 Travelling in an eastbound direction along the N31 National Road, the road continues into Dun Laoghaire Town and Harbour. Travelling westbound on the N31 leads towards Blackrock, Booterstown and the N11 National Road, providing further links to the M50 motorway.

2.3.3 The N31 is a one-way single carriageway road in the vicinity of the proposed development site. Due to the recent implementation of the Coastal Mobility Route in 2020 (**Figure 2.4**), vehicular movement is restricted to a westbound lane from Crofton Road in Dun Laoghaire to Newtown Avenue in Monkstown. Near the site, the N31 has a 200m long eastbound lane to give access to the petrol station and the West Pier Campus.

2.3.4 Cumberland Street, as noted, bounds the development site on the western and southern side. This road, also referenced as the R119, currently has a wide road carriageway, approximately 9m in width. The road is a two-way single lane road and operates with a posted speed limit of 50kph.

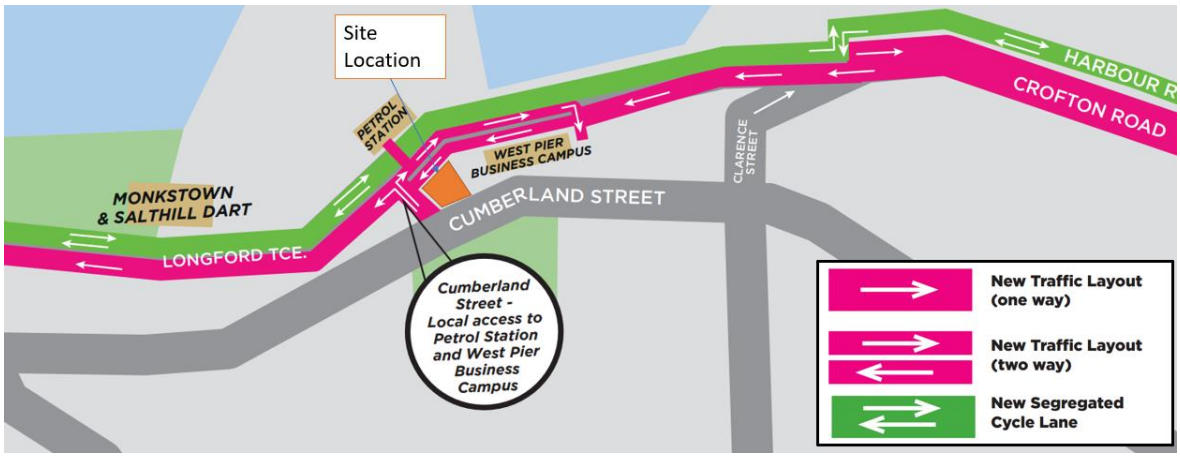


Figure 2.4: Coastal Mobility Route – Traffic Interventions (Source: DLRCC)

Existing Pedestrian Facilities

2.3.5 Footpath facilities are provided along the N31 Old Dunleary Road and Cumberland Street in the vicinity of the subject site. These footpaths are narrow in places. However, with the implementation of the Coastal Mobility Route, traffic has decreased considerably, and the environment is less dominated by the car.

2.3.6 There are no crossing facilities currently in place for pedestrians at the N31 Old Dunleary Road/Cumberland Street junction. There is a priority crossing located along Cumberland Street at the junction with the R119. This crossing is wide, approximately 20m.

2.3.7 The road network in the vicinity of the development, offers good public lighting for pedestrians and cyclists.

Existing Cyclist Facilities

2.3.8 The newly established Coastal Mobility Route follows the N31 Old Dunleary Road. Immediately adjacent to this route, in Blackrock Village, several cycle improvements took place in summer 2020, including the reallocation of road space to a cycle track. The scheme now provides users with a high-quality cycle track linking with different towns in the vicinity (Dun Laoghaire, Monkstown, Glasthule, Dalkey) and with Merrion Road towards Dublin City Centre.

2.3.9 In addition to the new cycle track and as a result of Covid-19 funding, new cycle infrastructure was also installed, including signal-controlled junctions with

advanced cycle stages and more cycle parking across the Dun Laoghaire wider area.

2.3.10 A dockless bike sharing scheme provided by Bleeperbike are located within the vicinity of the site. As well as catering for local trips, the scheme provides the possibility of linked trips with public transport to destinations across the wider Dublin Area.

Figure 2.5: Existing Cycle Facilities (Source: GDA Cycle Network Plan)

Public Transport

2.3.11 The development site is located approximately 300m from the entrance to the Salthill & Monkstown train station and is ideally positioned to avail of excellent transport services in the form of DART and commuter train services. The services run between Greystones/Bray in the south and Malahide/Howth Junction in the north. Connections to commuter rail services to Dundalk, Maynooth and Hazelhatch can be made at a multitude of stations including Grand Canal Dock, Pearse, Connolly and Tara.

2.3.12 The Intercity to Rosslare Europort commuter train provides a service from Wexford to Dublin City Centre and stops at the Dun Laoghaire Train Station, situate approximately 900m east of the development site.

2.3.13 The frequency of DART services was increased to every 10 minutes between 06:50 AM and 8 PM in 2018.

2.3.14 The site is also excellently located to avail of a multitude of existing Dublin Bus and Go-Ahead Bus services including the 7 & 7A which stop approximately 25m & 100m from the site on Cumberland Street and De Vesci Terrace respectively. The site is located approximately 250m west of York Road. This is a busy corridor served by the 46A as well as the 63, 75 and 111. Details of existing bus services are provided in Table 2.1 below. These are illustrated in the map in **Figure 2.6**.

Route No.		Direction	Mon - Fri	Sat	Sun
			Frequency (No. services)		
Dublin Bus	7	From Mountjoy Sq. to Brides Glen Luas	38	34	26
		From Brides Glen Luas to Mountjoy Sq.	36	33	23
	7a	From Mountjoy Sq. to Loughlinstown	36	34	26
		From Loughlinstown to Mountjoy Sq.	36	34	24
	46a	From Phoenix Park to Dún Laoghaire	10 mins	15 mins	15 mins
		From Dún Laoghaire to Phoenix Park	10 mins	15 mins	15 mins
Go Ahead Bus	59	From Killiney to Dún Laoghaire Station	17	17	16
		From Dún Laoghaire Station to Killiney	17	17	16
	63	From Dún Laoghaire Station to Kilternan Village	35	34	30
		From Kilternan Village to Dún Laoghaire Station	34	34	30
	75	From Tallaght to Dún Laoghaire	37	34	30
		From Dún Laoghaire to Tallaght	38	34	29
	111	From Dalkey to Brides Glen	19	19	15
		From Brides Glen to Dalkey	18	18	15

Table 2.1: Bus Services (Frequency - Minutes)

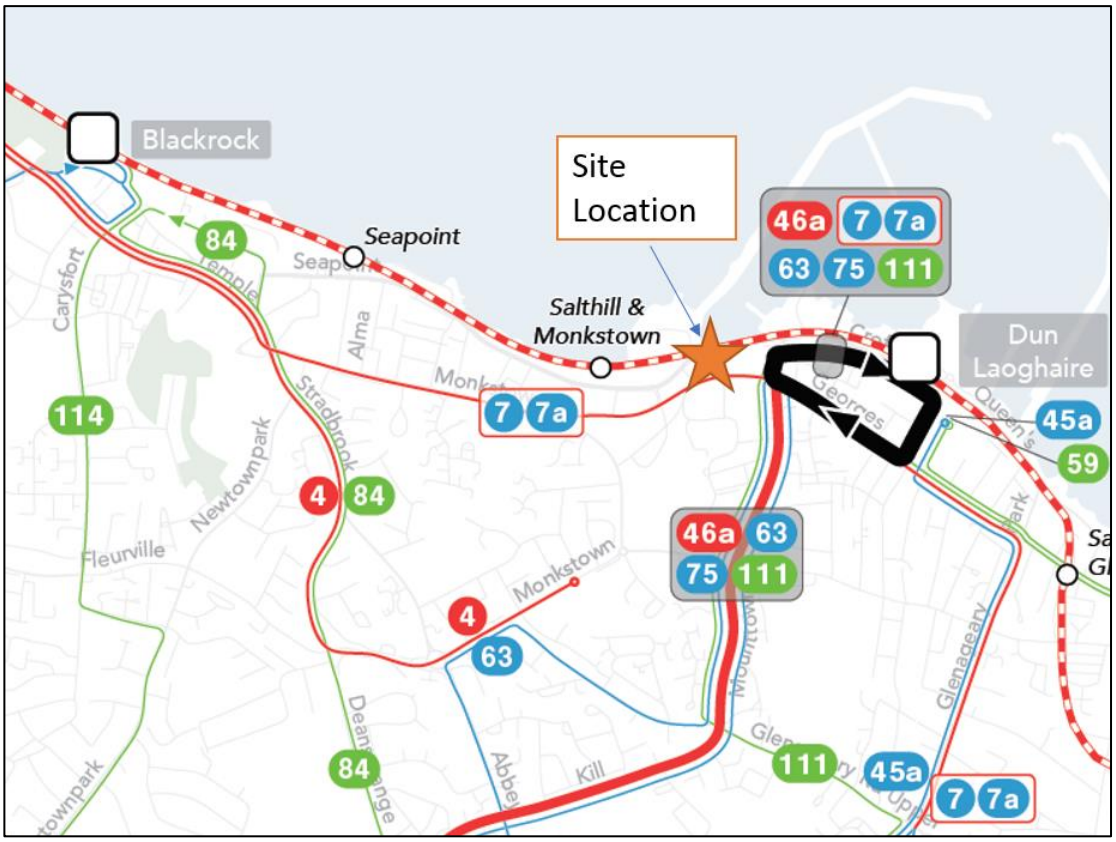


Figure 2.6: Map of Bus Services – (Source: BusConnects)

2.3.15 Under the Network Redesign element of Bus Connects, weekday midday frequencies for route number 7 will be as frequent as every 10 - 15 minutes; the E2 branch of the E spine and route numbers 222 and 225 will also benefit from the same bus frequency. The S8 route, linking the site to Sandyford and Tallaght, will have a frequency of a bus coming every 20 – 25 minutes. Other routes serving the site, such as the 211, 221 and 229 will operate with a half hourly or hourly frequency.

2.3.16 The existing network's transport linkages may be seen in full in **Appendix C** in this report.

2.4 LOCAL AMENITIES

2.4.1 The proposed development site is ideally located to make use of local amenities in the neighbouring area. There are a number of schools, within 2km of the subject site including St. Joseph's National School, Monkstown Educate Together National School, Christian Brothers College, Holy Family School and Dominican Primary School.

2.4.2 The subject site is located within close proximity to Dun Laoghaire Town Centre which provides good access to a number of amenities including retail and food stores, restaurants, bars, shopping centres as well as leisure facilities including cinema, library, museums etc. The Dun Laoghaire Harbour is also situated close to the development site.

2.5 PROPOSED TRANSPORTATION INFRASTRUCTURE

Cycle Network Proposals

2.5.1 The subject site lies within the Greater Dublin Area Cycle Network Plan Zone 7 under "*Dublin South Central"* as outlined within the Greater Dublin Area Cycle Network Plan (2013). The sector covers "*UCD Belfield Campus, Mount Merrion and the coastal strip which forms the boundary with Dublin South East sector in the east, to the Dun Laoghaire-Rathdown and South Dublin County boundary to the west and to the Dublin Mountains to the south".*

2.5.2 **Figure 2.7** below indicates the proposed cycle routes in the vicinity of the site in accordance with the National Transport Authority's *"Greater Dublin Area Cycle Network Plan".*

2.5.3 Some of the routes shown in **Figure 2.7** have already put in place. **Route 13E** corresponds with the aforementioned Coastal Mobility Route. **Primary Route 13** is currently a cycle lane shared with bus along Merrion Road. The enhancement of this route will provide a safe and rapid link with Dublin City Centre. **Primary Route S05** will link with different towns and villages across South Dublin, including Dún Laoghaire, Monkstown, Stillorgan and Dundrum. Currently this route is complete only in few sections.

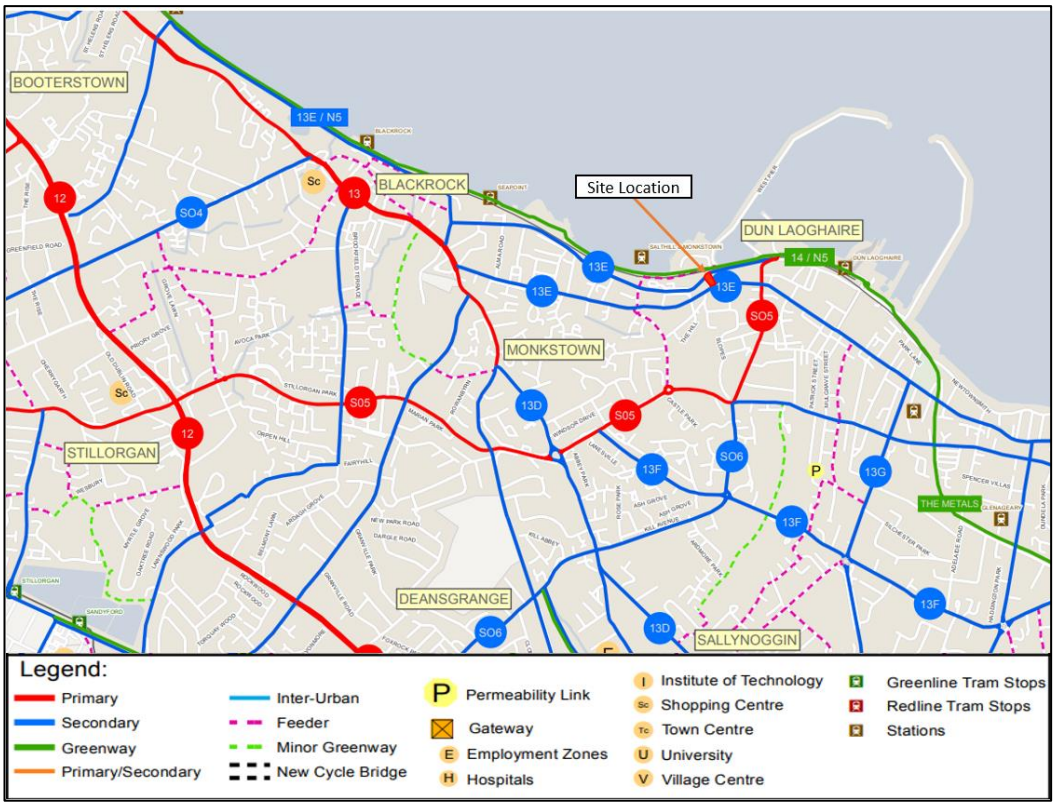


Figure 2.7: Proposed Cycle Routes (Source: GDA Cycle Network Map**)**

Public Transport Proposals

2.5.4 Currently, Iarnród Éireann is undertaking the DART+ Programme, which includes the project DART+ Coastal South. This extends from Greystones to Dublin Conolly and includes an upgrade of the infrastructure to improve capacity. At Conolly, the scheme will link with DART+ Coastal North, which includes the expansion from Malahide to Drogheda, and DART+ West towards Maynooth and M3 Parkway. These proposals are illustrated in the map in **Figure 2.8**.

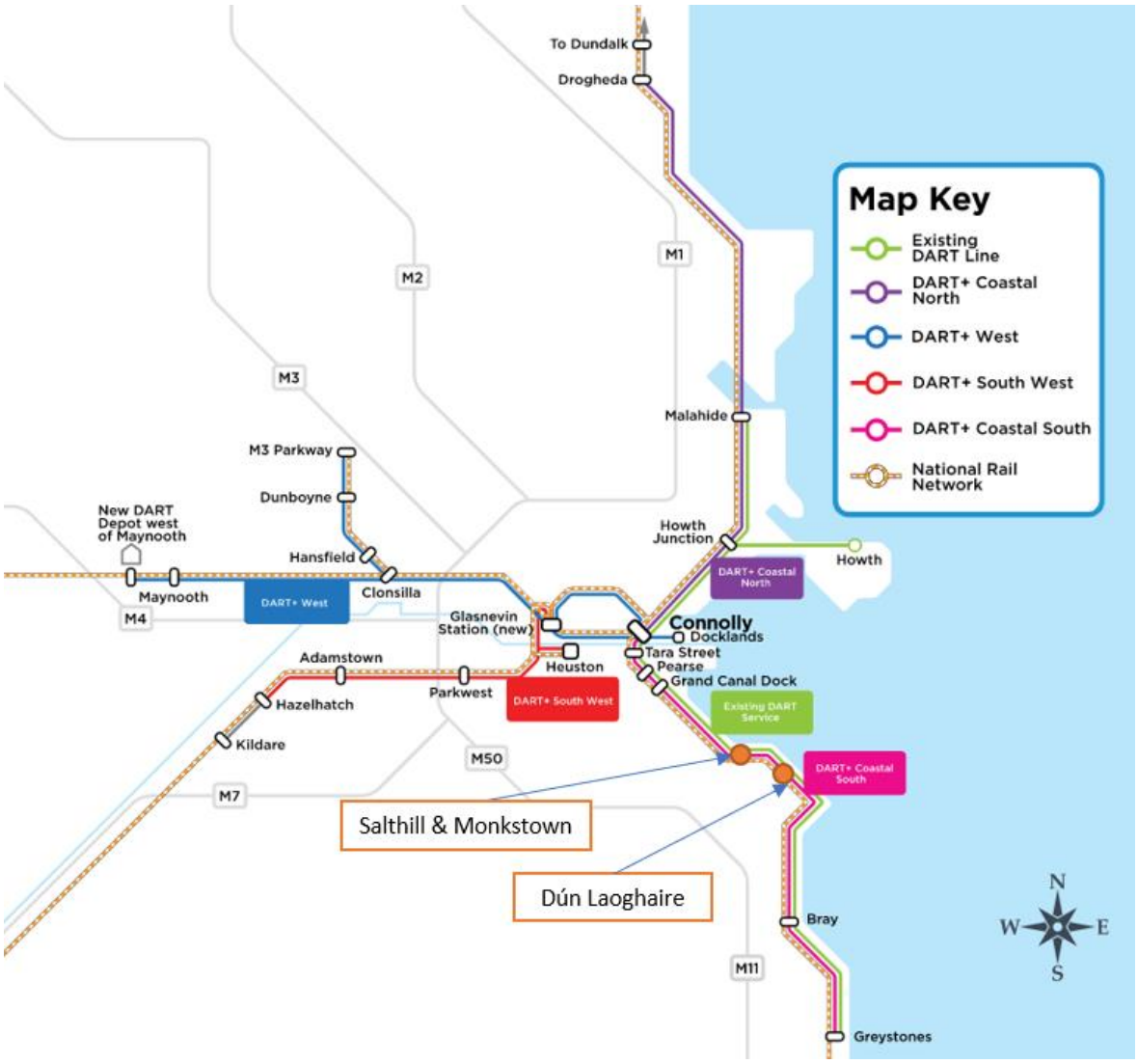


Figure 2.8: Proposed DART+ Network (Source: DART+)

2.5.5 The Dublin Bus routes which act to service this area are subject to changes with the NTA's BusConnects proposals. Under the Network Redesign element of Bus Connects, weekday midday frequencies for the **E2** branch of the E spine and the **B3** branch of the B spine will be 10 and 15 minutes respectively, and route numbers **L22** and **L25** will also benefit from a 15-minute frequency.

2.5.6 The **S8** route, linking the site to Sandyford and Citywest, will have a frequency of 15 minutes at peak hours and 20 – 30 minutes at off-peak hours. Other local routes serving the site, such as the **L22**, **L11** and **L27** will operate with a 15, 20 and 30- minute frequency respectively.

Figure 2.9: Proposed BusConnects Routes (Source: BusConnects)

2.5.7 Whilst the above enhancements to bus services are being proposed as part of the network redesign element of Bus Connects, the Core Bus Corridors strand of the initiative will provide for enhanced frequency and reliability of bus services along the Blackrock to Merrion Core Bus Corridor. This will have a pronounced positive impact on services such as the future bus route **B3** which serves the site directly and proposes to provide services every 15 minutes.

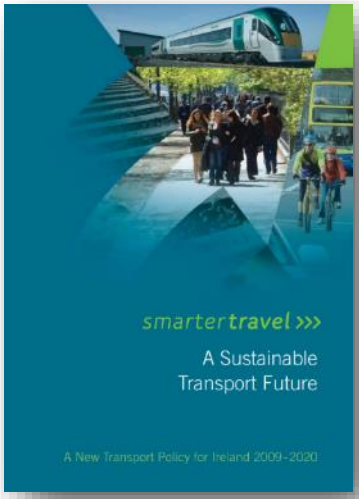
2.5.8 This redesign also includes for a number of services which run to Dun Laoghaire as a primary destination, with BusConnects maps showing Dun Laoghaire train station as a likely destination for bus services. This is conveniently located close to the proposed site, approximately 900m east of the site.

2.5.9 All of the local network's proposed transport linkages may be seen in full in **Appendix C** of this report.

3.0 POLICY FRAMEWORK

3.1 DEVELOPMENT POLICY

Smarter Travel – A Sustainable Transport Future



3.1.1 Smarter Travel was published in 2009 by the Department of Transport which represents the national policy documentation outlining a broad vision for the future and establishes objectives and targets for transport. The document examines past trends in population and economic growth and transport concluding that these trends are unsustainable into the future.

3.1.2 In order to address the unsustainable nature of current travel behaviour, Smarter Travel sets down a number of key goals and targets for 2020 - including:

- Total vehicle km travelled by car will not significantly increase;
- Work-related commuting by car will be reduced from 65% to 45%;
- 10% of all trips will be by cycling;
- The efficiency of the transport system will be significantly improved.

3.1.3 The document recognises that these are ambitious targets, and outlines a suite of 49 actions required to achieve these targets – summarised under the following four main headings:

- Actions aimed at reducing distances travelled by car and the use of fiscal measures to discourage use of the car;
- Actions aimed at ensuring that alternatives to the car are more widely available;
- Actions aimed at improving fuel efficiency of motorised travel; and
- Actions aimed at strengthening institutional arrangements to deliver the targets.

Traffic and Transportation Management Policy

*"**TM 1:** To manage traffic in urban areas and prioritise the movement of pedestrians, cyclists and public transport particularly at key junctions."*

*"**TM 2:** To manage traffic so as to minimise the impact of queues on the road network with priority as follows: motorways (highest), national roads, regional roads, local roads, entrances to developments (lowest)."*

*"**TM 3:** To effectively manage the flow of through traffic along the strategic road network and maximise the efficient use of existing resources."*

*"**TM 4:** To minimise the impact of new developments on the county road and street network by implementing mobility management initiatives."*

*"**TM 5:** To support the use of Intelligent Transport Systems (ITS) technology for pedestrian, cyclist and vehicular traffic, public transport and parking management in all new developments."*

*"**TM 6:** To require all major developments to submit Traffic Impact Assessments and Mobility Management Plans."*

Transport Strategy for the Greater Dublin Area 2016 - 2035

3.1.4 The Transport Strategy for the Greater Dublin Area 2016-2035 as compiled by the National Transport Authority sets out the Strategic Transport Plan for the Greater Dublin Area for the period up to 2035. In order to address the unsustainable nature of current travel behaviour, Smarter Travel sets down a number of key goals and targets for 2020 - including:

- Total vehicle km travelled by car will not significantly increase;
- Work-related commuting by car will be reduced from 65% to 45%;
- 10% of all trips will be by cycling;
- The efficiency of the transport system will be significantly improved.

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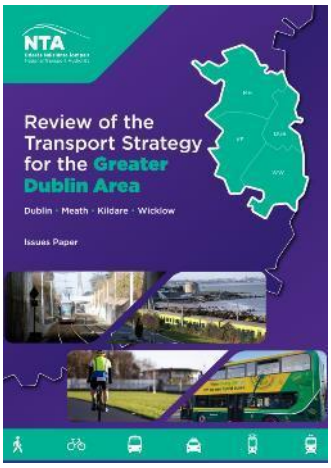
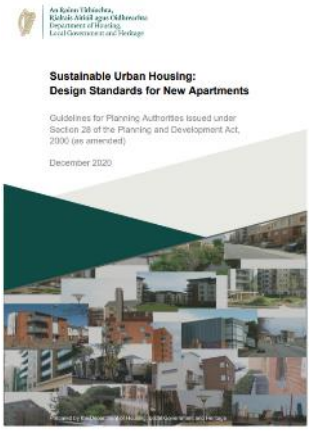
- Actions aimed at ensuring that alternatives to the car are more widely available;
- Actions aimed at improving fuel efficiency of motorised travel; and
- Actions aimed at strengthening institutional arrangements to deliver the targets.

3.1.6 It is noted that the GDA strategy is under review, with a draft report expected in Quarter 3 2021. The Review of the Transport Strategy for the GDA will aim to adapt to a post-Covid life in the GDA, deliver a sustainable transport network which meets climate change requirements and looking to the future when it comes to transport technologies and transport options.



SUSTAINABLE URBAN HOUSING: DESIGN STANDARDS FOR NEW APARTMENTS – DECEMBER 2020

3.1.7 This guideline document was produced by the Department of Housing, Planning and Local Government and was updated with the latest version in December 2020. The purpose of this document is to set out standards for apartment development, mainly in response to circumstances that had arisen whereby some local authority standards were at odds with national guidance.



3.1.8 With the demand for housing increasing, this means that there is a need for an absolute minimum of 275,000 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.

3.1.9 These Guidelines apply to all housing developments that include apartments that may be made available for sale, whether for owner occupation or for individual lease. They also apply to housing developments that include apartments that are built specifically for rental purposes, whether as 'build to rent' or as 'shared accommodation'.

3.1.10 Cycling provides a flexible, efficient and attractive transport option for urban living and these guidelines require that this transport mode is fully integrated into the design and operation of all new apartment development schemes.

3.1.11 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. 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 and cycle parking and secure storage.

