TRAFFIC & TRANSPORT ASSESSMENT

Bailey Gibson Strategic Housing Development No.2

JUNE 2022

SYSTRA

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1. INTRODUCTION

1.1.1 This report has been prepared by SYSTRA Limited under the appointment of the applicant: CWTC Multi Family ICAV acting solely in respect of its sub fun DTBR SCR1 Fund. This **Traffic and Transport Assessment (TTA)** Report has been prepared to support a proposed Strategic Housing Development (SHD) at the Former Bailey Gibson Site, former Player Wills Site, Dublin City Council land (formerly Boys Brigade pitch and part of St. Teresa's Gardens (all within Strategic Development Regeneration Area 12)), South Circular Road and Donore Avenue, Dublin 8.

1.1.2 This report is to be read in conjunction with the accompanying documents submitted as part of this application:

- **Mobility Management Plan (MMP)**. A summary of the same is in Chapter 9.
- **Construction Traffic Management Plan (CTMP)**. The CTMP has been prepared to ensure traffic management practices and necessary arrangements are in place throughout the construction period.

1.2 Development Description

This application relates to a proposed mixed-use strategic housing development (SHD) on a site of approx. 5.5 hectares in Dublin 8. It includes all of the former Bailey Gibson site and a small portion of the former Player Wills site, both of which are owned by the Applicant, CWTC Multi Family ICAV acting solely in respect of its sub fun DTBR SCR1 Fund. The balance of the proposed development site relates to land owned by Dublin City Council (DCC) known locally as the 'Boys Brigade pitch' and part of the St. Teresa's Gardens site, together with DCC controlled public roads.

The application area is predominately within Strategic Development Regeneration Area (SDRA) 12, St. Teresa's Gardens & Environs as identified in the Dublin City Development Plan 2016-2022. The part of the proposed development site not within SDRA 12 relate to works proposed in the public roads surrounding the site, South Circular Road, Donore Avenue and Rehoboth Place.

A comprehensive description of the proposed development is set out in the Planning Statement. The Statutory Notices should also be referenced.

Briefly, it is proposed to demolish the existing vacant buildings and structures on the Bailey Gibson site to make way for development of 345 new homes across 5 blocks, BG 1 - BG 5, ranging in height from 2-7 storeys. The residential blocks will be contained within the Bailey Gibson site. The typology is predominantly apartments with 4 townhouses proposed in block BG5.

This is a mixed tenure scheme, with 292 units proposed as Build to Rent (BtR) across blocks BG1-BG3 and 53 units proposed as Build to Sell (BtS) in blocks BG4 and BG5. It is proposed to deliver 34 social and affordable homes as part of the overall total.

All apartments have private amenity space. At ground floor this is in the form of terraces and on upper levels, balconies. Each of BG1-BG4 have communal amenity areas either as a courtyard or podium area.

Tenant amenities and facilities are proposed in the BtR blocks and include a gym, co-working space, kitchen/lounge areas, concierge, and waste facilities.

Over 2 hectares of public open space including a multi-sport play pitch, a playground, 'St. Teresa's Playground', a boulevard, 'St. Teresa's Boulevard', a park, 'Players Park', a plaza, 'Rehoboth Plaza'.

The proposed non-residential uses include in blocks BG1 and BG2 commercial units that have the capacity to support daily living needs e.g., a shop, pharmacy and professional services. A creche with capacity for approx. 60 children. In block BG2 the design includes floorspace for a café/restaurant/bar.

In total there are 89 car parking spaces allocated to the proposed apartments and all are contained within the Bailey Gibson site. Apart from 1 space at podium level, the parking is contained within a basement. Additionally, 10 'Go Car' spaces are proposed at podium level for residents use only. Each of the 4 townhouses has 1 on-curtilage car parking space.

Visitor parking is at street level and the proposed sport pitch will be serviced separately by new spaces on the public roads. The scheme includes set down parking for the creche, a loading bay for deliveries and coach parking area.

Provision is made for disabled parking, electric vehicle charging, a car sharing scheme and motorcycle parking.

784 spaces are proposed for cycle parking including secure residents parking, visitor parking and spaces for cargo bicycles.

Other works include the development of a network of streets across the proposed development site that will link with other sites within SDRA 12 and into the wider street network of Dublin 8. Improvement works within existing local streets to facilitate access and safe movement.

Ancillary development works includes the construction of electricity substations, meter rooms, plant rooms at basement level, waste storage areas, solar photovoltaics, drainage, landscaping, and lighting.

Figure 1.1 BAILEY GIBSON SHD 2 – Image from Urban and Architectural Design Statement

1.3 Design Aim & Objectives

1.3.1 The design is informed by the design principles relevant for SDRA 12 set out in Chapter 15 (section 15.1.1.15) of the Dublin City Development Plan 2016-2022 that are relevant to traffic and transport issues.

- *"The development of a network of streets and public spaces will be promoted to ensure the physical, social and economic integration of St. Teresa's Gardens with the former Player Wills & Bailey Gibson site, with further integration potential with the site of the Coombe Hospital and White Heather Industrial Estate. "*
- *"Strong permeability through these lands will be encouraged to generate movement and activity east-to-west (connecting Dolphin's Barn Street and Cork Street with Donore Avenue) and north-to-south (connecting Cork Street and Donore Avenue with the South Circular Road and Grand Canal Corridor); a high-quality public domain, provision of pedestrian and cyclist routes and provision of actives streets will be promoted."*

1.3.2 The proposed development achieves the design principles identified in 15.1.1.15 of Dublin City Development Plan 2016-2022. The aim of the internal road layout and access strategy is the creation of a connected, walkable and cyclable network which facilities and encourages the sustainable and safe movement of people whilst maintaining a strong sense of place. The design considers the ease of movement for all modes, including cars, but a balanced approach has been taken which reflects the local mode share trends outlined in Section 4 and is in line with the principles set out in the Design Manual for Urban Roads and Streets (DMURS), as discussed in Section 2.5.

1.3.3 Based on the above aim and the principles set out in DMURS several design objectives have been developed as follows;

- Provide a connected network with strong permeability for pedestrians and cyclists for the benefit of future and existing residents alike;
- Promote multi-functional streets with a strong sense of place;
- Facilitate high levels of walking and cycling through prioritisation, shared space and the provision of quality infrastructure;
- Design streets that promote reduced vehicle speeds that support safety and enhance user experience ;
- Limit the impact of all stages, i.e. demolition, construction and operational on the surrounding area;
- Ensure the safety of all users across all modes;
- Future proof the layout to link into the permitted Player Wills development and other known forthcoming developments within SDRA 12 i.e. the 'Donore Project' (https://donoreproject.ie/) that is in design development phase, led by the Land Development Agency (LDA).

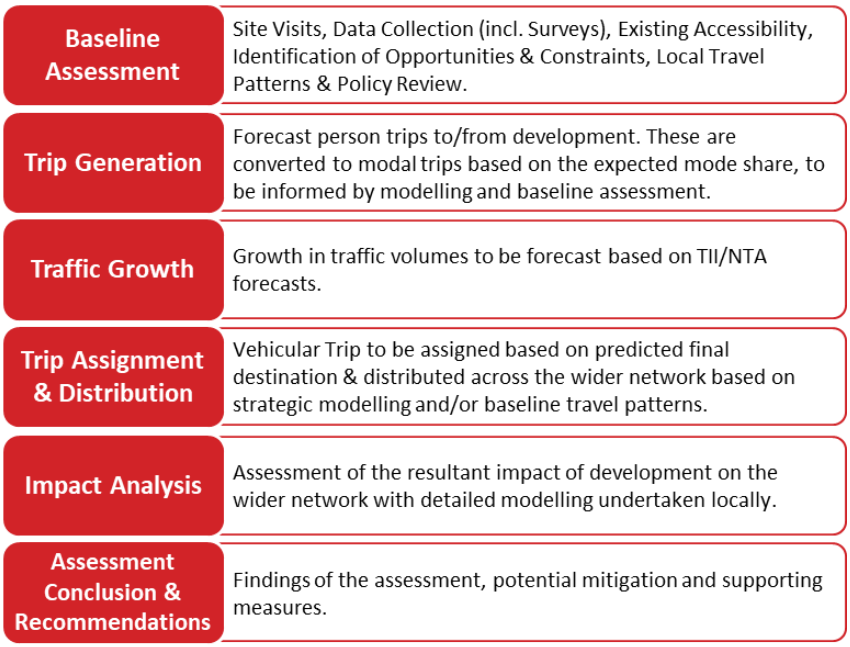
1.4 Report Purpose

1.4.1 The purpose of the Traffic and Transport Assessment Report is to describe and evaluate the baseline traffic environment, identify forecast demand from the proposed development across all modes and assess the potential impact of this demand on the surrounding network, during demolition, construction and operation stages. The report also details the proposed access arrangements to the development for all travel modes and identifies necessary mitigation measures required to support the development and limit adverse impacts on the surrounding network.

1.5 Assessment Methodology

1.5.1 The assessment has been undertaken in line with the guidelines set out in Transport Infrastructure Ireland's (TII's) *'Traffic and Transport Assessment Guidelines'* and Appendix 4 of the Dublin City Council Development Plan 2016-2022 – *'Transport Assessments, Mobility Management and Travel Plans'*. An outline of the methodology adopted is presented in Figure 1.2.

Figure 1.2 Traffic & Transport Methodology



1.6 Report Structure

1.6.1 The report structure is as follows:

- Chapter 2 sets out the policy framework which has informed the assessment, the access strategy and layout as well as the mobility and parking strategies;
- Chapter 3 describes the baseline receiving environment for each mode and planned future network improvements;
- Chapter 4 outlines the travel characteristics of local residents within the vicinity of the site and of similar developments;
- Chapter 5 provides more detail on the proposed development, road layout and design;
- Chapter 6 details the proposed parking strategy, supporting measures and management measures;
- Chapter 7 outlines the forecast person and vehicular trip generation and distribution for the various elements of the development as well as the expected level of background growth and cumulative demand of the wider SRDA 12;
- Chapter 8 provides a summary of the results of the modelling assessment undertaken to ascertain the development's impact, individually and cumulatively, on the surrounding network;
- Chapter 9 outlines proposed mitigation and supporting measures designed to alleviate potential impacts on the surrounding network;
- Chapter 10 is the summary and conclusion.

2. POLICY FRAMEWORK & STANDARDS

2.1 Dublin City Development Plan 2016-2022

2.1.1 The Dublin City Development Plan provides a coherent, integrated framework to ensure the city develops in an inclusive and sustainable manner which is resilient on social, economic and environmental fronts in the short and longer term. The plan emphasises the need for Dublin

to become a low-carbon city and the role of compact, self-sustaining communities and neighbourhoods, urban form and movement has to play in achieving this goal.

2.1.2 The plan details a Core Strategy which includes housing, settlement, employment, retail and public transport strategies. The strategy translates into 3 broad strands which form the basis for the policies and objectives outlined in the plan, these are:

- Compact, Quality, Green, Connected City;
- A Prosperous, Enterprising, Creative City; and
- Creating Sustainable Neighbourhoods and Communities.

2.1.3 The policies and objectives of the plan are categorised into 12 broad areas. Table 2.1 below provides a summary of the policies most relevant to this assessment.

Table 2.1 Extracts from most relevant Dublin City Development Plan 2016-2022 Policies

No.	Details
SC19	"To promote the development of a network of active, attractive and safe streets and public spaces….which encourage walking as the preferred means of movement between buildings and activities in the city. In the case of pedestrian movement within major developments, the creation of a public street is preferable to an enclosed arcade or other passageway."
SC20	"To promote the development of high-quality streets and public spaces which are accessible and inclusive, and which deliver vibrant, attractive, accessible and safe spaces and meet the needs of the city's diverse communities. "
QH10	"To support the creation of a permeable, connected and well-linked city and discourage gated residential developments as they exclude and divide established communities."
MT2	"Whilst having regard to the necessity for private car usage to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as cycling, walking and public transport..."
MT7	"To improve the city's environment for walking and cycling through the implementation of improvements to thoroughfares and junctions and also through the development of new and safe route.."
MT10	"To provide 30kph speed limits and traffic calmed areas at appropriate locations throughout the city subject to stakeholder consultation."
MT11	"To continue to promote improved permeability for both cyclists and pedestrians in existing urban areas..."
MT12	"To improve the pedestrian environment and promote the development of a network of pedestrian routes which link residential areas with recreational, educational and employment destinations to create a pedestrian environment that is safe and accessible to all."
MT13	"To promote bets practice mobility management and travel planning to balance car use to capacity and provide necessary mobility via sustainable transport modes."
MT17	"To provide sustainable levels of car parking and storage in residential schemes in accordance with development plan car parking standards so as to promote city centre living and reduce the requirement for car parking."
MT18	"To encourage new ways of addressing the paring needs of residents (such as car clubs) to reduce the requirement for car parking."
MTO25	"To support the growth of Electric Vehicles and e-bikes, with support facilities as an alternative to the use of fossil-fuel-burning vehicles, through a roll-out of additional electric charging points in collaboration with relevant agencies at appropriate locations."

2.1.4 of the proposed development site is part of SDRA 12,. The development outlines the guiding principles for SDRA 12, as outlined in previous section "Design Aim & Objectives".

2.1.5 Section 16.38 & 16.39 of the Development plan set out the car and cycle parking standards respectively. The plan states that car parking standards are maximum in nature and may be reduced where other modes of transport provide sufficient mobility for residents. Alternative solutions will also be considered such as residential car clubs where there are site constraints. The maximum parking standards applicable to the proposed development are outlined below in Table 2.2. Additional visitor parking is decided on a case by case visit. The cycle parking provided must in a secure and accessible location.

Table 2.2 Dublin City Development Plan 2016-2022 – Residential Car & Cycle Parking Standards

Parking Type	Requirement
Car Parking	1 per dwelling (maximum standard)
Car Parking	1 per 150 sq.m restaurant/café
Car Parking	1 per 275 sq.m other retail
Car Parking	Leisure – dependent on nature and location
Motorcycle Parking	4% of total spaces (additional to car spaces)
Disability Parking	5% of all car spaces
Taxi Parking	High density development should include details of how taxis can be accommodated
Cycle Parking	1 per dwelling

2.2 Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities, DHLGH December 2020

2.2.1 This document, published by the Department Housing, Local Government and Heritage in December 2020, provides direction for local authorities taking account of the current and future need for housing in line with the National Planning Framework (NPF) and Project Ireland 2040. The document outlines a number of Specific Planning Policy Requirements (SPPRs) which planning authorities and An Bord Pleanála are required to apply in carrying out their functions and supersedes the previous guidance issued in 2015.

2.2.2 Based on the NPF projections there is a need to a build 550,000 new household nationally by 2040 to accommodate a 1 million person increase in population 25% of which will be housed within the existing footprint of Dublin City and Suburbs. The objective is for these new households to be located in as sustainable a location as possible within our towns and cities to address increasing pollution and commuting times and to enable the state to feasibly provide and justify supporting infrastructure. There is a greater level of apartment living needed to achieve these objectives, particularly within urban areas where supporting sustainable infrastructure can be readily justified.

2.2.3 In relation to traffic and transport, the guidelines address the requirements for car parking in areas with greater mobility options and higher levels of accessibility. For large scale, higher density residential developments located within an accessible urban location the guidelines state that "the default policy is for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances." The criteria for these locations are to be within a 15-minute walk of the city centre, 10 min walk to rail or tram or 5-minute walk to high frequency (10min peak hour frequency) bus services. Other considerations are walking proximity to *"significant employment centres, that may include hospitals and third level institutions."*

2.2.4 The guidelines do stipulate that for car parking standards to be reduced in any location there needs to be consideration given to the provision of drop-off spaces, services vehicles, visitor spaces, car club spaces and parking for the mobility impaired. There should also be specific measures which enable the elimination or reduction of parking spaces. In addition, the guidelines state that the reduced parking provision or 'car-free' nature of the development must be communicated to potential residents through the marketing process.

2.2.5 The document specifically acknowledges the role of BTR schemes in the provision of future housing and the accelerated rate of delivery they may provide, and the parking requirements associated with these developments. SPPR 8 part (iii) of the document states: *"There shall be a default minimal or significantly reduced car parking provision on the basis of BTR development being more suitable for central locations and/or proximity to public transport*

services. The requirement for a BTR scheme to have a strong central management regime is intended to contribute to the capacity to establish and operate shared mobility measures".

2.2.6 These reductions in parking standards for developments in suitable locations are a direct application of Objective 13 of the NPF which states *"There should also generally be no car parking requirement for new developments in or near the centres of the five cities, and a significantly reduced requirement in the inner suburbs of all five"*.

2.2.7 The guidelines also emphasise the importance of cycling as a mode and the provision of cycle facilities in new developments. The guidelines recommend a general minimum standard of 1 cycle storage space per bedroom. Visitor parking is also recommended at a ratio of 1 space per 2 residential units. Any proposed deviations from these standards are at the discretion of the planning authority and shall be justified by factors such as location, quality of facilities proposed and flexibility for future enhancement/enlargement.

2.3 Smarter Travel, A Sustainable Transport Future – A New Transport Policy for Ireland 2009-2020

2.3.1 As recognised in Smarter Travel, A Sustainable Transport Future – A New Transport Policy for Ireland 2009 – 2020 (STASTF) there is a need to provide an integrated transport network that enables the efficient, effective and sustainable movement of people and goods, in order to contribute to economic, social and cultural progress.

2.3.2 This policy recognises that without intervention, congestion will worsen, transport emissions will continue to grow, economic competitiveness will suffer, and quality of life will decline. The key goals are as follows:

- Improve quality of life and accessibility to transport for all and for people with reduced mobility and those who may experience isolation due to lack of transport;
- Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks;
- Minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions;
- Reduce overall travel demand and commuting distances travelled by the private car;
- Improve security of energy supply by reducing dependency on imported fossil fuels.

2.3.3 The implementation of STASTF will also assist in meeting Ireland's international obligations towards tackling climate change. The following actions are relevant to the proposed development at Bailey Gibson:

- Action 1 – We will continue to enhance existing legislative provisions to deliver deeper integration of travel and spatial planning and to support the full integration and alignment of transport plans with the development plan process and local area planning (see also Action 42).
- Action 2 – We will ensure better integration of land use planning and transport policies in the relevant planning guidelines as part of their ongoing review and we will avail of policy directives to give effect to specific measures needed to meet the vision for sustainable travel. The following will also be included in future planning guidelines: a requirement that developments above a certain scale have viable travel plans in place. The following will also be included in future planning guidelines:

- A general requirement that significant housing development in all cities and towns must have good public transport connections and safe routes for walking and cycling to access such connections and local amenities;
- Integration of cycling and public transport;
- A requirement that developments above a certain scale have viable travel plans in place.

2.3.4 The STASTF specifically targeted a reduction from 65% to 45% in the mode share for all commuting trips to work with the remaining 55% of trips to be undertaken by alternative, sustainable means. According to the 2016 census the sustainable mode share, the combined walking, cycling and public transport, is just 22.8% nationally.

2.4 Greater Dublin Area Transport Strategy 2016-2035

2.4.1 This strategy, published by the National Transport Authority aims to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods – helping to reduce modal share of car-based commuting to a maximum of 45%. To achieve these principles, future developments must:

- Have transport as a key consideration in land use planning – integration of land use and transport to reduce the need to travel, reduce the distance travelled, reduce the time taken to travel, promote walking and cycling especially within development plans.
- Protect the capacity of the strategic road network.
- Ensure a significant reduction in share of trips taken by car, especially those trips which are shorter or commuter trips.
- Take into account all day travel demand from all groups.
- Provide alternate transport modes in order to reduce the strain on the M50 as current increase in traffic is unsustainable.

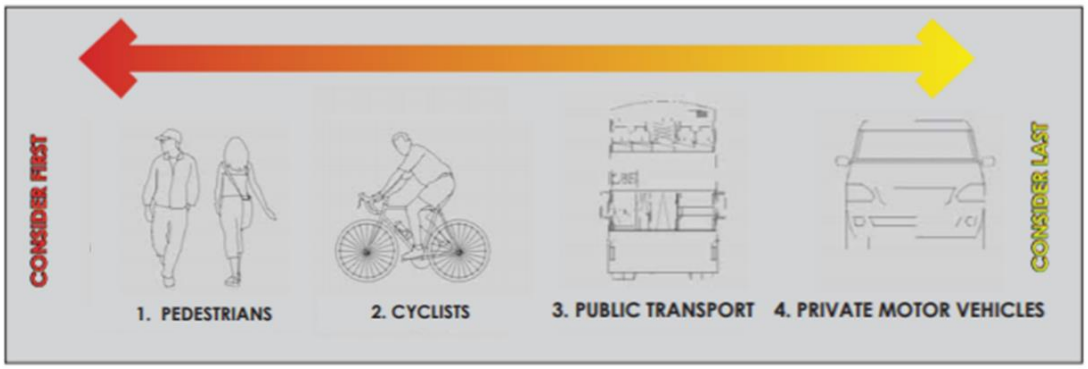
2.4.2 Based on the results outlined in the strategy, AM travel demand within the GDA will increase by 25% however car demand within the AM peak will increase by just 6.3% due to the significant increase in the sustainable transport mode share as a result of the proposed infrastructural improvements for public transport, walking and cycling.

2.4.3 The site is within walking distance of improved public transport provisions such as the proposed Core Bus Corridors, which will enhance the overall public transport provision across urban Dublin. This will improve public transport options for residents, including for those commuting to destinations across the wider Dublin area.

2.5 Design Manual for Urban Roads & Streets

2.5.1 The primary objective of the Design Manual for Urban Roads & Streets (DMURS), published by the Department of Transport, is to set out an integrated design approach for streets in urban areas which balances the needs of all users and is influenced by the surrounding context of the street. The manual aims to promote a sustainable approach to design which promotes real alternatives to the car. To achieve this the needs of sustainable modes must be considered before that of the private car. This is outlined in the user hierarchy on page 28 of the manual and shown in Figure 2.4.

Figure 2.1 DMURS User Hierarchy



2.5.2 There are a number of street types set out in the manual based on the function served by the street. Based on these types, outlined in Table 2.3 of the manual, the streets in the proposed development are Local Streets intended to serve communities and provide access to link/ arterial streets. The total width of local streets should be 5-5.5m (i.e. 2.5-2.75m laneways). Footpath widths vary based on the expected level of pedestrian activity. For moderate levels of pedestrian activity widths of 2.5m are recommended.

2.5.3 The manual also sets out requirements and recommendations for all other aspects of the street design. The main points relevant to the subject development are outlined in Table 2.3.

Table 2.3 DMURS – Local Street Design Standards and Recommendations

Street Element	Details
Lane Width	5-5.5m for local streets
Footpaths	2.5m for moderate pedestrian activity, 1.8m legal minimum
Verges	No verges required on local streets, but street furniture should not encroach on footpath
Corner Radii	1-3m on local streets to create compact junctions and reduced crossing times for pedestrians
Junction Design	Uncontrolled junctions between local streets (internal network) Priority junctions between local and link/arterial streets (external network)
Kerbs	0.5-0.75mm along local streets, no kerbs where shared surface junctions or streets are proposed but tactile paving or drainage channels should be used to assist visually impaired users in navigating the road.
Crossings	Local streets do not require the provision of controlled crossings, provision of dropped kerbs will suffice.
Shared Space	Shared space streets and junctions are highly desirable where movement priorities are low and there is a high place value in promoting more liveable streets such as on local streets. Shared streets should not exceed 4.8m in width and the kerbs should be flush with the carriageway.
Cycle Facilities	On lightly trafficked/low-speed roads designers are directed to create shared streets where cyclists and motorists share the carriageway, further details available from the National Cycle Manual discussed in Section 2.6.