Dun Laoghaire Rathdown County Development Plan 2016-2022

3.1.12 The Dún Laoghaire-Rathdown County Council Development Plan (2016-2022) sets out the authority's policies and objectives for the development of the County for the period 2016 to 2022. The Plan seeks to develop and improve in a sustainable manner the social, economic, cultural and environmental assets of the county. In the context of the subject development site and the proposed residential scheme a number of the most relevant policies include;

Sustainable Communities Strategy

*"**Policy RES15: Urban Villages** – In new development growth nodes and in major areas in need of renewal/ regeneration it is Council policy to implement a strategy for residential development based on a concept of sustainable urban villages."*

*"**Policy ST3: Development of Sustainable Travel and Transportation Policies** – It is Council policy to promote, facilitate and cooperate with other transport agencies in securing the implementation of the transportation strategy for the County and the wider Dublin Region as set out in Department of Transport's 'Smarter Travel, A Sustainable Transport Future 2009-2020' and the NTA's 'Greater Dublin Area Draft Transport Strategy 2016-2035'."*

*"**Policy ST11: Public Transport Improvements** – It is Council policy to secure improvements to the public transport system as set out in 'Smarter Travel, A Sustainable Transport Future 2009-2020' and the NTA's 'Greater Dublin Area Draft Transport Strategy 2016-2035' by optimising existing or proposed transport corridors and interchanges and by developing new Park and Ride and taxi rank facilities at appropriate locations."*

*"**Policy ST12: Quality Bus Network** – It is Council policy to co-operate with the NTA and other relevant agencies to facilitate the implementation of the Bus Network measures as set out in the NTA's 'Greater Dublin Area Draft Transport 2016-2035' and to extend the bus network to other areas where appropriate subject to design, public consultation, approval, finance and resources."*

*"**Policy ST25: Roads** – It is Council policy, in conjunction and co-operation with other transport bodies and authorities such as TII and the NTA, to secure improvements to the County road network – including improved pedestrian and cycle facilities."*

Green County Strategy

*"**Policy OSR8: Greenways Network** – It is Council policy to develop a comprehensive network of County Greenways linking parks and public open spaces and to liaise with adjoining local authorities and other stakeholders to achieve and improve wider external linkages and corridors."*

Specific Local Objectives

***Objective 93 -** To promote the development of the S2S Promenade and Cycleway as a component part of the National East Coast Trail Cycle Route. It should be noted that these coastal routes will be subject to a feasibility study, including an assessment of the route options. Any development proposals shall be subject to Appropriate Assessment Screening in accordance with the requirements of the EU*

Habitats Directive to ensure the protection and preservation of all designated SACs, SPAs, and pNHAs in Dublin Bay and the surrounding area.

Objective 106 *- To improve the Streetscape/Public Realm of Monkstown Village.*

Objective 153 *- That Dunleary House (Yellow Brick House – a proposed Protected Structure) and associated boundary be retained in situ and renovated.*

Objective 156 *- In accordance with National Policy, the Council shall, within the relevant planning frameworks, formulate and implement, where appropriate and applicable, a plan for the future development of Dún Laoghaire Harbour and its curtilage.*

4.0 CHARACTERISTICS OF PROPOSALS

4.1 OVERVIEW

4.1.1 The proposals seek permission for the provision of a Build-to-Rent residential and mixed-use development comprising of 146 no. Apartment Units as well as a retail unit, the incorporation of Dun Leary House (a proposed Protected Structure) into the development as co-working office space, and ancillary facilities including a gym and lounge areas on lands zoned 'to protect, provide for and-or improve mixed use neighbourhood centre facilities'.

4.1.2 The proposed development site comprises of approximately 0.559 hectares of land, which is currently a brownfield site with a hardstanding area.

4.1.3 The current proposals seek to construct 146 apartments as well as a retail unit and the incorporation of a co-working space as part of a Build-to-Rent development at the subject site. The site layout plan is shown below in **Figure 4.1**.

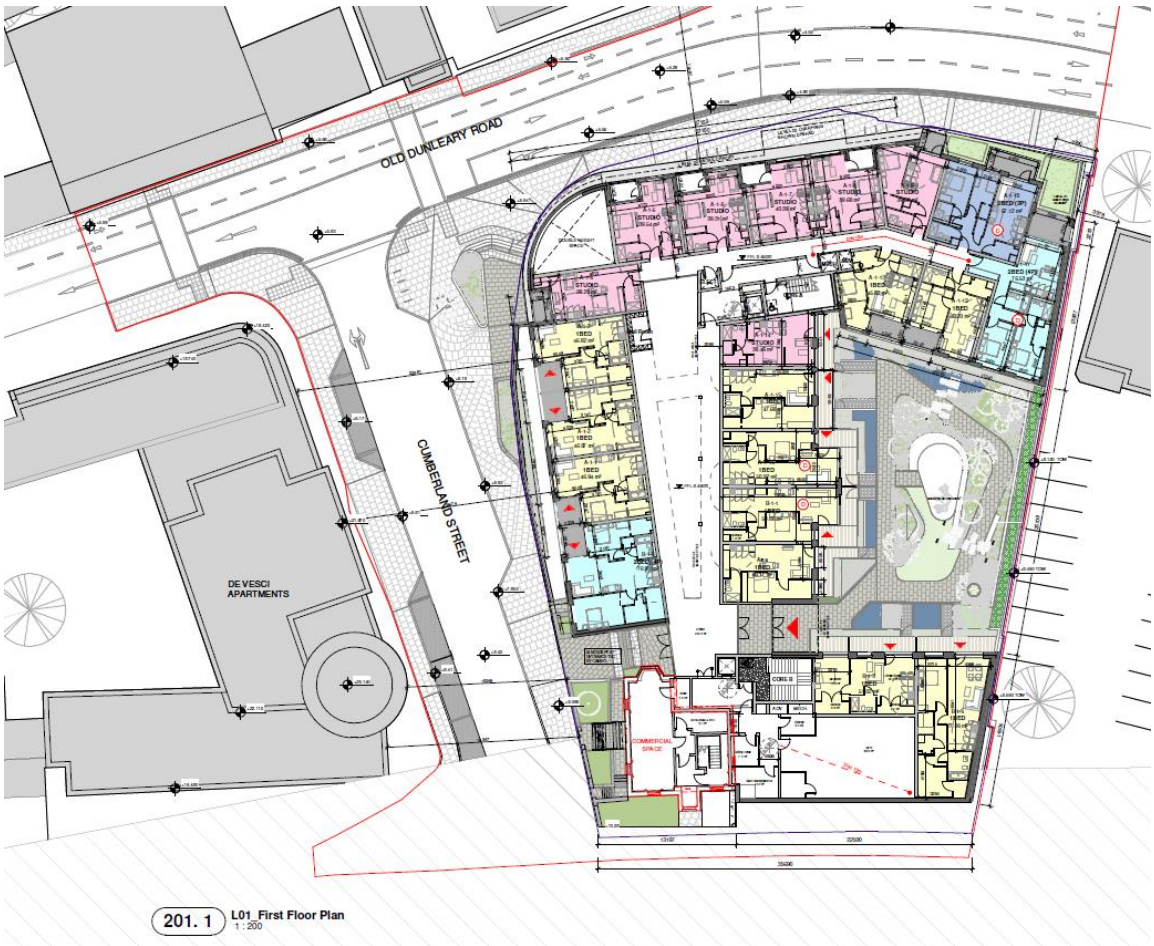


Figure 4.1: Site Layout Plan

4.1.4 With reference to MOLA Architecture drawing the development schedule is summarised in **Table 4.1** below.

Unit Type	Description	Quantity
Apartments	Studio Apartment	34
	One Bedroom Apartment	77
	Two Bedroom Apartment (3P)	4
	Two Bedroom Apartment (4P)	31
Total Apartment Units		146
Atrium Amenity	Atrium Amenity	1
Commercial	Retail unit	1
Commercial	Co-working space	1
Residential Amenity	Residential Amenity	2

Table 4.1: Development Schedule Summary

Vehicular Access

4.1.5 The subject site will benefit from 1 no. vehicular access location onto the local road network via the N31 Old Dunleary Road. This site access will form a three arm priority junction with the N31 Old Dunleary Road.

4.1.6 This Priority-controlled Junction complies with DMURS for design standards and sight lines for a 50kph road of 49m, with sight line drawings being displayed in **Figure 4.2** below, also shown in further detail on DBFL Drawing 190057-1102.

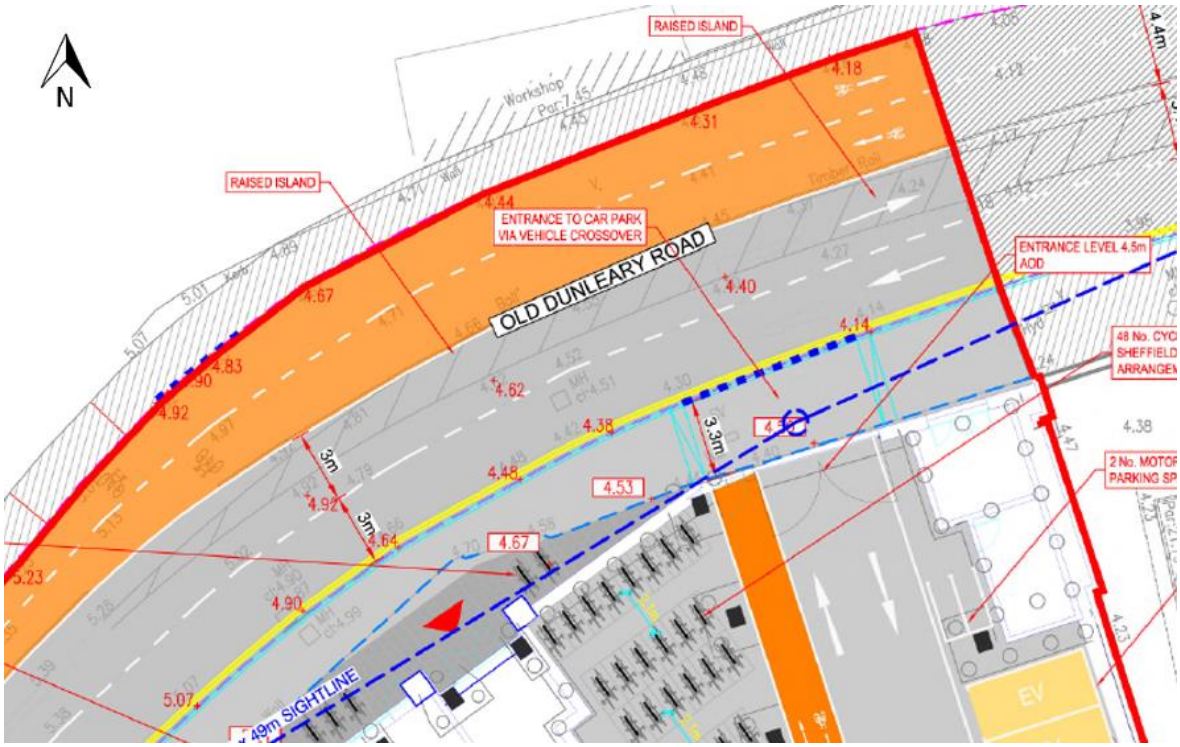


Figure 4.2: Vehicular Site Access Sight Line Drawing

Pedestrian and Cycle Access

4.1.7 There are a number of road and junction upgrades proposed to improve pedestrian facilities surrounding the subject site. These include improved footpaths within the vicinity of the site on the N31 and Cumberland Street. The existing N31/Cumberland Street priority junction is proposed to be converted to a signal-controlled junction with improved footpaths and signalised pedestrian crossings on all arms.

4.1.8 Pedestrians and cyclists will access the development via the main vehicular access off the N31 Old Dunleary Road. A cycle path will be provided on the western side of the car parking access that will accommodate cyclists through the car park to the proposed cycle parking area. There are also 32 no. public cycle parking spaces being proposed along the upgraded public realm pedestrian infrastructure.

4.1.9 The proposed access for vehicles, pedestrians and cyclists is displayed in **Figure 4.3**.

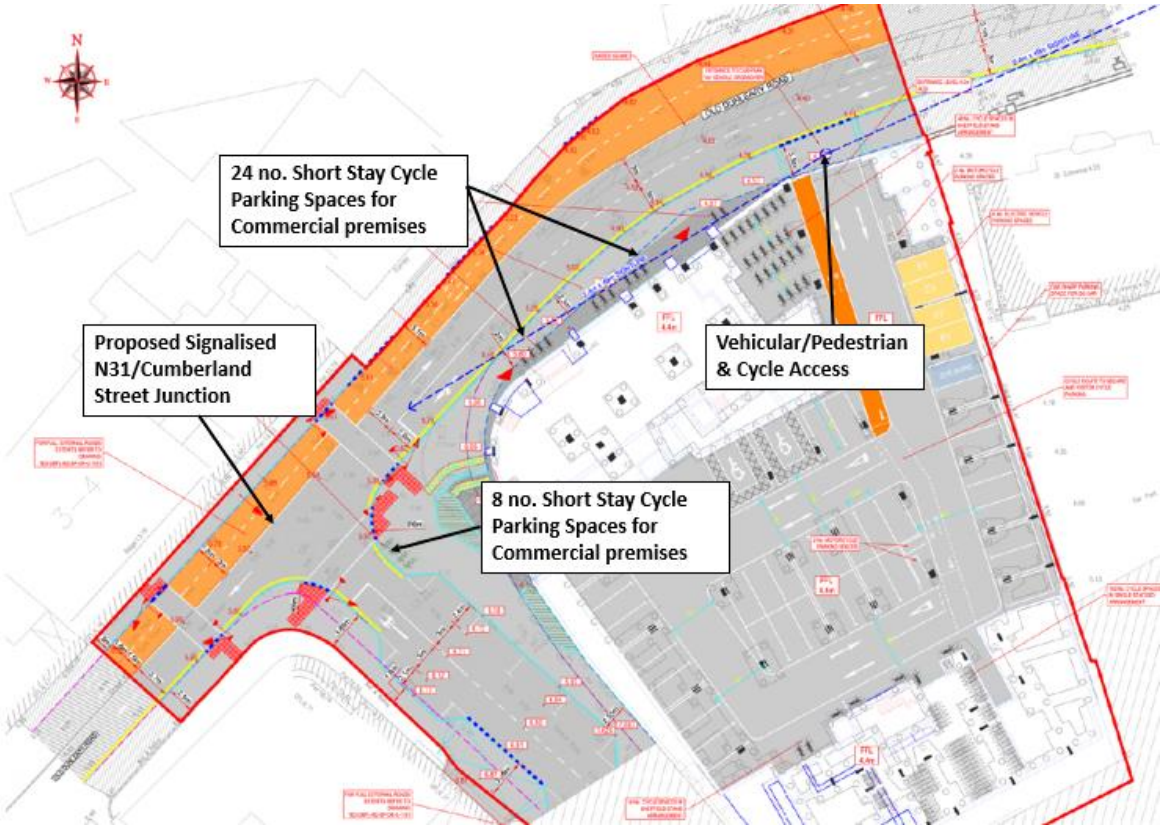


Figure 4.3: Proposed Access Location

Car Parking

4.1.10 Dun Laoghaire Rathdown County Council has published an advisory note to their current County Development Plan (2016-2022) which was referenced with regard to the car parking standards. Table 12.8 within the development plan standards provides parking guidance for residential developments stating the following allowance: -

- Apartment 1 bed – 1 space per units.
- Apartment 2 bed – 1.5 spaces per unit.
- Apartment 3 bed – 2 spaces per unit.

Land Use	Units	Parking Standard	Parking Permitted
Apartment – Studio	34	1 space per 1-bed unit	34
Apartment – 1 Bed	77	1 space per 1-bed unit	77
Apartment – 2 Bed	35	1.5 spaces per 2-bed units	53
Total			**164**

Table 4.2: Car Parking Standards

4.1.11 The parking provisions for the residential apartment blocks have been designed in accordance with the Department of Housing, Planning and Local Government's *Sustainable Urban Housing: Design Standards for New Apartments December 2020* on the basis of site location and availability of excellent travel alternatives such as train and bus services as well as good walking facilities and proposed cycle network facilities.

4.1.12 As referenced in the SUHDS, the subject site is located within a 'Central and/or Accessible Urban Location'. As such, the guidance document states that 'In larger scale and higher density developments, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances'.

4.1.13 It is proposed to provide a total of 52 no. car parking spaces in total with 44 no. car parking spaces provided within the undercroft facility. 8 no. on-street further car parking spaces are available on Cumberland Street. The proposed vehicle parking corresponds to an overall provision of 0.30 parking bays per apartment unit, which includes for both Mobility Impaired Parking and Electric Vehicle Parking, as per DLRCC Development Plan (2016-2022) standards.

4.1.14 Accordingly, the following car parking provision, as shown in **Table 4.3**, has been proposed for this development, which meets the design standards criteria of the *Sustainable Urban Housing: Design Standards for New Apartments*.

Unit type	Units	Car Parking Proposed (in Undercroft)
Apartments	146	44
Total		**44**

Table 4.3: Car Parking Proposals

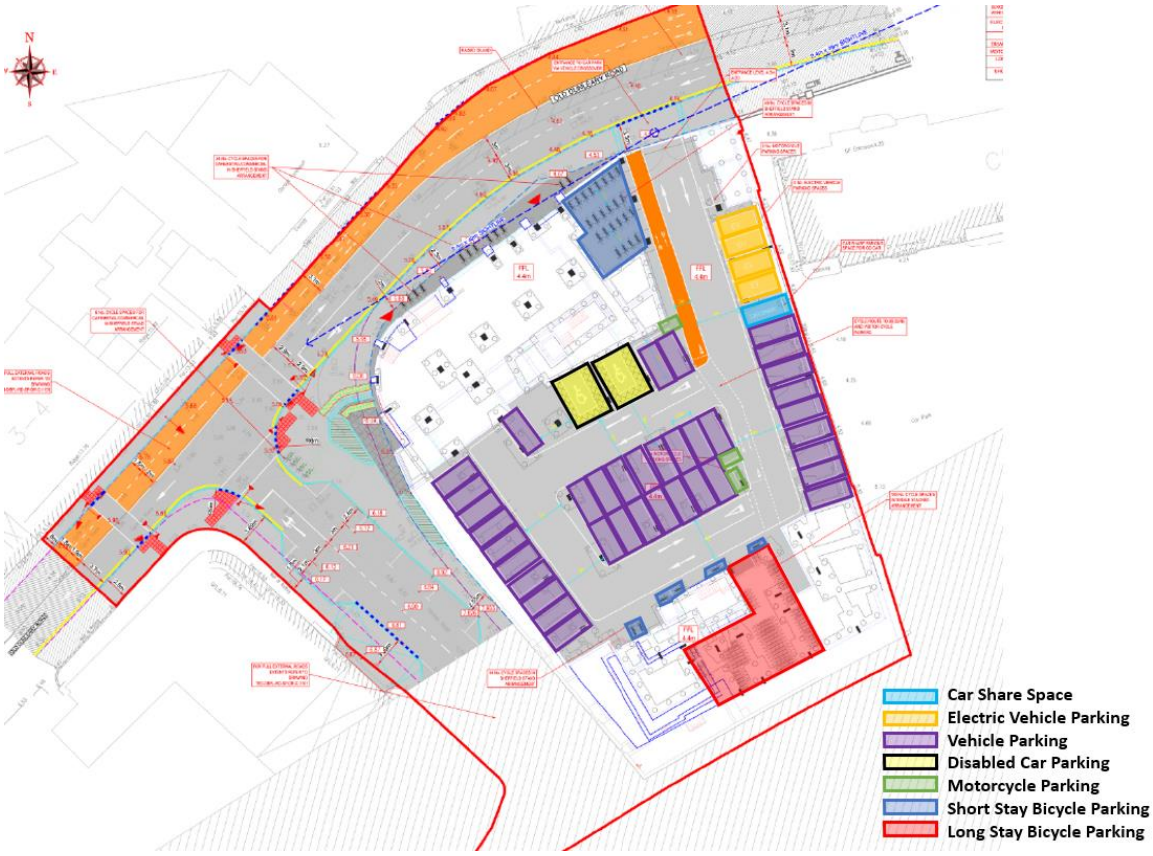


Figure 4.4: Proposed Undercroft Parking Layout

4.1.15 It has been proposed to provide 1 GoCar parking space within the development car park. This GoCar space will be used by residents within the apartment units.

4.1.16 It is noted that car parking provision for visitors of the retail unit and the co-working space is not required. These users will avail of on-street parking, as the parking spaces within the development will not be accessible for the commercial premises.

4.1.17 The existing on-street public parking spaces located on Cumberland Street have been altered due to the improvement works along this street. At present, there are a total of 11 on-street spaces provided. It is proposed to provide a total of 8 on street spaces, achieved through 4 no. on street spaces along either side of Cumberland Street as part of this development scheme. This is a reduction of 3 car parking spaces along Cumberland Street.

4.2 BUILD-TO-RENT SCHEMES

4.2.1 Although considered a relatively new feature within Ireland and UK property market the Build to Rent (BTR) scheme is being increasingly recognised as an exciting opportunity for investors, local authorities and developers. Significant research has been undertaken, in particular within the UK, with regard to this emerging concept. The research affirms the value of BTR to the property industry as it seeks to accelerate new developments to help address the housing crisis whilst also delivering broader social and economic benefits to local communities.

4.2.2 By delivering high quality and well managed homes and creating new, sustainable communities, BTR will enhance the overall quality of housing and become woven in to the residential landscape.

4.2.3 From a number of surveys undertaken in the UK regarding BTR schemes, the surveys suggest that the main age demographic interested in the BTR schemes are the 25 – 35 year age bracket. This is likely due to a number of factors including the difficulty of procuring a mortgage and getting on to the property ladder in this current property climate. Also, a consideration for this is that renting properties tends to suit this age demographic as many people of this age may wish to move around and travel and may not wish to buy at that time.

4.2.4 The UK reference document 'Unlocking the Benefits and Potential of Build to Rent' identifies a link, from the UK Census 2011, between car ownership and the tenure of a residence, i.e., whether a resident is renting in the public domain or privately owns their residence. The graph in **Figure 4.4** shows that residents who own their residence are more likely to own a car than residents who rent their property. It shows that the total average of car ownership for privately owned residences is 0.8 cars per residential unit, this is compared with a car ownership of just 0.4 cars per residential unit for residences that are publicly rented. This suggests that car parking demand for the rental market may well be lower than traditional build to sell schemes.

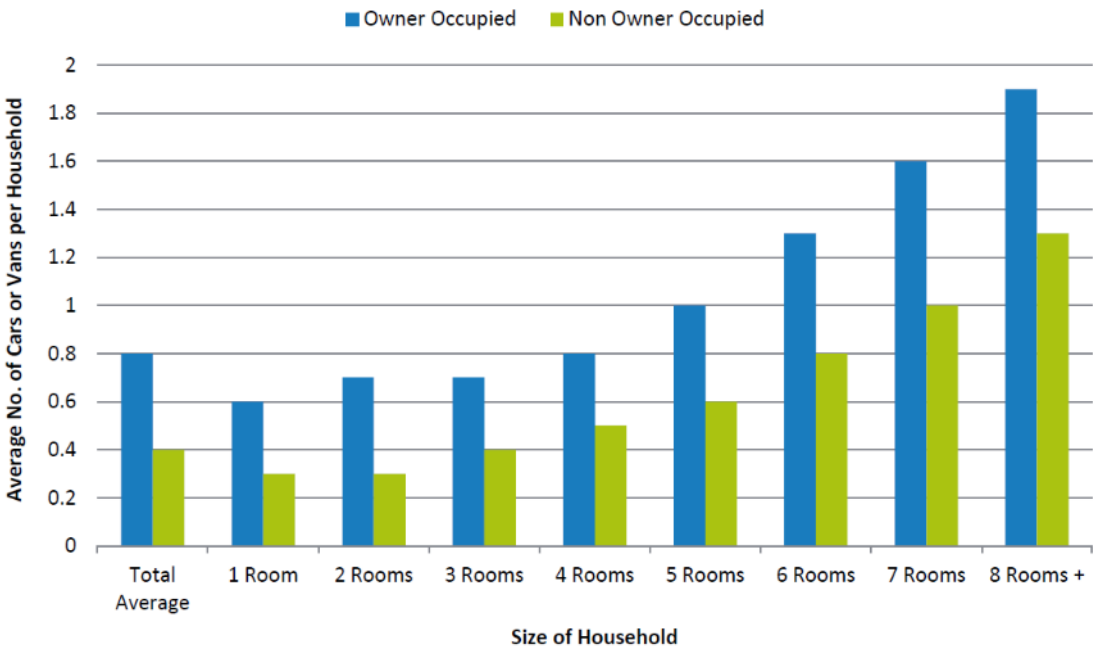


Figure 4.4: Car Ownership between Privately Owned and Publicly Rented Dwellings

(Source: Unlocking the Benefits and Potential of Build to Rent by British Property Federation)

4.3 CAR OWNERSHIP & USAGE

4.3.1 In order to establish demand for car parking within the surrounding area of the proposed development site, the 2016 CSO data has been analysed to determine the level of current car ownership and car usage. The CSO Small Area map has been reviewed. The search included for areas that were close to the site that contained a majority of apartment blocks within the area similar to that of the proposed development. A total of 7 Small Areas were assessed, as detailed in the map in **Figure 4.5**.