2.6 National Cycle Manual

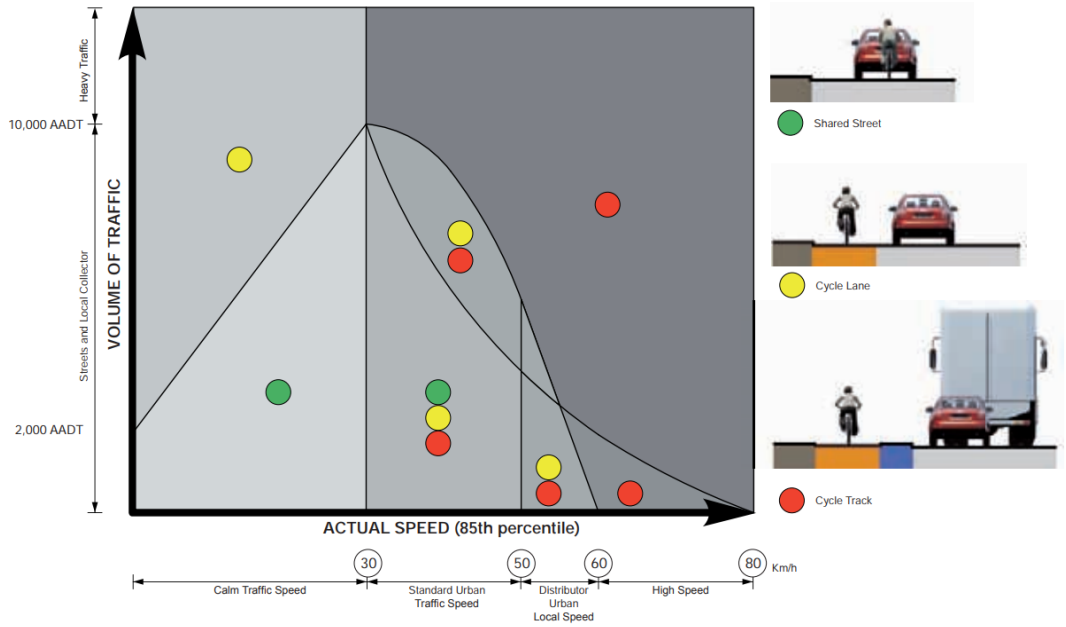
2.6.1 The National Cycle Manual (NCM), published by the National Transport Authority in 2011, offers guidance on the integration of cycling into the design of urban areas and streets. The NCM outlines the 'Hierarchy of Provision' which encourages designers to first try to

accommodate cyclists in mixed use traffic environment considering the following steps in hierarchical order:

1. Traffic Reduction
2. Traffic Calming
3. Junction Treatment and Traffic Management
4. Redistribution of the Carriageway
5. Cycle lanes and tracks
6. Cycleways

2.6.2 The manual provides a guidance graph to help designers determine when segregation, steps 5 & 6, should be applied. Figure 2.5 shows this graph. As illustrated, low speed streets with lower level of car traffic should not require cycle lanes and cyclists should be accommodated on a shared street where possible.

Figure 2.2 NCM Guidance Graph



3. RECEIVING ENVIRONMENT

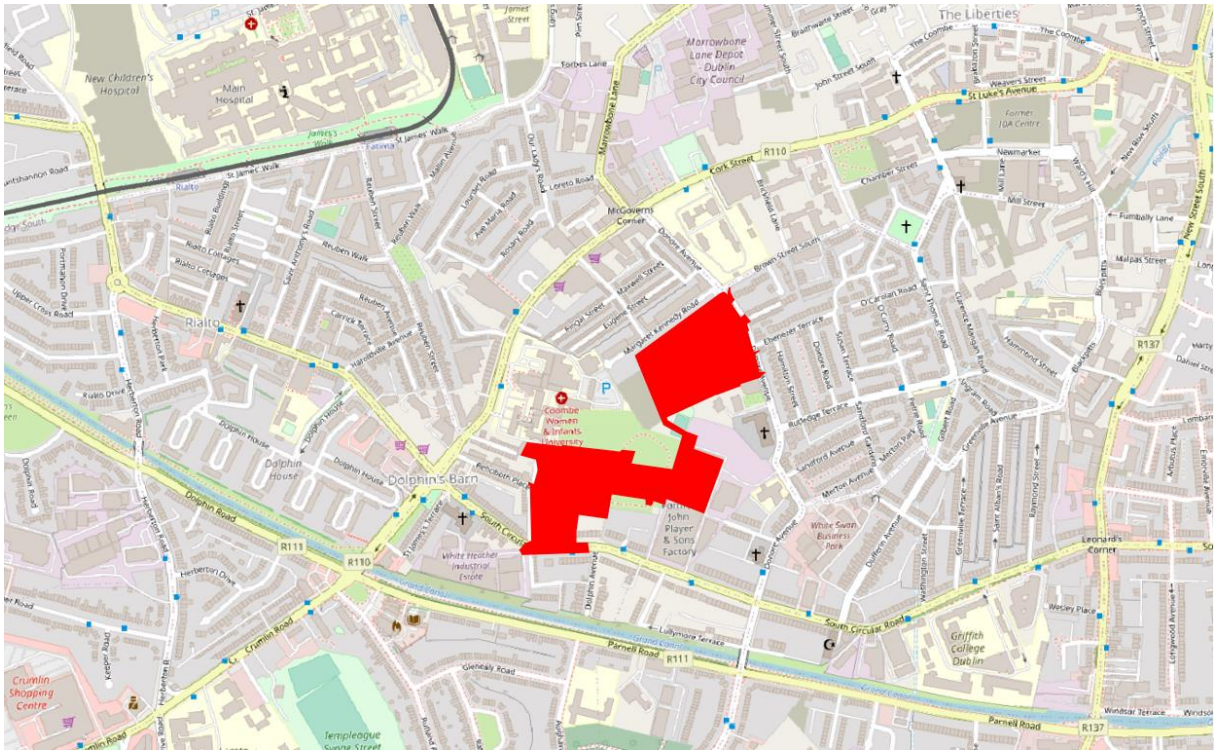
3.1 Surrounding Land Use

3.1.1 The surrounding land use is largely residential comprising of predominantly terrace housing. To the South-west there are a number of industrial units housing self-storage facilities, pipe suppliers and An Post Delivery Office. To the north-east is St. Teresa's Gardens which forms part of SDRA 12. The Coombe hospital is located to the north-west. The site formerly accommodated the Bailey Gibson Architectural & Reclamation Salvage Yard. There are 9 buildings on site and 1no. ESB substation, all buildings are proposed for demolition.

3.2 Site Location

3.2.1 The application site is located between the South Circular Road and Dolphin Street/Cork Street and Donore Avenue in Dublin 8. It borders on the south the South Circular Road, on the west Rehoboth Place & Rehoboth Avenue, on the east Donore Avenue and on the north Margaret Kennedy Road. The location of the site in relation to the surrounding road network is shown in Figure 3.1.

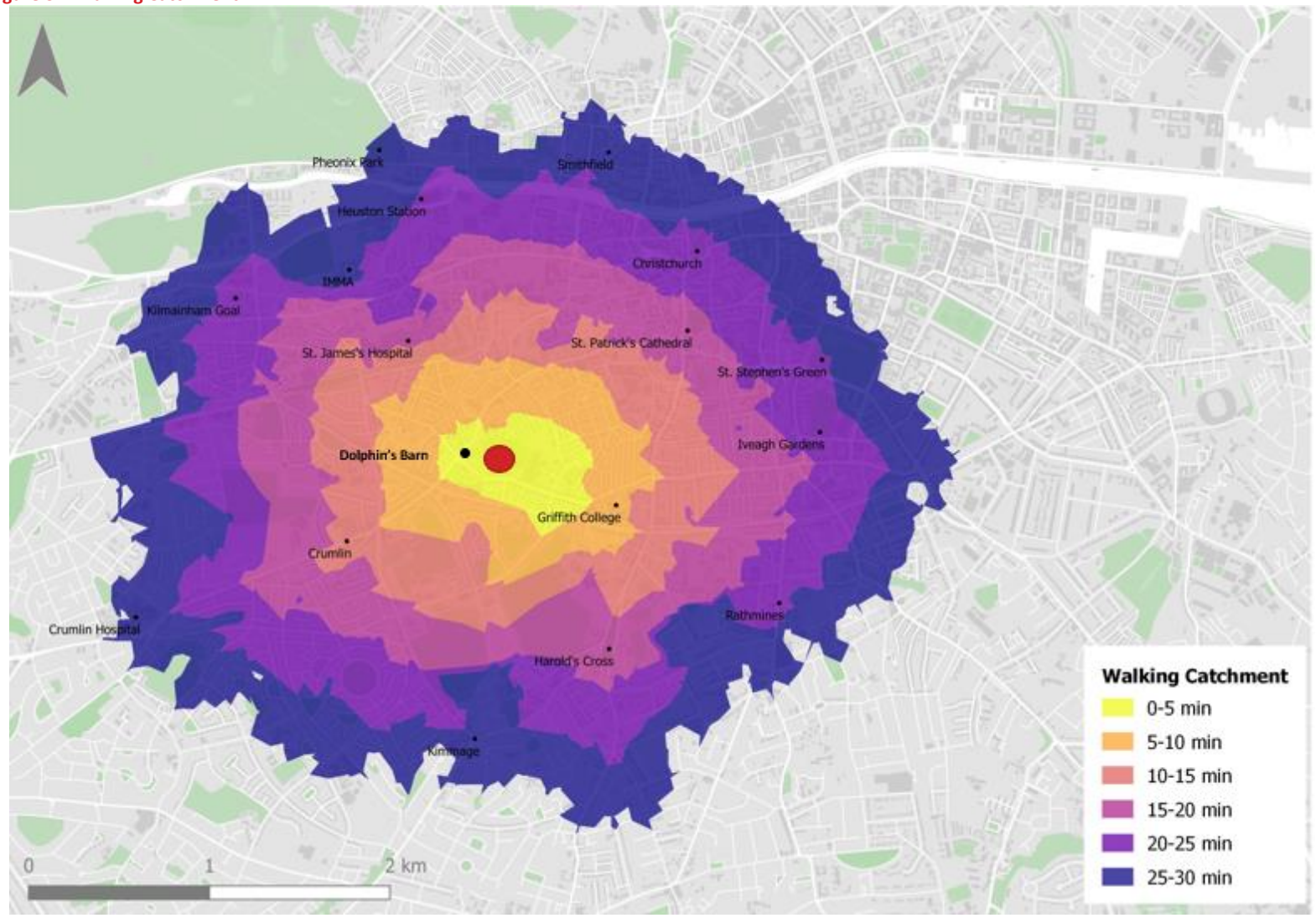
Figure 3.1 Site Location & Surrounding Road Network



3.3 Walking Accessibility & Infrastructure

3.3.1 The site is within a convenient walking distance of the city centre and a number of large employment centres as well as leisure and retail facilities. The Coombe Maternity Hospital is located within less than 5-minute walk of the site. St. James's Hospital, home to the future national children's hospital, is within 15-minute walk of the sites as is Griffith College and the Guinness Storehouse. The city centre is a 25-30 minute walk. Heuston Station, the Phoenix Park and the Royal Hospital Kilmainham are also within a 30-minute walk of the site. Figure 3.2 below outlines the walking catchment in 5-minute intervals.

Figure 3.2 Walking Catchment



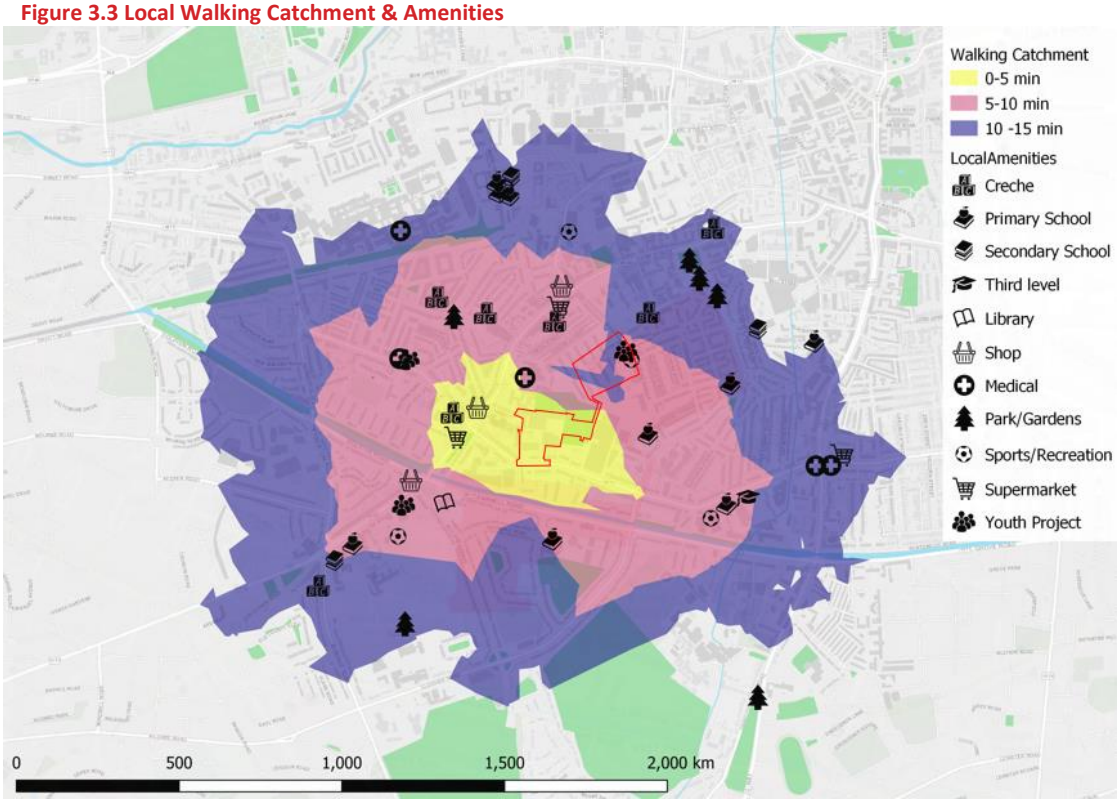
3.3.2 In total, there are over 72,000 jobs within the total catchment area shown. Table 3.1 outlines the cumulative number of jobs accessible within each 5-minute interval.

Table 3.1 Jobs Accessible by Walking

Time Travelled	Jobs Accessible
0-5 min	921
0-10 min	3,220
0-15 min	8,264
0-20 min	18,555
0-25 min	39,713
0-30 min	72,350

3.3.3 In addition to the employment centres outlined, there are many local creches, schools, convenience shops and supermarkets, sports and youth clubs and parks & community gardens within easy walking distance of the site. The local amenities and 15-minute walking catchment are shown in Figure 3.3.

Figure 3.3 Local Walking Catchment & Amenities



3.3.4 In the immediate vicinity of the site there are good quality pedestrian routes along South Circular Road with width footpaths varying between 2.2 & 4.2m between Donore Avenue and Dolphin's Barn Cross and good quality lighting. There are no formal zebra or signalised crossing point along this stretch of the South Circular Road. However, there is an unmarked pedestrian crossing, with dropped kerb lines and traffic island directly in front of the development. Along Rehoboth Place the footpaths are narrower varying between 1.1-1.6m though this street is very lightly trafficked. Figures 3.4-3.11 capture the pedestrian environment on the surrounding streets.

Figure 3.4 Pedestrian Environment - Overview

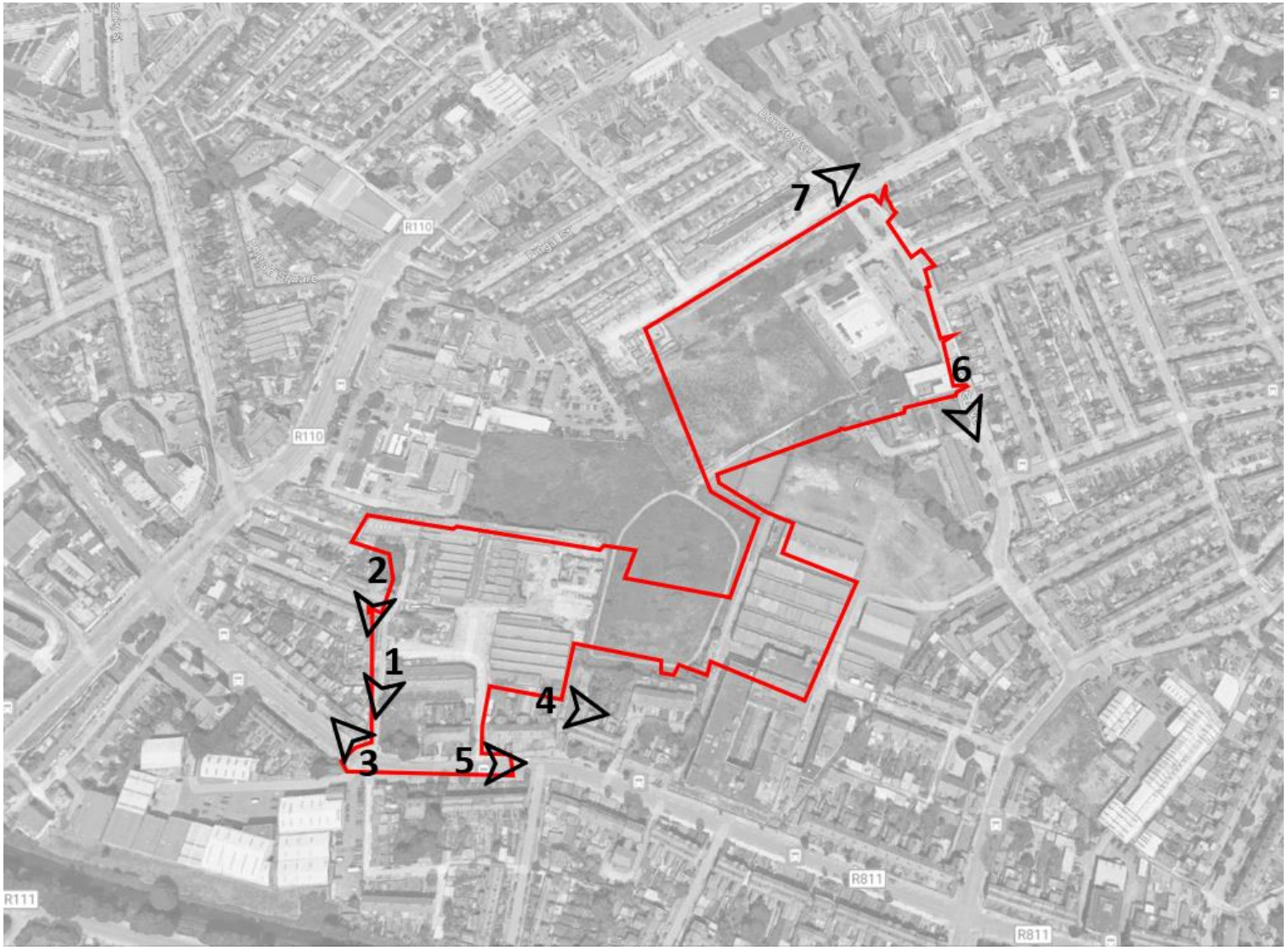


Figure 3.5 Pedestrian Environment – Viewpoint 1 – Rehoboth Place Northwards

Figure 3.6 Pedestrian Environment – Viewpoint 2 – Rehoboth Avenue Northwards

Figure 3.7 Pedestrian Environment – Viewpoint 3 South Circular Road eastwards

Figure 3.8 Pedestrian Environment – Viewpoint 4 – South Circular Road westwards

Figure 3.9 Pedestrian Environment – Viewpoint 5 – Bus Stop on South Circular Road

Figure 3.10 Pedestrian Environment – Viewpoint 6 – Donore Avenue

Figure 3.11 Pedestrian Environment – Viewpoint 5 – Margaret Kennedy Road

3.3.5 There are also signalised pedestrian crossing points at Dolphin's Barn Cross and South Circular Road/Donore Avenue Junction west and east of the site. Dolphin's Barn Street & Cork Street also have wide footpaths as does the remainder of the South Circular Road until it terminates near Harcourt Road.

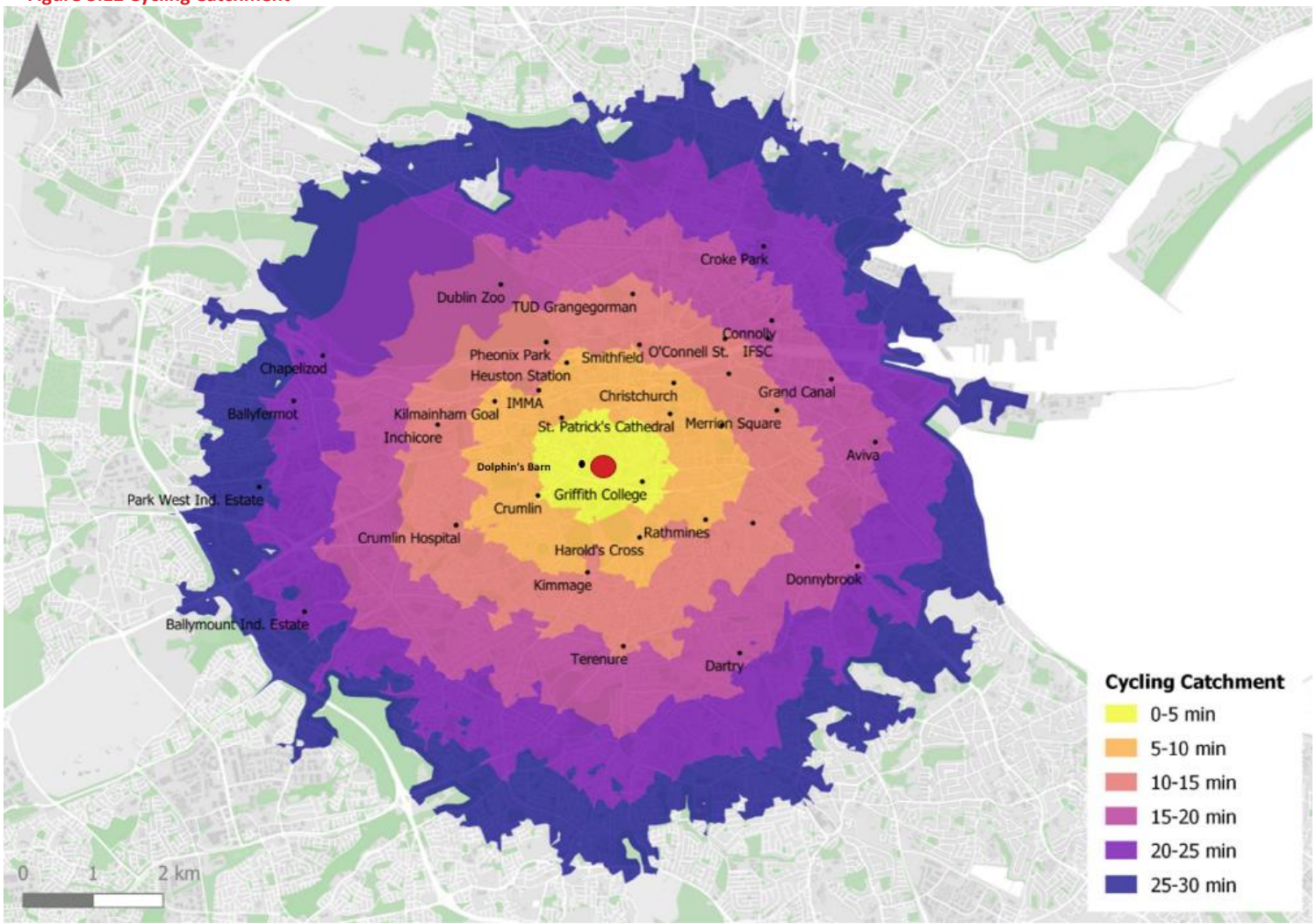
3.4 Cycling Accessibility & Infrastructure

3.4.1 The site is also highly accessible by cycling. The city centre, TUD Grangegorman, Coombe and St James's Hospitals and Heuston Station are all within a 15-minute cycle of the site. There are an estimated 148,050 jobs within a 15-minute cycle of the site and over 340,000 within a 30-minute cycle. Figure 3.12 outlines the cycling catchment in 5-minute intervals. The estimated number of jobs accessible within this catchment is outlined in Table 3.2.