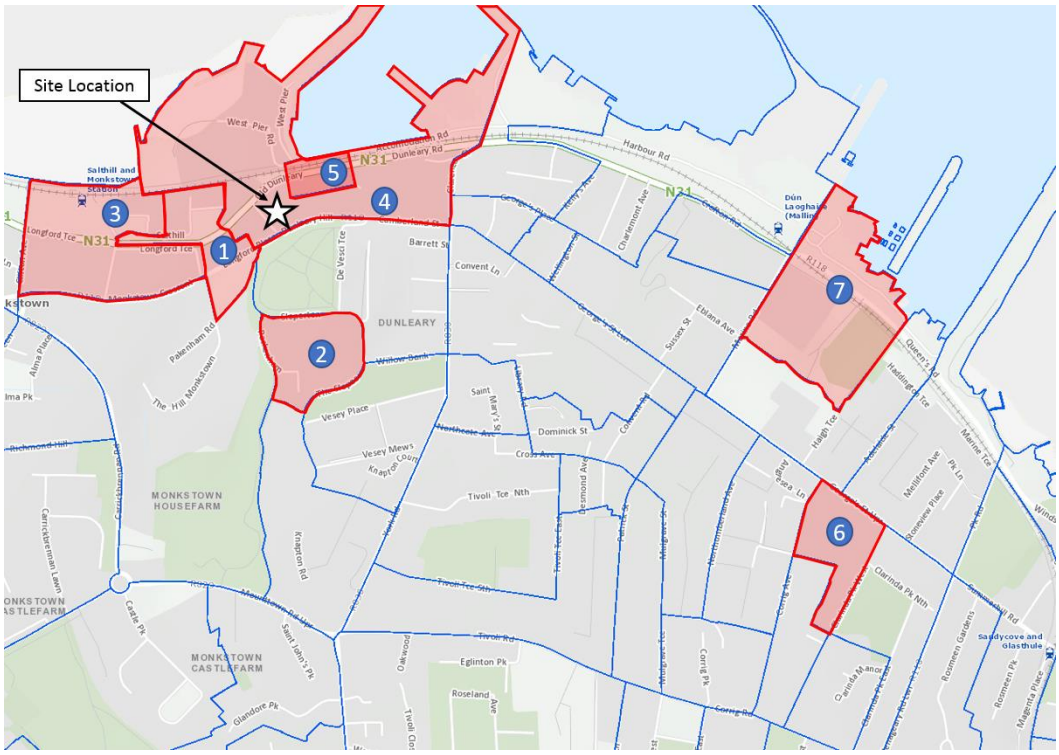


Figure 4.5: 2016 CSO Small Areas containing apartments close to proposed site

4.3.2 A total of 579 units were included in this assessment. The CSO data for households who do not own a car in each of these areas is presented in **Table 4.4** below.

Small Area	No. Apts	No. Houses	No. Households with No Car	% of Households with No Car	Equivalent Rate of Parking Required (Space/Unit)
1	68	6	12	16.2%	0.84
2	93	5	28	28.6%	0.71
3	58	25	16	19.0%	0.81
4	78	16	26	27.7%	0.72
5	65	0	11	16.9%	0.83
6	67	16	29	34.1%	0.66
7	77	0	24	31.2%	0.69

Table 4.4: 2016 CSO Car Ownership Data

4.3.3 **Table 4.4** highlights that the level of households that do not own a car within each small area varies between a low 16% in Area 1 up to a high 34% in Area 6. The level of car parking required within these locations would be, on average, 0.75 spaces per unit. It is noted that these apartments are typically based on past development standards that adhered to the 1 car space per unit for apartment blocks and also based on a different commercial model with parking spaces designated to units as part of the sale/rental agreement.

4.3.4 It should also be considered that whilst many households own a car, they may not avail of their car for commuting purposes and may use their vehicle infrequently. Using a vehicle for commuting purposes could also be hindered by a commuter's destination, for example, does their place of work have restricted car parking allocation in force. Therefore, in order to assess the level of daily use for commuters who drive their vehicle to work, the 2016 CSO data was again reviewed for the modal split for people travelling to Work, School or College. This was assessed for the same 7 small areas as previously discussed. The results of this assessment are detailed in **Table 4.5**.

Small Area	No. Commuters	% Households with No Car	No. Commuters that Drive	% Commuters that Drive
1	81	16.2%	21	26%
2	119	28.6%	33	28%
3	151	19.0%	43	28%
4	159	27.7%	38	24%
5	97	16.9%	32	33%
6	131	34.1%	27	21%
7	89	31.2%	15	17%

Table 4.5: 2016 CSO Data – Percentage of Commuters that use their Vehicle

4.3.5 **Table 4.4** outlines that although car ownership within these locations is at an average 75%, the percentage of commuters that use their vehicle to drive to work, college or school is lower at an average of 25% over all areas assessed. This highlights that although commuters may own vehicles within these areas, a high proportion of them avail of other, more sustainable, modes of travel for commuting purposes.

4.3.6 The proposed development is located adjacent to the N31 Old Dunleary Road and is situated in close proximity to excellent and improving public transport routes and stops available through DART and the proposed BusConnects routes.

4.4 AGE DEMOGRAPHIC SURROUNDING DEVELOPMENT SITE

4.4.1 Considering the type of development proposed, ie, a Build to Rent scheme, as well as the type of demand that these developments tend to attract (25- 35 years old tenants), it was considered necessary to establish the general age demographic for rental properties within the area surrounding the proposed development site. The CSO 2016 small areas highlighted in **Figure 4.5** was used for this assessment.

4.4.2 **Figure 4.6** shows that a large number of residents, 58%, within the surrounding areas in Dun Laoghaire are renting their accommodation with 42% of residents who own their property.

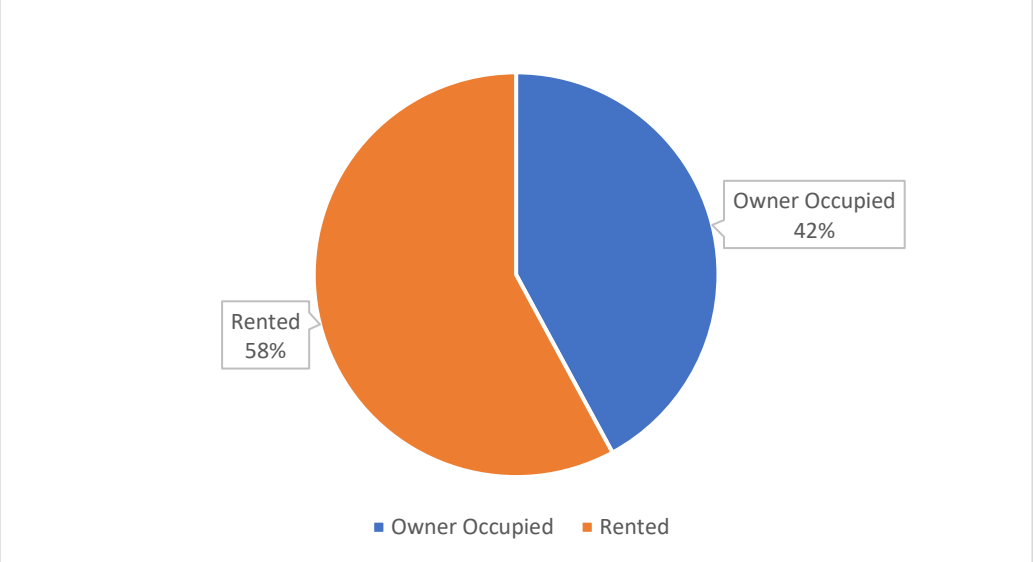


Figure 4.6: CSO 2016 Type of Accommodation in Dún Laoghaire

4.4.3 This indicates that there is a demand for rental accommodation within the area. From recent research undertaken regarding age demographics and rental accommodation, it showed that the age demographic of 25 - 35 years has the highest demand for renting their accommodation rather than buying.

4.4.4 The overall age profile for the 7 locations close to the proposed development site were assessed and are outlined in the chart in **Figure 4.7**. The results show that there is a young age demographic within Dún Laoghaire with the highest number of residents between the 25 – 39 age profile within this area.

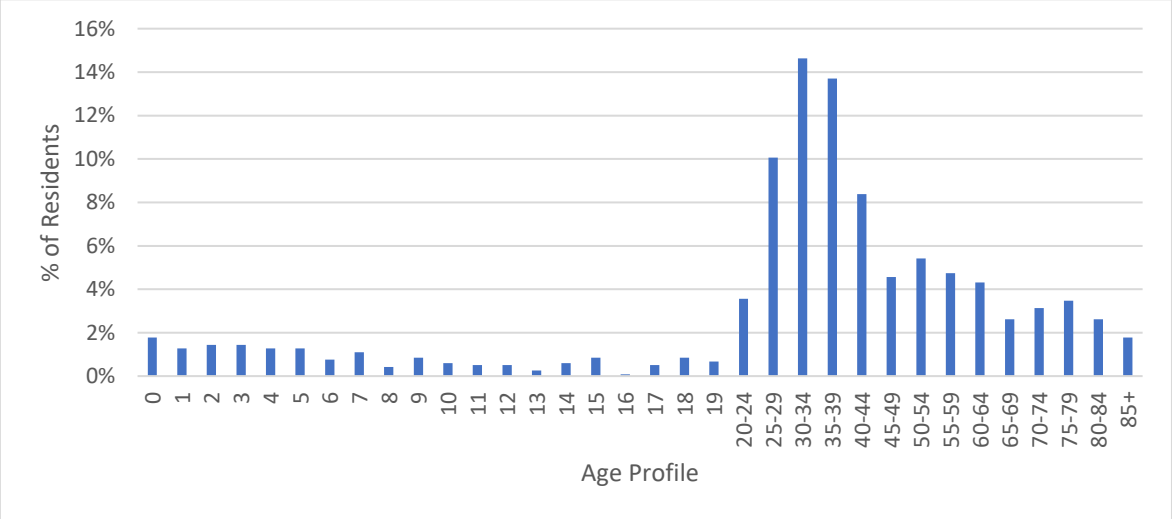


Figure 4.7: CSO 2016 Age Profile for Dun Laoghaire Area from the Small Area Sites

4.4.5 The young age profile in combination with the rental demand in Dun Laoghaire as well as the low use of cars for peak commuting trips (average of 25%) indicates that a Build to Rent Scheme would benefit this location.

4.4.6 The level of car ownership amongst this demographic is decreasing with many unprepared to commit to the additional cost of retaining a designated car parking space when viable alternative modes of travel are available.

4.5 INITIATIVES FOR SUSTAINABLE TRAVEL

4.5.1 The current Bus Connects proposals include for enhanced services along the N31 Old Dun Leary Road adjacent to the site comprising of bus frequencies of approximately 20 minutes. This could increase the number of commuters using

bus services which would lead to a further reduction in those commuting and owning a car in the Dún Laoghaire area.

4.5.2 Investment of more than €750m on the Bus Connects Programme will deliver a transformative investment package that will finance new and expanded bus routes, greatly improve bus access, and also includes the commencement of construction of core bus routes that include segregated cycle lanes and pedestrian footpaths, all which will greatly assist in encouraging modal shift.

4.5.3 It is acknowledged that residents may require a vehicle of some sort for purposes other than commuting on an everyday basis and simply reducing car parking would not be realistic without implementing alternative measures to accommodate residents and visitors alike. Therefore, the following alternative arrangements could be proposed should car parking and car ownership be reduced within the development:

- Car Club (GoCar);
- Increased Cycle; and
- Parking Management.

Car Club

4.5.4 A car club provides its members with quick and easy access to a vehicle for short term hire. The GoCar is a well-established and successful car club operator in Dublin. This service has been recommended in recent developments as a means for car sharing where car parking is reduced. GoCar would provide a number of permanent vehicles within the development or within close proximity to the development where residents would have the ability to avail of. A recent survey undertaken by GoCar indicated that the main uses of the service was for day trips, family trips and big shopping trips. The survey also highlighted that the average use of a car was for 1 hour a day.

Car Sharing

4.5.5 GoCar operate a number of car club bases within easy walking distance of the site including dedicated bays at the Salthill and Monkstown car park, Crofton Road, Dun Laoghaire car park and Alma Road, Blackrock. Yuko Car sharing also has two bases at Crofton Road and another one at Windsor Terrace.

4.5.6 It is noted that 1 parking space within the proposed development has been allocated as a GoCar space. This will be publicly accessible.

Increased Cycle Parking

4.5.7 Increasing cycle parking is an alternative measure when reducing car parking spaces. A total of 277 cycle spaces are proposed for this development. With 146 residential units being proposed, this equates to approximately 1.90 cycle spaces per unit. This provision is in excess of the Dun Laoghaire-Rathdown Council requirement of 175 spaces (1 space per unit + 1 visitor space per 5 units), and the DHPLG Design Standards for New Apartments standards of 254 spaces (1 space per bedroom + 1 visitor space per 2 units).

Parking Management Strategy

4.5.8 A parking management strategy has been undertaken in order to manage the daily operations within the car park. A *Parking Strategy* Report has been prepared and issued as part of this planning submission.

4.5.9 In summary, the Parking Management Strategy will be founded on the principle that no residential unit will be allocated a parking space as part of the rental agreement for the property. The rental cost associated with the parking spaces is expected to be in the region of €100 – €150 per month which is specified at such a rate so as to discourage the use of the private vehicle unless necessary and to encourage the uptake of more sustainable modes such as walking, cycling and public transport for which there are excellent opportunities within and directly adjacent to the development site. The parking spaces will be allocated on a 'first come, first served' basis in terms of paying the prescribed fee.

4.5.10 Taking all of the above factors such as the characteristics of the BTR development, the baseline low levels of car use in the Dún Laoghaire area, the proposed mobility measures and the requirement for car parking to be '**minimised, substantially reduced or wholly eliminated'** as set out in the '*Sustainable Urban Housing: Design Standards for New Apartments*' into account it is considered appropriate that a parking provision of 44 car parking spaces (0.30 spaces per unit) for the subject development of 146 apartments is provided. Of this provision, 2 mobility impaired parking spaces are to be provided in the development.

Cycle Parking

4.5.11 Dun Laoghaire Rathdown County Council have published a stand-alone cycle parking standard document titled '*Standards for Cycle Parking and associated Cycling Facilities for New Developments*' January 2018. The cycle parking requirement from these standards is shown in **Table 4.6** below and is extracted from the guidelines.

4.5.12 These standards outline that there is a requirement for 1 cycle space per 1 apartment unit for long term parking and 1 cycle spaces per 5 apartment units for short term parking. Therefore, a total of 175 cycle parking spaces are required to be provided for the DLRCC standards.

Residential Development type	1 short stay (visitor) parking space per: (Minimum of 2 spaces)	1 long stay parking space per: (Minimum of 2 spaces)
Apartments, Flats, Sheltered housing	5 units	1 unit
Houses - 2 bed dwelling	5 units	1 unit
Houses - 3+ bed dwelling	5 units	1 unit
Sheltered housing	5 units	1 unit
Student Accommodation	5 bedrooms	2 bedrooms

Table 4.6: DLRCC Cycle Parking Standards

4.5.13 Reference has also been made to the cycle standards within the *Sustainable Urban Housing: Design Standards for New Apartments* Guidelines, issued by the *Department of Housing, Planning and Local Government (DHPLG)*, which outlines a higher provision of cycle parking to be provided in order to promote a more sustainable development.

4.5.14 The DHPLG guidelines propose that a provision of 1 cycle space per bedroom should be provided for long term parking as well as 1 cycle space per every 2 apartment units for visitor short term parking. With regard to these standards, a total of 254 cycle parking spaces would be required to be provided.

4.5.15 A total of 277 cycle spaces are proposed within this development, with 183 residential long terms spaces and 94 total visitor spaces proposed. This development's cycle parking provision would exceed the development plan requirements. The overall cycle parking standards and provision is outlined in **Table 4.7** below.

4.5.16 It is noted that 32 on-street visitor cycle parking spaces are to be provided Cumberland St and Old DunLeary Rd to cater for visitors to the retail unit and the co-working space.

Standard/Proposed	Type	Apartments
DLRCC Standards	Short	29
	Long	146
	Total	**175**
DHPLG Standards	Short	73
	Long	191
	Total	**264**
Proposed	Short	94
	Long	183
	Total	**277**

Table 4.7: Cycle Parking Proposals

5.0 TRIP GENERATION AND DISTRIBUTION

5.1 TRAFFIC SURVEYS

5.1.1 With the objective of quantifying the existing traffic movements across the local road network, vehicle link counts were undertaken.

5.1.2 A vehicle turning count survey (junction turning count - JTC) was conducted over a 12-hour period from 07:00 to 19:00 on Thursday 9th May 2019 for the following junctions:

- N31 / Cumberland Street Junction;
- Cumberland Street / R119 Junction.

5.1.3 The surveys, undertaken by IDASO Ltd., established that the local network's AM and PM peak hours occur between 08:15 – 09.15 and 16:45 – 17:45 respectively. The AM and PM peak hours traffic flows are shown in **Figure 5.1**.

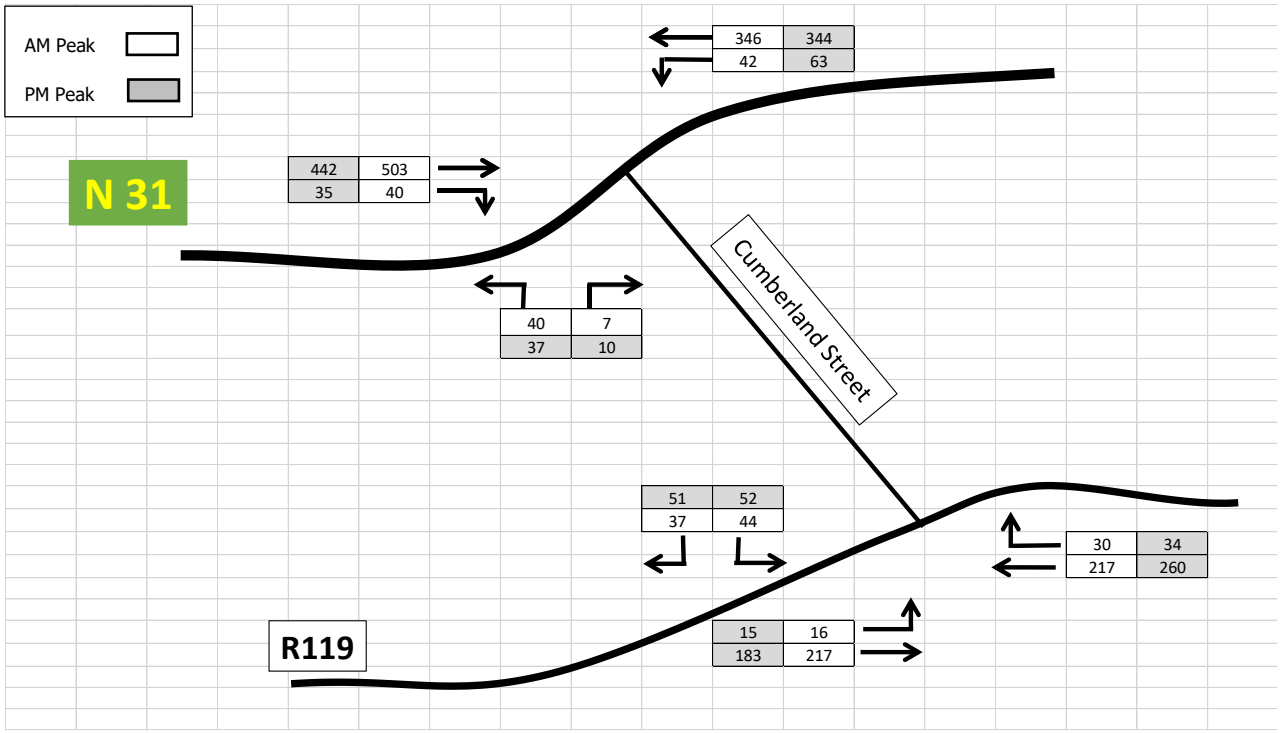


Figure 5.1: AM and PM peak hour traffic flows

5.1.4 The traffic flows show that there is a total of 503 vehicles travelling east along the N31 in the AM peak hour with 442 vehicles in the PM peak. There are 346 vehicles travelling west along the N31 in the Am peak hour and 344 vehicles in the PM peak hour.

5.1.5 The traffic flows at the Cumberland Street/R119 junction are low, particularly on the Cumberland Street arm in both peak hours.

5.1.6 It is noted that the traffic surveys were undertaken prior to the recent COVID-19 pandemic which has been ongoing since March 2020. As a result of the global pandemic and national lockdown, DLRCC have implemented a number of COVID-19 Public Realm Works within the County. One of these is a two way segregated cycle lane which routes from Blackrock to Dun Laoghaire with a one way system for vehicles. This facility runs along Old Dunleary Road in the vicinity of the proposed development.

5.1.7 With the reduction of traffic as a result of the pandemic as well as a one way system in place for vehicles along a section of Old Dunleary Road, it is expected that traffic volumes would have decreased since the surveys were undertaken in 2019, however, in order to inform a conservative assessment , the junctions have been analysed based on pre COVID traffic volumes.

5.1.8 In order to analyse and assess the impact of the proposed development on the surrounding road network, a traffic generation and distribution model (excel based) of the following key junctions was created (illustrated in **Figure 5.2**):

- **Junction 1** – Priority Control – N31 Old Dunleary Road / Cumberland Street; and
- **Junction 2** – Priority Control – R119 Dun Leary Hill / Cumberland Street.

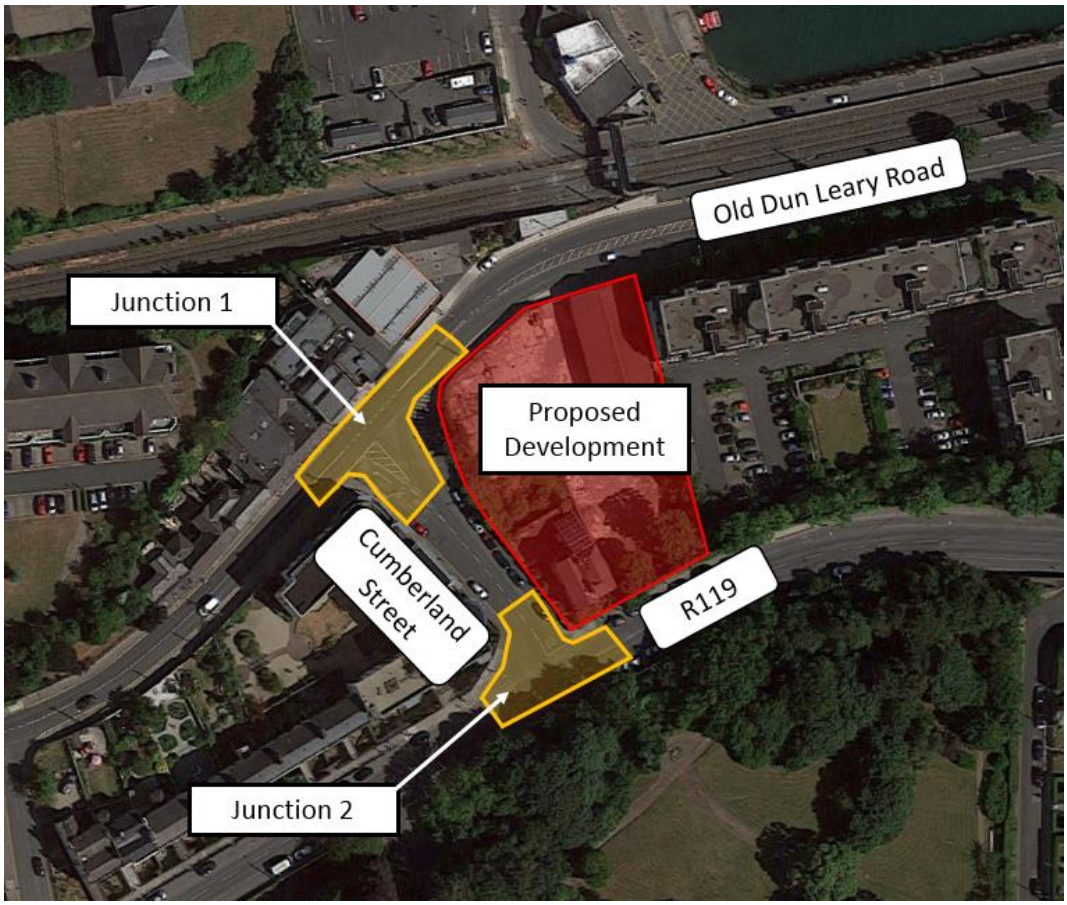


Figure 5.2: Junctions Included Within the Network Analysis

5.2 TRIP GENERATION

Proposed Development Trips

5.2.1 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, we consider that TRICS will provide a reasonable indication of traffic generation from the proposed development.

5.2.2 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 consider 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.

5.2.3 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, we consider that TRICS will provide a reasonable indication of traffic generation from the proposed development.

5.2.4 **Table 5.1** below includes the predicted trip generations and our estimate of the likely traffic flows in and out of the proposed development during the morning and evening peak hour periods using data from TRICS.

Land Use	Unit	AM Peak Hour			PM Peak Hour		
		Arr	Dep	Total	Arr	Dep	Total
Apartments	Per Unit	0.054	0.18	0.234	0.176	0.073	0.249
Café	GFA /100sqm	0.202	0	0.202	1.065	0.867	1.933
Co-Working Space	GFA /100sqm	0.481	0.039	0.521	0.095	0.372	0.468

Table 5.1: Proposed Development Trip Rates (TRICS)

5.2.5 **Table 5.2** summarises the predicted peak hour AM and PM traffic generated by the proposed development. The TRICS output files are included in **Appendix B** of this report.

Land Use	Units	AM Peak Hour			PM Peak Hour		
		Arr	Dep	Total	Arr	Dep	Total
Apartments	146	8	26	34	26	11	36
Café	290sqm	1	0	1	3	3	6
Co-Working Space	298sqm	1	0	1	0	1	1
Total				36			43

Table 5.2: Proposed Development Vehicle Trips

5.2.6 It is noted that any trips generated for the Café and Co-Working Space will not be allocated to and from the development. These trips will be required to avail of on street parking surrounding the development. As part of the impact assessment, however, these trips have been allocated on the surrounding road network through the junctions.

5.2.7 It is also noted that trips for the Café unit will most likely consist of pass-by trips rather than new trips to the area. Trips for the Café will also most likely consist of sustainable trips such as walking or cycling rather than car trips, however, for a conservative assessment, the trips generated have not been reduced.

5.2.8 A total of 36 trips have been generated to and from the development in the AM peak hour with 43 trips generated in the PM peak hour. It is noted that the development proposes reduced car parking with a total of 44 car parking spaces proposed. Therefore, in reality, the trips generated onto the local road network will be below the trips generated by the TRICS database. However, in order to provide a conservative assessment, the trips generated from the TRICS database were utilised for this assessment.