Table 3.2 Jobs Accessible by Cycling

Time Travelled	Jobs Accessible
0-5 min	5,942
0-10 min	47,683
0-15 min	148,050
0-20 min	249,251
0-25 min	301,127
0-30 min	341,377

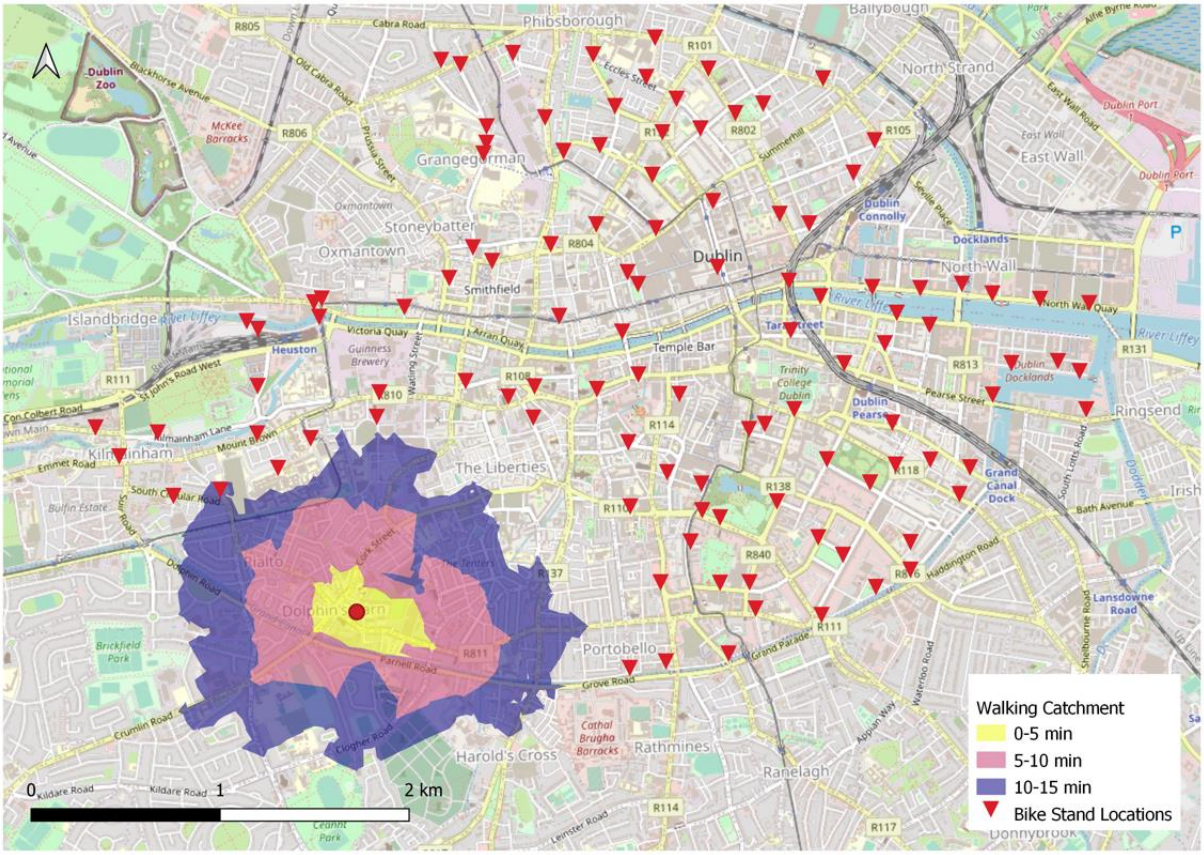
Figure 3.12 Cycling Catchment



3.4.2 There are cycle lanes provided along the majority of the way from Dolphin's Barn Cross to the City Centre and along the length of the Canal towards the docklands. There are currently no cycle lanes along the South Circular Road and Donore Avenue but the bus lanes along South Circular Road.

3.4.3 In terms of bike sharing infrastructure the main scheme within Dublin is dublinbikes. Dublinbikes is a public bike rental scheme facilitated by numerous stations around Dublin City primarily within the Canal Cordon. There are limited Dublin Bike stations within walking distance of the sites with the nearest sites approximately 15 minutes' walk, as illustrated in Figure 3.13.

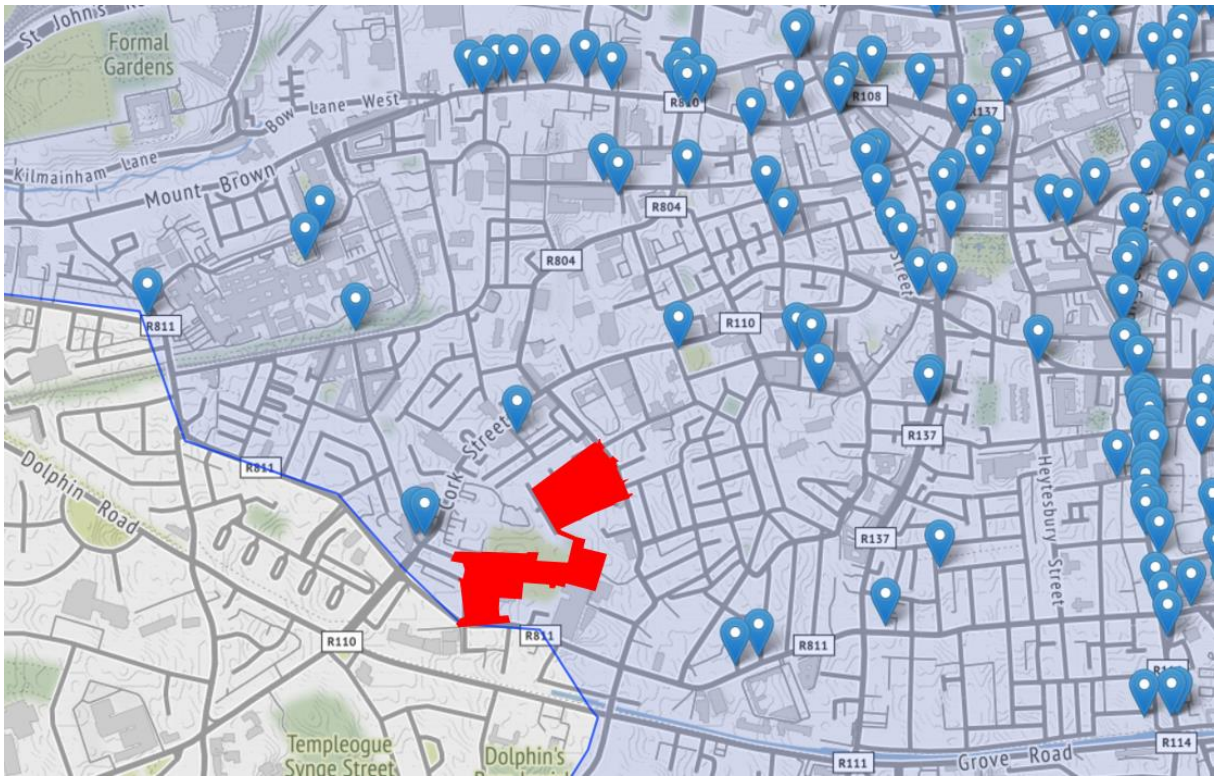
Figure 3.13 Dublin Bike Stand Locations



3.4.4 In terms of Station-less Bicycles, BleeperBike and Moby bikes are the current operators of these schemes in Dublin, where users park the bike at designated parking spaces through the city. The bikes are mainly located in areas currently not serviced by dublinbikes, extending well beyond the canals into the north and south of the city.

3.4.5 There are several designated bleeper bike parking spaces close to the proposed developments as shown in Figure 3.14. Any suitable parking stand can be added as a designated space by a user sending the location and photographs to the BleeperBike support team.

Figure 3.14 BleeperBike Designated Parking Locations



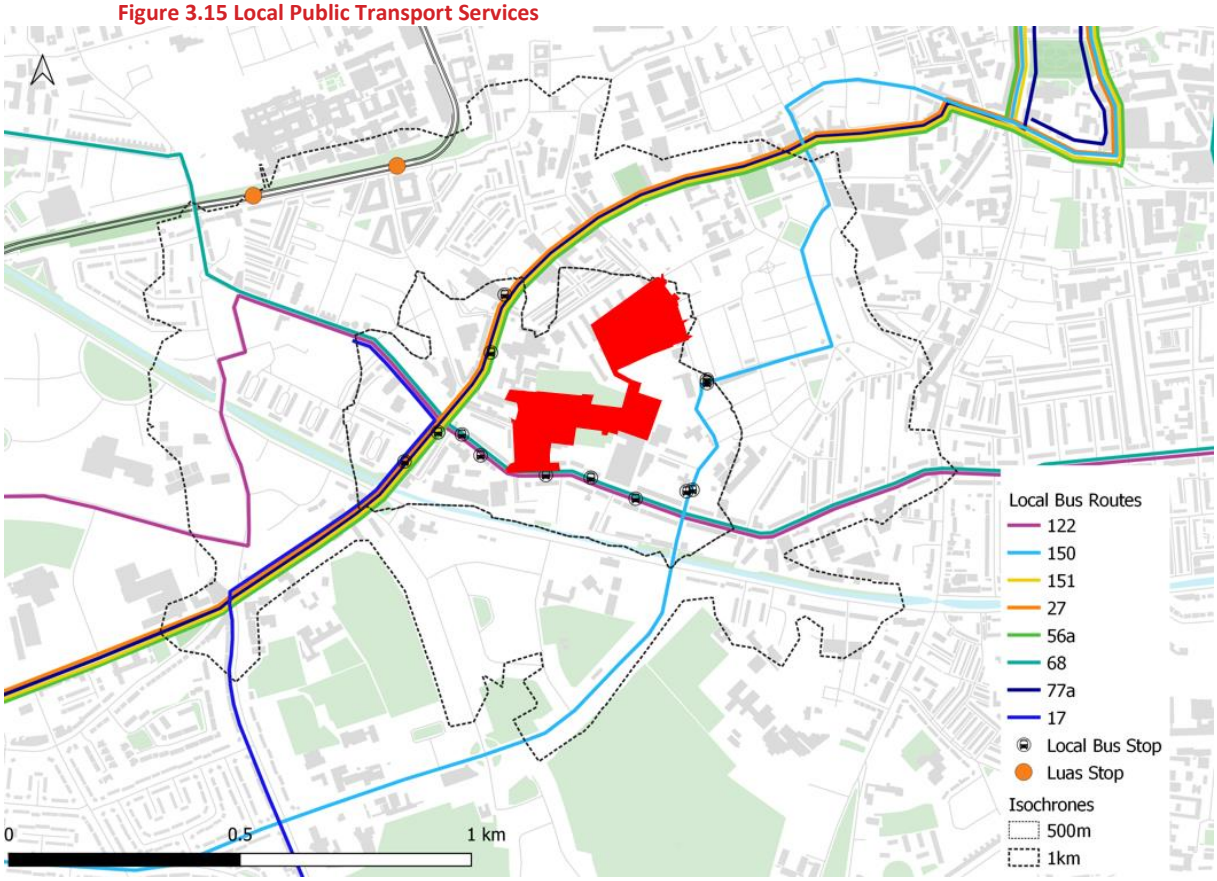
(Map Data https://data.smartdublin.ie/dataset/bleeperbike/resource/40a718a8-cb99-468d-962b-af4fed4b0def)

3.5 Public Transport

Public Transport Accessibility and Infrastructure

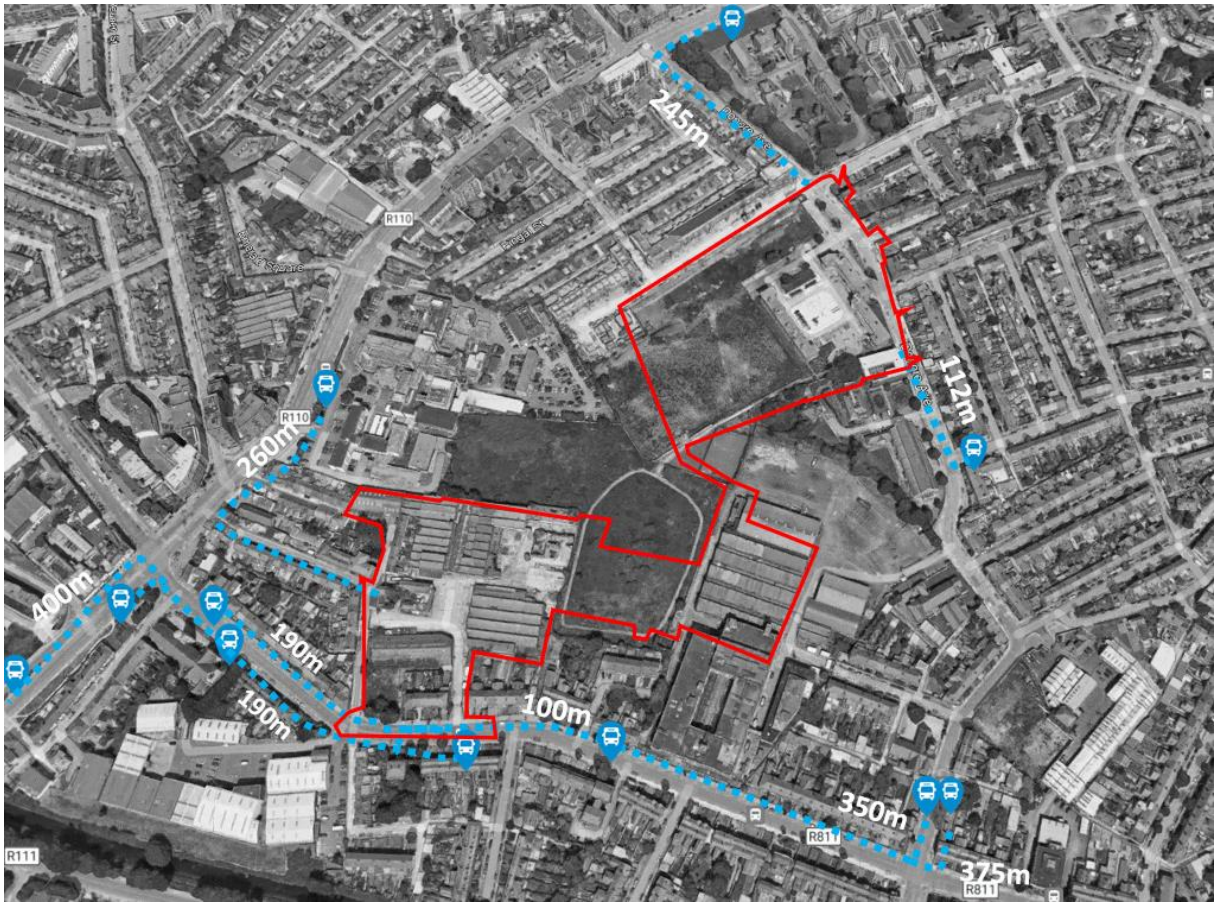
3.5.1 The site is located within a 5-minute walk of a numerous high frequency Dublin Bus & Go-Ahead services along Dolphin's Barn Street/Cork Street, a dedicated Quality Bus Corridor, and the South Circular Road. It is also a 9-minute walk to the Fatima Red line Luas stop. Figure 3.15 below illustrates the existing public transport network and stop locations.

Figure 3.15 Local Public Transport Services



3.5.2 All bus services shown are within a 5-minute walk of the site and operate frequently during the weekday and weekend. Figure 3.16 shows the approximate distances to each local bus stop from the nearest site entrance.

Figure 3.16 Distance & Path to Local Bus Stops



3.5.3 Table 3.3 outlines the frequency of the bus services, along with the red line Luas, during the weekday AM peak hour & Inter peak as well as the weekend Inter peak. Based on the frequencies outlined, the site is considered an *"accessible urban location"* as defined by the DHLGH apartment guidelines, previously discussed in section 2.2.3.

Table 3.3 Local Public Transport Services Frequency (min)

Route		Weekday		Weekend	
		AM Peak	Interpeak	Saturday	Sunday
68	Hawkins St./Newcastle	60	60	60	45-90
122	Ashington/Drimnagh	10	20	20	20
27	Clarehall/Jobstown	10	10	10	15
56a	Ringsend/Tallaght	60	75	75	75
77a	Ringsend/Citywest	20	20	20	30
151	Docklands/Foxborough	20	20	20	30
150	Hawkins St/Rossmore	15	20	20	30
17	Blackrock/UCD/Rialto	20	20	20	30
Luas Red Line	Tallaght/Saggart/City west-Connolly/Point	3	9	10	10

3.5.4 There is no formal public transport accessibility measure for Dublin however a document published by the European Commission, **"Measuring Access to Public Transport in European**

Cities"[1], provides a methodology for rating the public transport accessibility of areas based on the following 5 categories and criteria:

- **No access**: people cannot easily walk to a public transport stop, in other words it takes more than 5 minutes to reach a bus or tram stop and more than 10 minutes to reach a metro or train station.
- **Low access**: people can easily walk to a public transport stop with less than four departures an hour. of population along some transport lines
- **Medium access**: people can easily walk to a public transport stop with between 4 and ten departures an hour.
- **High access**: people can easily walk to a bus or tram stop with more than 10 departures an hour OR people can easily walk to a metro or train station with more than 10 departures an hour (but not both).
- **Very high access**: people can easily walk to a bus or tram stop with more than 10 departures an hour AND a metro or train station with more than 10 departures an hour.

The stops must be within a walk time of 5 minutes (417m) for bus & tram and 10 minutes (833m) for metro and train. Based on the frequencies outlined in Table 3.3 there are 16 departures per hour from bus stops along Dolphin's Barn Street. Therefore, the development site would be considered to have a high accessibility by public transport.

It should be noted that as light rail was not included with heavy rail in this study just 1% of the population of Dublin was found to have very high accessibility. If trams were to be included with metro and trains the site would be considered as very highly accessible by public transport.

Existing Public Transport Capacity Assessment

3.5.5 As part of the preparation of the Traffic and Transport Assessment for Bailey Gibson, an assessment has been undertaken to identify if the existing public transport capacity can accommodate the current and future PT trips that will be generated by the development. The assessment has been conducted along the main bus routes which will be used by future residents to access the City Centre. This includes an assessment of existing bus services operating along Cork Street (northbound) and along South Circular Road (eastbound).

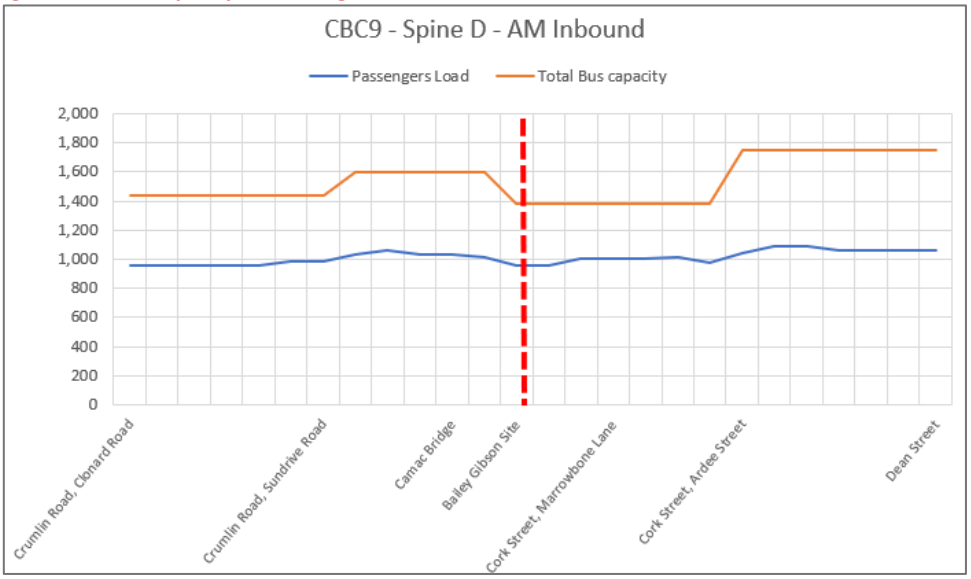
3.5.6 Bus capacity information and boarding & alighting data has been extracted for these routes using the National Transport Authority's Eastern Regional Model (ERM). The ERM is the NTA's primary tool for assessing the multi-modal impact of transport schemes and policy measures in the Greater Dublin Area. In particular, the ERM has recently been used as part of the preparation of the BusConnects EIAR to forecast the future demand for public transport use. This has been compared against the number of buses that serve these routes in the morning peak period, to give an indication of the residual capacity for passengers along the two routes.

3.5.7 Figure 3.17 below illustrates the total bus capacity (orange line) along Cork Street in the AM peak period heading into the City Centre. This is based on the number of buses that serve this route and the carrying capacity of each service. The AM period has been chosen as it represents the busiest period of the day for public transport demand. The graph also indicates the cumulative passenger loading (Blue line) along the route heading into the City Centre based on passenger demand extracted from the ERM. The figure indicates that the total capacity for passengers on the bus services along Cork Street heading into the city is approximately 1,400 at the point of the proposed development site, and the passenger loading

[1] https://ec.europa.eu/regional_policy/sources/docgener/work/2015_01_publ_transp.pdf

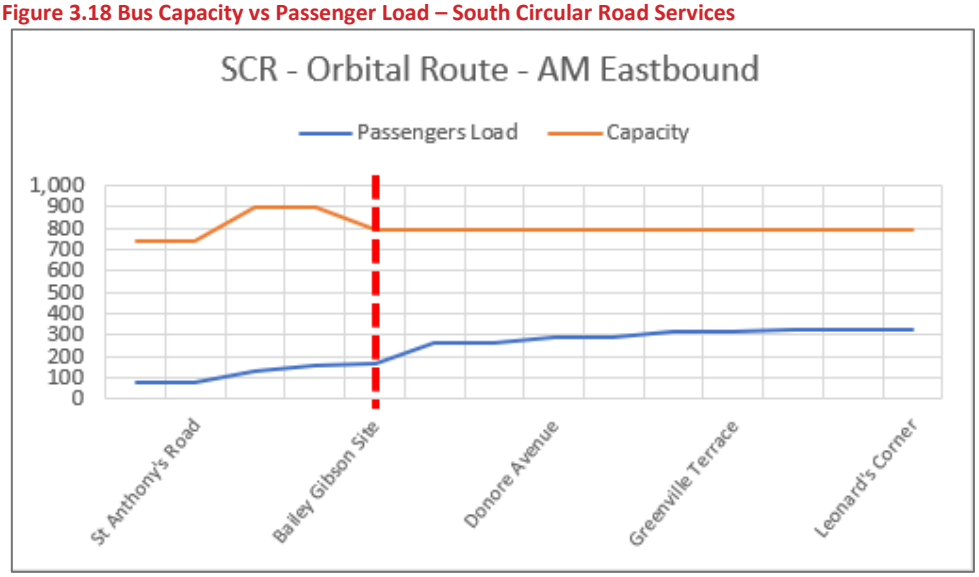
is approximately 1,000. Therefore, the data indicates that there is spare capacity for an additional 400 passengers along this route. The total combined (arrivals and departures) public transport peak hour demand for the proposed development (as set out in Table 7.8 of the TTA Report) is 43 public transport trips. This demonstrates that the existing bus services operating along Cork Street have more than sufficient capacity to accommodate the future PT trips generated by the development.

Figure 3.17 Bus Capacity vs Passenger Load – Cork Street Services



3.5.8 A similar exercise has been performed for bus services operating in an eastbound direction along the South Circular Road in the AM peak period. This is illustrated in Figure 3.18 below. Again, The AM period has been chosen as it represents the busiest period of the day for public transport demand. The figure indicates that the total capacity for passengers on bus services operating along the South Circular Road heading eastwards towards the city is approximately 800 at the point of the proposed development site, and the passenger loading is approximately 200. Therefore, the data indicates that there is spare capacity for an additional 600 passengers along this route. As noted previously, the total combined (arrivals and departures) public transport AM peak hour demand for the proposed development is 43 public transport trips. This demonstrates that the existing bus services operating along the South Circular Road have more than sufficient capacity to accommodate the future PT trips generated by the development.

Figure 3.18 Bus Capacity vs Passenger Load – South Circular Road Services



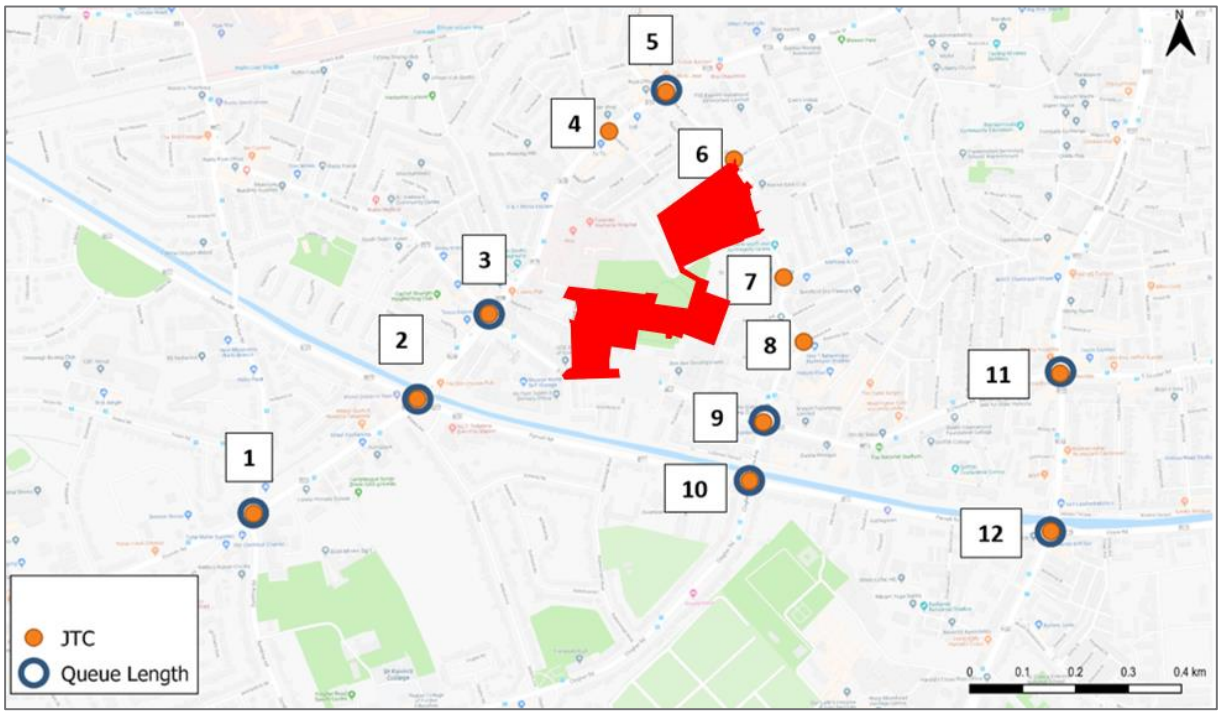
3.5.9 For both bus corridors, there is considered ample residual capacity to accommodate new bus passenger trips generated by the proposed development. The above exercise has been based on the capacity of the existing bus service operating in the vicinity of the proposed development. The delivery of BusConnects will see a step change in both the capacity and quality of the public transport system in the Greater Dublin Area. In particular, Cork Street forms part of the Core Bus Corridor network which will support the delivery of high frequency and reliable bus services along this route. This will further enhance public transport provision in the local area and will encourage sustainable travel from the proposed site.