5.3 TRIP DISTRIBUTION & ASSIGNMENT

Proposed Development Trip Distribution

5.3.1 The distribution of the proposed development's generated vehicle movements as proposed by DBFL is presented in **Appendix A** of this report. The associated residential vehicle trips have been assigned to the surrounding road network based on the surveyed traffic movements as well as assumptions made with regard to trips now using the right turn on the Cumberland Street arm of the proposed signalised junction with the N31 which is at present a banned movement.

5.3.2 In the Opening Year 2023, it has been assumed that the Café , Co-Working Office and all 146 of the residential units will be complete and occupied, in order to show the design scenario which is expected for this proposed development.

5.4 TRAFFIC GROWTH

5.4.1 The TTA adopts an Opening Design Year of 2023, Interim Year of 2028 (+5 years) and Future Horizon Year of 2038 (+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".

5.4.2 Table 5.3.2 within the TII Project Appraisal Guidelines Units 5.3 provides Link-Based Annual Traffic Growth Factors for the different regions within Ireland. The subject site lies within 'Dublin' with the growth factors as outlined within **Table 5.3** below:

Region	Name	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
1	Dublin	1.0146	1.0280	1.0034	1.0116	1.0162	1.0295	1.0051	1.0136	1.0191	1.0328	1.0087	1.0172

Table 5.3: Link-Based Growth Rates: Annual Growth Factors (Extract from Table 6.1 PE-PAG-02017)

5.4.3 Applying the annual factors (central growth) as outlined in **Table 5.3** above for the adopted Opening Year of 2023 and Future Horizon Year of 2038 (+15 years), the following growth rates have been adopted to establish corresponding 2023, 2028 and 2038 future network flows: -

- 2019 to 2023 – 1.066 (or 6.64%);
- 2019 to 2028 – 1.156 (or 15.56%); and
- 2019 to 2038 – 1.243 (or 24.29%).

5.5 ASSESSMENT SCOPE

Assessment Scenarios

5.5.1 This analysis looks at two different traffic scenarios across each of the three design years for this traffic network, namely 'Do-Nothing' and 'Do-Something' scenarios, which as follows:

- 'Do-Nothing' traffic characteristics –Base Traffic Flows adjusted to account network growth projections, in accordance with TII's Project Appraisal Guidelines.
- 'Post development' (Do-Something Scenario) traffic characteristics – adjusted base network with completion of proposed development.

5.5.2 The 'Do Nothing' traffic scenarios have taken into account the existing flows travelling across the network.

5.5.3 The proposed development traffic is then added to the network's 'Base' traffic flows to establish the 'Post Development' traffic flows.

5.5.4 In summary, the following network modelling scenarios are considered: -

Do Nothing

- A1 – 2023 Opening year Traffic Flows
- A2 – 2028 Interim Year Traffic Flows
- A3 – 2038 Horizon Year Traffic Flows

Do Something

- B1 – 2023 Do Nothing (A1) + Proposed Development
- B2 – 2028 Do Nothing (A2) + Proposed Development
- B3 – 2038 Do Nothing (A3) + Proposed Development

Assessment Periods

5.5.5 The network's AM and PM peak hour flows have been identified as occurring between 08:15 to 09:15 and 16:45 to 17:45 respectively.

5.5.6 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 1 – 2023 Do Nothing (A1)
- Figure 2 – 2028 Do Nothing (A2)
- Figure 3 – 2038 Do Nothing (A3)
- Figure 4 – 2023 Do Something (B1)
- Figure 5 – 2028 Do Something (B2)
- Figure 6 – 2038 Do Something (B3)

5.6 IMPACT OF PROPOSALS

5.6.1 The Institution of Highways and Transportation document 'Guidelines for Traffic Impact Assessments' 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. When such levels of impact are generated a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance. These same thresholds are reproduced in

the NRA/TII document entitled Traffic and Transport Assessment Guidelines (2014).

5.6.2 **Table 5.4** below details the percentage increase of two-way vehicle trips to/from the proposed development site that will travel through Junction 1 (N31/Cumberland Street) and Junction 2 (Cumberland Street/R119) in the 2023 Opening Year and 2035 Future Year scenarios. The development scenarios considered full construction and occupation of the proposed development by 2028 Opening 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 Something' Scenarios vs 'Do Nothing' scenarios for the corresponding years.

5.6.3 The following junctions were assessed with regard to the level of impact from the proposed development:

- **Junction 1** - Priority Control – N31 Old Dunleary Road / Cumberland Street;
- **Junction 2** - Priority Control - R119 Dun Leary Hill / Cumberland Street; and
- **Junction 3 –** Priority Control – N31 Old Dunleary Road / Site Access.

5.6.4 The location for these junctions are shown in **Figure 5.3** below:

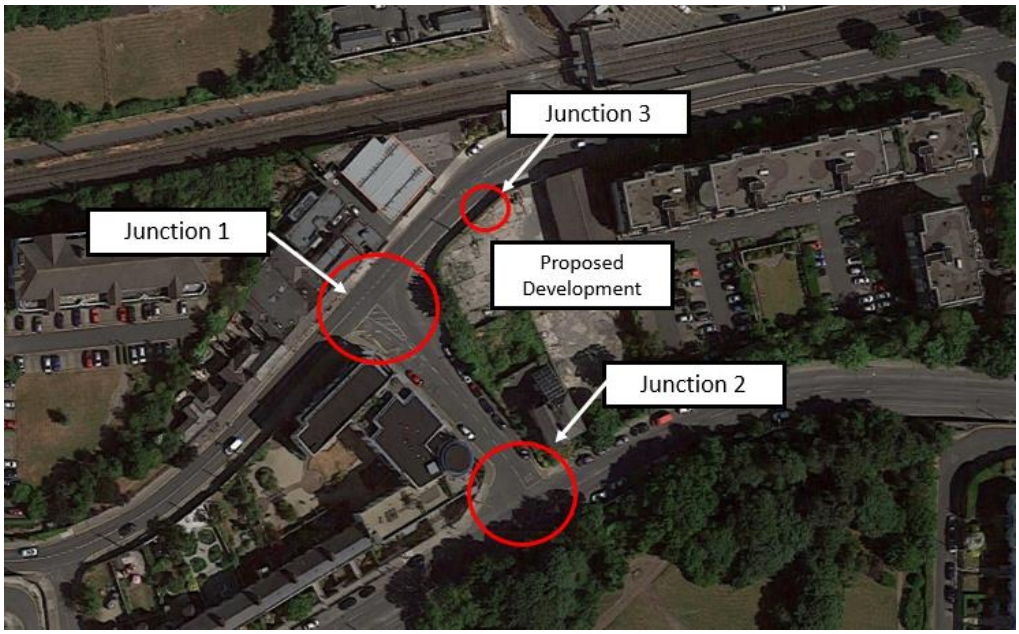


Figure 5.3: Junction Locations for Impact Assessment

	Location	2023	2038

Junction ID		AM Peak	PM Peak	AM Peak	PM Peak
1	N31 Old Dunleary Road / Cumberland Street	1.57%	2.22%	1.35%	1.91%
2	R119 Dun Leary Hill / Cumberland Street	0.19%	0.15%	0.17%	0.13%
3	N31 / Site Access	4.68%	5.14%	4.04%	4.44%

Table 5.4: Network Impact Through Key Off Site Junctions (2023 DS and 2038 DS)

5.6.5 For this proposed development's assessment, as outlined in **Table 5.4**, it can be seen that none of the junctions assessed exceed the 10% threshold required for further junction analysis as defined within the NRA/TII "Traffic and Transportation Assessment Guidelines"; therefore, there was no requirement for further assessment or analysis for these junctions.

6.0 CONSTRUCTION PHASE

6.1 OVERVIEW

6.1.1 In general, the impact of the construction period will be temporary in nature and less significant than the final post development operational stage.

6.1.2 All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed with DLRCC prior to the commencement of construction activities on site. The principle objective of the CTMP is to ensure that the impacts of all building activities generated during the construction phase upon the public (off-site), visitors to the subject site (on-site) and internal (on-site) workers environment, are fully considered and proactively managed/programmed thereby ensuring that safety is maintained at all times, disruption is minimised and undertaken within a controlled hazard free/minimised environment. A Preliminary CMP has been prepared and is submitted with this application.

6.1.3 The major construction items for the proposed development include demolition, excavation, basement construction, superstructure construction and fit out. It is anticipated that the peak of HGV movements to and from the site will be during the excavation and construction of the basement. The peak HGV movements to and from the site will be during the substructure and superstructure construction. It is anticipated that the construction traffic impact on the surrounding local network to the proposed development site will be minimal.

6.1.4 The site will be accessed from the existing entrance off Old Dunleary Road for the construction traffic; and traffic volumes are not anticipated to be significant. Warning signage will be provided for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan. Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction and supervisory staff.
- Excavation plant, dumper trucks and materials delivery vehicles involved in site development works.

6.1.5 Proposed routes for construction traffic, as per the arrangements proposed in **Figure 7.1**, will need to respect the local road networks' existing vehicle regulations (including banned movements at off-site junctions) and should be formally agreed with DLRCC prior to commencing any construction works. Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction and supervisory staff. This category will predominantly include private motor cars and LGVs.
- Excavation plant, dumper trucks and material delivery vehicles involved in site development works. This could include three or four axle rigid HGVs and five or more axle articulated HGVs.

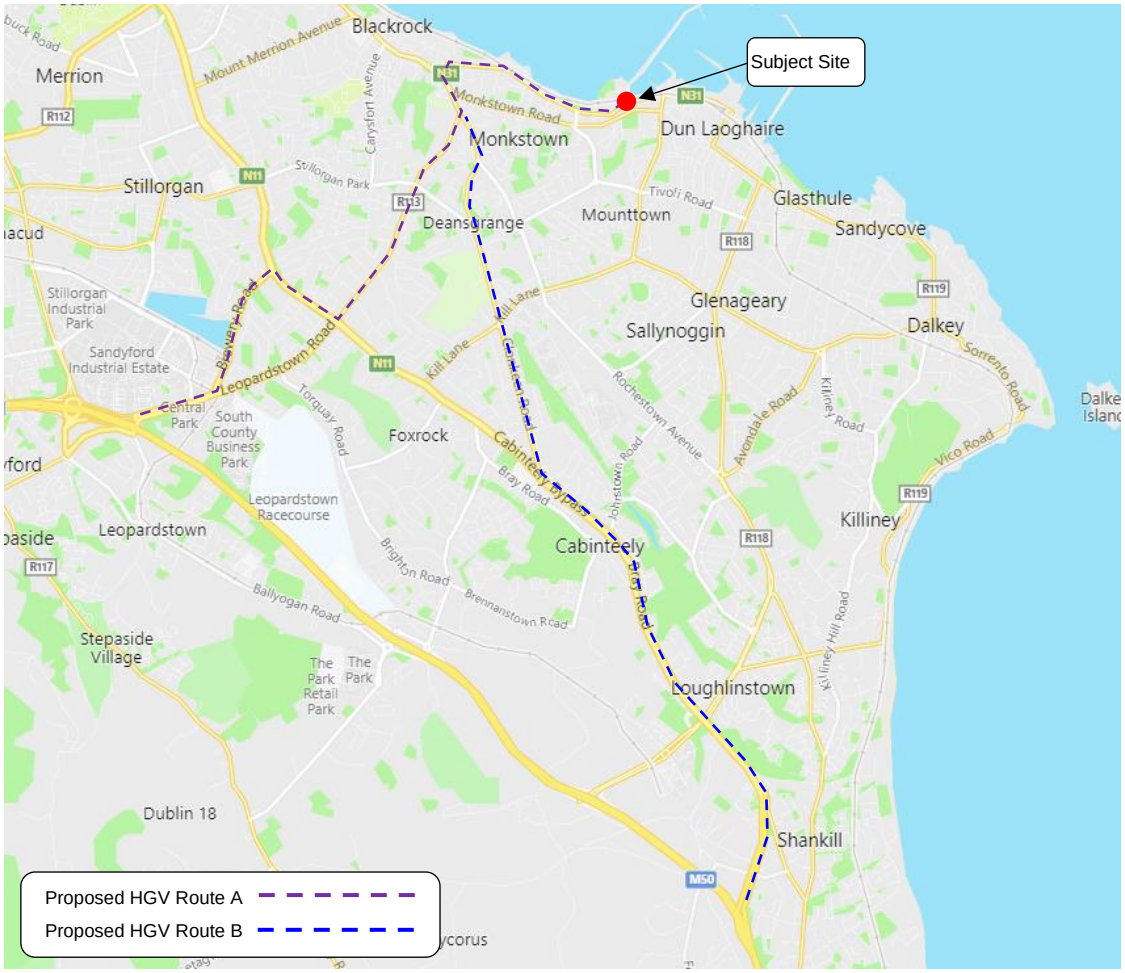


Figure 7.1: Proposed routes for construction traffic

6.1.6 Subject to any potential planning authority limitations and specific Client requirements, on-site construction operations will generally be undertaken between the hours of:

- Weekdays: 07h00 to 18h00, Monday to Friday; and
- Weekends: 08h00 to 14h00 on Saturdays.

6.1.7 In the absence of a final construction programme, it is difficult to assess the exact impact during the construction period. Nevertheless, the following estimates have been made in respect of the construction period impacts:

- All operatives will be encouraged to use sustainable travel options when travelling to/from the subject site. The contractor and subcontractors (with large numbers of on-site personnel) will be obliged to provide private transport from an appropriate park and ride facility.
- The contractor may seek to implement a contractors compound with some element of parking off site, subject to availability of local opportunity sites.
- On-site employees will generally arrive before 07h00, thus avoiding the morning peak hour traffic. Construction employees will generally depart after 18h00. It should be noted that a large proportion of construction workers may arrive in shared transport. Carpooling will minimise any impact on the traffic network through the reduction of the number of vehicles arriving to the site.
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low.

6.1.8 Wheel-wash facilities or similar will be provided for vehicles exiting the site if deemed appropriate or when significant vehicle movements are planned (e.g. disposal of topsoil from site);

7.0 SUMMARY AND CONCLUSION

7.1 OVERVIEW

7.1.1 DBFL Consulting Engineers (DBFL) has been commissioned by Ted Living Limited to prepare a Traffic and Transport Assessment (TTA) for a proposed residential and mixed use development on the lands at the former TedCastles site, Old Dunleary Road, Cumberland Street, Dun Leary Hill, Dún Laoghaire, Co. Dublin as part of a Build-to-Rent scheme.

7.1.2 The proposed development at the former Ted Castles site, Old Dun Leary Road, Cumberland Street and Dun Leary Hill, Dun Laoghaire will consist of:

- The provision of 146 no. apartment units (Build to Rent) and all associated ancillary facilities (including residential amenities) in a building with an overall height ranging from 6 storeys (with setbacks from 4th storey) addressing Dun Leary Hill, to 5 and 8 storeys (with set backs from 7th storey) addressing Old Dun Leary Road. The proposal provides for private and communal open spaces throughout.
- A retail unit addressing Old Dun Leary Road and Cumberland Street.
- The incorporation of the building known as "Dun Leary House" (a proposed Protected Structure) into the development as a co-working space.
- All associated ancillary car parking, cycle parking, a new vehicular entrance/cycle path (off the Old Dun Leary Road), ancillary plant areas, ESB substation and storage areas.
- Extensive hard and soft landscaping throughout, green roof, public lighting, signage, boundary treatments and public realm improvements.
- The demolition of all the existing building within the subject site excluding Dun Leary House, and the removal of existing boundary walls, piers, railings, and gates. The proposal includes the reuse and incorporation of part of the existing boundary wall material within the landscape proposals.
- All associated ancillary site services and site development works.

7.1.3 The extent of the site layout is detailed in the attached Architectural Design Statement and drawings prepared by MOLA Architecture.

7.1.4 The purpose of this TTA was as follows:

- To quantify the existing transport environment
- To detail the results of assessment work undertaken
- To identify the potential level of transport impact generated as a result of the proposed residential development.

7.1.5 This TTA has carried out a range of assessments for an opening year of 2023 and a future horizon year assessment of 2038. This assessment assumed and accounted for complete development and occupation of all units proposed to occur by Opening Year, as this provided a conservative design assessment of network operations. Six different assessments were analysed as follows: -

Do Nothing

- A1 – 2023 Opening year Traffic Flows
- A2 – 2028 Interim Year Traffic Flows
- A3 – 2038 Horizon Year Traffic Flows

Do Something

- B1 – 2023 Do Nothing (A1) + Proposed Residential Development
- B2 – 2028 Do Nothing (A2) + Proposed Residential Development
- B3 – 2038 Do Nothing (A3) + Proposed Residential Development

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

- The site of the proposed development is ideally located to maximise access to / from the site by sustainable forms of travel including walking and cycling to local amenities. There are also public transport links to Bray, Dun Laoghaire, University College Dublin and Dublin City Centre.
- The proposals are in accordance with the land use zoning for the subject development site.
- There is an appropriately located, sized and designed site access junction provided which may support the proposed vehicular, pedestrian and cycle movements expected for this development.

- Traffic generated by the proposed development was established in a percentage impact assessment on the surrounding key junctions to assess the impact of the proposed development upon the local road network. This assessment was undertaken in order to investigate if the level of traffic generated surpassed 10% on normal uncongested networks and 5% on congested networks. When such levels of impact are generated, a more detailed assessment is undertaken to ascertain the specific impact upon the network's operational performance.

- The results of the impact assessment outlined that all three junctions surrounding the development were below the 10% threshold and therefore did not require further analysis to be undertaken.

7.1.7 All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed with DLRCC prior to the commencement of construction activities on site.

7.2 CONCLUSIONS

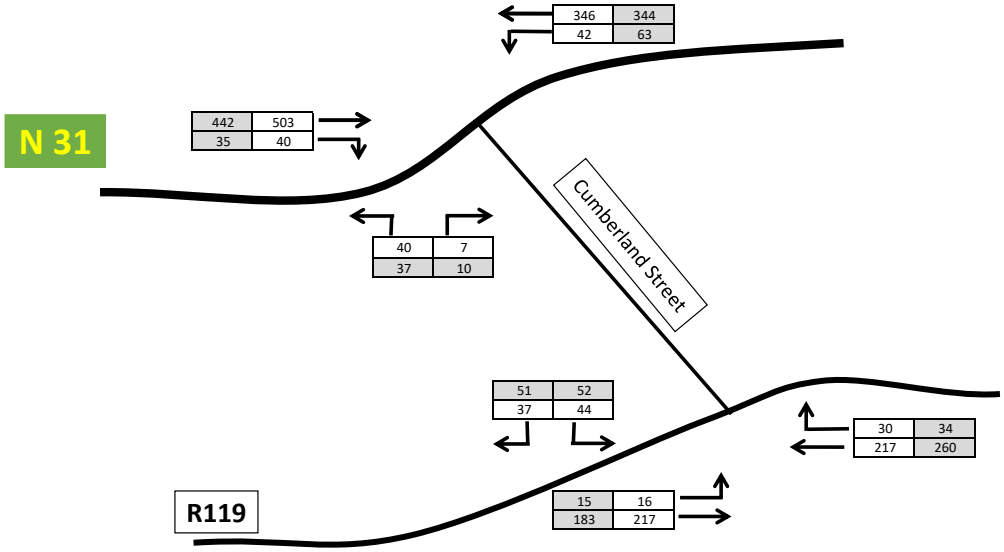
7.2.1 In conclusion, we believe that the opportunity is available, in terms of transport and traffic, for the local authority to consider favourably the proposed development on the subject site.

7.2.2 It is concluded that there are no traffic or transportation related reasons that should prevent the granting of planning permission for the proposed residential development.

APPENDICES

APPENDIX A

Traffic Flow Diagrams



DBFL Consulting Engineers

Dublin Office:
Dublin Office: Ormond House, Upper Ormond Quay, Dublin 7
phone: +353 1 400 4000

Waterford Office:
Unit 2, The Chandlery, 1-2 O'Connell Street, Waterford
phone: +353 51 309 500

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

Project :
Proposed Residential Development at Tedcastles, Dun Laoghaire, Co. Dublin

DRG. Title :
Network Traffic Flows - Vehicles
2019 Base Flows

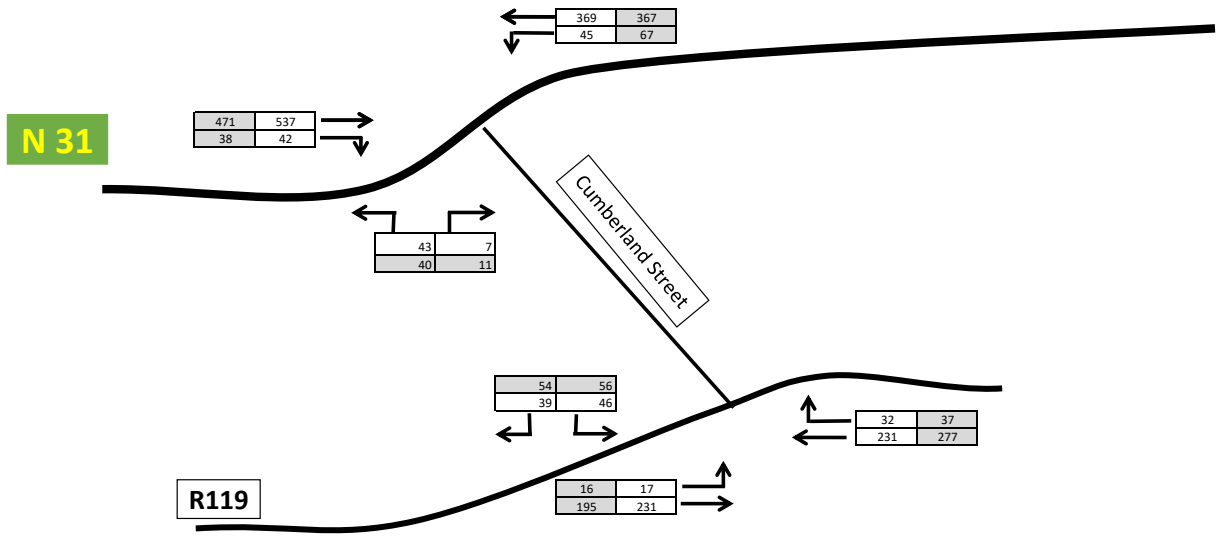
Key:
AM Peak Hour (08:15 to 09:15)
PM Peak Hour (16:45 to 17:45)

Flows based on 09/05/2019 Traffic Surveys

Dwn:	Ckd:	Date:
PMG		27/05/2019

Ref: p190057\calcs\excel\Traffic\ Traffic Model01

Figure:	Rev:
1	-



DBFL Consulting Engineers

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phone: +353 1 400 4000

Waterford Office:
Unit 2, The Chandlery, 1-2 O'Connell Street, Waterford
phone: +353 51 309 500

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2023 Do Nothing

Key:
AM Peak Hour (08:15 to 09:15)
PM Peak Hour (16:45 to 17:45)

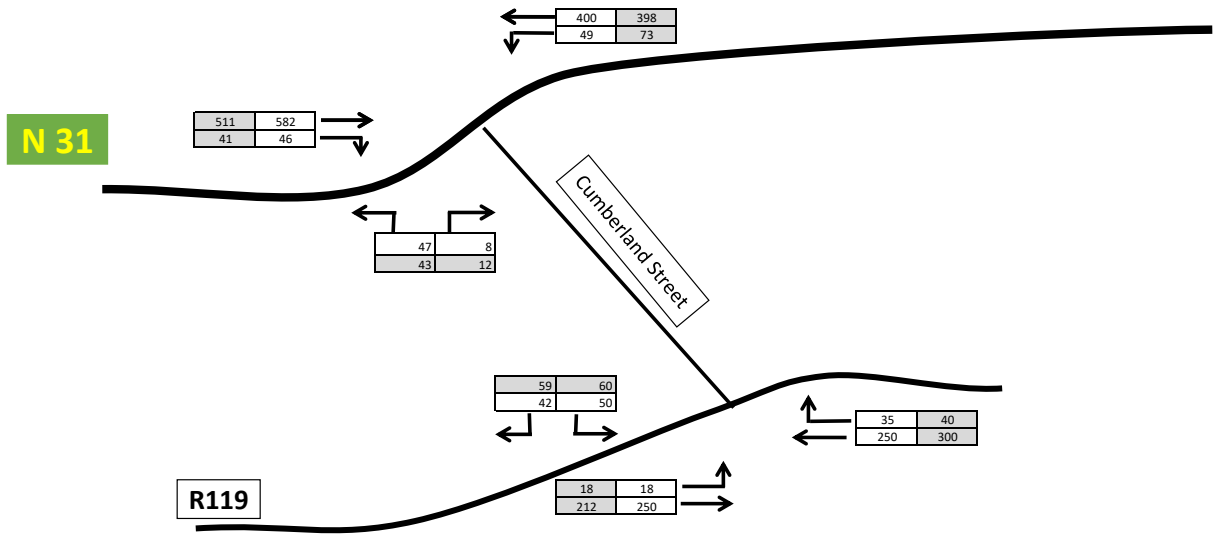
Flows based on 09/05/2019 Traffic Surveys

Dwn:	Ckd:	Date:
PMG		27/05/2019

Ref: p170237\calcs\excel\Traffic\ Traffic Model01

Figure: 2

Rev: -



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phone: +353 1 400 4000

Waterford Office:
Unit 2, The Chandlery, 1-2 O'Connell Street, Waterford
phone: +353 51 309 500

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

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DRG. Title :
Network Traffic Flows - Vehicles
2028 Do Nothing

Key:
AM Peak Hour (08:15 to 09:15)
PM Peak Hour (16:45 to 17:45)