3.6 Road Network Infrastructure & Traffic Conditions

3.6.1 The surrounding road network is a mix of quieter residential streets and more heavily trafficked regional, urban roads such as the R811 South Circular Road, the R110 Dolphin's Barn Street/Cork Street, the R111 Parnell Road (Canal Road). Many of the residential streets are narrow in nature due to restricted carriageway widths and/or on-street parking.

3.6.2 As part of the baseline assessment extensive traffic surveys were undertaken in the local area in 2019. These included Junction Turning Counts (JTCs) and queue lengths surveys at a number of key junctions. The surveys were undertaken for 12 hours on a neutral weekday within school term, 2nd May 2019. Figure 3.19 illustrates the location of these surveys.

Figure 3.19 Traffic Survey Locations



3.6.3 The traffic surveys utilised to assess the impact of the Bailey Gibson development were collated in 2019 before the advent of the Covid Pandemic. Since the start of the pandemic in 2020, the demand for all transport modes has fluctuated, but has not returned to pre-pandemic levels (tii.ie/roads-tolling/operations-and-maintenance/traffic-count-data/covid-traffic-patterns/), with a cohort of society continuing to work from home.

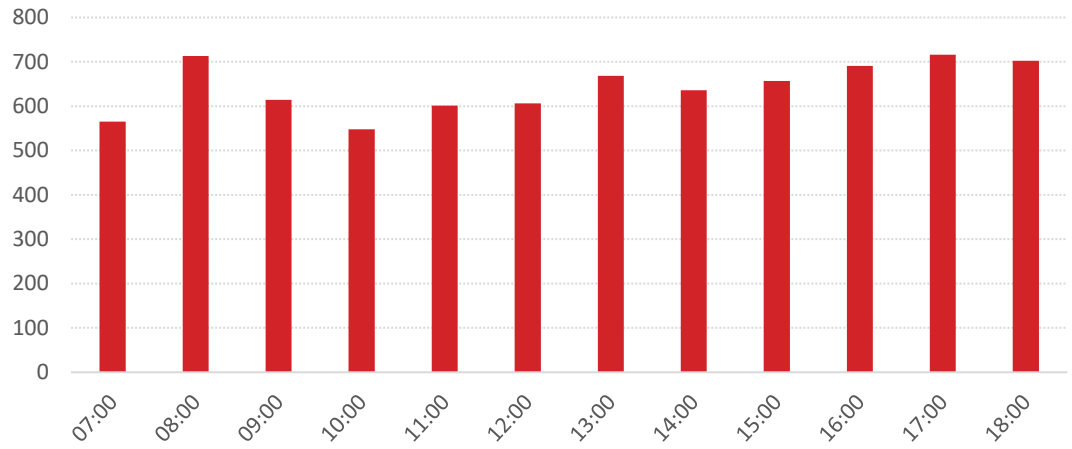
3.6.4 Both the NTA (through their publication Alternative Futures Travel Demand Nov 2020) and TII (through their publication PAG Unit 5.3 Travel Demand Projections PE-PAG-02017 (tiipublications.ie) Oct 2021), have sought to forecast the future demand for travel in a medium to long term horizon. The application of both of these forecasting methodologies result in an overall reduction in transport demand and traffic flows compared to pre-pandemic levels to reflect changes in technology and working behaviors. Where feasible, it is advised by TII to use pre-pandemic traffic flows to reflect stable and conservative traffic flow conditions. Therefore, the use of 2019 traffic flows in the appraisal of the Bailey Gibson scheme represents a conservative and robust case scenario, appropriate for the assessment of the capacity of the network across all modes. The recently published EIAR prepared by the NTA for the BusConnects Core Bus Corridor Infrastructure works has also utilised traffic surveys collated in 2019. In this regard, the BusConnects EIAR notes that:

"the Do Minimum and Do Something scenarios are based on the assumption that travel behaviour will remain broadly consistent over time and that car demand, used for this assessment, represents a likely worst-case scenario. It is possible that societal trends in the medium to long term may reduce car demand further due to the ongoing changes to travel behaviours and further shifts towards sustainable travel, flexibility in working arrangements brought on following COVID-19, and delayed car ownership trends that are emerging."

Link Flows

3.6.5 The hourly total two-way flow along the South Circular Road between Dolphin's Barn & Donore Avenue was calculated from JTC 3 & 9 in order to find the peak hours for traffic. The daily profile of traffic along this route is shown in Figure 3.20. There is a notable peak in morning traffic between 8:00-9:00. The PM peak is less well defined with traffic more evenly spread, however there is slightly more traffic observed between 17:00-18:00.

Figure 3.20 South Circular Road – Daily Profile of Traffic



3.6.6 The peak hour traffic flows along each of the main links close to the development is outlined for the AM and PM peaks in Figure 3.21 and Figure 3.22 respectively. As shown, the busiest road locally during the AM & PM peaks is Dolphin's Barn Street/Cork Street north and southbound with large volumes of car traffic crossing the canal daily (921 vehicles northbound in the AM peak hour & 999 vehicles southbound in the PM Peak hour). There are also high volumes of traffic along the South Circular Road east of Donore Avenue.

Figure 3.21 AM Peak Traffic Volumes

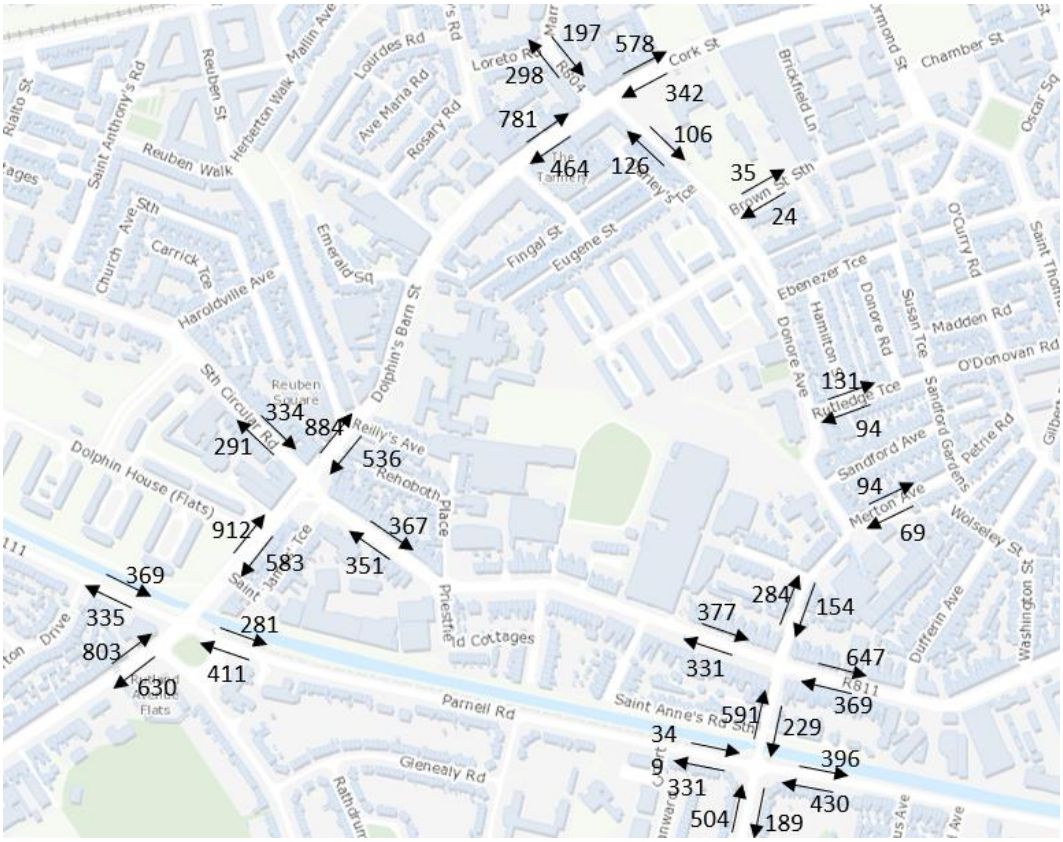
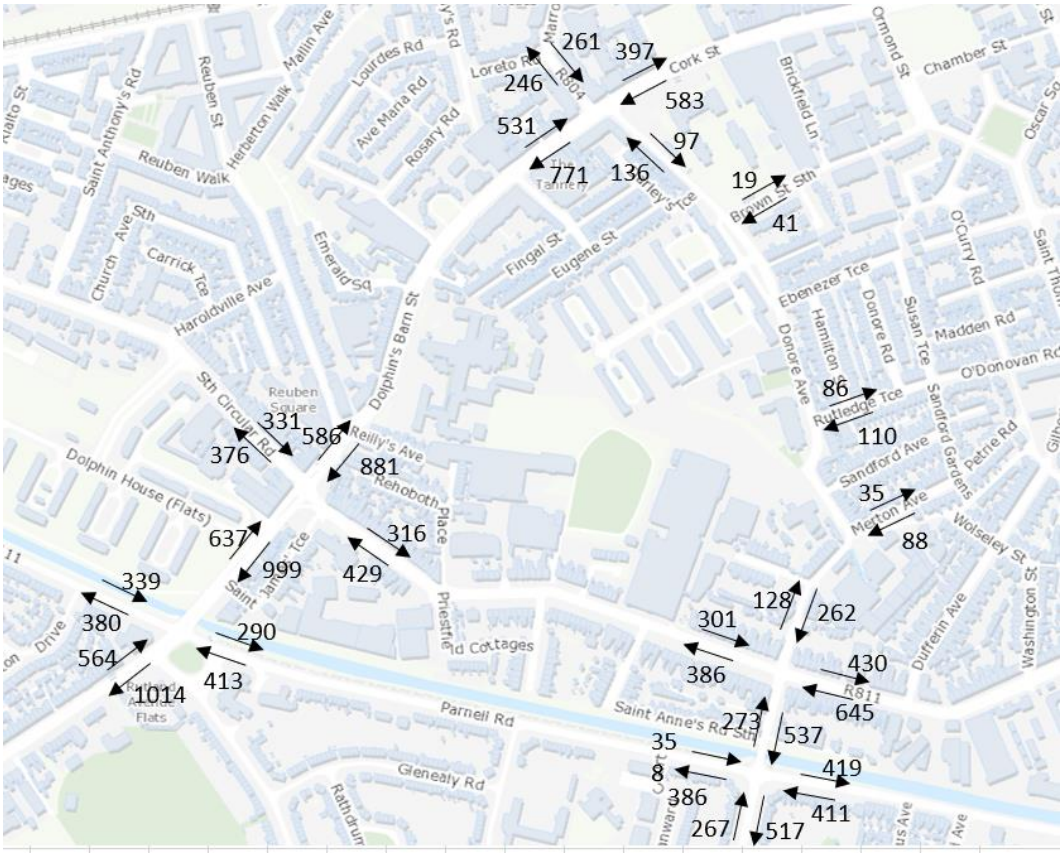


Figure 3.22 PM Peak Traffic Volumes

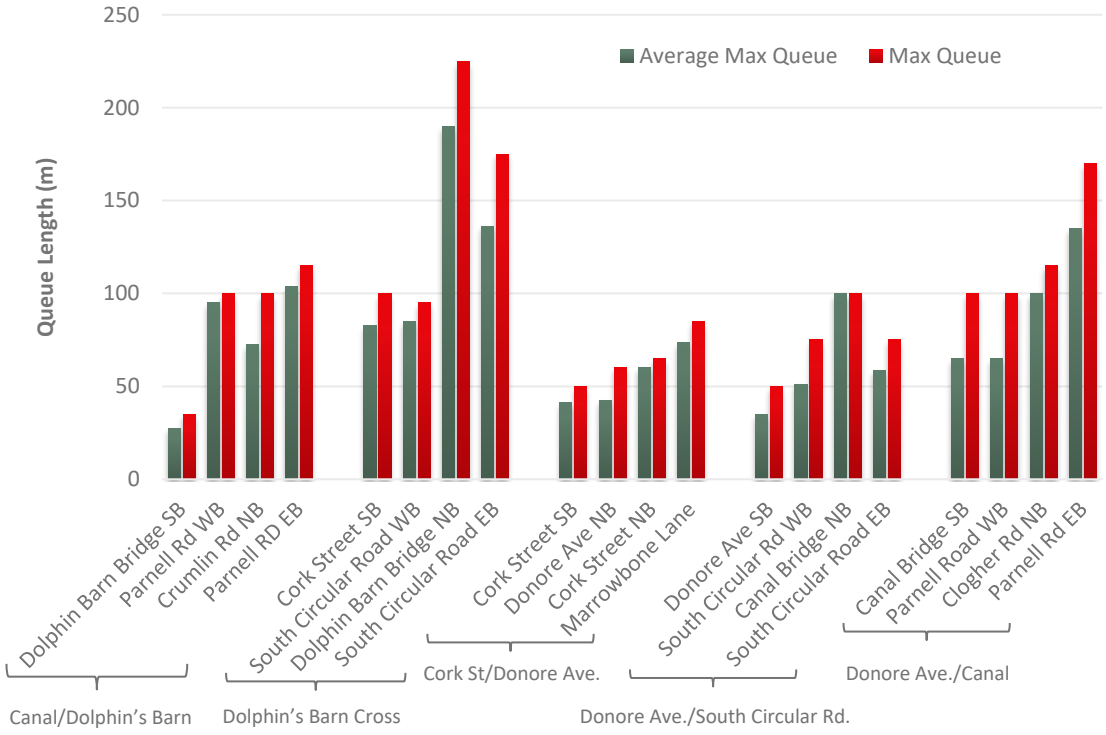


Queue Length Results

3.6.7 The queue length surveys undertaken record the maximum queue observed within 15-minute intervals through the peak hour. The average of the 4 max queues observed across the hour and the highest individual queue in the peak hour are shown for each arm in Figure 3.23 & Figure 3.24 for the AM and PM peak hour respectively.

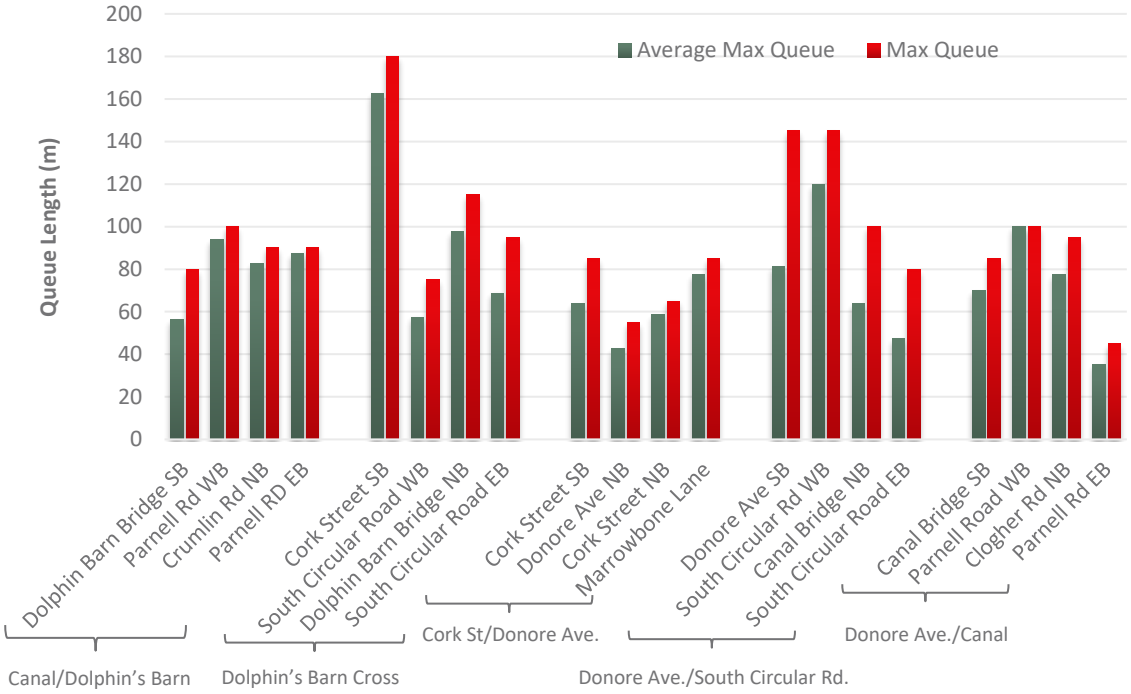
3.6.8 As shown in Figure 3.23, the highest levels of queuing are observed at Dolphin's Barn Cross travelling northbound across the bridge and eastbound along the South Circular Road in the morning peak. There are also higher levels of queueing observed travelling eastbound along the canal at Donore Avenue.

Figure 3.23 AM Peak (8-9) Queue Lengths



3.6.9 In the PM peak hour, the longer queues are predominantly observed travelling south and westbound as traffic travels outbound from the city. The longest queue is observed along Cork Street southbound travelling towards Dolphin's Barn Cross. There is also some queuing to the east of the subject site along Donore Avenue southbound and South Circular Road westbound.

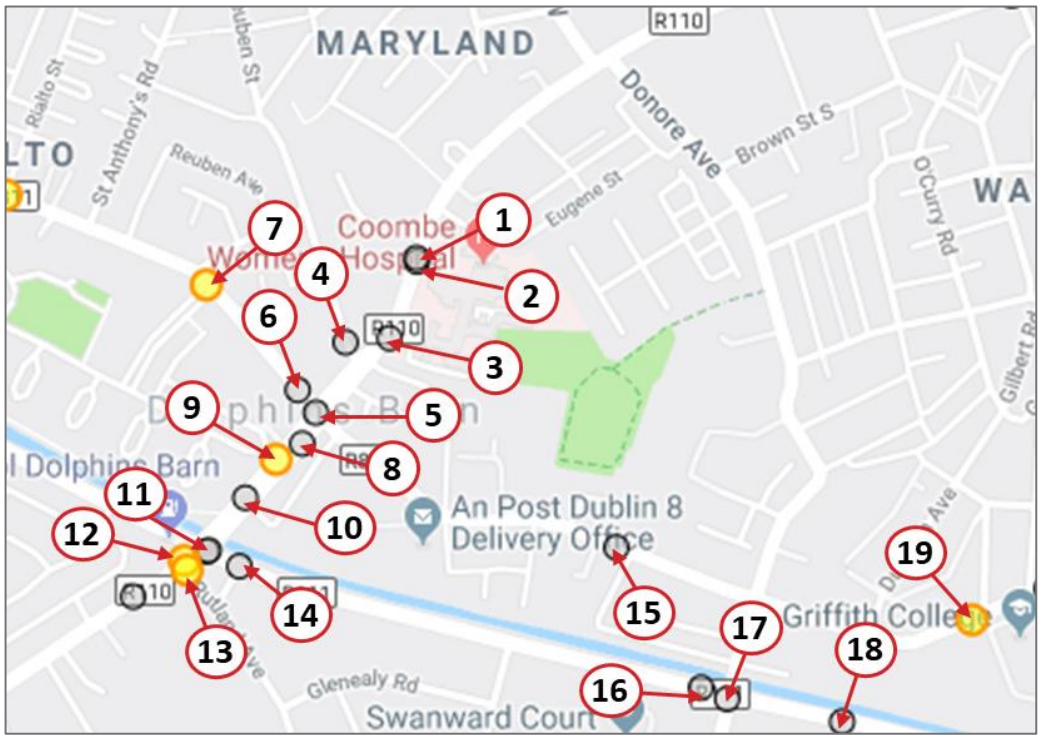
Figure 3.24 PM Peak (17-18) Queue Lengths



3.7 Road Safety

3.7.1 The Road Safety Authority's (RSA's) online collision map was reviewed to assess any local accidents and safety trends which may impact the proposed development. The collision map includes all fatal, serious and minor accidents officially recorded between 2005 and 2016. The data for subsequent years is not yet available on the RSA's website. The recorded accidents near the subject site are shown in Figure 3.25.

Figure 3.25 RSA Collision Map



(Map Data © Google & Road Safety Authority)

3.7.2 As shown, there is only one minor accident in the immediate vicinity of the site along the South Circular Road. There were more accidents reported further from the site along Dolphin's Barn Street including a number of serious accidents but no fatal. Details of the accidents shown in Figure 3.25 are given below in Table 3.4.

Table 3.4 Local Accident Summary

No.	Severity	Vehicle	Circumstances	Day	Time	No. Causalities
1	Minor	Car	Rear end, left turn	Mon.	0700-1000	1
2	Minor	Goods Vehicle	Rear end, straight	Wed.	1000-1600	1
3	Minor	Car	Other	Wed.	1000-1600	2
4	Minor	Car	Single Vehicle only	Sat.	1900-2300	1
5	Minor	Bus	Head-on conflict	Sat.	0300-0700	4
6	Minor	Car	Head-on conflict	Fri.	1900-2300	2
7	Serious	Car	Pedestrian	Fri.	1000-1600	1
8	Minor	Undefined	Pedestrian	Thu.	1600-1900	1
9	Serious	Bicycle	Other	Wed.	1000-1600	1
10	Minor	Bus	Pedestrian	Sun.	2300-0300	1
11	Minor	Bus	Other	Sat.	0300-0700	1
12	Serious	Bicycle	Other	Fri.	1600-1900	1
13	Serious	Undefined	Pedestrian	Mon.	1600-1900	1

No.	Severity	Vehicle	Circumstances	Day	Time	No. Causalities
14	Minor	Bicycle	Other	Wed.	1000-1900	1
15	Minor	Car	Single Vehicle only	Fri.	1900-2300	1
16	Minor	Car	Rear end, straight	Tue.	1000-1600	1
17	Minor	Bicycle	Other	Mon.	0700-1000	1
18	Minor	Motorcycle	Other	Mon.	1600-1900	1
19	Serious	Bicycle	Other	Wed.	1000-1600	1

3.8 Future Infrastructural Improvements

BusConnects

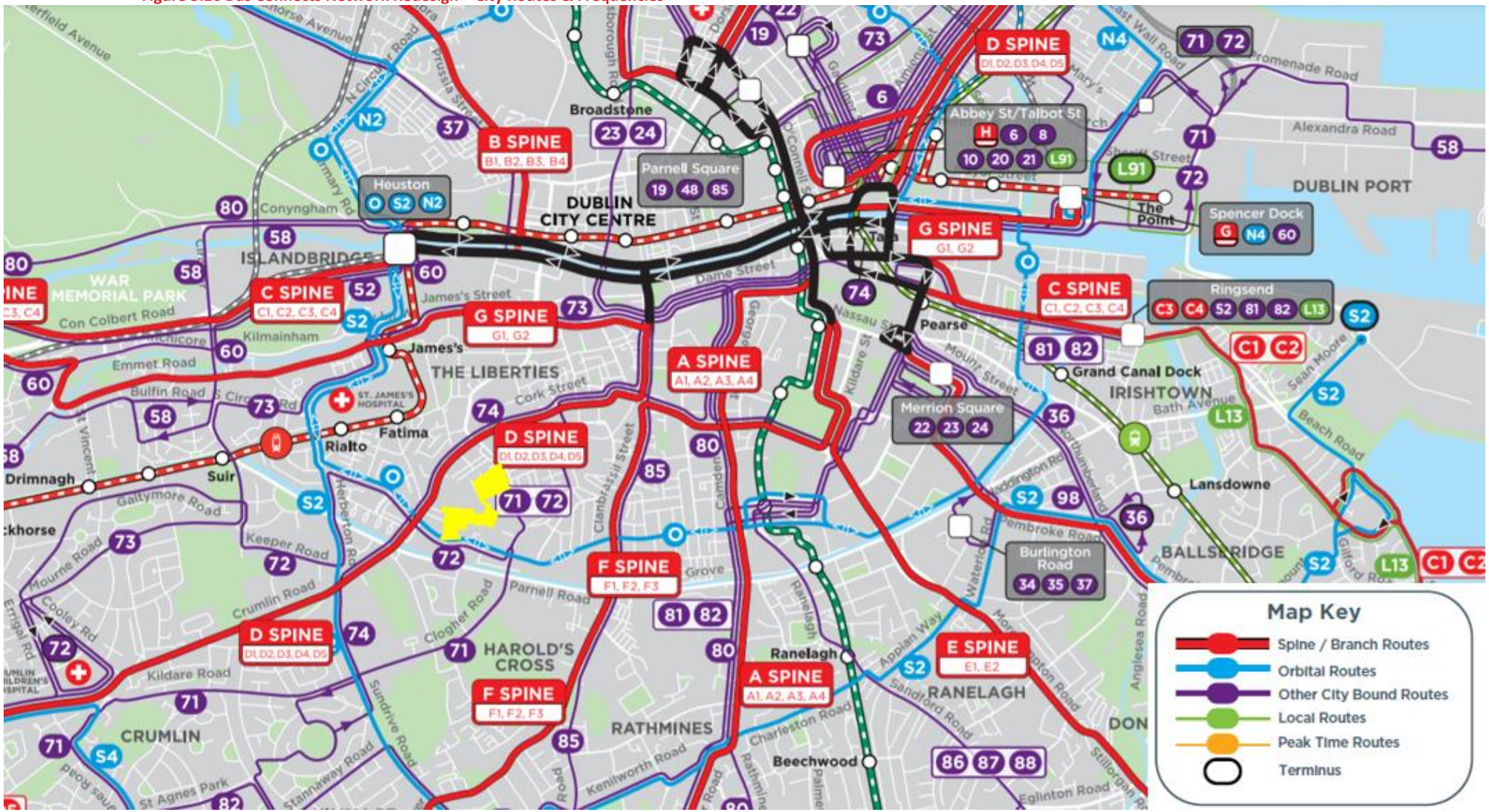
3.8.1 BusConnects is a major investment programme to improve and enhance the bus network of Dublin. It aims to overhaul the current system through a 10-year programme of integrated actions to deliver a more efficient, reliable, integrated and better bus system with a capacity to carry for more people. As part of this programme there are a number of initiatives planned including:

- Delivery of a network of new or improved core bus corridor to improve journey times and reliability;
- New network of cycle lanes/tracks;
- Redesign of bus network with higher frequency spine routes, new orbital services and increased services;
- New bus stops and shelters with improved signage and information;
- Improvement to ticketing and fare structures.