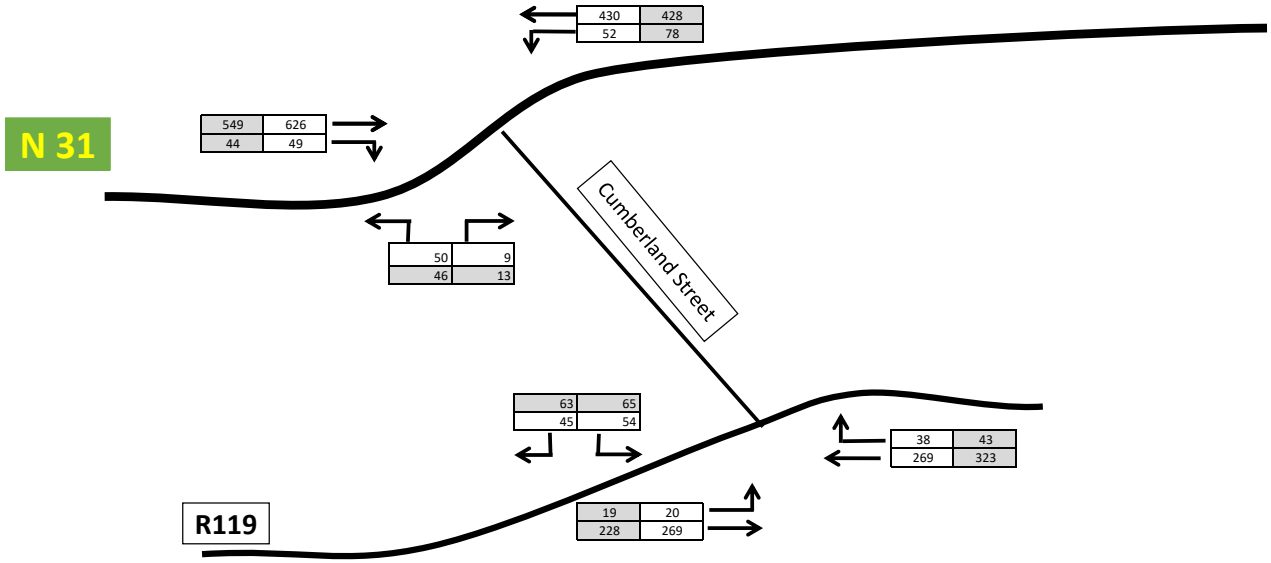
Flows based on 09/05/2019 Traffic Surveys

Dwn:	Ckd:	Date:
		27/05/2019

Ref: p170237\calcs\excel\Traffic\ Traffic Model01

Figure: 3

Rev: -



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Dublin Office: Ormond House, Upper Ormond Quay, Dublin 7
phone: +353 1 400 4000

Waterford Office:
Unit 2, The Chandlery, 1-2 O'Connell Street, Waterford
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email: info@dbfl.ie
website: www.dbfl.ie

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2038 Do Nothing

Key:
AM Peak Hour (08:15 to 09:15)
PM Peak Hour (16:45 to 17:45)

Flows based on 09/05/2019 Traffic Surveys

Dwn:	Ckd:	Date:
		27/05/2019

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Figure:	Rev:
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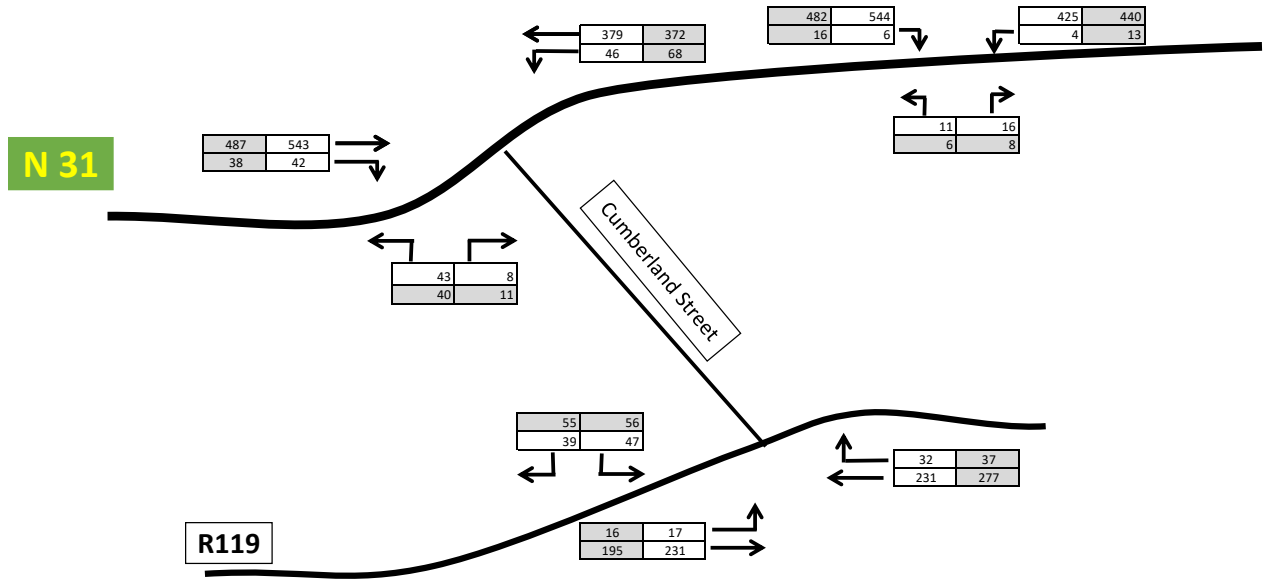

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email: info@dbfl.ie
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DRG. Title :
Network Traffic Flows - Vehicles
2023 Do Something

Key:
AM Peak Hour (08:15 to 09:15)
PM Peak Hour (16:45 to 17:45)

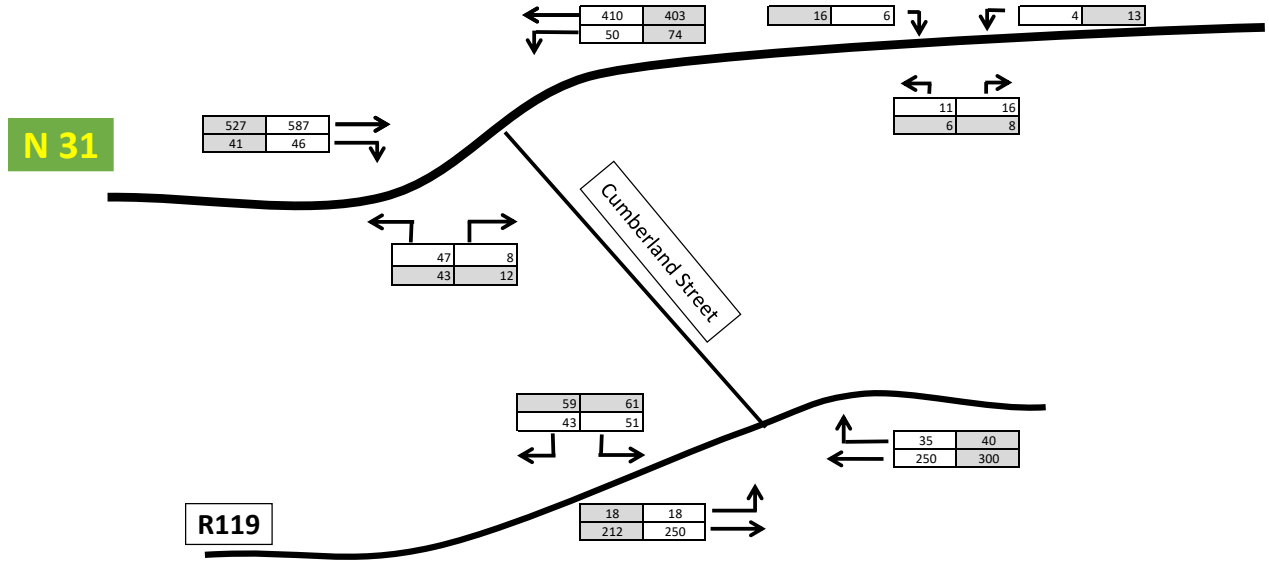
Flows based on 09/05/2019 Traffic Surveys

Dwn:	Ckd:	Date:
PMG		27/05/2019

Ref: p170237\calcs\excel\Traffic\ Traffic Model01

Figure: 5

Rev: -



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DRG. Title :
Network Traffic Flows - Vehicles
2028 Do Something

Key:
AM Peak Hour (08:15 to 09:15)
PM Peak Hour (16:45 to 17:45)

Flows based on 09/05/2019 Traffic Surveys

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		27/05/2019

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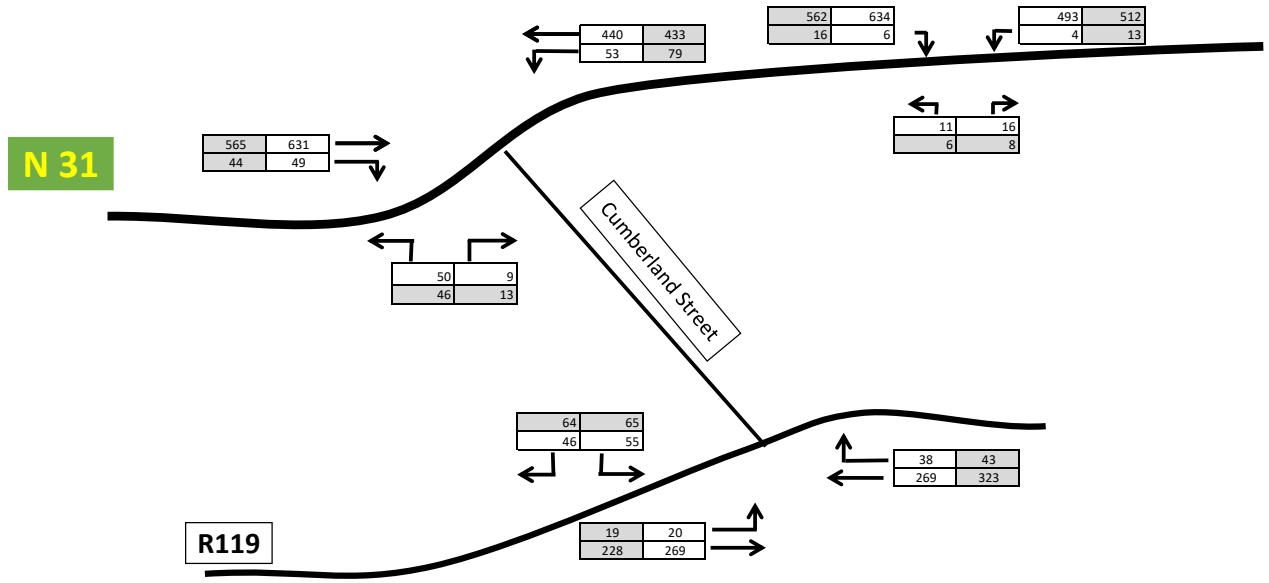
Figure:	Rev:
6	-



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Key:
AM Peak Hour (08:15 to 09:15)
PM Peak Hour (16:45 to 17:45)

Flows based on 09/05/2019 Traffic Surveys

Dwn:	Ckd:	Date:
		27/05/2019

Ref: p170237\calcs\excel\Traffic\ Traffic Model01

Figure:	Rev:
7	-

APPENDIX B

TRICS Database Outputs

Calculation Reference: AUDIT-638801-190530-0517

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

03	SOUTH WEST		
	DC	DORSET	1 days
	DV	DEVON	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	2 days
	NF	NORFOLK	1 days
	SF	SUFFOLK	2 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	NT	NOTTINGHAMSHIRE	2 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	RI	EAST RIDING OF YORKSHIRE	1 days
08	NORTH WEST		
	GM	GREATER MANCHESTER	2 days
09	NORTH		
	CB	CUMBRIA	3 days
	TV	TEES VALLEY	1 days
10	WALES		
	CO	CONWY	1 days
	DB	DENBIGHSHIRE	1 days
11	SCOTLAND		
	EB	CITY OF EDINBURGH	1 days
	SA	SOUTH AYRSHIRE	1 days
	SR	STIRLING	2 days
12	CONNAUGHT		
	GA	GALWAY	1 days
13	MUNSTER		
	WA	WATERFORD	1 days
14	LEINSTER		
	LU	LOUTH	3 days
15	GREATER DUBLIN		
	DL	DUBLIN	8 days
16	ULSTER (REPUBLIC OF IRELAND)		
	MG	MONAGHAN	1 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	1 days

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

Secondary 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: Number of dwellings
Actual Range: 14 to 340 (units:)
Range Selected by User: 8 to 372 (units:)

Parking Spaces Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/11 to 26/03/18

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

Selected survey days:

Monday	6 days
Tuesday	11 days
Wednesday	7 days
Thursday	7 days
Friday	7 days
Saturday	1 days

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

Selected survey types:

Manual count	39 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:

Town Centre	3
Edge of Town Centre	12
Suburban Area (PPS6 Out of Centre)	18
Edge of Town	3
Neighbourhood Centre (PPS6 Local Centre)	3

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	23
Built-Up Zone	7
No Sub Category	9

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

Secondary Filtering selection:

Use Class:

C3	39 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 1 mile:

1,001 to 5,000	4 days
5,001 to 10,000	3 days
10,001 to 15,000	9 days
15,001 to 20,000	4 days
20,001 to 25,000	3 days
25,001 to 50,000	16 days

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

Secondary Filtering selection (Cont.):

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	4 days
50,001 to 75,000	10 days
75,001 to 100,000	3 days
125,001 to 250,000	4 days
250,001 to 500,000	7 days
500,001 or More	9 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	14 days
1.1 to 1.5	25 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	39 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	39 days

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

LIST OF SITES relevant to selection parameters

1 AN-03-C-02 BLOCK OF FLATS ANTRIM
SUMMERHILL AVENUE
BELFAST
KNOCK
Edge of Town
Residential Zone
Total Number of dwellings: 22
Survey date: FRIDAY *28/11/14* *Survey Type: MANUAL*

2 CA-03-C-02 BLOCK OF FLATS CAMBRIDGESHIRE
WESTFIELD ROAD
PETERBOROUGH
NETHERTON
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 44
Survey date: TUESDAY *18/10/11* *Survey Type: MANUAL*

3 CA-03-C-03 BLOCKS OF FLATS CAMBRIDGESHIRE
CROMWELL ROAD
CAMBRIDGE

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 82
Survey date: MONDAY *18/09/17* *Survey Type: MANUAL*

4 CB-03-C-01 BLOCK OF FLATS CUMBRIA
KING STREET
CARLISLE

Town Centre
Built-Up Zone
Total Number of dwellings: 40
Survey date: THURSDAY *12/06/14* *Survey Type: MANUAL*

5 CB-03-C-02 BLOCK OF FLATS CUMBRIA
BRIDGE LANE
PENRITH

Edge of Town
No Sub Category
Total Number of dwellings: 35
Survey date: WEDNESDAY *11/06/14* *Survey Type: MANUAL*

6 CB-03-C-03 FLATS & BUNGALOWS CUMBRIA
LOUND STREET
KENDAL

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 33
Survey date: MONDAY *09/06/14* *Survey Type: MANUAL*

7 CO-03-C-01 BLOCKS OF FLATS CONWY
MOSTYN BROADWAY
LLANDUDNO

Edge of Town Centre
Built-Up Zone
Total Number of dwellings: 37
Survey date: MONDAY *26/03/18* *Survey Type: MANUAL*

8 DB-03-C-01 FLATS IN HOUSES DENBIGHSHIRE
RHYL ROAD
RHUDDLAN

Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of dwellings: 16
Survey date: FRIDAY *07/10/11* *Survey Type: MANUAL*

9 DC-03-C-02 FLATS IN BLOCKS DORSET
PALM COURT
WEYMOUTH
SPA ROAD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 14
Survey date: FRIDAY *28/03/14* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

10 DL-03-C-08 FLATS DUBLIN
FINGLAS ROAD
DUBLIN
FINGLAS
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 340
Survey date: FRIDAY *30/09/11* *Survey Type: MANUAL*

11 DL-03-C-09 FLATS DUBLIN
OLD FINGLAS ROAD
DUBLIN
GLASNEVIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 201
Survey date: THURSDAY *29/09/11* *Survey Type: MANUAL*

12 DL-03-C-11 BLOCK OF FLATS DUBLIN
WYCKHAM WAY
DUBLIN
DUNDRUM
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of dwellings: 96
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

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

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 47
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

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

Neighbourhood Centre (PPS6 Local Centre)
Built-Up Zone
Total Number of dwellings: 52
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

15 DL-03-C-14 BLOCKS OF FLATS DUBLIN
BALLINTEER ROAD
DUBLIN
DUNDRUM
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 140
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

16 DL-03-C-15 BLOCKS OF FLATS DUBLIN
MONKSTOWN ROAD
DUBLIN
MONKSTOWN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 20
Survey date: WEDNESDAY *01/10/14* *Survey Type: MANUAL*

17 DL-03-C-16 BLOCKS OF FLATS DUBLIN
BOTANIC AVENUE
DUBLIN
DRUMCONDRA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 31
Survey date: TUESDAY *22/11/16* *Survey Type: MANUAL*

18 DS-03-C-02 FLATS DERBYSHIRE
BURTON ROAD
DERBY
NEW NORMANTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 28
Survey date: SATURDAY *09/07/11* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

19 DV-03-C-01 BLOCK OF FLATS DEVON
BONHAY ROAD
EXETER

Edge of Town Centre
Residential Zone
Total Number of dwellings: 27
Survey date: MONDAY *10/07/17* *Survey Type: MANUAL*

20 EB-03-C-01 BLOCKS OF FLATS CITY OF EDINBURGH
MYRESIDE ROAD
EDINBURGH
CRAIGLOCKHART
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 32
Survey date: TUESDAY *26/05/15* *Survey Type: MANUAL*

21 GA-03-C-01 FLATS GALWAY
BALLYLOUGHANE ROAD
GALWAY

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 34
Survey date: THURSDAY *31/10/13* *Survey Type: MANUAL*

22 GM-03-C-02 BLOCK OF FLATS GREATER MANCHESTER
WHITWORTH STREET W.
MANCHESTER

Town Centre
Built-Up Zone
Total Number of dwellings: 154
Survey date: THURSDAY *13/10/11* *Survey Type: MANUAL*

23 GM-03-C-03 BLOCK OF FLATS GREATER MANCHESTER
FAIRFIELD STREET
MANCHESTER

Town Centre
Built-Up Zone
Total Number of dwellings: 20
Survey date: FRIDAY *14/10/11* *Survey Type: MANUAL*

24 LU-03-C-01 BLOCKS OF FLATS LOUTH
DONORE ROAD
DROGHEDA

Edge of Town Centre
Residential Zone
Total Number of dwellings: 52
Survey date: THURSDAY *12/09/13* *Survey Type: MANUAL*

25 LU-03-C-02 BLOCK OF FLATS LOUTH
NICHOLAS STREET
DUNDALK

Edge of Town Centre
Residential Zone
Total Number of dwellings: 33
Survey date: MONDAY *16/09/13* *Survey Type: MANUAL*

26 LU-03-C-03 BLOCK OF FLATS LOUTH
NICHOLAS STREET
DUNDALK

Edge of Town Centre
Residential Zone
Total Number of dwellings: 20
Survey date: MONDAY *16/09/13* *Survey Type: MANUAL*

27 MG-03-C-01 BLOCK OF FLATS MONAGHAN
MALL ROAD
MONAGHAN

Edge of Town Centre
No Sub Category
Total Number of dwellings: 28
Survey date: FRIDAY *06/09/13* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

28 NF-03-C-01 BLOCKS OF FLATS NORFOLK
PAGE STAIR LANE
KING'S LYNN

Edge of Town Centre
Built-Up Zone
Total Number of dwellings: 51
Survey date: THURSDAY *11/12/14* *Survey Type: MANUAL*

29 NT-03-C-01 HOUSES (SPLIT INTO FLATS) NOTTINGHAMSHIRE
LAWRENCE WAY
NOTTINGHAM

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 56
Survey date: TUESDAY *08/11/16* *Survey Type: MANUAL*

30 NT-03-C-02 HOUSES (SPLIT INTO FLATS) NOTTINGHAMSHIRE
CASTLE MARINA ROAD
NOTTINGHAM

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 135
Survey date: WEDNESDAY *09/11/16* *Survey Type: MANUAL*

31 RI-03-C-01 FLATS EAST RIDING OF YORKSHIRE
465 PRIORY ROAD
HULL

Edge of Town
Residential Zone
Total Number of dwellings: 20
Survey date: TUESDAY *13/05/14* *Survey Type: MANUAL*

32 SA-03-C-01 BLOCK OF FLATS SOUTH AYRSHIRE
RACECOURSE ROAD
AYR

Edge of Town Centre
Residential Zone
Total Number of dwellings: 51
Survey date: TUESDAY *16/09/14* *Survey Type: MANUAL*

33 SF-03-C-01 BLOCKS OF FLATS SUFFOLK
STATION HILL
BURY ST EDMUNDS

Edge of Town Centre
Built-Up Zone
Total Number of dwellings: 85
Survey date: THURSDAY *18/12/14* *Survey Type: MANUAL*

34 SF-03-C-03 BLOCKS OF FLATS SUFFOLK
TOLLGATE LANE
BURY ST EDMUNDS

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 30
Survey date: WEDNESDAY *03/12/14* *Survey Type: MANUAL*

35 SR-03-C-01 FLATS STIRLING
FORTHSIDE WAY
STIRLING

Edge of Town Centre
No Sub Category
Total Number of dwellings: 80
Survey date: WEDNESDAY *18/06/14* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

36	SR-03-C-02	FLATS		STIRLING
	ROSEBERRY TERRACE			
	STIRLING			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:		48	
	Survey date: WEDNESDAY		*18/06/14*	*Survey Type: MANUAL*
37	TV-03-C-02	FLATS		TEES VALLEY
	ACKLAM ROAD			
	MIDDLESBROUGH			
	LINTHORPE			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:		85	
	Survey date: WEDNESDAY		*29/06/11*	*Survey Type: MANUAL*
38	WA-03-C-01	BLOCKS OF FLATS		WATERFORD
	UPPER YELLOW ROAD			
	WATERFORD			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:		51	
	Survey date: TUESDAY		*12/05/15*	*Survey Type: MANUAL*
39	WM-03-C-04	BLOCKS OF FLATS		WEST MIDLANDS
	GILLQUART WAY			
	COVENTRY			
	PARKSIDE			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:		55	
	Survey date: FRIDAY		*11/11/16*	*Survey Type: MANUAL*

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
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	39	62	0.044	39	62	0.166	39	62	0.210
08:00 - 09:00	39	62	0.050	39	62	0.207	39	62	0.257
09:00 - 10:00	39	62	0.066	39	62	0.099	39	62	0.165
10:00 - 11:00	39	62	0.050	39	62	0.068	39	62	0.118
11:00 - 12:00	39	62	0.064	39	62	0.066	39	62	0.130
12:00 - 13:00	39	62	0.080	39	62	0.072	39	62	0.152
13:00 - 14:00	39	62	0.075	39	62	0.084	39	62	0.159
14:00 - 15:00	39	62	0.080	39	62	0.080	39	62	0.160
15:00 - 16:00	39	62	0.104	39	62	0.066	39	62	0.170
16:00 - 17:00	39	62	0.120	39	62	0.072	39	62	0.192
17:00 - 18:00	39	62	0.195	39	62	0.073	39	62	0.268
18:00 - 19:00	39	62	0.153	39	62	0.078	39	62	0.231
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.081			1.131			2.212

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.

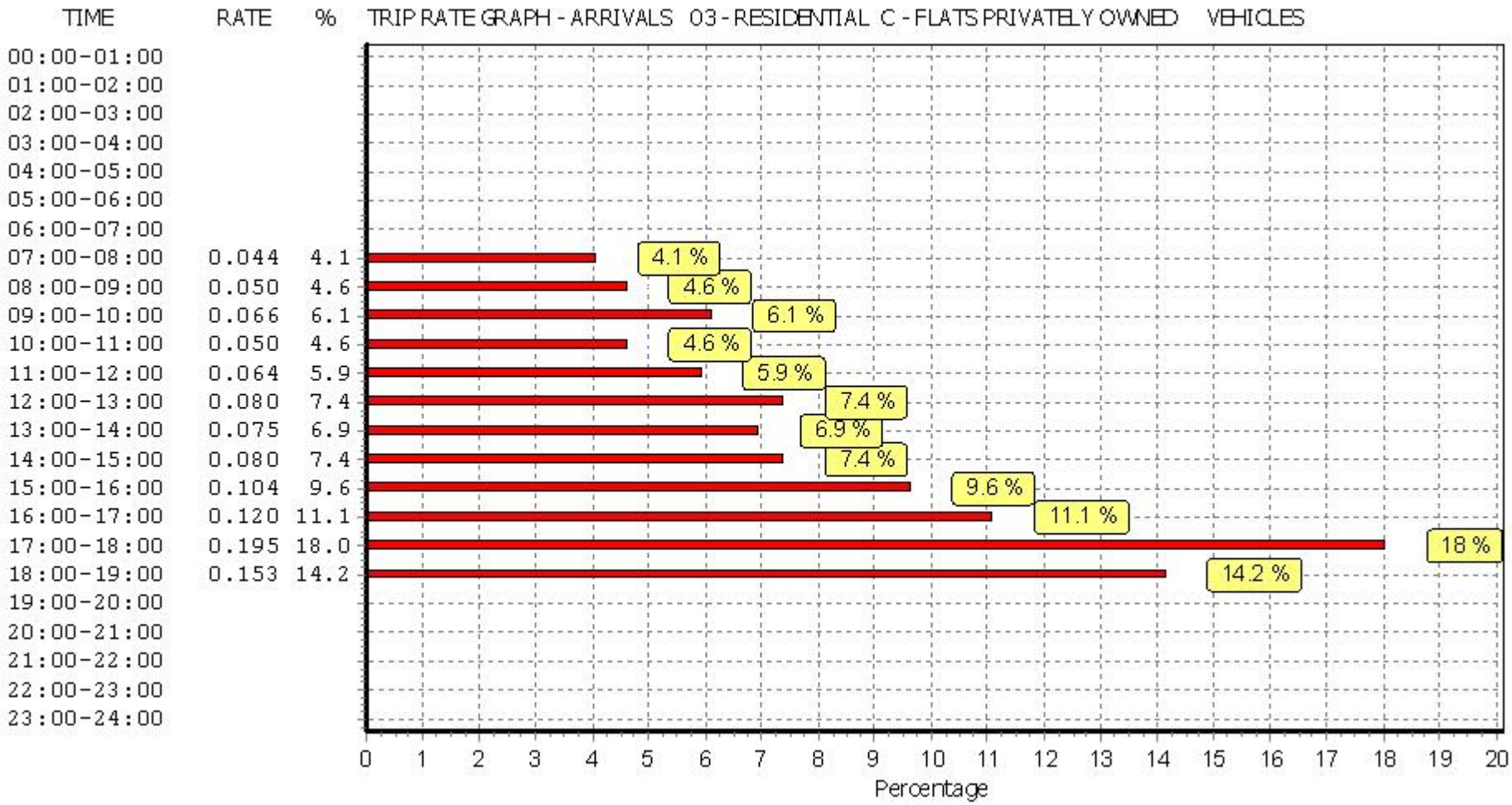
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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:	14 - 340 (units:)
Survey date date range:	01/01/11 - 26/03/18
Number of weekdays (Monday-Friday):	38
Number of Saturdays:	1
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

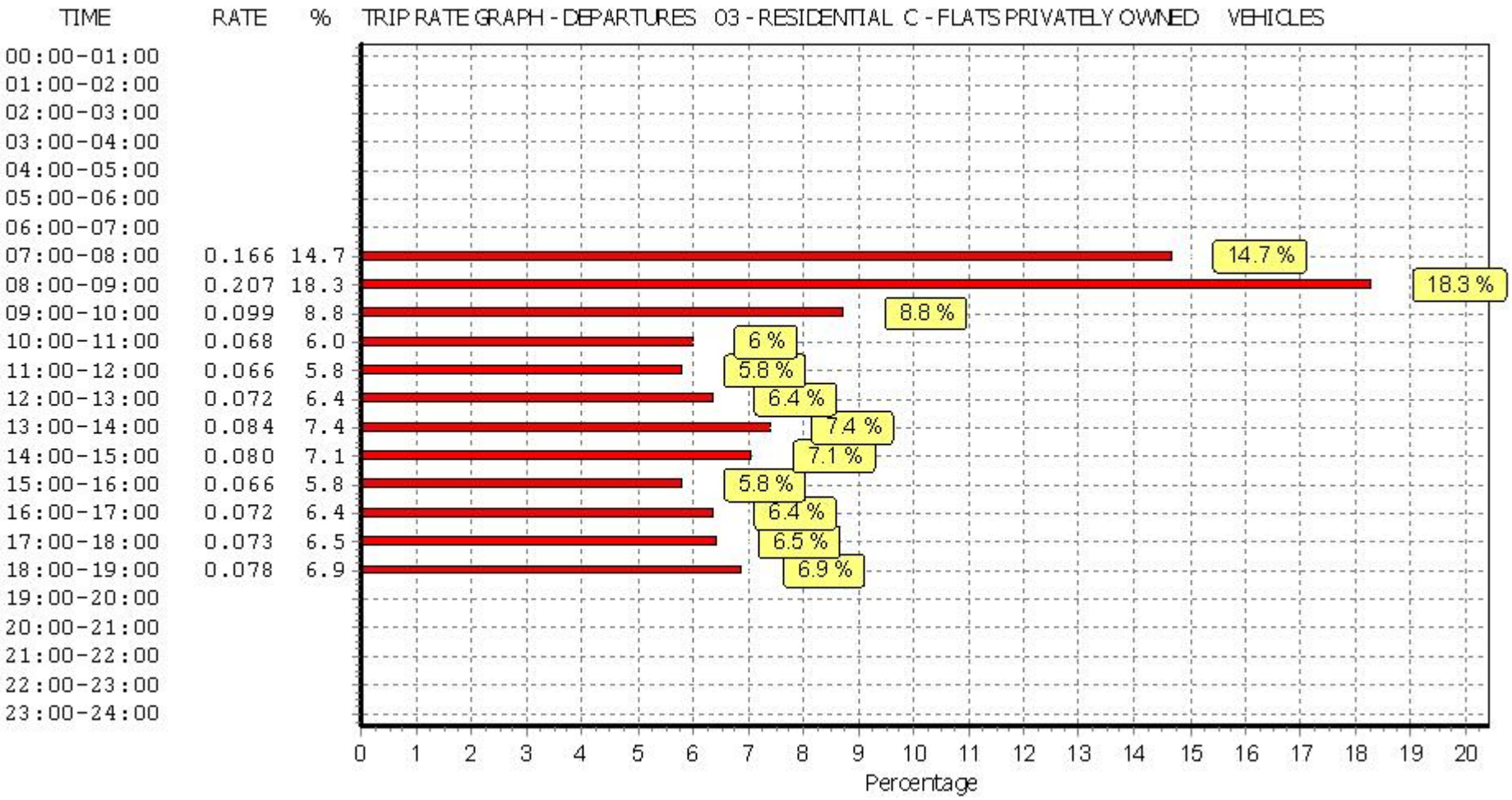
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected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

DBFL Ormond House Dublin Licence No: 638801



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

DBFL Ormond House Dublin Licence No: 638801



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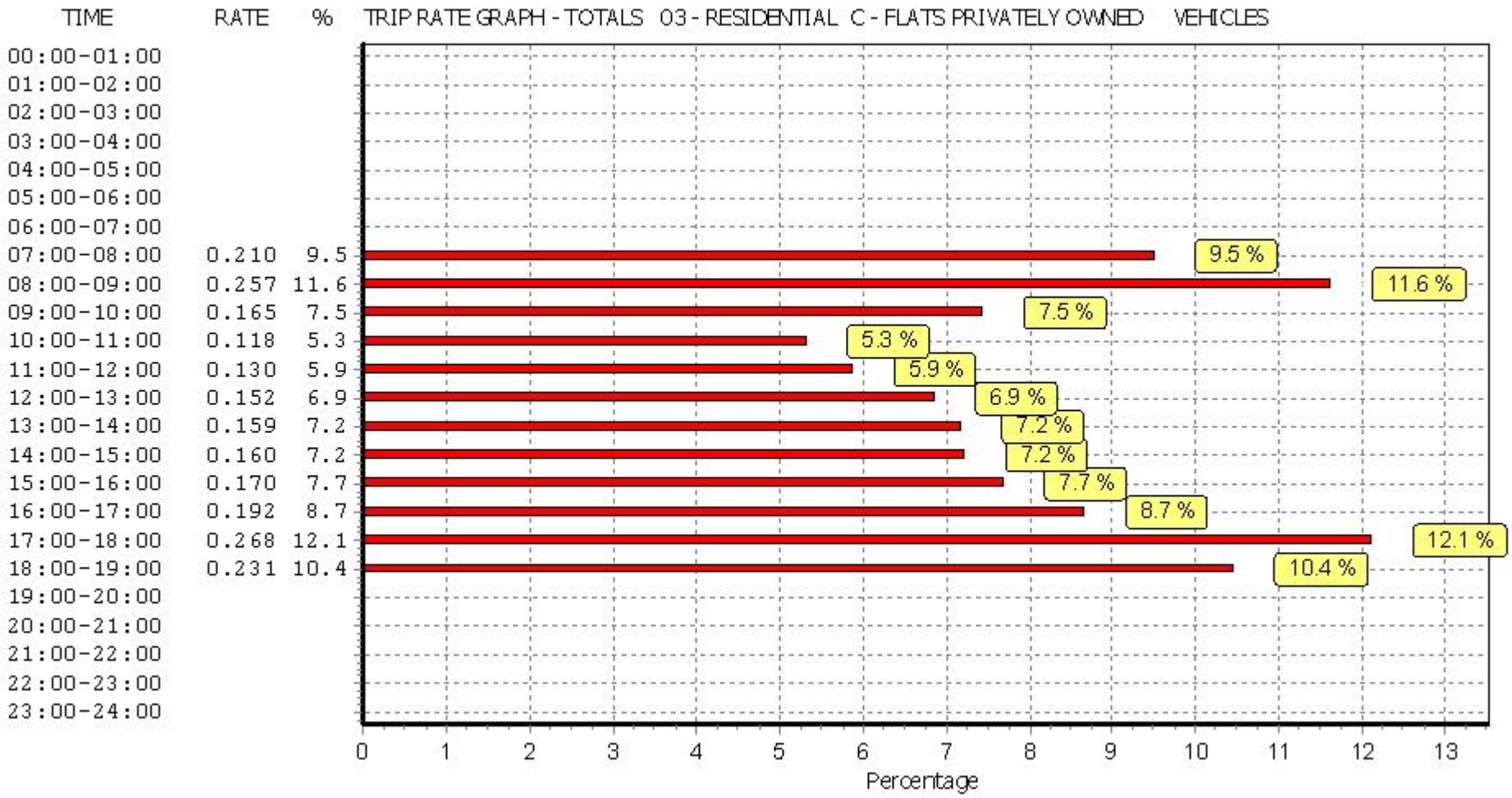

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TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	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	39	62	0.005	39	62	0.005	39	62	0.010
08:00 - 09:00	39	62	0.001	39	62	0.001	39	62	0.002
09:00 - 10:00	39	62	0.002	39	62	0.002	39	62	0.004
10:00 - 11:00	39	62	0.000	39	62	0.001	39	62	0.001
11:00 - 12:00	39	62	0.004	39	62	0.004	39	62	0.008
12:00 - 13:00	39	62	0.002	39	62	0.001	39	62	0.003
13:00 - 14:00	39	62	0.003	39	62	0.004	39	62	0.007
14:00 - 15:00	39	62	0.003	39	62	0.003	39	62	0.006
15:00 - 16:00	39	62	0.004	39	62	0.004	39	62	0.008
16:00 - 17:00	39	62	0.003	39	62	0.003	39	62	0.006
17:00 - 18:00	39	62	0.003	39	62	0.002	39	62	0.005
18:00 - 19:00	39	62	0.003	39	62	0.004	39	62	0.007
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.033			0.034			0.067

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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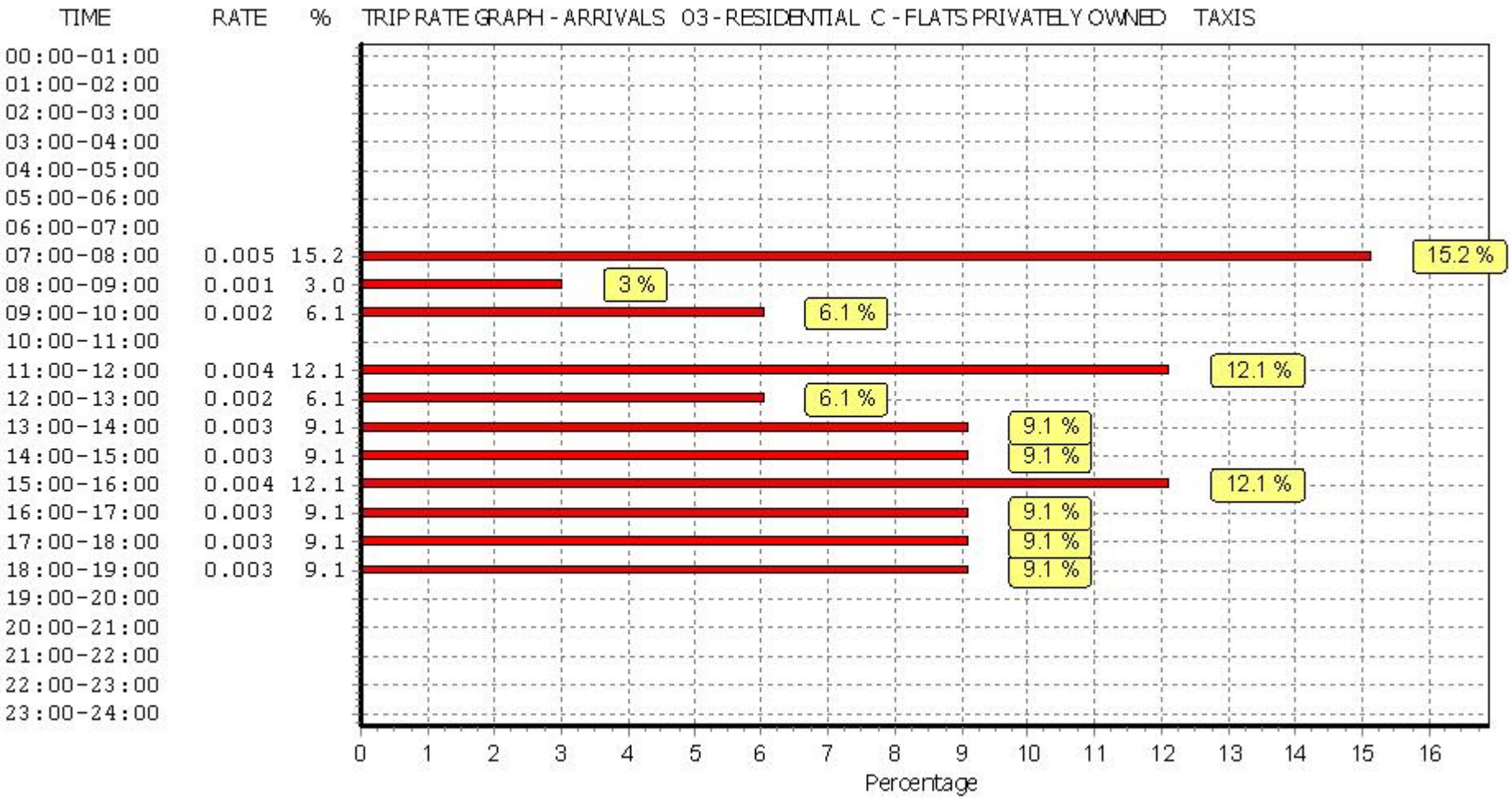
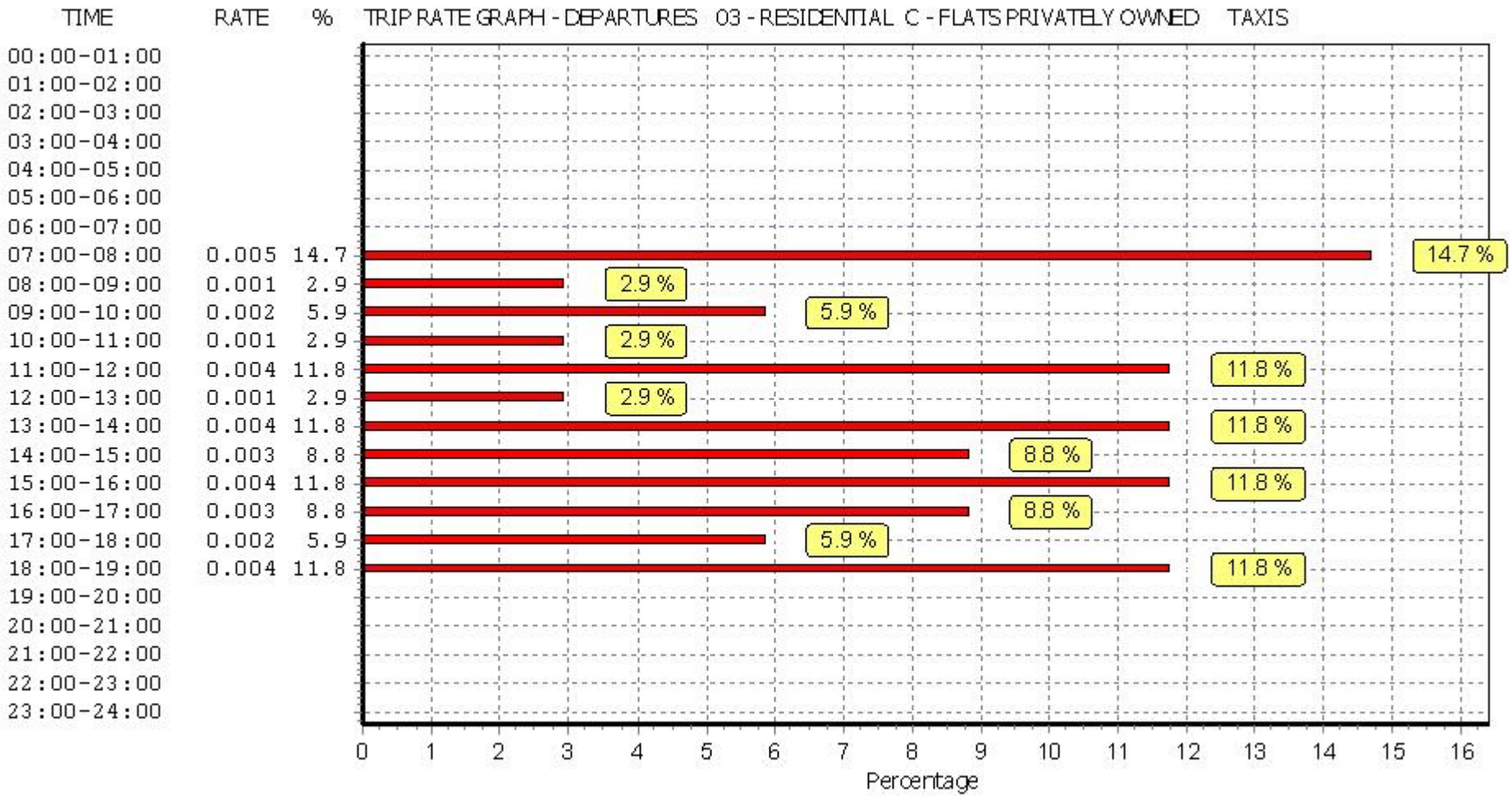


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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



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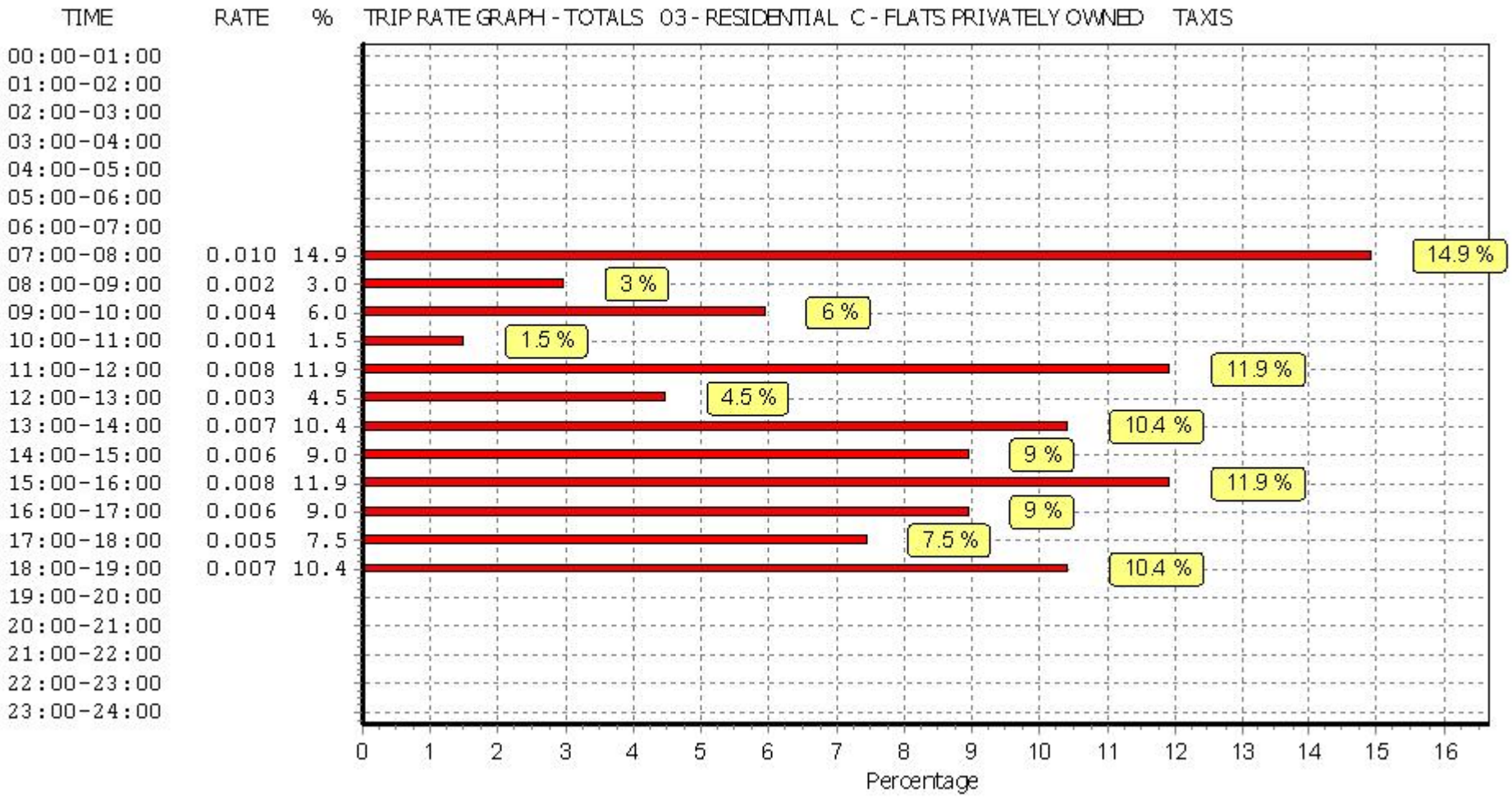

This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
OGVS
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	39	62	0.001	39	62	0.003	39	62	0.004
08:00 - 09:00	39	62	0.001	39	62	0.001	39	62	0.002
09:00 - 10:00	39	62	0.002	39	62	0.002	39	62	0.004
10:00 - 11:00	39	62	0.000	39	62	0.001	39	62	0.001
11:00 - 12:00	39	62	0.000	39	62	0.000	39	62	0.000
12:00 - 13:00	39	62	0.002	39	62	0.001	39	62	0.003
13:00 - 14:00	39	62	0.000	39	62	0.001	39	62	0.001
14:00 - 15:00	39	62	0.001	39	62	0.001	39	62	0.002
15:00 - 16:00	39	62	0.001	39	62	0.000	39	62	0.001
16:00 - 17:00	39	62	0.001	39	62	0.001	39	62	0.002
17:00 - 18:00	39	62	0.000	39	62	0.000	39	62	0.000
18:00 - 19:00	39	62	0.000	39	62	0.000	39	62	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.009			0.011			0.020

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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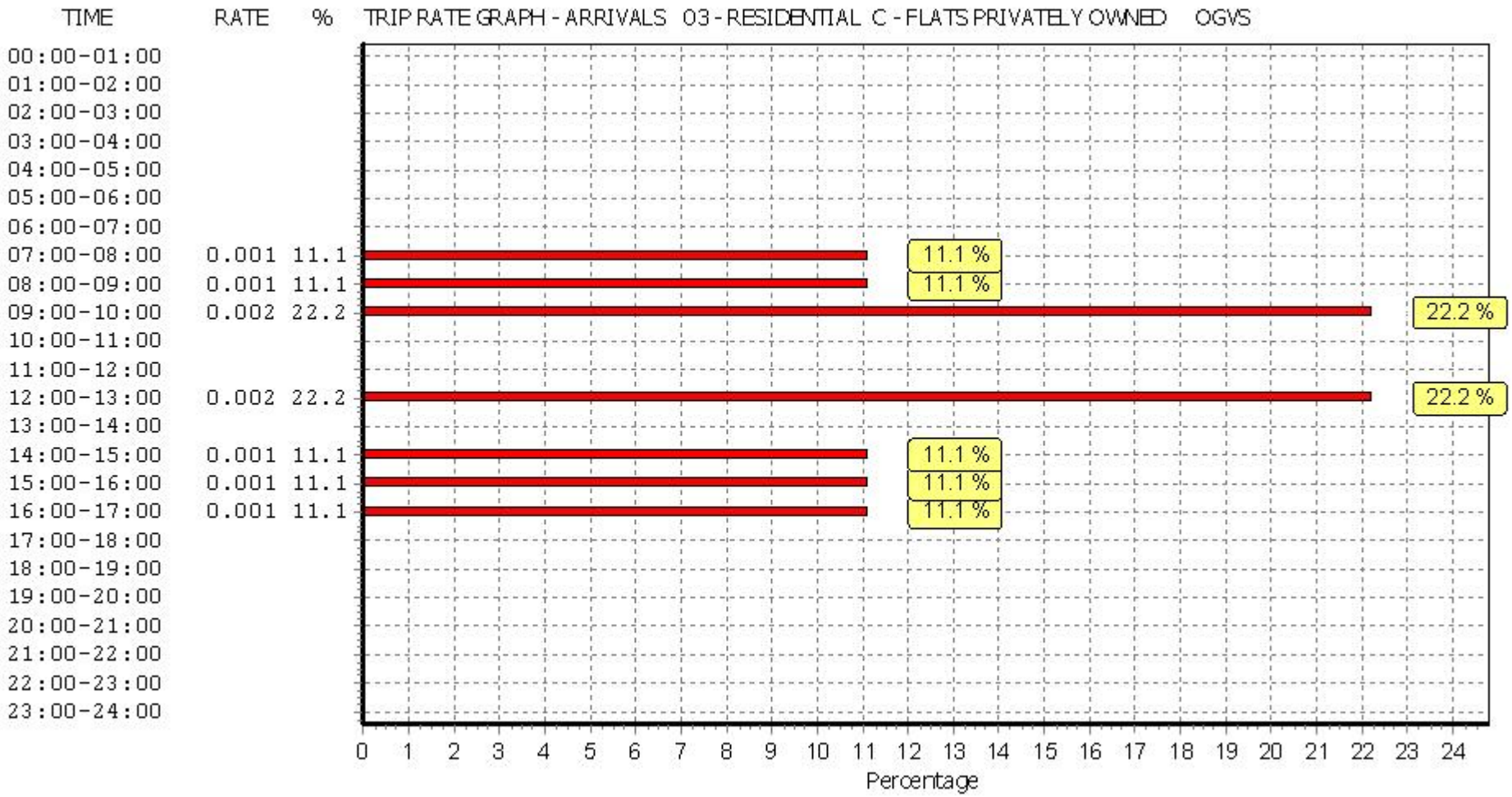