3.8.2 There are a total of 16 Core Bus Corridors which are planned to be developed over 3 phases. Greenhills-City Centre Corridor which runs along Dolphin's Barn Street is planned to be developed in phase 2 of the project. The preliminary design for these corridors are currently being progressed by National Transport Authority based on feedback from the initial public consultation.

3.8.3 The Greenhills-City Centre corridor is classified as a very high frequency spine with frequencies of less than 5minutes proposed along Dolphin's Barn Street/Cork Street. In addition, a new orbital route is planned along the South Circular Road which will pass directly in front of the proposed development. This route will operate at a frequency of 5-10 minutes. Figure 3.26 shows the Revised Network Plan 2020.

Figure 3.26 Bus Connects Network Redesign – City Routes & Frequencies

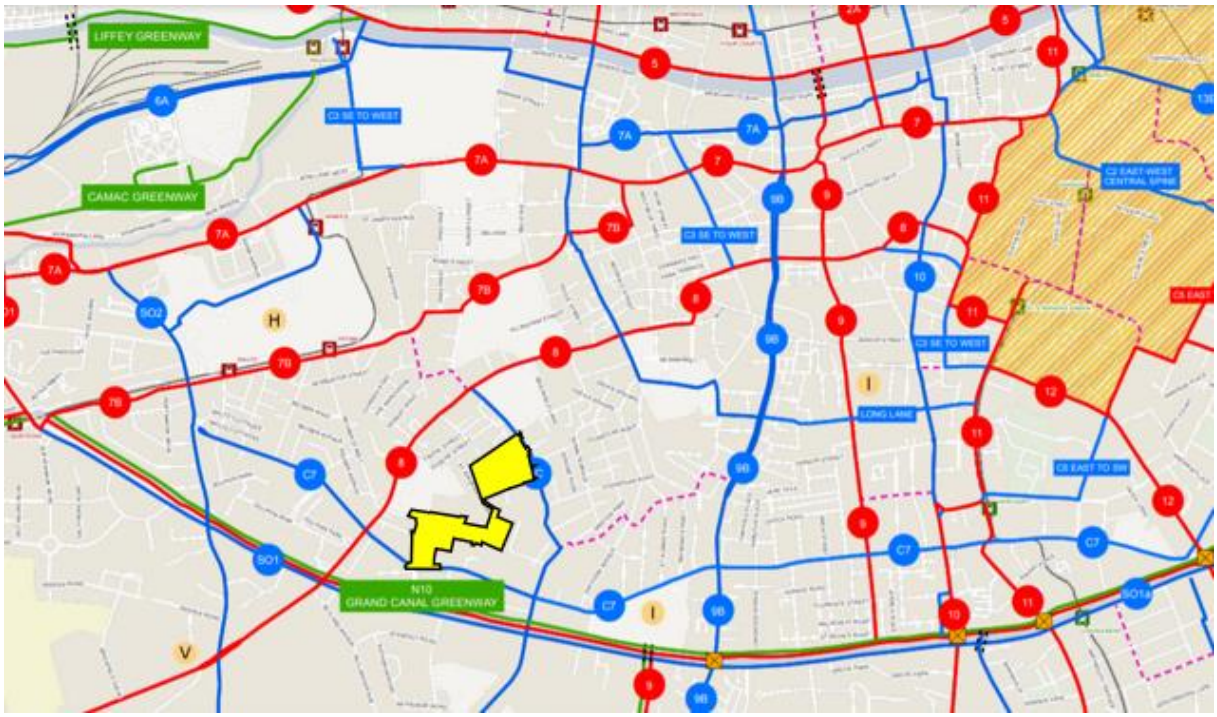


Greater Dublin Area Cycle Network Plan, 2013

3.8.4 The Greater Dublin Area Cycle Network Plan sets out a 10-year strategy to expand the urban cycle network from 500km to 2,480km. The overarching ambition of the plan is to increase the national cycle mode share to 10% by 2020.

3.8.5 The network will consist of a series of primary, secondary and feeder routes as well as greenways routes. These routes will comprise of a mix of cycle tracks and lanes, cycleways and infrastructure-free cycle routes in low traffic environments. The proposed cycle network near to the development is shown below, with the Grand Canal Greenway, the Primary Routes 8 and SO1 / N10 and the Secondary Routes 8C and SO2 running near to the site as shown in Figure 3.27.

Figure 3.27 GDA Cycle Network Plan – City Centre

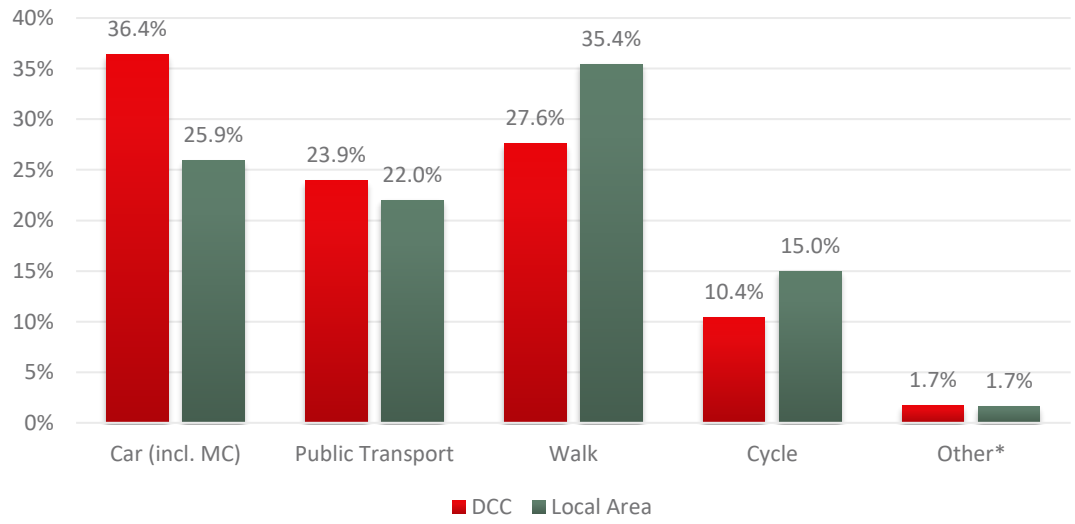


4. BASELINE TRAVEL CHARACTERISTICS

4.1 Mode Share

4.1.1 Using the Small Area Population Statistics (SAPS) from the 2016 Census data the commuting mode shares for DCC were analysed by Small Area, the smallest geographical area for which the data is publicly released. The commuting mode share for work and education trips in the local area (small areas within 500m of the site) were also extracted. Figure 4.1 below shows the breakdown of mode shares for both areas. 'Other' trips include those working mainly from home. Respondents who failed to record on answer on the census have been excluded from the analysis.

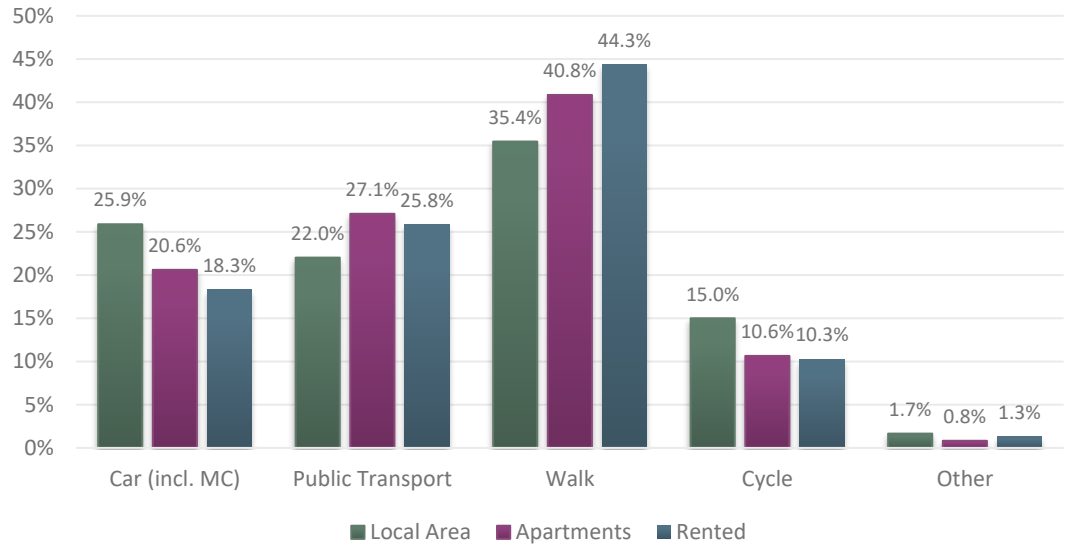
Figure 4.1: DCC & Local Commuting Mode Shares



4.1.2 As illustrated above, the commuting car mode share in the immediate vicinity of the subject site is significantly lower than the average for DCC at only 25.9%. The public transport share is marginally lower but the active mode shares (i.e. walking and cycling) significantly higher reflecting the proximity of the local area to major employment centres and the city centre. Combined walking and cycling trips account for over half of all commuting trips made from the local area.

4.1.3 Within the local area there are many privately owned houses which traditionally have higher commuting car mode shares. For small areas with higher proportions of apartments or rented accommodation (>75%) within the local area, which are more representative of the subject site, the car mode share is significantly lower than the average for the area as shown in Figure 4.2. The public transport and walking mode shares are significantly higher however the cycling mode share is lower which may reflect limited cycling parking in existing apartments and rented accommodation.

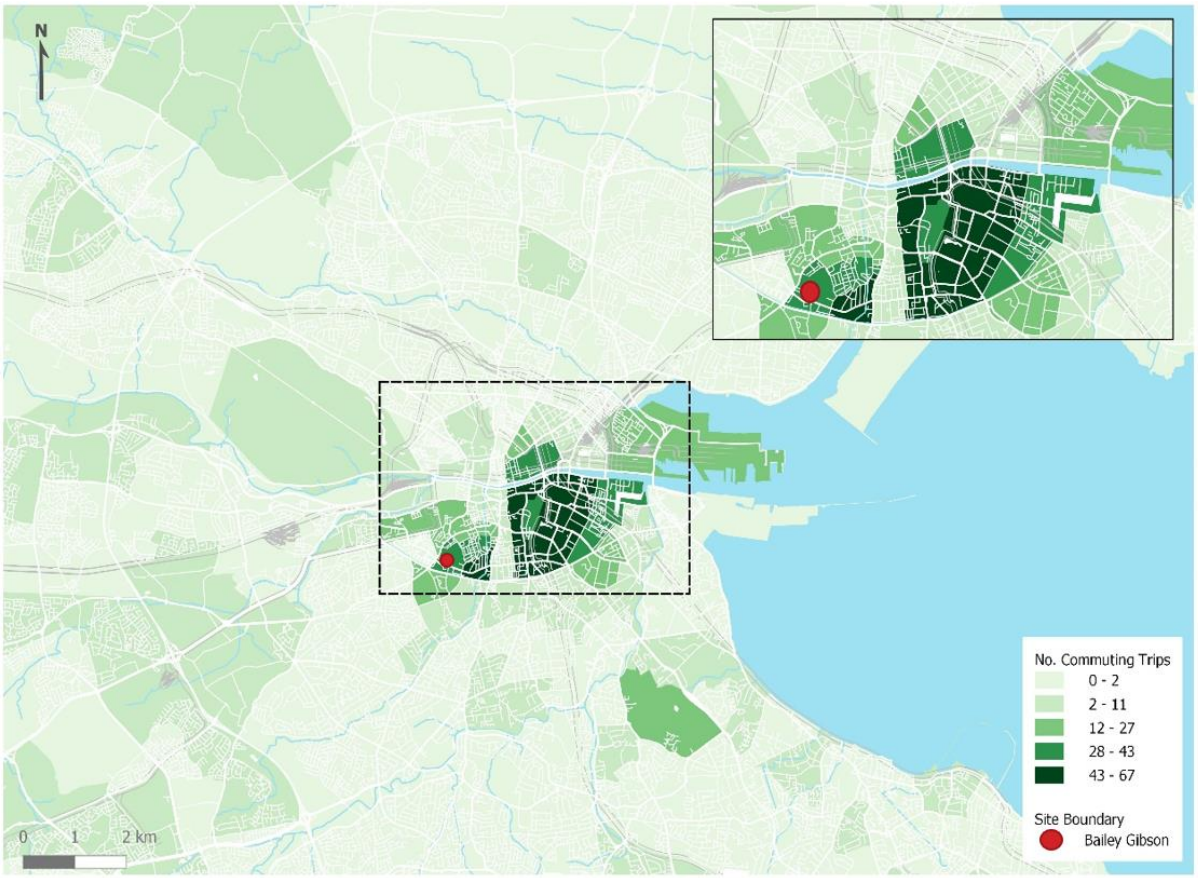
Figure 4.2: Local Commuting Mode Shares by Housing Type



4.2 Destination Choice

4.2.1 As part of the 2016 census the CSO released Origin Destination data for all commuting trips (combined work & education) by Electoral District (ED). To understand the potential destination of future residents the destination of existing commuting trips from the ED where the subject site is located was mapped, as shown in Figure 4.3.

Figure 4.3: Destination of Commuting Trips from ED 02124



4.2.2 As shown, the majority of trips have a destination within the city, with concentrations of demand shown locally and in the city centre and docklands. In total, 60% of the trips originating within this ED have a destination within the canal cordon or docklands.

4.3 Existing Levels of Car Ownership

4.3.1 Using the SAPS an estimate of the approximate number of cars per household was calculated along with the proportion of houses with no car and average car mode share for work and education commuting trips. To estimate car ownership levels of developments similar to the proposed small areas with a high percentage, 75%+, of apartment or privately rented accommodation were also extracted separately from all DCC small areas. The results of the analysis for each are outlined in Table 4.1.

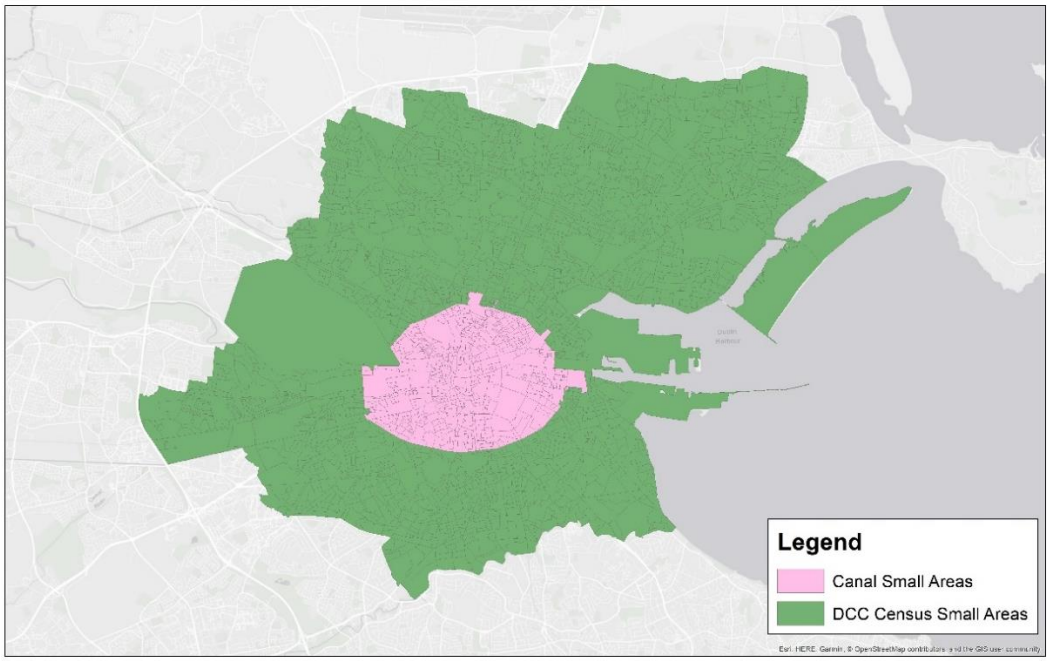
Table 4.1: DCC Estimated Average Car Ownership per Household, Proportion of Households with no Car & Commuting Car Mode Share

SA Type	Average Cars per Household	% of Households with No Car	Average Commuting Car Mode Share
ALL DCC	0.84	33.7%	36.4%
SA with 75%+ Apartments	0.53	49.0%	23.5%
SA with 75%+ Rented Accommodation	0.48	57.0%	16.8%

4.3.2 As shown, the average number of cars per household is 0.84, below the maximum standards of the development plan. This decreases substantially when small areas with high proportions of apartments or privately rented accommodation are isolated with approximately 1 car for every two households on average. There is a corresponding reduction in the commuting car mode share.

4.3.3 DCC covers a wide area of Dublin City and includes many more suburban areas with lower densities and poorer public transport accessibility than that of the proposed development and surrounding area. To account for this, small areas within the boundaries of the canal were extracted and analysed separately. The areas analysed are shown in Figure 4.4.

Figure 4.4: DCC Small Areas & 'Canal' Small Areas



4.3.4 Table 4.2 shows the car ownership data for those small areas within the canals, highlighted in pink in the figure above. As shown small areas located within the canals have significantly lower levels of car ownership than the average levels across DCC and significantly lower than one car per household, particularly small areas with a high proportion of apartments. For those small areas with a high proportion of apartments there is on average just 1 car per every 3 households.

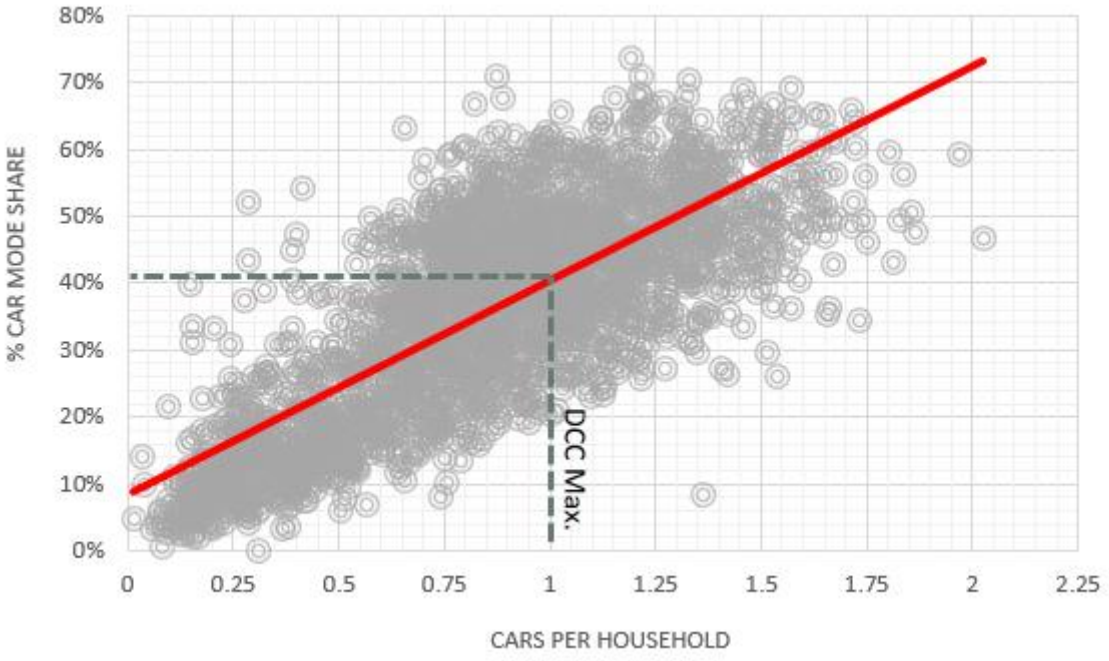
Table 4.2: City Centre Car Ownership Data – By Household Type

SA Type	Average Cars per Household	% of Households with No Car	Average Commuting Car Mode Share
Canal Cordon SAs	0.42	57.3%	16.3%
SA with 75%+ Apartments	0.34	62.4%	13.7%
SA with 75%+ Rented Accommodation	0.37	65.3%	12.1%

4.4 Car Ownership verses Car Usage

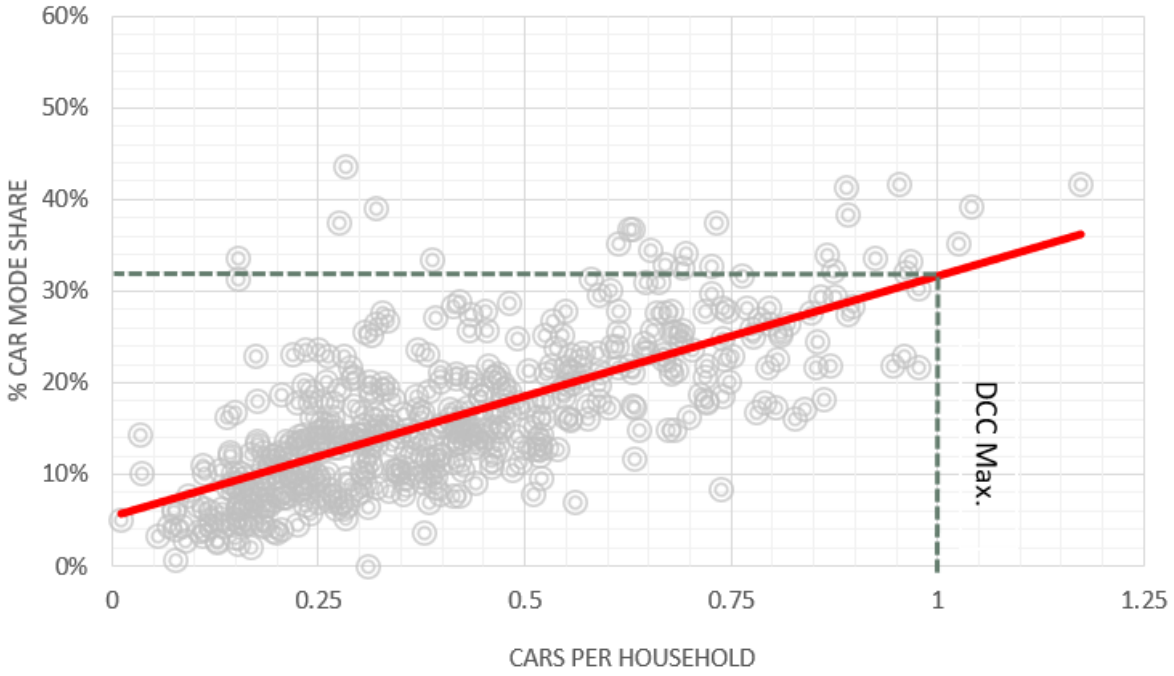
4.4.1 To help understand the likely commuting mode share for differing levels of car ownership the average commuting car mode share was plotted against the average number of cars per household for each small area within DCC and is illustrated in Figure 4.5. The graph illustrates the direct relationship between car ownership/availability and daily car usage.