This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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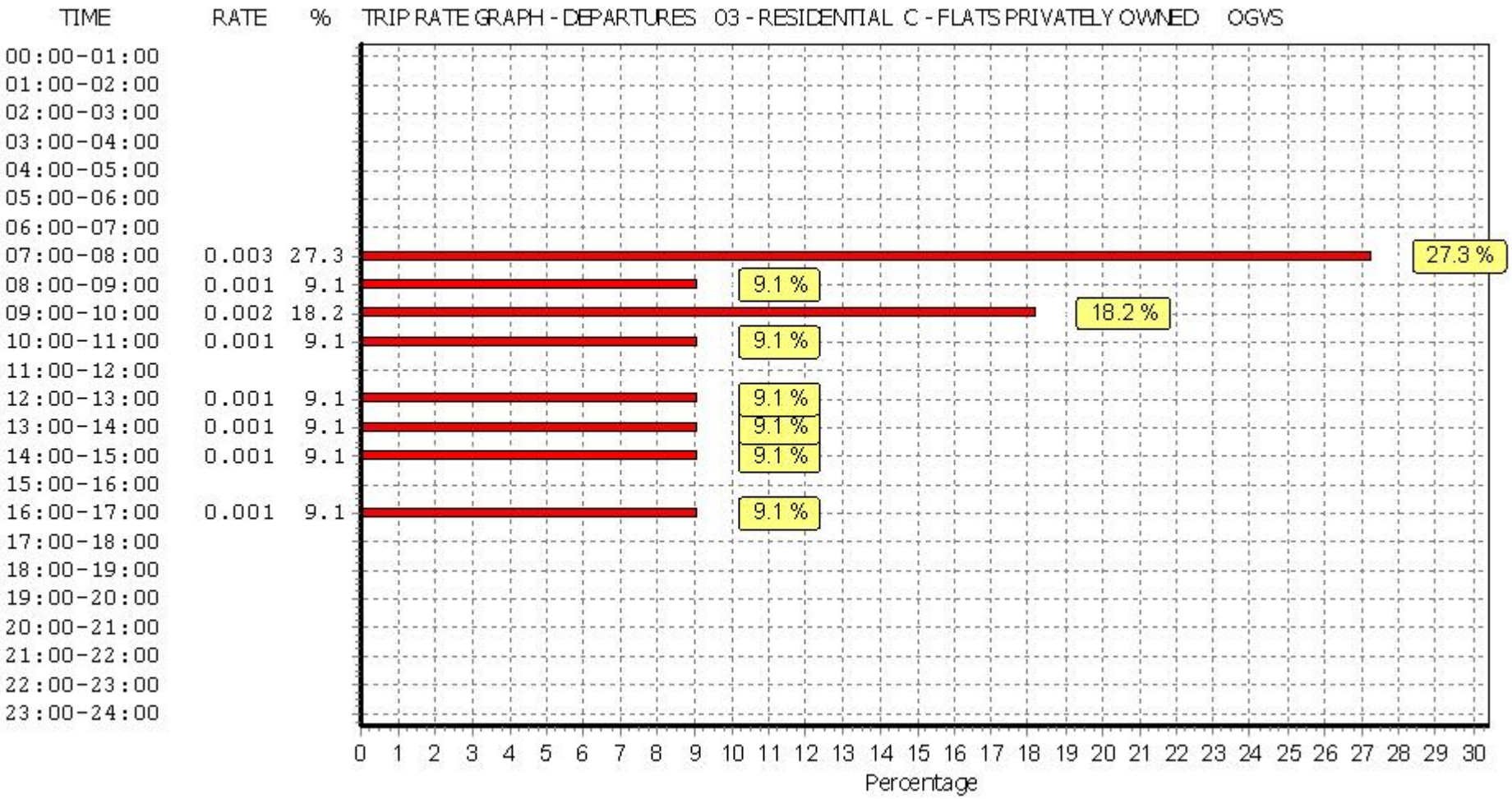
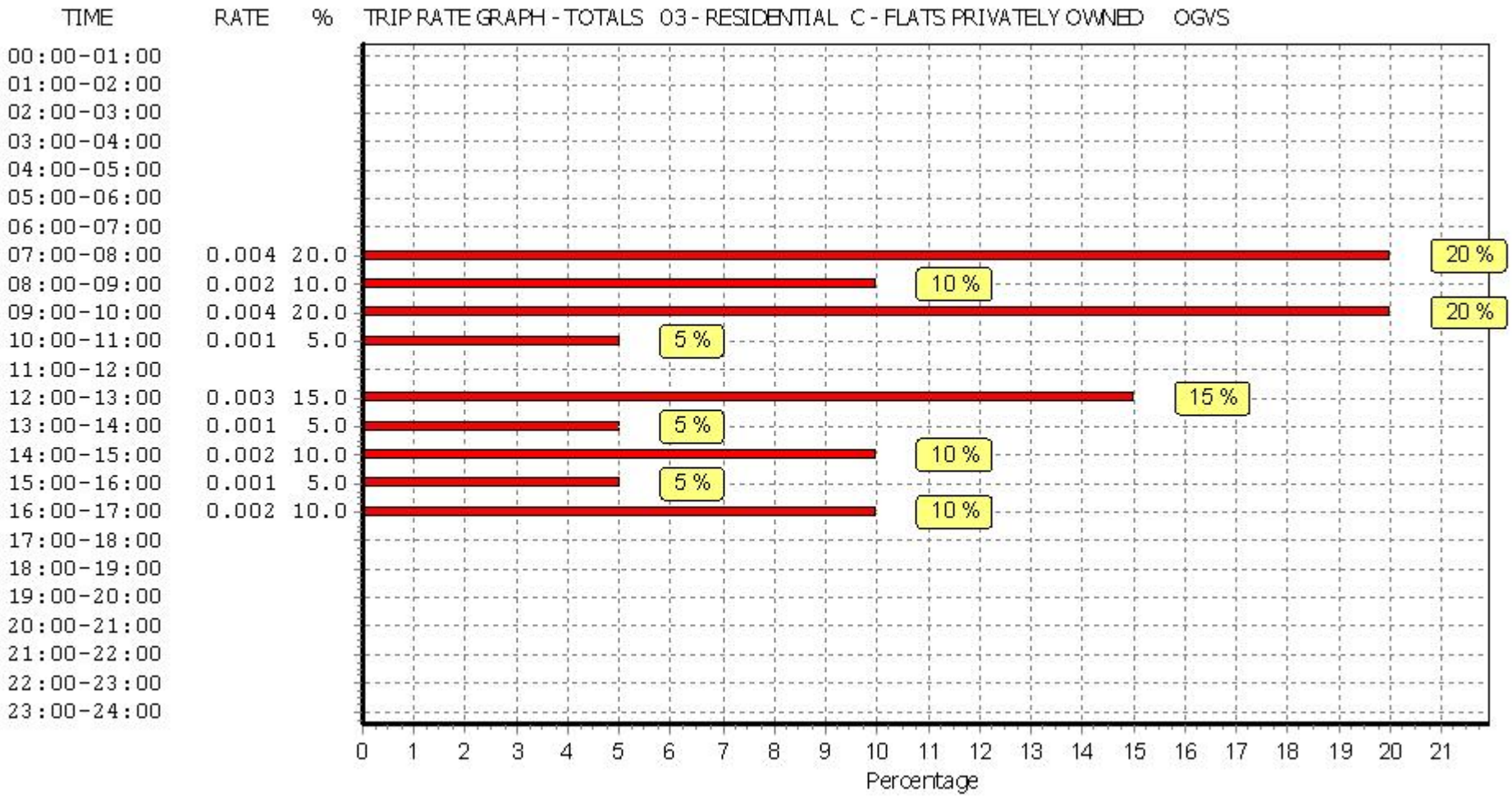


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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



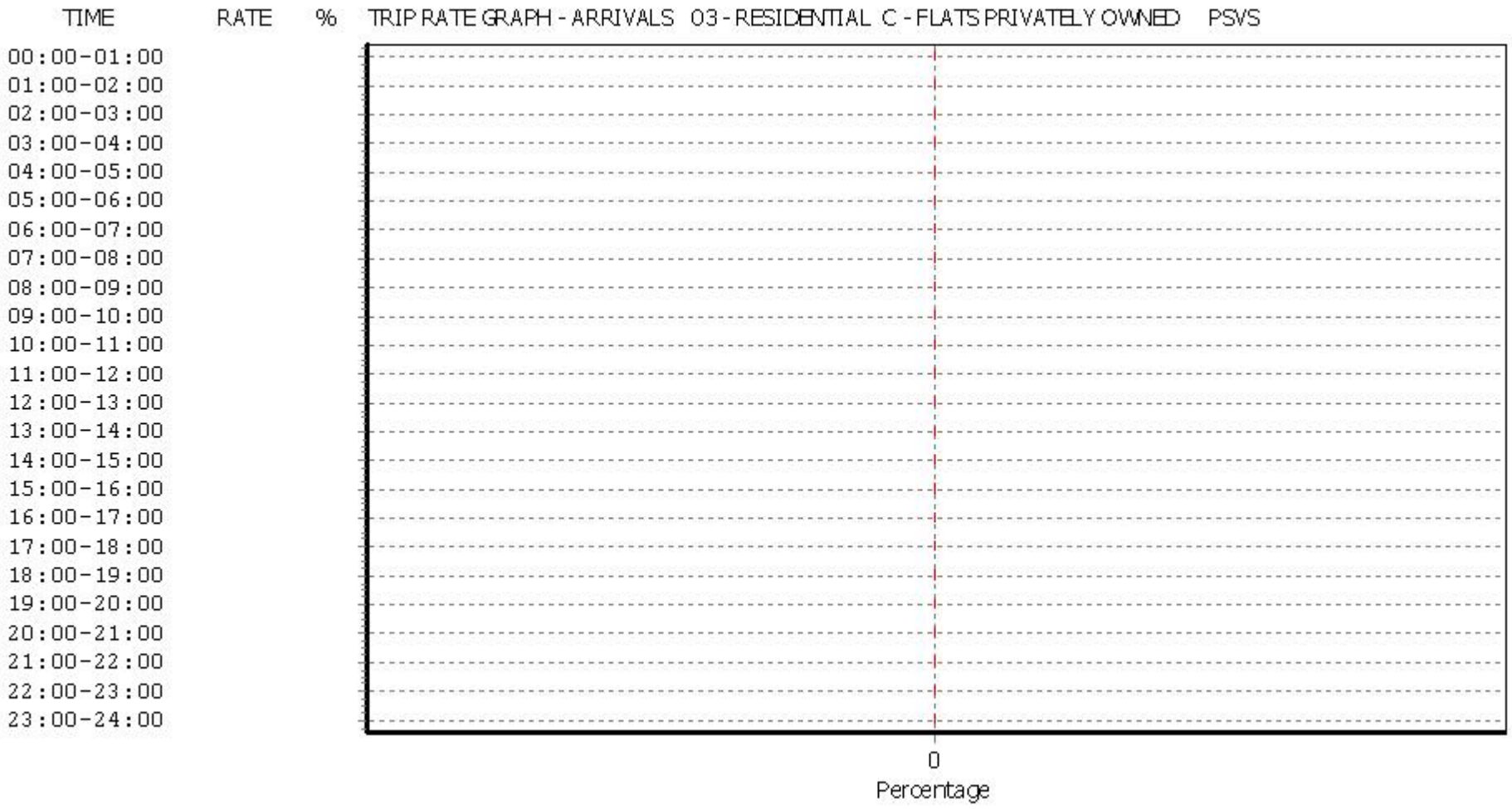
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

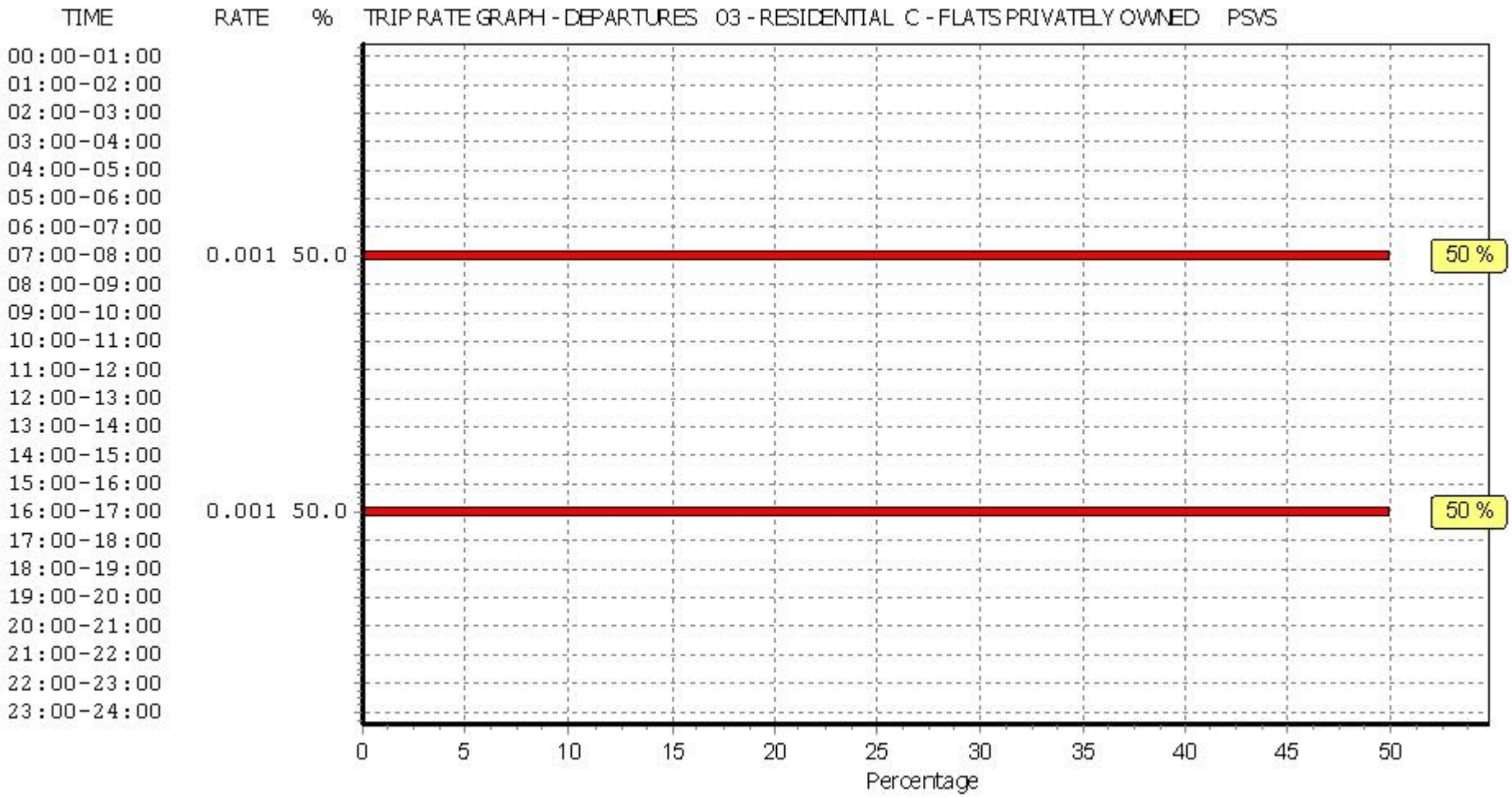
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	39	62	0.000	39	62	0.001	39	62	0.001
08:00 - 09:00	39	62	0.000	39	62	0.000	39	62	0.000
09:00 - 10:00	39	62	0.000	39	62	0.000	39	62	0.000
10:00 - 11:00	39	62	0.000	39	62	0.000	39	62	0.000
11:00 - 12:00	39	62	0.000	39	62	0.000	39	62	0.000
12:00 - 13:00	39	62	0.000	39	62	0.000	39	62	0.000
13:00 - 14:00	39	62	0.000	39	62	0.000	39	62	0.000
14:00 - 15:00	39	62	0.000	39	62	0.000	39	62	0.000
15:00 - 16:00	39	62	0.000	39	62	0.000	39	62	0.000
16:00 - 17:00	39	62	0.000	39	62	0.001	39	62	0.001
17:00 - 18:00	39	62	0.000	39	62	0.000	39	62	0.000
18:00 - 19:00	39	62	0.000	39	62	0.000	39	62	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.002			0.002

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.*

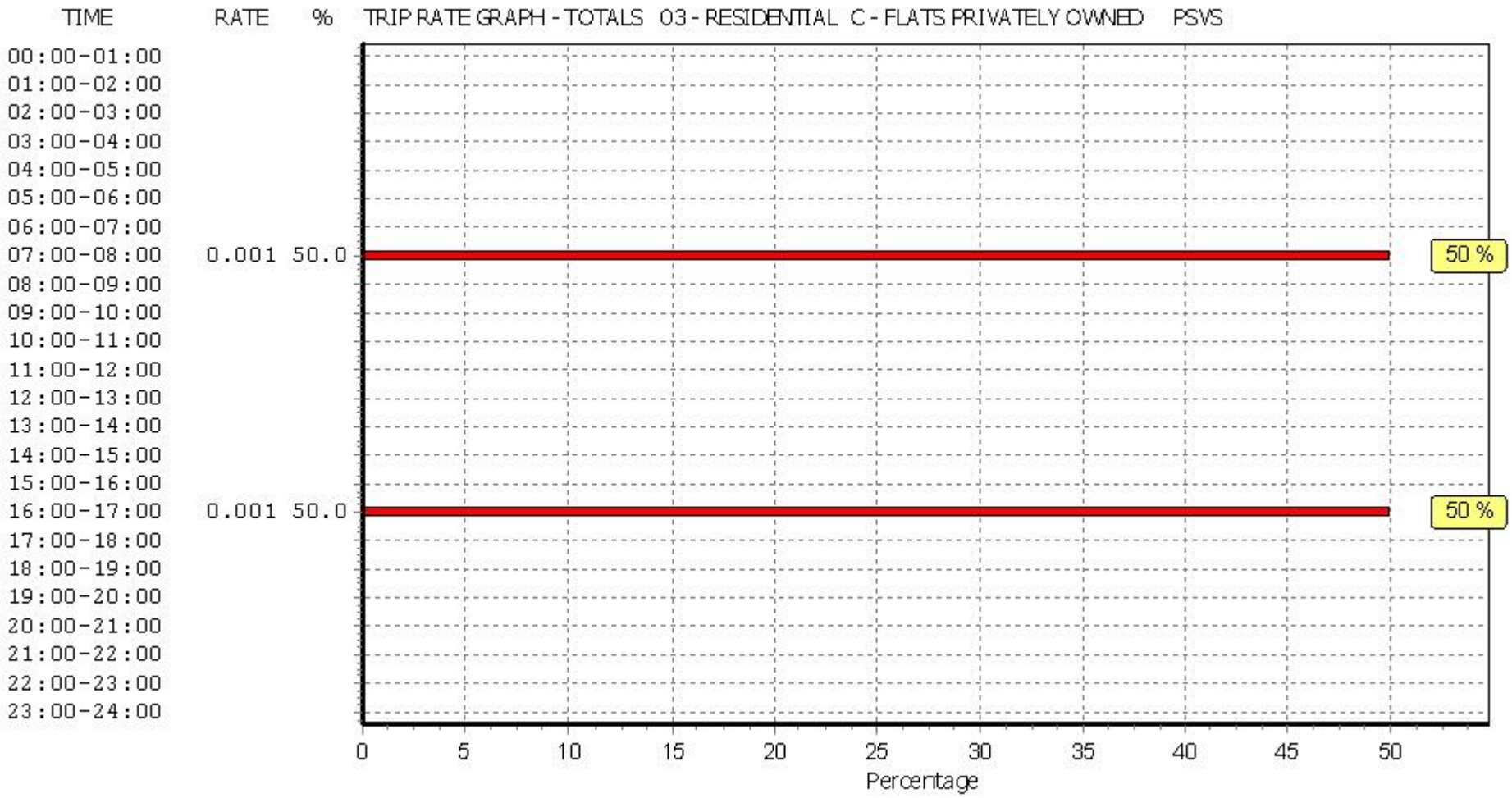


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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



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

DBFL Ormond House Dublin Licence No: 638801



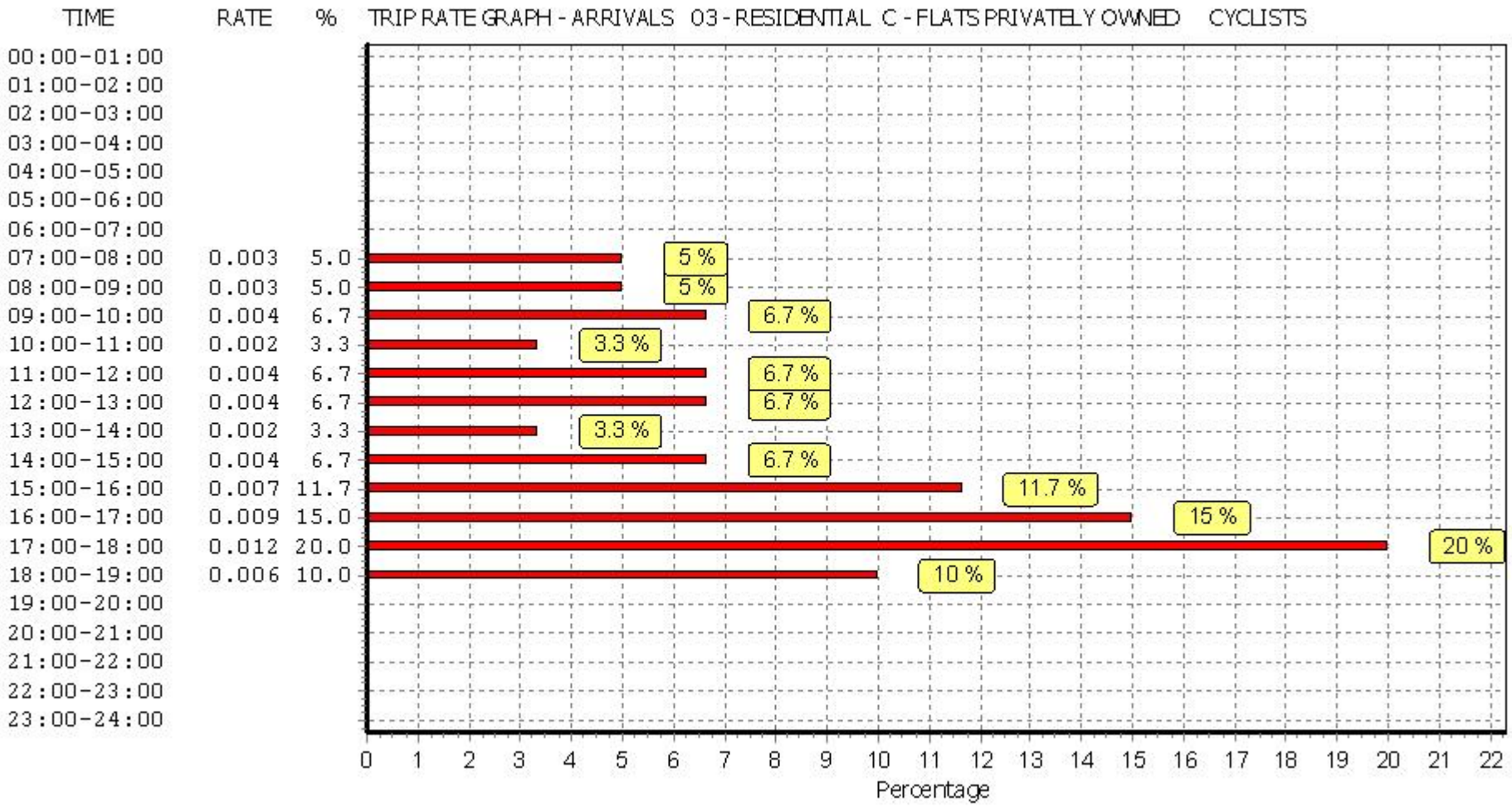
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