Figure 4.5: DCC SAPS Data – Car per Household versus Commuting Car Mode Share



4.4.2 The same exercise was undertaken for small areas within the canal boundaries as shown in Figure 4.6. The same relationship applies for small areas close to the city centre suggesting a high proportion of cars parked in residential developments in the city are used for daily commuting and not solely stored for leisure use. The graph also shows most Small Areas within the canals have significantly less than 1 car per household. Approximately 70% of small areas have less than 1 car per every 2 households with 45% having less than 1 car per every 3 households.

Figure 4.6: City Cordon SAPS Data – Car per Household versus Commuting Car Mode Share



5. PROPOSED DEVELOPMENT & ACCESS ARRANGEMENTS

5.1 Wider Context

5.1.1 As explained previously, the proposed development site is part of SDRA 12. The access strategy and internal road layout for the site has therefore been developed and future proofed to link with the wider SDRA 12 site.

5.2 Design Criteria & Considerations

5.2.1 To achieve the objectives outlined above and inform the design several key design criteria and considerations were identified. These are based on the design guidance set out in DMURS and the National Cycle Manual (NCM) and are as follows;

- Streets to be designed as local, access-only streets with widths of 5m, 4.8m where shared space is implemented, and with no central medians;
- A buffer/setback of 1.5m should be maintained around ground floor residential units to allow for balcony, private space etc.;
- All footpaths should be 2.0m minimum with higher demand streets designed as 3m+ and 1.8m maintained at any pinch points;
- In line with NCM guidance, which emphasises traffic reduction and calming before segregation or cycle lanes[2], streets will be designed such that speeds and volumes are sufficiently low to facilitate shared carriageway between vehicles and cyclists;
- Lower kerb heights of 50-75mm will be applied throughout to reinforce lower design speeds and sense of shared space. No kerbs or tactile kerbing will be used where shared surfaces are proposed[3];
- Given the likely low traffic volumes within the development, internal junctions will be uncontrolled shared spaces with priority junctions linking to the external network.

5.3 Site Access Constraints & Opportunities

5.3.1 On the Bailey Gibson Site, it is not feasible to have two-way entry and exit through the existing site entrance with appropriate footpath provision, as the available entry width is less than 6m. In addition, the current width of Rehoboth Place which runs along the western boundary of the site is also too narrow to accommodate a two-way access point to the development. It is possible to widen this road into the development site as far north as No. 40. This house at No. 40 is outside the applicants ownership and outside of the red line boundary.

5.3.2 Providing a main access into the site further north of No. 40 is constrained by the width of the road and corner radii at this point. The opportunities and constraints described are summarised below in

5.3.3

5.3.4

5.3.5 **Figure 5.1**.

[2] Section 1.7.3. https://www.nationaltransport.ie/downloads/national_cycle_manual_110728.pdf

[3] Tactile kerbing will be used to provide navigation for visually-impaired users as per DMURS guidance.

Figure 5.1: Site Access Opportunities & Constraints

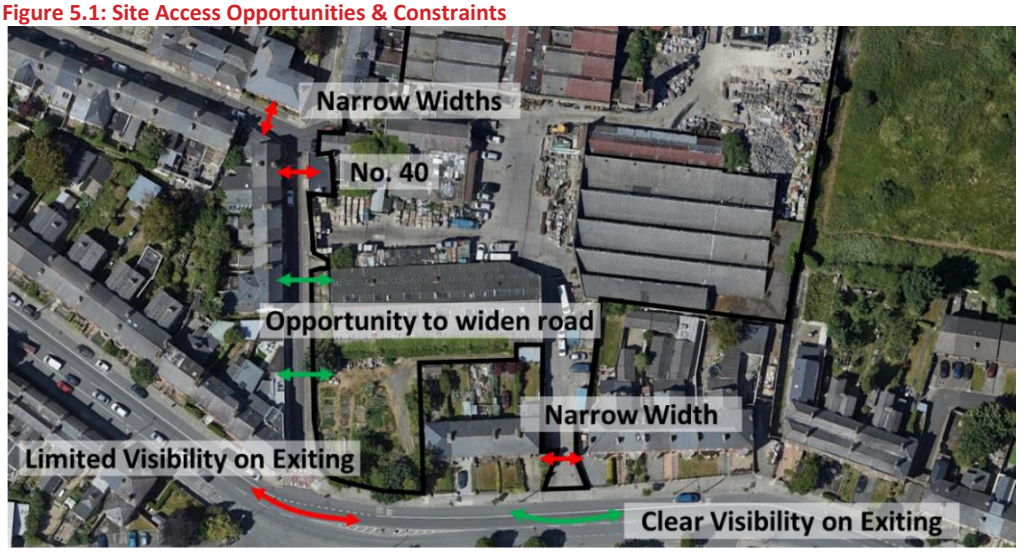
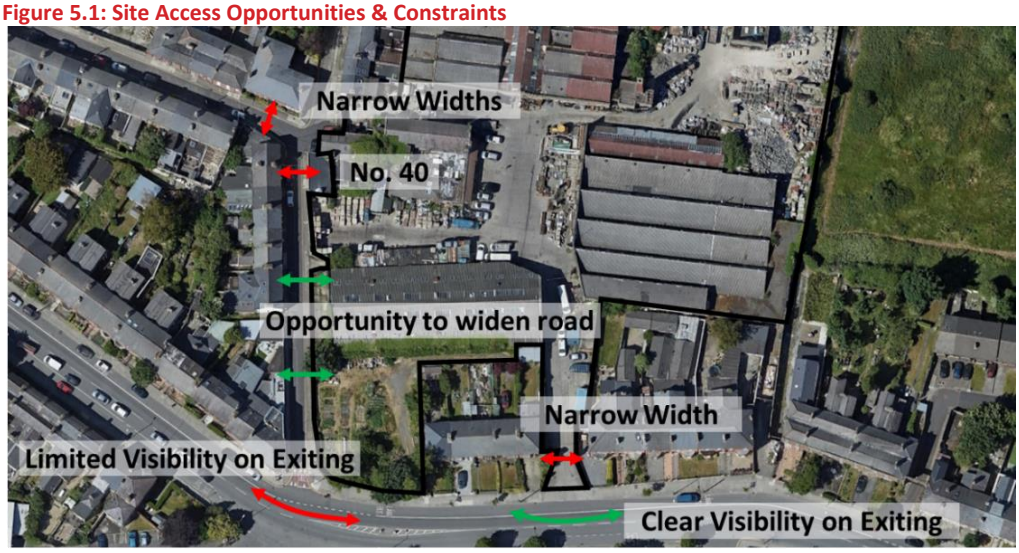


Figure 5.1: Site Access Opportunities & Constraints



5.4 Proposed Access Strategy

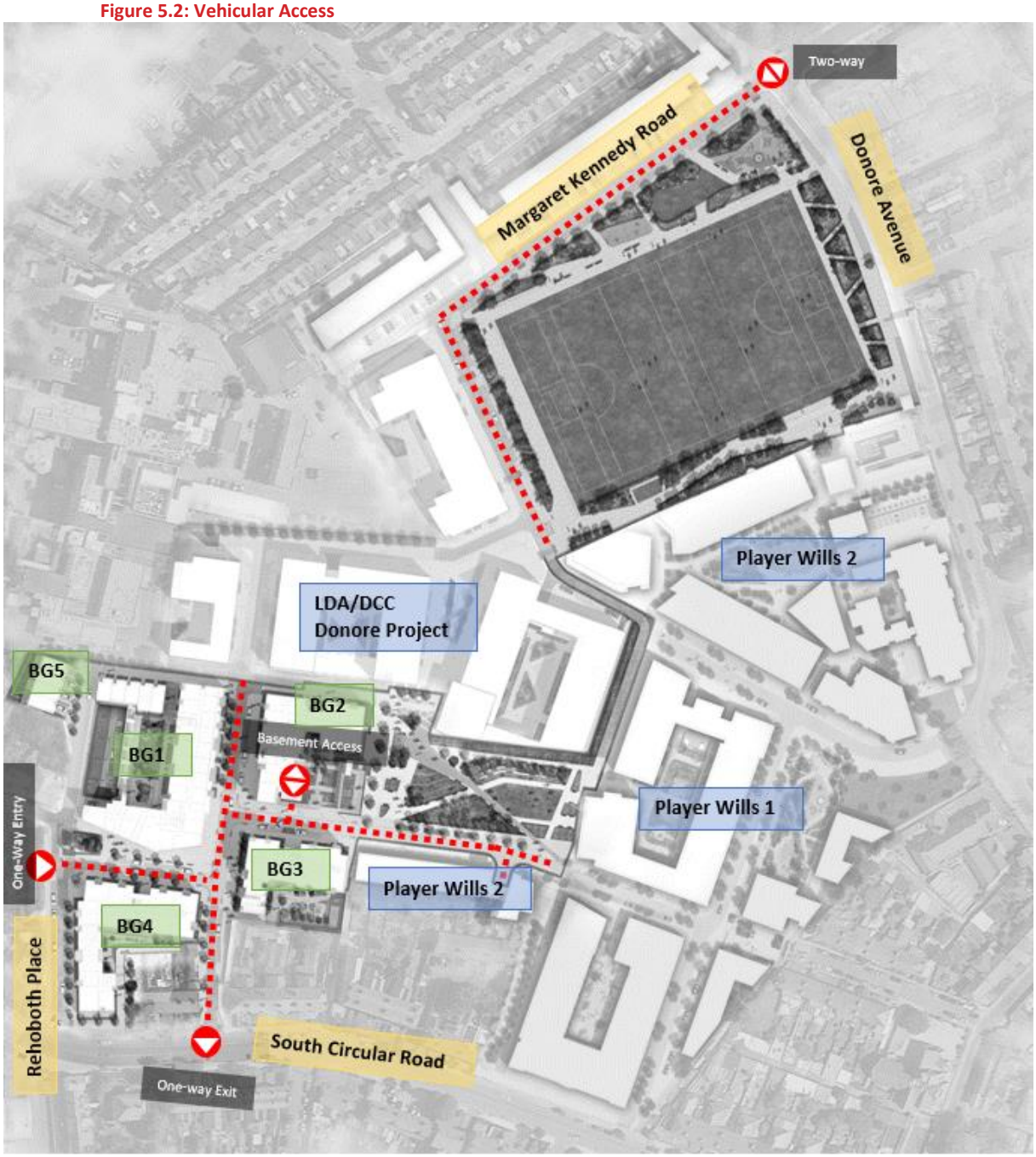
5.4.1 Based on the constraints and opportunities identified a one-way vehicular access system to the residential element of the proposed development i.e. at the Bailey Gibson site is proposed as the optimum design response. The site exit will be via the existing site access onto South Circular Road. Based on the available width this access can accommodate a one-way

carriageway and wide footpath. Entry will be via Rehoboth Place south of No. 40. This road will be widened to improve existing footpaths and provide a widened carriageway which will benefit both existing and future residents.

5.4.2 The existing road along Rehoboth Place which borders the development will be maintained as two-way to facilitate existing residents but entry to the development will be one-way for vehicular traffic. Pedestrian access will also be provided to the north of No. 40 linking the site with Dolphin's Barn Street. Access to block BG 5 will be via Rehoboth Avenue, however this block consists of just 4 townhouses and 4 accompanying parking spaces. The proposed access strategy for each mode is shown in Figure 5.2 to Figure 5.4.

5.4.3 **Vehicular Access** to the residential development will be limited to a one-way entrance via South Circular Road/Rehoboth Place and one-way exit through the existing entrance directly onto the South Circular Road. Both junctions off the South Circular Road will be priority junctions. The road network will ultimately link to the DCC lands north and east of the development which will provide further accesses to Donore Avenue. A secondary access will be provided to the north of Rehoboth Avenue; however, this will provide access to just 4 houses and accompanying parking spaces. The access to the multi-purpose playing pitch on-street car parking will be from Donore Avenue, along Margaret Kennedy Road and the proposed new road Western Connection Road, which will be a no through road with a turning facility for cars.

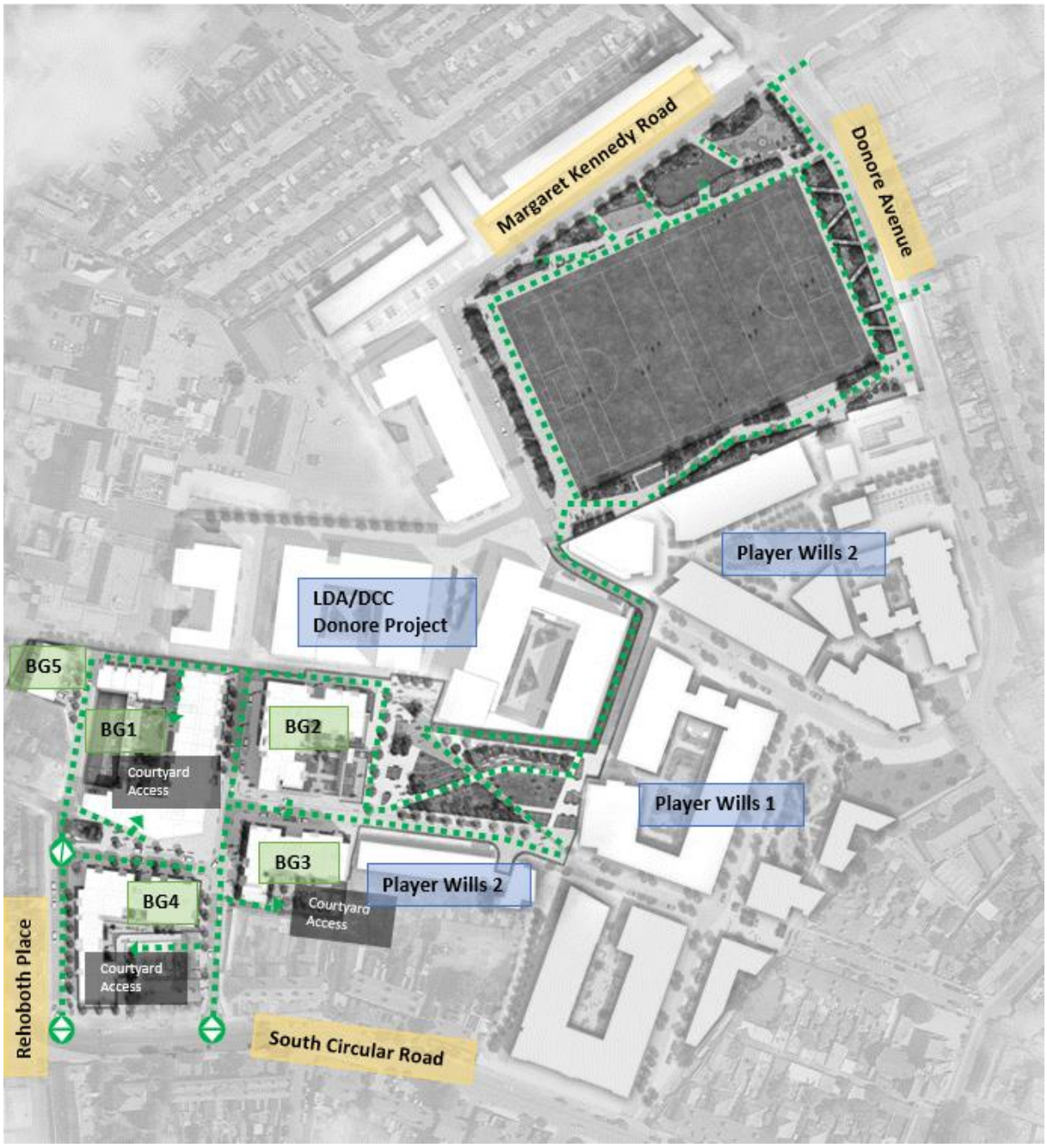
Figure 5.2: Vehicular Access



5.4.4 **Pedestrian Access** to the external network is provided at multiple points across the development including Rehoboth Place, the South Circular Road and Donore Avenue. The site itself is also permeable with footpaths provided through the site and a shared pedestrian/cycle path around the perimeter. A walking/cycling path is provided from Players Park to the south corner of the multi-purpose playing pitch to provide filtered permeability. The multi-purpose playing pitch is surrounding by paths and will be accessible from the north and east residential areas from Donore Avenue and Margaret Kennedy Road.

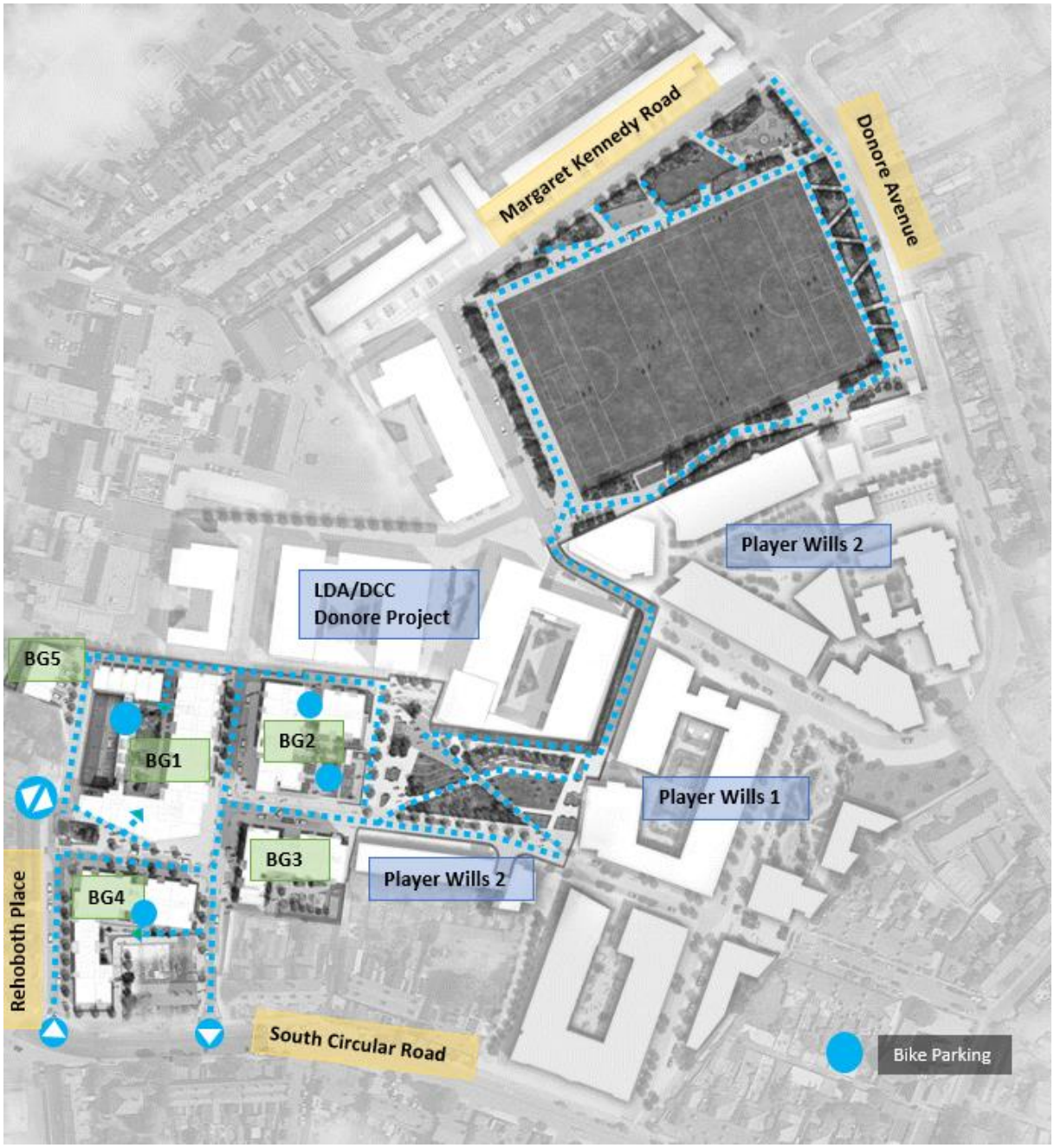
5.4.5 These footpaths will ultimately connect through to the LDA/DCC Donore Project lands to the north and Player Wills Phase 1 to the east.

Figure 5.3: Pedestrian Access



5.4.6 **Cycling Access** follows the one-way system for vehicular traffic off the South Circular Road with additional accesses provided onto Rehoboth Place. There are shared pedestrian/cycle paths around the perimeter which also provide access to some of the long stay cycle parking. The 4m wide path from Players Park to the Multi-purpose Playing Pitch will provide filtered permeability for cyclist. The access to the multi-purpose playing pitch bike parking will be from Donore Avenue, along Margaret Kennedy Road and the proposed new road Western Connection Road, which will connect the Western Connection Road with the 4m wide path up to Players Park.

Figure 5.4: Cyclist Access



5.5 Internal Road Layout & Design

5.5.1 The internal roads have been designed to reduce vehicular speed and provide an environment which promotes walking and cycling above the car. The width of the internal road varies between 4.8m (shared surface) to 5m for two-way roads with 3.7m widths provided on one-way roads to allow access for service and emergency vehicles.

5.5.2 Footpath widths have been maximised internally and range between 2m-8m in width. There are a number of informal crossing points around the development with dropped kerbs and tactile paving. There are also marked crossing points at the primary entry and exit points which will cater for existing pedestrians and future residents. 1.8m+ clearance has been maintained at any pinch points in line with the acceptable minimum outlined in DMURS.

5.5.3 The proposed works on the roads and public footpaths have been superimposed on existing topographical survey to ensure full clarity of the proposed amends. TTA drawings nos. SYS-BG-1.1 and SYS-BG-1.2 shown the proposed improvements to the existing road infrastructure. The proposed areas to be taken in charge have been designed in accordance with the *Construction Standards for Roads and Street Works in Dublin City Council*.

5.5.4 The existing footpaths and carriageway widths along Rehoboth Place south of No.40 have also been widened using land from the development site. The carriageway and footpaths immediately outside of No.40 have also been widened to improve access to the townhouses to the north of the site and accommodate emergency vehicles to both existing and future residents. This results in loss of three existing parking spaces.

5.5.5 Along Rehoboth Avenue is proposed to provide a Home zone/ shared surface to resolve the pinch point between houses no. 1 and no. 36. One parking space along Rehoboth Avenue will also be relocated from the from the east to west side of the road, with no parking spaces lost along this road.

5.5.6 The two main internal junctions will form a raised shared surface connecting to the road to the east which will eventually form a shared surface link between Bailey Gibson & Player Wills south of the proposed park, 'Players Park'. This area will have flush kerbing with tactile & contrasting paving marking the edge of the footpath and start of the road carriageway to allow for visually impaired pedestrians to navigate the space.

5.5.7 The purpose of the shared space is to encourage pedestrian priority through the heart of the development, reducing vehicles speeds and contributing to the sense of place and quality of public realm. It is in line with the guidance set out in DMURS which states shared surfaces and junction are highly desirable where movement priorities are low and there is a high place value in promoting more liveable streets such as on Local streets within Neighbourhoods.

5.5.8 The link roads to the north and east have been provided with turning heads to allow vehicles to turn providing access to the on-street parking. Figure 5.5 and Figure 5.6 show the internal road layout in full. Drawings SYS-BG-1.1 & 1.2 are included in TTA drawing booklet. The width of pedestrian pinch points are marked on the drawing to demonstrate 1.8m clearance is maintained. Further details on the landscaping, public realm, cross sections and material choices can be found in the Landscape Design Statement.

Figure 5.5: Road Layout (SYS-BG-1.1)

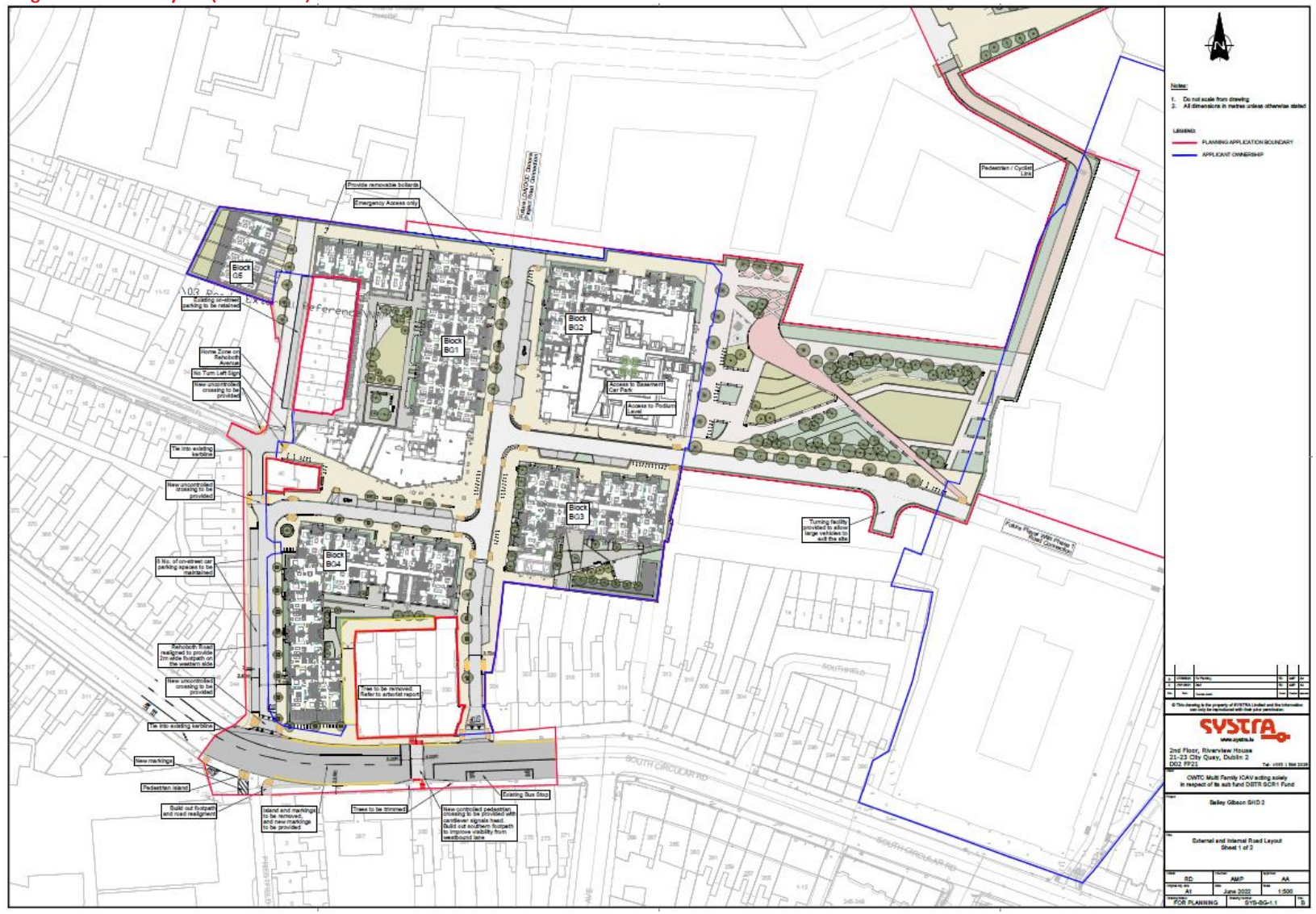


Figure 5.6: Road Layout (SYS-BG-1.2)

5.6 External Road Improvements

5.6.1 A number of infrastructural measures are proposed to improve access for all modes to the site and limit the impact of any additional demand on the immediate network. As discussed, the width of Rehoboth Place to the west of the development site will be increased using land from the applicant. This will improve access to the site but also improve the access and public realm for existing residents. Dropped kerbs to facilitate informal crossing points have been provided along Rehoboth Place and Avenue.

5.6.2 It is also proposed to relocate the existing informal pedestrian crossing across the South Circular Road to the west of the site exit point, east of its current location. This will improve visibility for oncoming traffic and provide a greater reaction time for drivers, particularly for bus drivers, and for pedestrians. The current location does not comply with the requirement sightlines in DMURS. The crossing will also provide a safer crossing point for resident alighting and boarding from buses along the South Circular Road. Other locations were considered as part of the design however after consultation with DCC is was decided the proposed location would best serve the pedestrian desire lines of the development and wider area.

5.6.3 In addition to the crossing, the footpath to the south of South Circular Road opposite Rehoboth Place will be improved and a pedestrian refuge provided between the access to Priestfield Cottages and White Heather Industrial Estate. This is designed to reduce the crossing distance for pedestrians and encourage lower vehicle speeds by passing and turning vehicles. The turning radius entering Rehoboth Place have also been reduced to shorten pedestrian crossing distance and encourage lower vehicular speeds. These changes were implemented based on recommendations made by DCC and in consultation with DCC.

5.6.4 The external networks improvements around the Multi-purpose playing pitch include for the replacement and realignment of footpaths along the eastern section of Donore Avenue to provide for improved pedestrian conditions; the reinstatement of centreline markings along the road; the provision of 1no. of controlled crossing on Donore Avenue aligning with Ebenezer Terrace and 1no. of curtesy crossing including build out kerbs in Donore Avenue aligning with Brown St.

5.6.5 The location and preliminary design of external works are shown in Figure 5.5 and Figure 5.6, in drawings SYS-BG-1.1 and 1.2 which can found in the accompanying drawing booklet.

5.7 Visibility Splay Assessment

5.7.1 In accordance with DMURS a sightline of 49m is required from the site exit at a setback of 2.4m based on the design speed along South Circular Road, 50kph. And a sightline of 24m from the exit along Donore Avenue.

5.7.2 These visibility splays requirements are achieved for the proposed exit at the existing access points as shown in Figure 5.7, Figure 5.8 and in SYSTRA drawing SYS-BG-2 which is included in A1 drawing booklet provided with the pack.

Figure 5.7: External Exit Visibility Splay - South Circular Road (SYS-BG-2)

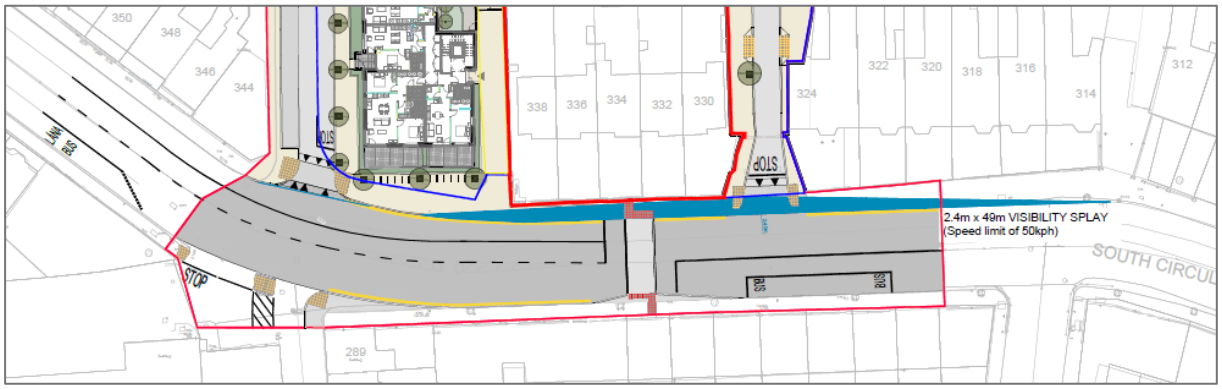
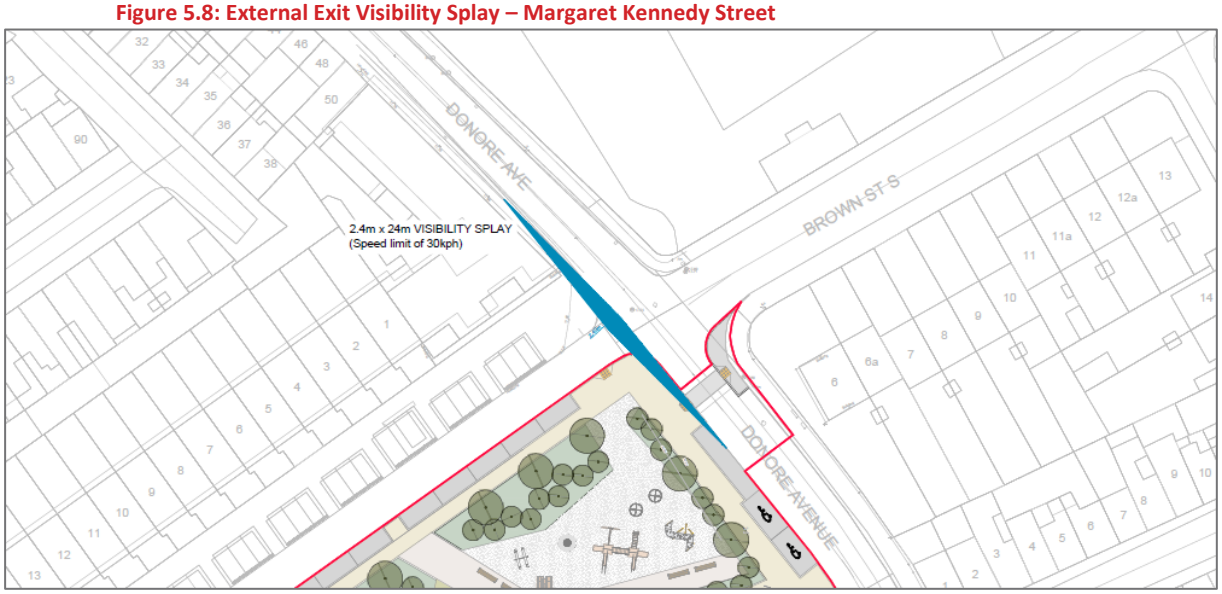


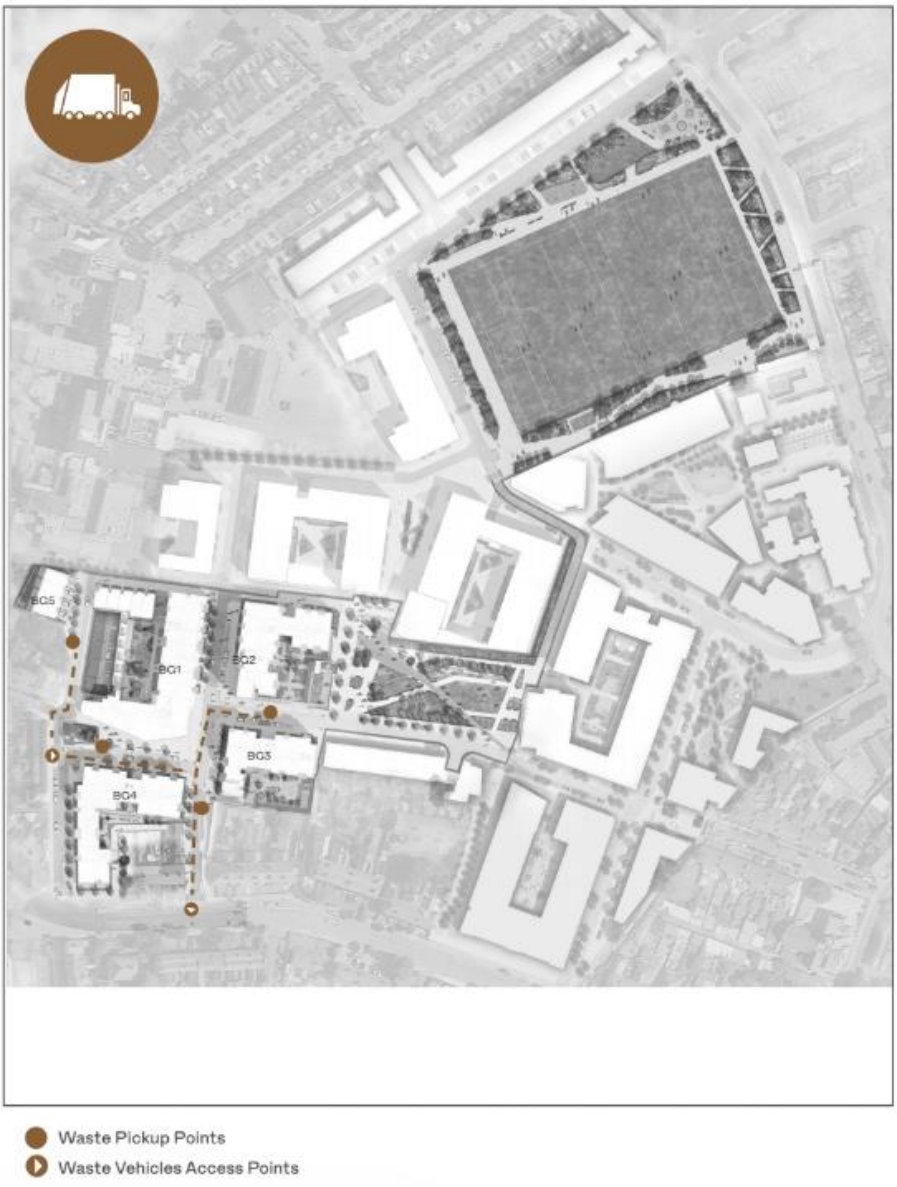
Figure 5.8: External Exit Visibility Splay – Margaret Kennedy Street



5.8 Refuse Vehicle Access

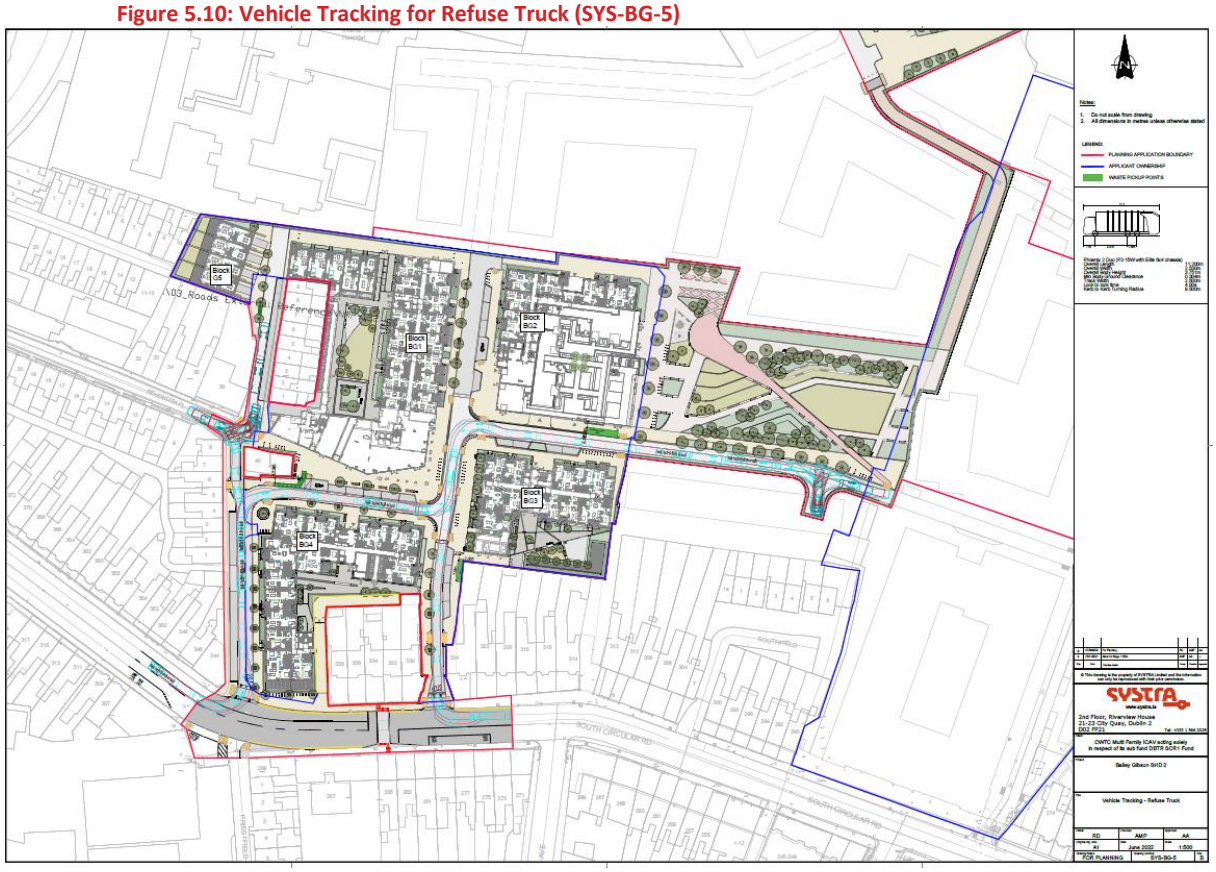
5.8.1 The internal road network has also been designed to accommodate circulation of refuse vehicles. The bin storage areas will be provided internally with the bins brought out to appropriate set down areas by the management company for collection one hour prior to collection and returned to the bin stores directly after collection. The bins will be collected on 3 different days with one day for grey, green and browns bins respectively. The proposed access strategy for refuse vehicles is outlined below in Figure 5.9.

Figure 5.9: Access Strategy for Refuse Collection



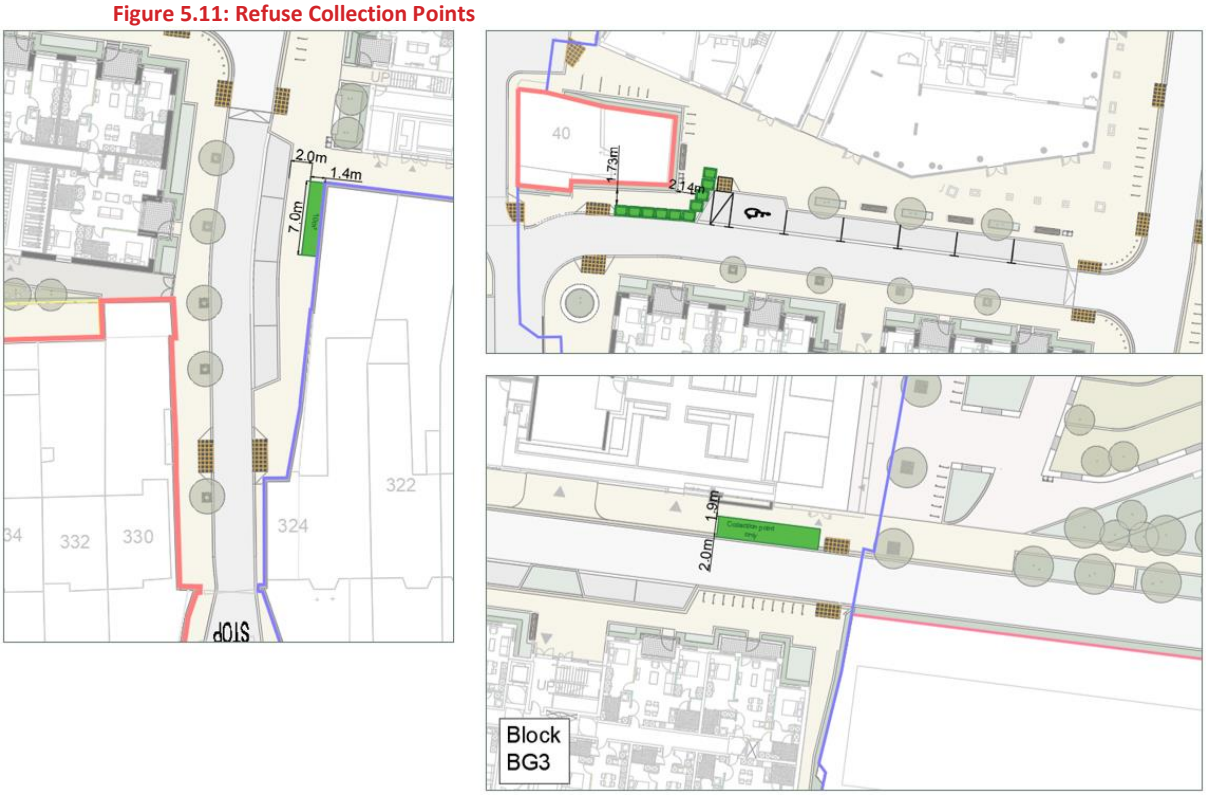
5.8.2 The access routes have been assessed using Vehicle Tracking to ensure a 11.2m refuse truck can use the accesses provided and navigate the internal road network easily. The results of this assessment, shown in Figure 5.10, show the internal network can cater for the refuse vehicles. This drawing, SYS-BG-5, are included in the A1 drawing booklet provided with the pack.

Figure 5.10: Vehicle Tracking for Refuse Truck (SYS-BG-5)



5.8.3 Also shown on the drawings are the bins when on-street. The number of bins shown is the maximum that will be on-street, this will be on the grey bin collection day, as indicated on the Operational Waste Management Plan. There will be less bins on street on the green and brown bin collection days. Each point has been reviewed to ensure the bins, when on-street, do not block footpaths provided or impact access through the public realm. These points are highlight in Figure 5.11. The bins for BG2 will be brought directly to the refuse truck from a bin store located within the podium level car park and will not be on-street prior to collection.

Figure 5.11: Refuse Collection Points



5.9 Emergency Vehicle Access

5.9.1 In addition to refuse vehicles, the access for fire tender has also been tracked to ensure emergency vehicles can safely access the entry and exit points and internal road network. A fire tender of 8.68m length has been tracked. The access strategy for the fire tender is shown in Figure 5.12 with the vehicle tracking shown in Figure 5.13 & Figure 5.14. These drawings, SYS-BG-4.1 & SYS-BG-4.2, are included in the A1 drawing booklet provided with the pack.

Figure 5.12: Fire Tender Access Strategy

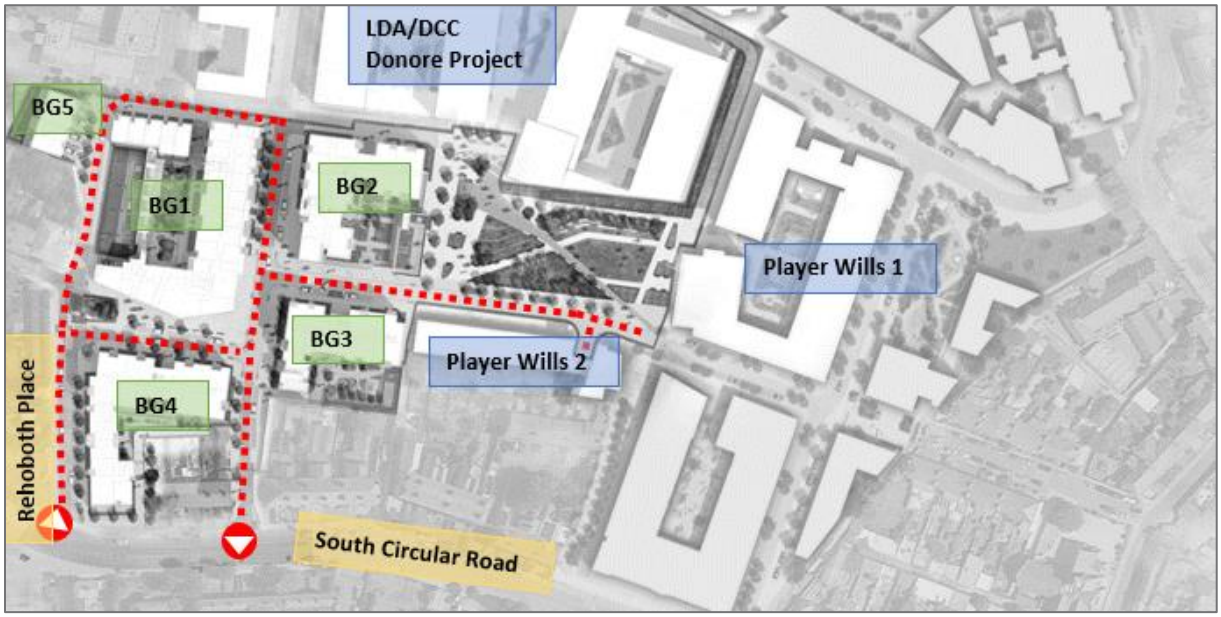


Figure 5.13: Vehicle Tracking for Fire Truck (SYS-BG-4.1)