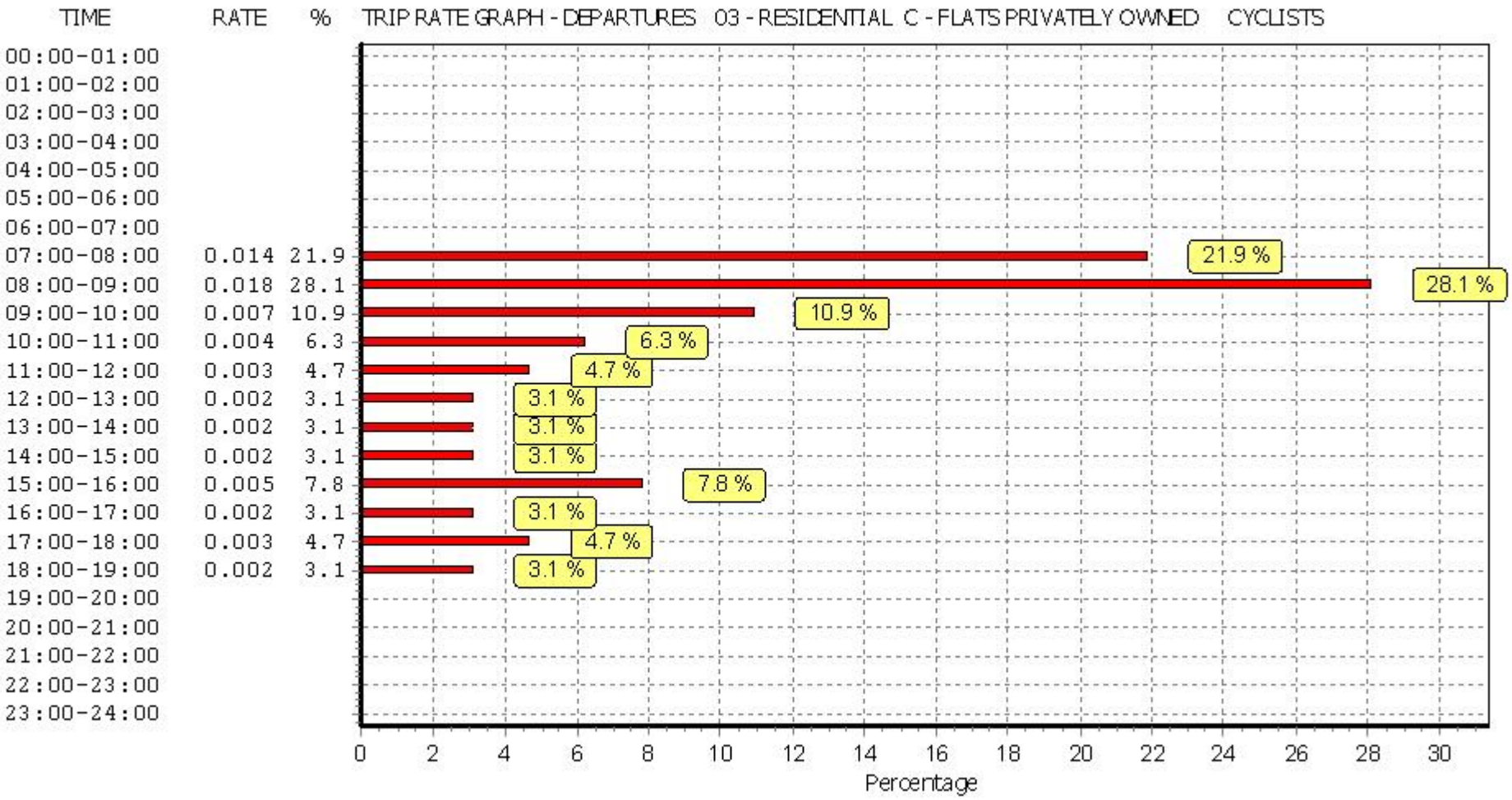
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	39	62	0.003	39	62	0.014	39	62	0.017
08:00 - 09:00	39	62	0.003	39	62	0.018	39	62	0.021
09:00 - 10:00	39	62	0.004	39	62	0.007	39	62	0.011
10:00 - 11:00	39	62	0.002	39	62	0.004	39	62	0.006
11:00 - 12:00	39	62	0.004	39	62	0.003	39	62	0.007
12:00 - 13:00	39	62	0.004	39	62	0.002	39	62	0.006
13:00 - 14:00	39	62	0.002	39	62	0.002	39	62	0.004
14:00 - 15:00	39	62	0.004	39	62	0.002	39	62	0.006
15:00 - 16:00	39	62	0.007	39	62	0.005	39	62	0.012
16:00 - 17:00	39	62	0.009	39	62	0.002	39	62	0.011
17:00 - 18:00	39	62	0.012	39	62	0.003	39	62	0.015
18:00 - 19:00	39	62	0.006	39	62	0.002	39	62	0.008
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.060			0.064			0.124

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.*

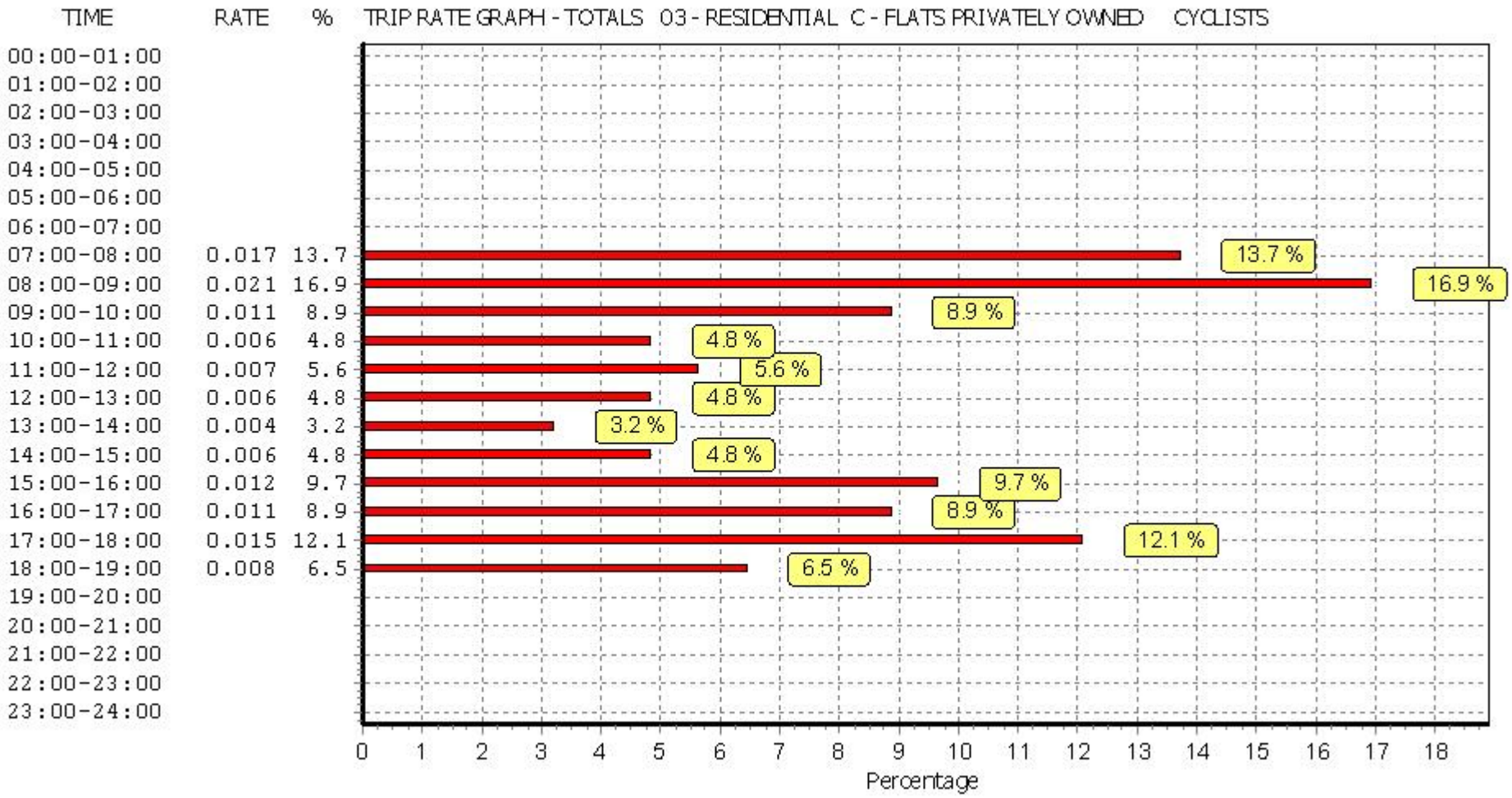


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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



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

DBFL Ormond House Dublin Licence No: 638801



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

Calculation Reference: AUDIT-638801-210709-0721

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 06 - HOTEL, FOOD & DRINK
Category : B - RESTAURANTS
TOTAL VEHICLES

Selected regions and areas:

12	CONNAUGHT		
	GA	GALWAY	1 days
	RO	ROSCOMMON	1 days
14	LEINSTER		
	LU	LOUTH	2 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:	Gross floor area
Actual Range:	736 to 2200 (units: sqm)
Range Selected by User:	330 to 2200 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 27/05/19

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

Selected survey days:

Monday	1 days
Wednesday	1 days
Friday	2 days

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

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

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

Selected Locations:

Town Centre	1
Edge of Town	1
Neighbourhood Centre (PPS6 Local Centre)	1
Free Standing (PPS6 Out of Town)	1

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

Selected Location Sub Categories:

Built-Up Zone	1
Village	1
Out of Town	1
No Sub Category	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:

E(b)	4 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

Population within 1 mile:

1,000 or Less	2 days
1,001 to 5,000	1 days
15,001 to 20,000	1 days

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

Population within 5 miles:

5,000 or Less	1 days
5,001 to 25,000	1 days
25,001 to 50,000	1 days
75,001 to 100,000	1 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	2 days
1.1 to 1.5	1 days
2.1 to 2.5	1 days

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

Travel Plan:

No	4 days

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

PTAL Rating:

No PTAL Present	4 days

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

LIST OF SITES relevant to selection parameters

1 GA-06-B-01 PIZZA RESTAURANT GALWAY
MIDDLE STREET
GALWAY

Town Centre
Built-Up Zone
Total Gross floor area: 1300 sqm
Survey date: MONDAY *27/05/19* *Survey Type: MANUAL*

2 LU-06-B-01 RESTAURANT LOUTH
CARLINGFORD ROAD R173
NEAR DUNDALK

Free Standing (PPS6 Out of Town)
Out of Town
Total Gross floor area: 865 sqm
Survey date: WEDNESDAY *25/09/13* *Survey Type: MANUAL*

3 LU-06-B-02 RESTAURANT LOUTH
DONORE ROAD
DROGHEDA
LAGAVOOREN
Edge of Town
No Sub Category
Total Gross floor area: 2200 sqm
Survey date: FRIDAY *19/06/15* *Survey Type: MANUAL*

4 RO-06-B-01 IRISH RESTAURANT ROSCOMMON
MAIN STREET
TULSK

Neighbourhood Centre (PPS6 Local Centre)
Village
Total Gross floor area: 736 sqm
Survey date: FRIDAY *27/04/18* *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 06 - HOTEL, FOOD & DRINK/B - RESTAURANTS
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	1	865	0.000	1	865	0.000	1	865	0.000
08:00 - 09:00	1	865	0.000	1	865	0.000	1	865	0.000
09:00 - 10:00	1	865	0.809	1	865	0.000	1	865	0.809
10:00 - 11:00	2	1533	0.685	2	1533	0.261	2	1533	0.946
11:00 - 12:00	4	1275	0.784	4	1275	0.647	4	1275	1.431
12:00 - 13:00	4	1275	1.274	4	1275	1.176	4	1275	2.450
13:00 - 14:00	4	1275	1.568	4	1275	1.431	4	1275	2.999
14:00 - 15:00	4	1275	0.980	4	1275	1.117	4	1275	2.097
15:00 - 16:00	4	1275	0.804	4	1275	0.941	4	1275	1.745
16:00 - 17:00	4	1275	0.921	4	1275	0.706	4	1275	1.627
17:00 - 18:00	4	1275	1.117	4	1275	0.921	4	1275	2.038
18:00 - 19:00	4	1275	1.549	4	1275	1.431	4	1275	2.980
19:00 - 20:00	4	1275	1.274	4	1275	1.157	4	1275	2.431
20:00 - 21:00	4	1275	0.823	4	1275	1.039	4	1275	1.862
21:00 - 22:00	4	1275	0.333	4	1275	0.941	4	1275	1.274
22:00 - 23:00	3	1412	0.283	3	1412	0.425	3	1412	0.708
23:00 - 24:00	2	1468	0.136	2	1468	0.170	2	1468	0.306
Total Rates:			13.340			12.363			25.703

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:	736 - 2200 (units: sqm)
Survey date date range:	01/01/13 - 27/05/19
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

Calculation Reference: AUDIT-638801-210708-0751

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : A - OFFICE
TOTAL VEHICLES

Selected regions and areas:

13	MUNSTER		
	CR	CORK	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	2 days
16	ULSTER (REPUBLIC OF IRELAND)		
	MG	MONAGHAN	1 days

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

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: Gross floor area
Actual Range: 3205 to 12474 (units: sqm)
Range Selected by User: 232 to 19500 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 09/11/20

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:

Monday	1 days
Tuesday	1 days
Wednesday	2 days

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

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town	2
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:

Out of Town	1
No Sub Category	3

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:

Not Known	4 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®.

Filter by Site Operations Breakdown:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 500m Range:
All Surveys Included

Population within 1 mile:

1,000 or Less	1 days
10,001 to 15,000	1 days
25,001 to 50,000	1 days
50,001 to 100,000	1 days

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

Population within 5 miles:

5,001 to 25,000	1 days
125,001 to 250,000	1 days
250,001 to 500,000	2 days

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

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	3 days

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

Travel Plan:

No	4 days

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

PTAL Rating:

No PTAL Present	4 days

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

LIST OF SITES relevant to selection parameters

1 CR-02-A-01 STATISTICS OFFICES CORK
MAHON CRESCENT
CORK

Edge of Town
No Sub Category
Total Gross floor area: 8600 sqm
Survey date: MONDAY *23/06/14* *Survey Type: MANUAL*

2 DL-02-A-05 OFFICE DUBLIN
GORT MUIRE
DUBLIN
BALLINTEER
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area: 12474 sqm
Survey date: TUESDAY *10/09/13* *Survey Type: MANUAL*

3 DL-02-A-07 OFFICES DUBLIN
BELGARD SQUARE EAST
DUBLIN
TALLAGHT
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area: 3230 sqm
Survey date: WEDNESDAY *20/06/18* *Survey Type: MANUAL*

4 MG-02-A-02 OFFICES MONAGHAN
ARMAGH ROAD
MONAGHAN

Edge of Town
Out of Town
Total Gross floor area: 3205 sqm
Survey date: WEDNESDAY *16/11/16* *Survey Type: MANUAL*

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

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	6877	0.069	4	6877	0.007	4	6877	0.076
07:30 - 08:00	4	6877	0.265	4	6877	0.025	4	6877	0.290
08:00 - 08:30	4	6877	0.560	4	6877	0.044	4	6877	0.604
08:30 - 09:00	4	6877	0.480	4	6877	0.040	4	6877	0.520
09:00 - 09:30	4	6877	0.407	4	6877	0.033	4	6877	0.440
09:30 - 10:00	4	6877	0.324	4	6877	0.102	4	6877	0.426
10:00 - 10:30	4	6877	0.105	4	6877	0.084	4	6877	0.189
10:30 - 11:00	4	6877	0.040	4	6877	0.044	4	6877	0.084
11:00 - 11:30	4	6877	0.055	4	6877	0.040	4	6877	0.095
11:30 - 12:00	4	6877	0.036	4	6877	0.065	4	6877	0.101
12:00 - 12:30	4	6877	0.047	4	6877	0.062	4	6877	0.109
12:30 - 13:00	4	6877	0.069	4	6877	0.214	4	6877	0.283
13:00 - 13:30	4	6877	0.113	4	6877	0.171	4	6877	0.284
13:30 - 14:00	4	6877	0.138	4	6877	0.142	4	6877	0.280
14:00 - 14:30	4	6877	0.193	4	6877	0.062	4	6877	0.255
14:30 - 15:00	4	6877	0.051	4	6877	0.065	4	6877	0.116
15:00 - 15:30	4	6877	0.051	4	6877	0.080	4	6877	0.131
15:30 - 16:00	4	6877	0.040	4	6877	0.084	4	6877	0.124
16:00 - 16:30	4	6877	0.036	4	6877	0.298	4	6877	0.334
16:30 - 17:00	4	6877	0.065	4	6877	0.378	4	6877	0.443
17:00 - 17:30	4	6877	0.033	4	6877	0.422	4	6877	0.455
17:30 - 18:00	4	6877	0.025	4	6877	0.269	4	6877	0.294
18:00 - 18:30	4	6877	0.011	4	6877	0.204	4	6877	0.215
18:30 - 19:00	4	6877	0.025	4	6877	0.171	4	6877	0.196
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			3.238			3.106			6.344

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.*

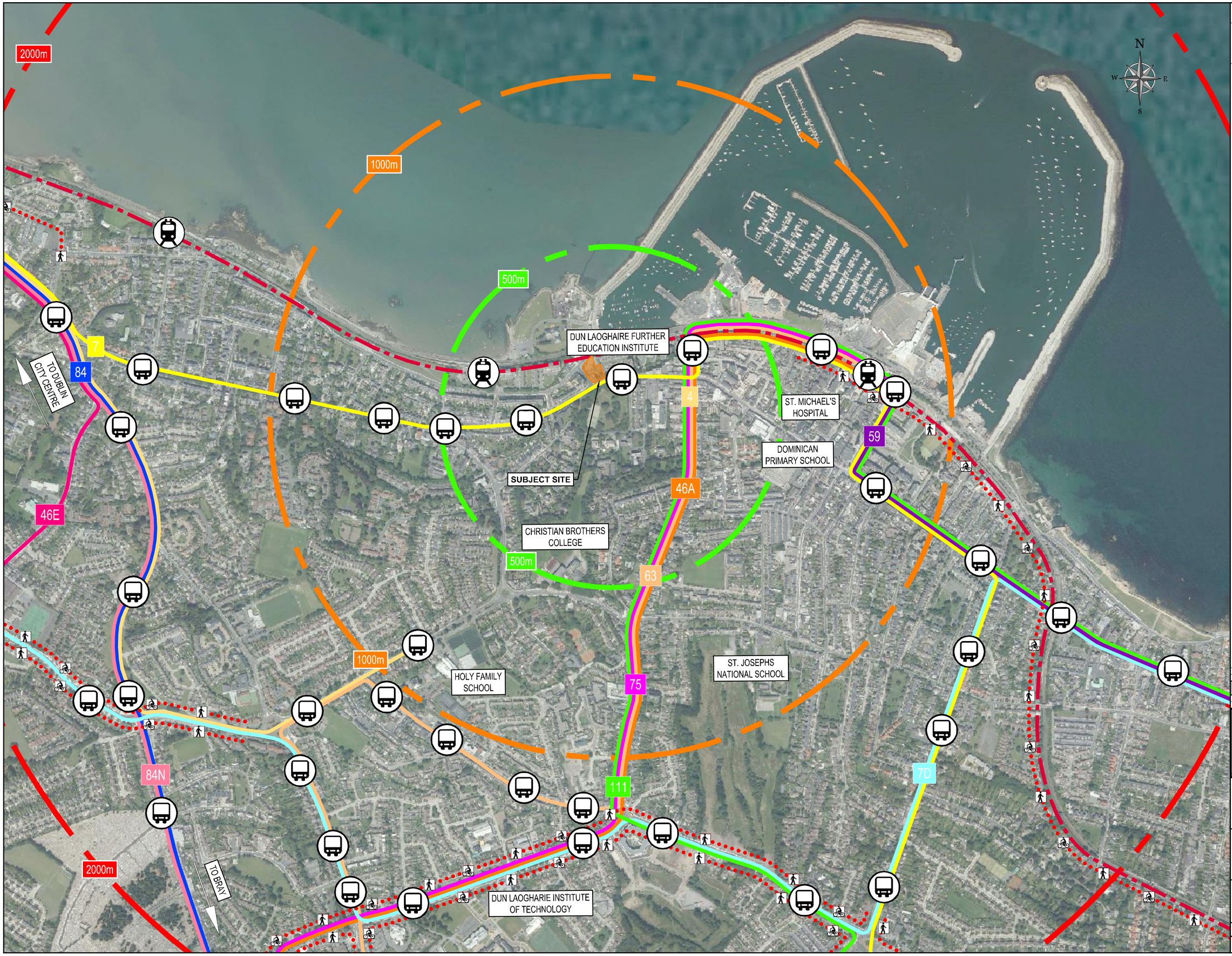
Parameter summary

Trip rate parameter range selected:	3205 - 12474 (units: sqm)
Survey date date range:	01/01/13 - 09/11/20
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

APPENDIX C

Linkages Drawings



ON ORIGINAL

0 5 10 15 20 25 30 40 50mm

GENERAL NOTES:

1. ALL CO-ORDINATES ARE TO IRISH TRANSVERSE MERCATOR (BASED ON OS MAPPING)
2. ALL LEVELS ARE TO ORDANCE DATUM MALIN HEAD (BASED ON LIDAR SURVEY INFORMATION)
3. ALL DIMENSIONS IN METERS UNLESS SPECIFIED OTHERWISE
4. DO NOT SCALE FROM DRAWING

LEGEND:

Walking Distance:
- 500m
- 1000m
- 2000m

Dublin Bus Routes:

Nitelink Bus Routes:

Go Ahead Bus Route:

Heavy Rail Network::

Pedestrian / Cycle Connection:

REV.	DATE	DESCRIPTION	BY	CHKD

PLANNING

DESIGNED	PS	PREPARED	JP
DATE	APRIL 2019	CHECKED	RK

DBFL

DUBLIN OFFICE Ormond House, Upper Ormond Quay, Dublin 7, Ireland. PHONE +353 1 400 4000 FAX +353 1 400 4050

WATERFORD OFFICE Unit 2, The Chandlery, 1-2 O' Connell Street, Waterford, Ireland. PHONE +353 51 309 500 FAX +353 51 844 913

DBFL Consulting Engineers EMAIL info@dbfl.ie SITE www.dbfl.ie

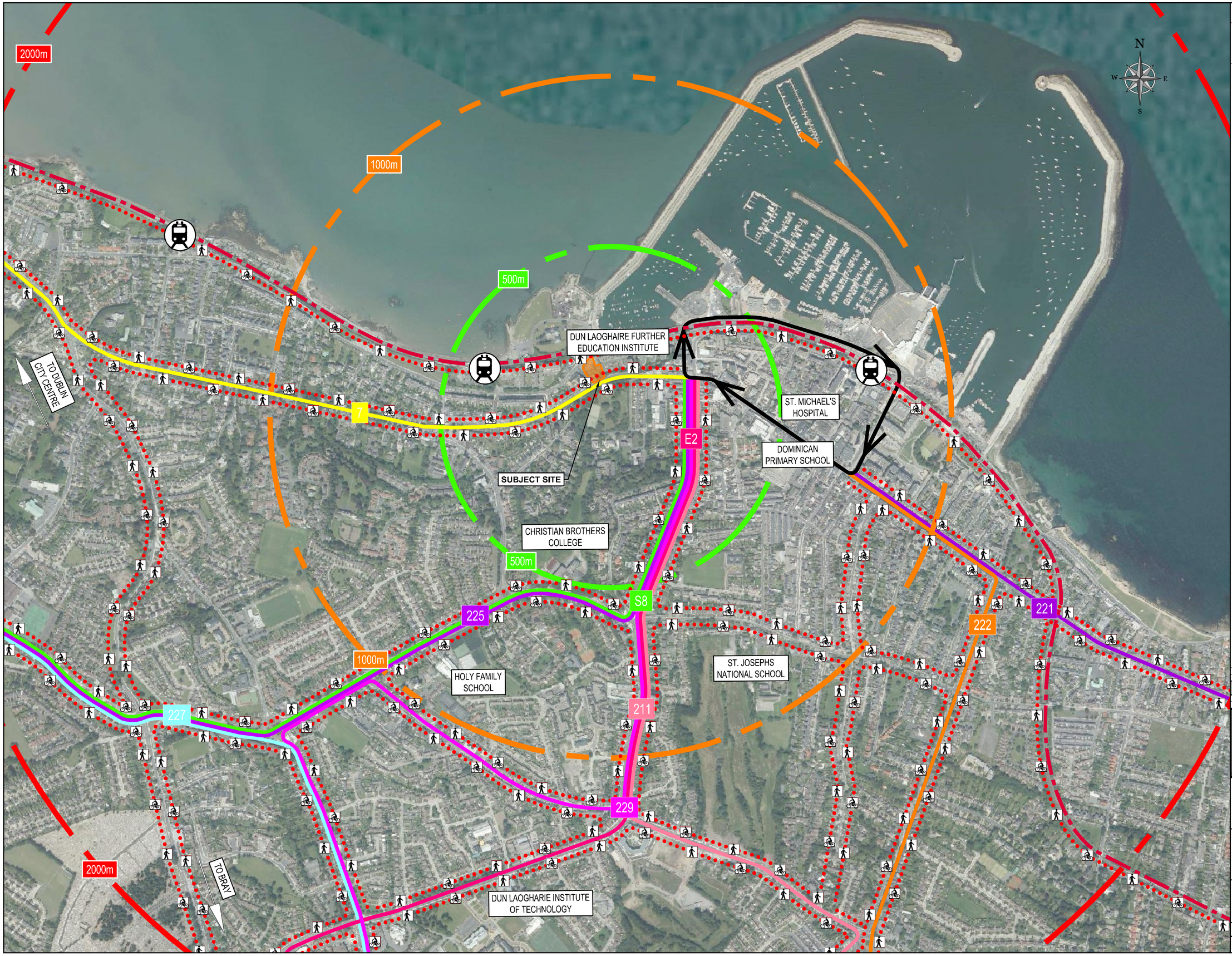
PROJECT
TEDCASTLES SITE,
DUN LAOGHAIRE

DRG. TITLE
EXISTING PUBLIC TRANSPORTATION LINKAGES PLAN

CLIENT
TED LIVING

SCALE	1:5000 @A1	FILE REF.	190057-1000

DRG. NO. 190057-1000 .



ON ORIGINAL

0 5 10 15 20 25 30 40 50mm

GENERAL NOTES:

1. ALL CO-ORDINATES ARE TO IRISH TRANSVERSE MERCATOR (BASED ON OS MAPPING)
2. ALL LEVELS ARE TO ORDANCE DATUM MALIN HEAD (BASED ON LIDAR SURVEY INFORMATION)
3. ALL DIMENSIONS IN METERS UNLESS SPECIFIED OTHERWISE
4. DO NOT SCALE FROM DRAWING

LEGEND:

Walking Distance:
500m
1000m
2000m

Bus Connect Routes:

Pedestrian / Cycle Connection:

Heavy Rail Network To Be Retained

REV.	DATE	DESCRIPTION	BY	CHKD

PLANNING

DESIGNED	PS	PREPARED	JP
DATE	APRIL 2019	CHECKED	RK

DBFL Consulting Engineers
DUBLIN OFFICE Clmond House, Upper Clmond Quay, Dublin 7, Ireland. PHONE +353 1 400 4000 FAX +353 1 400 4050
WATERFORD OFFICE Unit 2, The Chandlery, 1-2 O' Connell Street, Waterford, Ireland. PHONE +353 51 309 500 FAX +353 51 844 913
EMAIL info@dbfl.ie SITE www.dbfl.ie

PROJECT
TEDCASTLES SITE,
DUN LAOGHAIRE

DRG. TITLE
PROPOSED PUBLIC TRANSPORTION LINKAGES PLAN

CLIENT
TED LIVING

SCALE	1:5000 @A1	FILE REF.	190057-1001

DRG. NO. 190057-1001 .