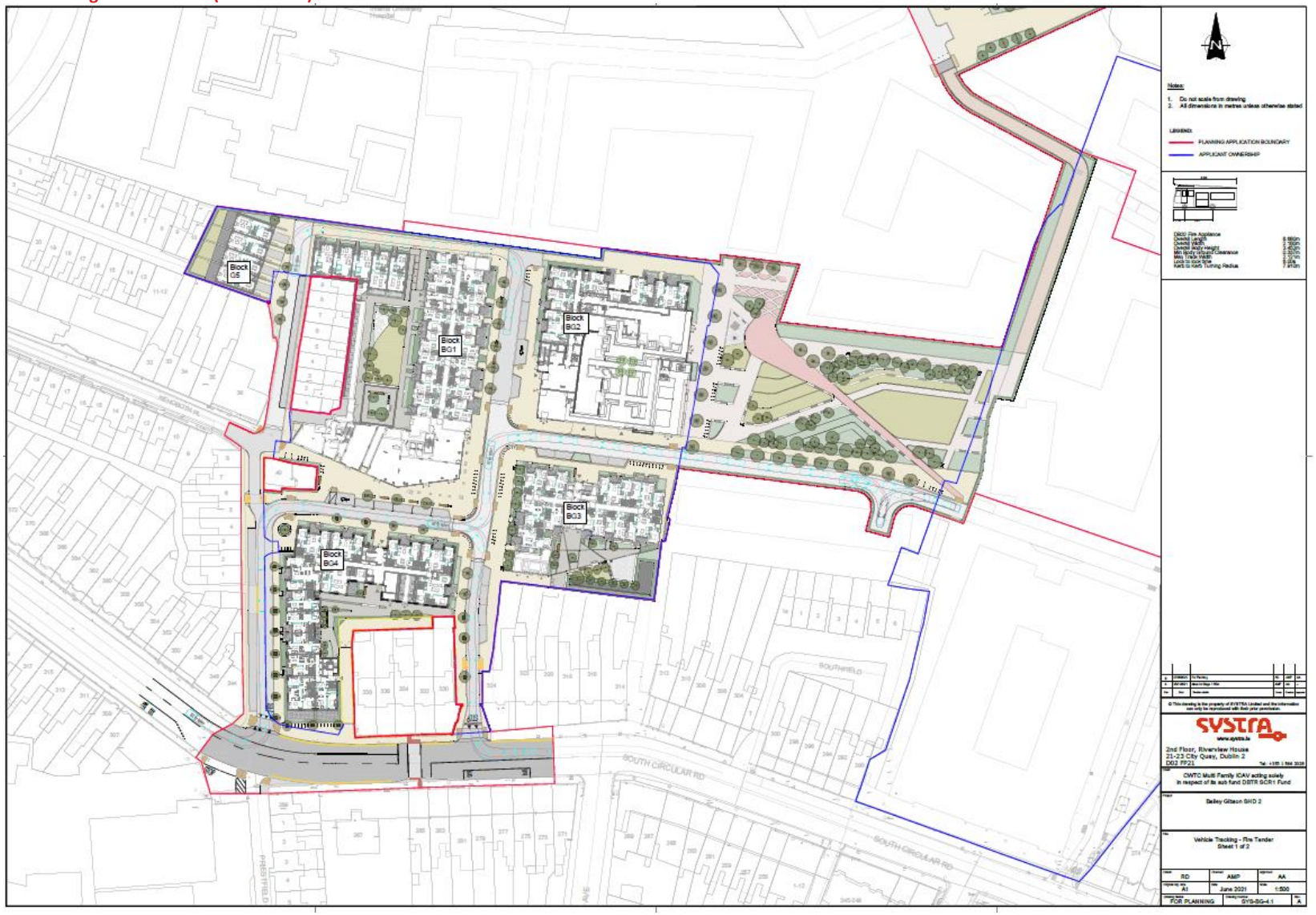


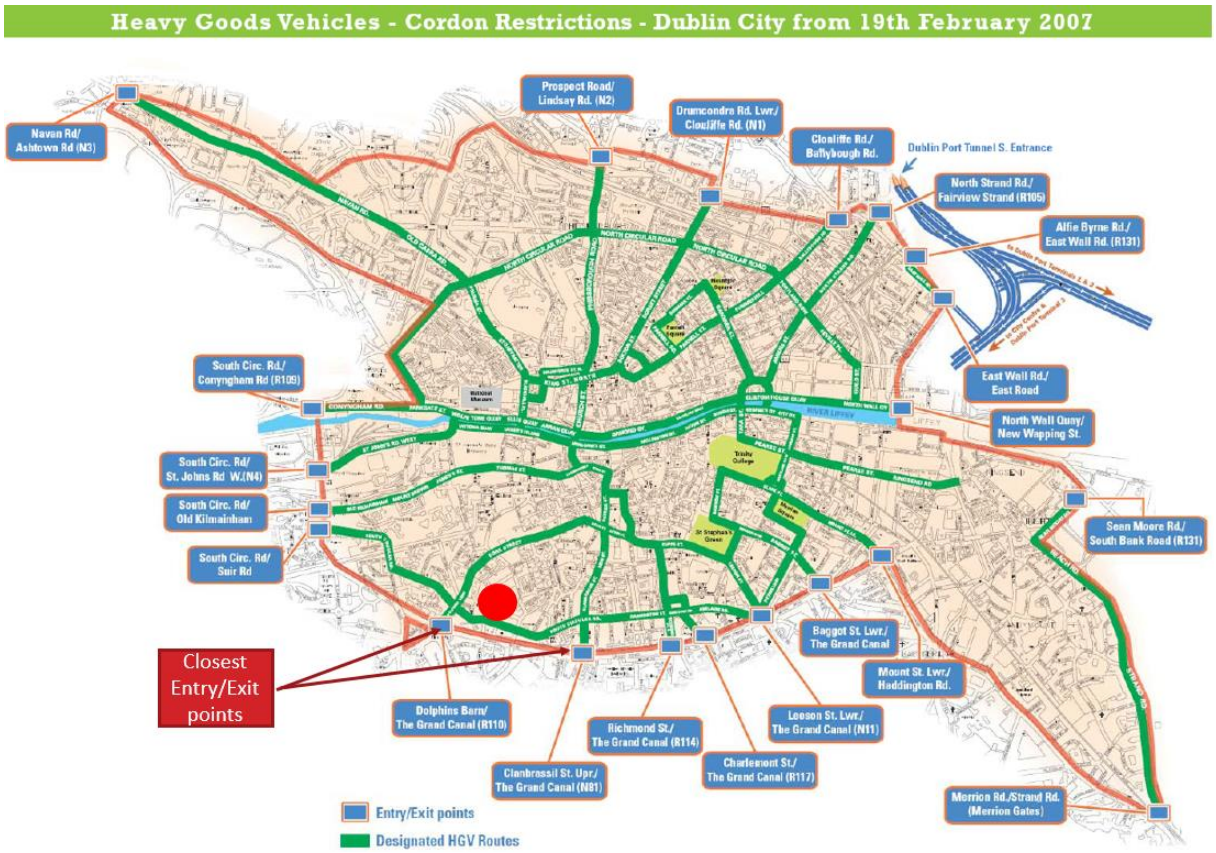
Figure 5.14: Vehicle Tracking for Fire Truck – Multi-purpose Playing Pitch Area (SYS-BG-4.2)

5.10 Access during Construction Phase

5.10.1 The Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) have been provided as part of the application under separate cover. The CTMP provides a detailed access strategy for construction traffic and construction staff for each phase of construction. The following section provides a broad outline of the strategy. For further details please consult the CEMP and CTMP.

5.10.2 The access strategy has been developed to comply with the DCC HGV strategy which provides a number of designated routes and entry/ exit points for HGVs travelling into the city. The strategy also outlines an exclusion zone which applies to 5+ axle vehicles without a valid permit between 07:00-19:00. The strategy restrictions are shown in Figure 5.15. As shown, the South Circular Road is a designated HGV route with closest designated entry points located at Dolphin's Barn Cross, Suir Road and Clanbrassil Street.

Figure 5.15: HGV Exclusion Zone and Designated Entry Points / Haulage Routes in DCC[4]



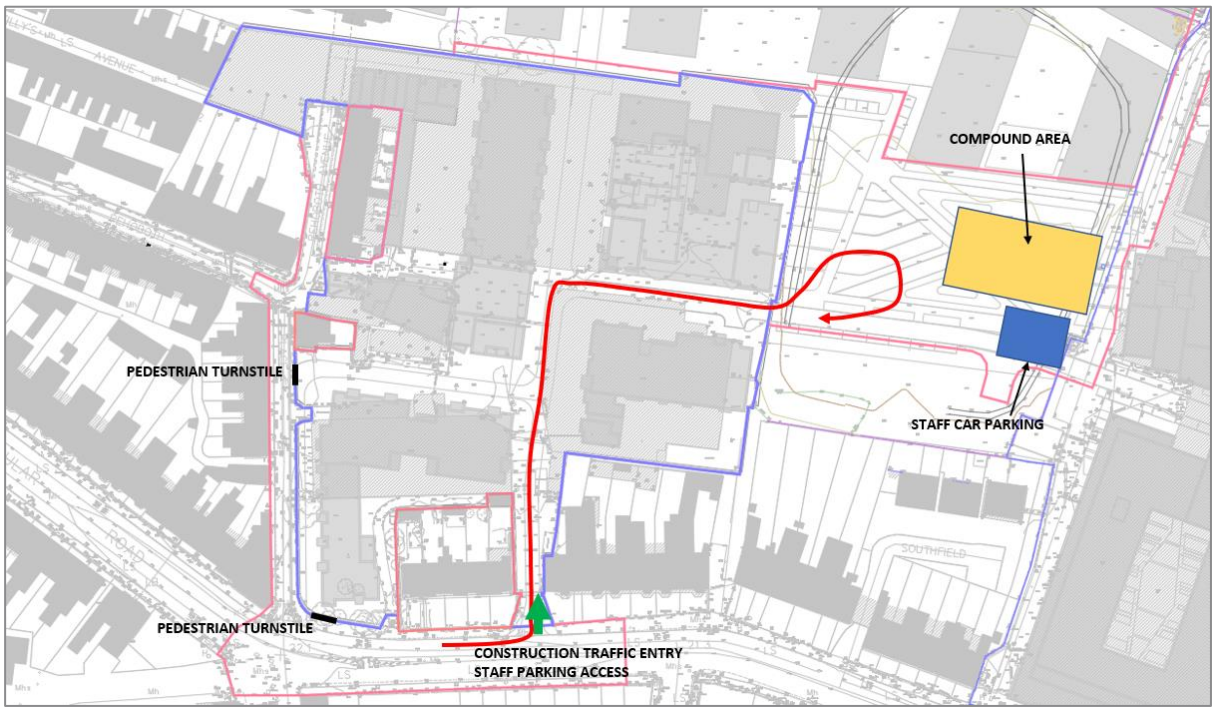
5.10.3 Based on the above, construction traffic will enter from the South Circular Road through the existing Bailey Gibson and Player Wills site entrances off the South Circular Road, a designated HGV route in the DCC strategy. It is proposed that the permitted Player Wills and proposed development sites will share the construction access strategy and site facilities and compounds.

4 http://www.dublincity.ie/sites/default/files/content//SiteCollectionDocuments/map_hgv_restricted_zone.pdf

5.10.4 Pedestrian access to the site will be permitted Pedestrian turnstile entrances will be provided on two locations as shown in Figure 5.16.

5.10.5 Staff and visitor vehicular entrance gates will also be located along South Circular Road with staff and visitor parking, 120 spaces, provided within the site. Mobility management measures and restrictions are recommended in the CTMP for construction staff to limit the volume of vehicular traffic permitted to travel to site during construction. Figure 5.16 provides a broad overview of access to the site and HGV Routes during construction and following completion of the basement excavation and construction.

Figure 5.16: Preliminary Construction Access Strategy



6. PARKING STRATEGY

6.1 Standards & Guidance

6.1.1 As discussed in Section 2.1.5, the standards applicable to the subject site set out in the Dublin City Development Plan is a maximum of 1 space per unit, for restaurants/café is 1 per 150 sq.m, for other commercial uses is 1 per 275 sq.m and for Leisure it depends of the nature/location. The plan does emphasis that the standards are maximum in nature and may be reduced based on the location suitability, access to alternative modes, availability of car clubs and electric car charging points. It will also be necessary to adequately demonstrate that lack of car parking on the site should not reasonably give rise to negative impacts on the amenities of surrounding properties or on the immediate street once the development is occupied – and that there is no potential negative impact on traffic safety.

6.1.2 The DHLGH apartment guidelines 2020 recommend minimised or significantly reduced parking levels for higher density residential developments in central and accessible locations and no parking requirements specifically for BTR and BTS developments, such as that proposed. The guidelines do not however provide guidance on the quantum of car parking that is considered appropriate to facilitate a level of car storage and attract a mixed demographic to the development.

6.1.3 To help ascertain the appropriate level of parking needed a review of international standards was undertaken. There are a number of European cities that are moving towards significantly reduced levels of residential car parking or 'car free' residential developments within the city centres or areas of high public transport accessibility. This is generally in combination with higher levels of cycle parking and mobility measures. These cities include London, Barcelona, Amsterdam and Strasbourg amongst others. Table 6.1 below outlines the residential parking requirements for different European cities.

Table 6.1 International Examples of Residential Parking Ratios

City	Car Parking
Amsterdam	Location A (Excellent PT access): 1/250 ^{sqm} Location B (Good PT access): 1/125^{qm} Location C (Mainly accessible by Car): No Standards, Case by Case
Barcelona	Apartment area >150 $^{sqm:}$ 1.5 spaces per unit 90-150 $^{sqm:}$ 1 space per unit 60-90 $^{sqm:}$ 0.5 spaces per unit <60$^{sqm:}$ 0.25 spaces per unit
London	Inner London 0-0.75 depending on public transport accessibility
Paris	No obligation to build any parking within 500-600m of metro stop, maximum 1/100 ^{sqm}
Stockholm	Green Parking Index, starting interval of 0.3-0.6 based on location suitability/public transport, decrease/increase based on apartment size (-30%/+20%) and reductions of up to 25% for mobility management plan).

6.1.4 The standards outlined show that several major European cities have adopted lower residential car parking provision in suitable urban locations close to the city centre and/or good public transport accessibility. This encourages lower car ownership within urban locations and more sustainable development.

6.1.5 The London Plan 2021[5] in particular provides clear guidance for residential parking provision based directly on quantifiable public transport accessibility. The London Plan is the statutory Spatial Development Strategy for Greater London prepared by the Mayor of London. The 2016 Plan (The London Plan consolidated with alterations since 2011) is still the adopted Development Plan, but the new Draft London Plan is a material consideration in planning decisions. The plan is underpinned by a supporting evidence base which contains numerous reports and technical notes on different aspects of the plan including a study of parking.

6.1.6 Set out in policy T6.1 of the plan[6] are revised parking standards designed to limit excessive car usage and overprovision of parking in new developments close to public transport. The maximum parking provision is based on the Pubic Transport Accessibility Level (PTAL). The PTAL is an index of accessibility to public transport calculated based on frequency of routes and walk times to stops from the development site, the higher the PTAL the better the accessibility to public transport. Where a site falls between two PTAL levels the more restrictive parking standard should be applied. Table 6.2 outlines the revised parking standards.

[5] The London Plan 2021 | London City Hall

[6] https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/draft-new-london-plan/chapter-10-transport/policy-t61-residential-parking

Table 6.2 London Plan 2021, Maximum residential parking standards

Location	Number of beds	Maximum parking provision*
Central Activities Zone Inner London Opportunity Areas Metropolitan and Major Town Centres All areas of PTAL 5 – 6 Inner London PTAL 4	All	Car free~
Inner London PTAL 3	All	Up to 0.25 spaces per dwelling
Inner London PTAL 2 Outer London Opportunity Areas	All	Up to 0.5 spaces per dwelling
Inner London PTAL 0 – 1	All	Up to 0.75 spaces per dwelling

6.1.7 Based on the guidance[7] provided by Transport for London on calculating PTAL the subject site has an Access Index of between 10.1-11.8 which means the site in its entirety falls in PTAL 3. As the site is based in city location the maximum parking provision that would apply to the site using this methodology is 0.25 spaces per unit.

[7] http://content.tfl.gov.uk/connectivity-assessment-guide.pdf

6.2 Supporting Measures

6.2.1 As demonstrated in Section 3, the site is easily accessible by public transport, walking and cycling. In many instances, these modes will be faster than travelling by car. To encourage the use of these modes and reduce the need for car ownership, a Mobility Management Plan (MMP) has been developed for the proposed development and should be read in conjunction with this report. A short summary of the MMP and the measures included within have been provided in Chapter 9 of this report.

6.2.2 The overall aim of the MMP is to minimise the proportion of vehicle trips and address the forecast transport needs of the end-users of the site. This is firstly achieved through reducing the need to travel, particularly by car, and secondly ensuring viable sustainable travel options are available and actively promoted to residents and visitors to the site. These measures help reduce the need to use or indeed own a car. These measures include 10 Go Cars provided exclusively for the use of the residents, personalised travel planning, on site services and sustainable travel incentives amongst others. Further details are outlined in Chapter 9. There is also an additional 4 Go Cars provided on street for public use.

6.3 Long Stay Car Parking Provision

6.3.1 Based on the site location, availability of alternative modes, proposed on-site mobility services, baseline levels of existing car ownership, national and international guidance, a parking ratio of 0.26 car spaces per apartment unit is proposed for the development. This figure aligns with the current commuting car mode share in the local area, as presented in Figure 4.6 of this report, which is 25.9%. Furthermore, for small areas with higher proportions of apartments or rented accommodation within the local area, which are more representative of the subject site, the car mode share is significantly lower, approximately 18-20%.

6.3.2 In addition, this ratio is aligned with the DHLGH Apartment Guidelines and will encourage walking, cycling and public transport, whilst also providing for a sustainable level of car storage.

6.3.3 It is proposed to provide 93no. long stay car parking for residents, of which 4no. will be allocated to each of the Town houses and 89no. will be for the apartment units. 88 will be located at basement level and 1no. at podium level. Of the 89 car parking spaces provided more than 10% will be disability parking (10 spaces), 5% over the minimum requirement set out in Part-M DCC parking standards. 14 no. motorcycle spaces will also be provided at basement level.

6.3.4 A total of 20% of all car parking spaces will be fitted with electric charging points with the remainder future proofed for the provision of 100%. The requirement for electric charging points will be reviewed on an ongoing basis as part of the MMP.

6.3.5 In addition, 10no. car parking spaces will be reserved for car sharing with this number potentially increased if needed. Car Share spaces will be located at podium level in a separate car park to the general parking for the convenience of residents. All car share spaces will be fitted with electrical charging points.

6.3.6 The 4 spaces provided for each townhouse in BG5, will be located on-curtilage and fitted with electrical charging points.

6.4 Residents Bike Parking Provision

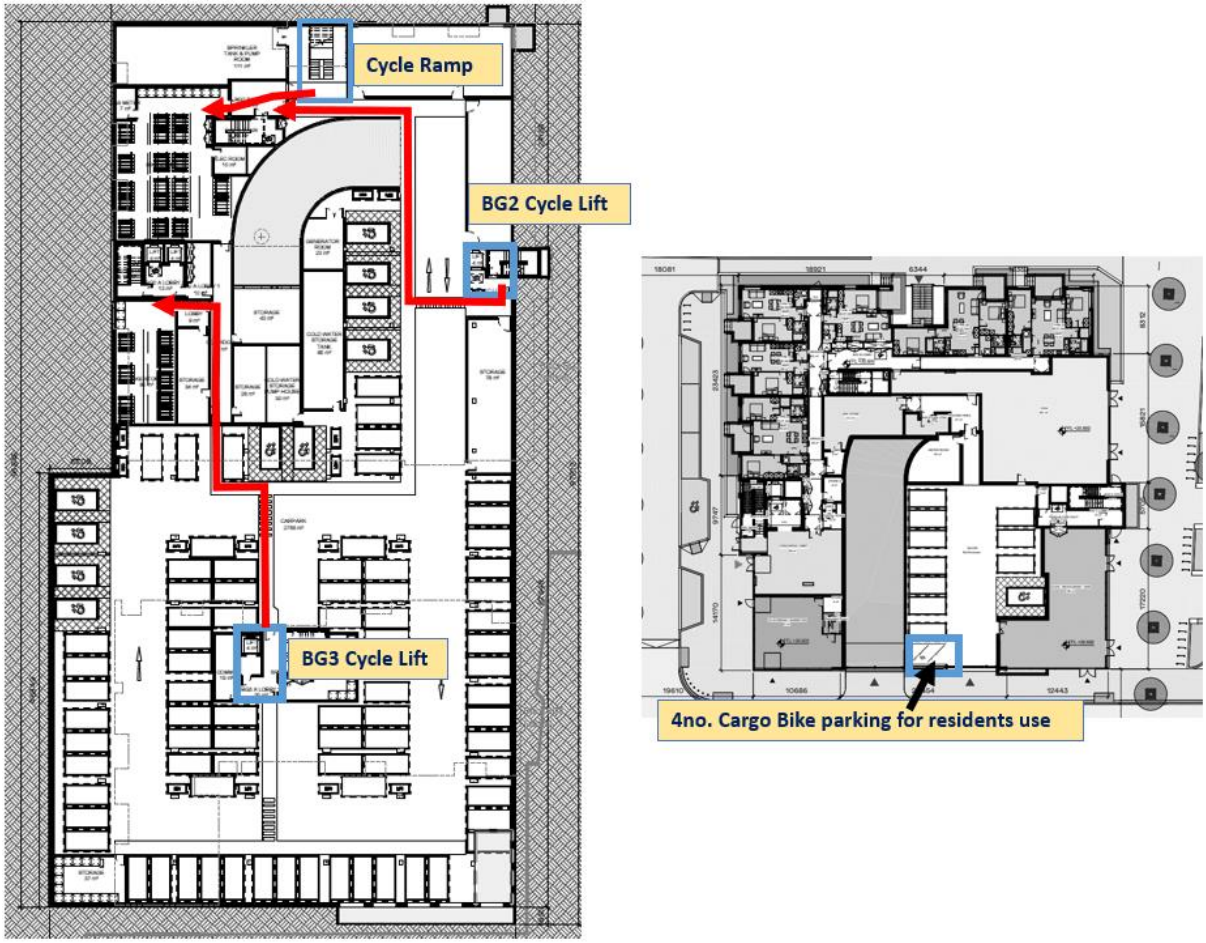
6.4.1 As part of the mobility management measures aimed at encouraging and facilitating sustainable travel, increased levels of cycle parking will be provided. A ratio of 1 cycle space per bedroom for the studios and apartments will be provided which is above current DCC standards (1 per unit) and in line with the DHLGH New Apartments Guidelines standards (1 per bedroom).

6.4.2 Table 6.3 summarises the long stay maximum standards and proposed car and cycle parking.

Table 6.3: Long Stay Parking Requirements & Provision for Studios and Apartments

Type	DCC Standards	DHLGH New Apartments Guidelines	Proposed
Car Parking	1 per unit (maximum standard): 345	No Max or Min	89no. for apartment units 4no. for houses
Motorcycle	4% of total spaces (maximum standard)	No Max or Min	14 at basement level
Cycle Parking	1 per unit: 341 (apartment units)	1 per bedroom (apartment units): 457	461 for residents 7 for other uses (retail and creche)

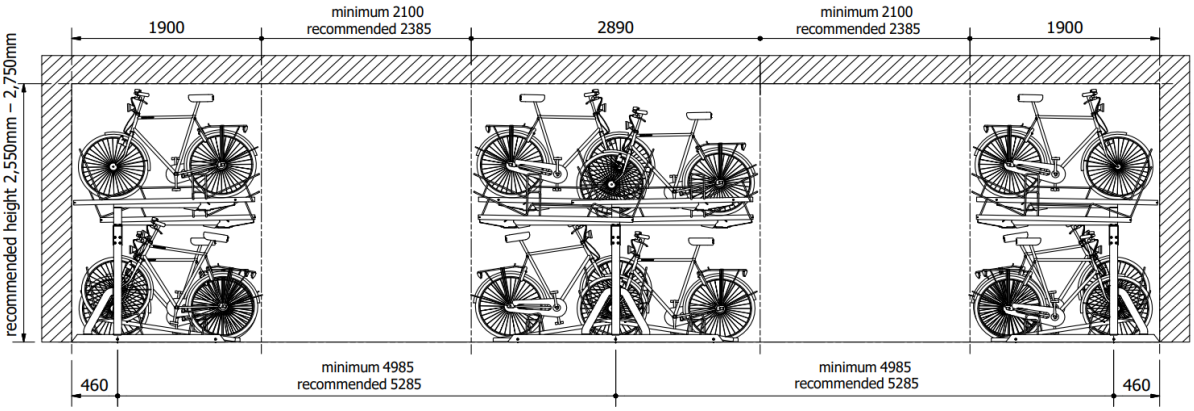
Figure 6.1: Basement and Podium Layout – Bike and Car parking



6.4.3 All long stay cycle parking for BG2 & 3 will all be at basement level and accessed via a separate stairwell to the rear of the basement and a cycle lift to the east of BG2, as highlighted in in Figure 6.2. The staircase will have double wheeling ramps either side in accordance with guidance from the Dublin Cycling Campaign. The long stay cycle parking for BG1 will be provided in a bike room within the block courtyard. BG4 cycle parking will be within a bike room located in the block. All bike rooms will be secure as per DCC guidelines. The bike parking will be two tier stacked parking, an example of which is shown in Figure 6.3. The ceiling heights and aisle widths of the bike room have all been designed to accommodate the dimensions illustrated.

Figure 6.2: BG1 and BG4 bike sheds location

Figure 6.3: Two-Tier Cycle Parking with dimensions



6.4.4 Long cycle parking for staff working in the commercial units of the development will be provided. 4 spaces will be made available at BG 2 basement level for staff of the retail and community units and 3 spaces provided for staff of the childcare facility in BG1 Bike Shed.

6.4.5 In addition, 4no. of cargo bike parking for residents is provided at Podium Level for easy access from street level.

6.5 Short Stay Car Parking

6.5.1 Though it is the objective of the parking and mobility strategy to limit the need for car usage of residents and visitors alike, an additional 15 car spaces (incl. two disability spaces) will be provided on street to ensure adequate parking is provided for visitors and negate any overspill onto the surrounding street. The total number of visitor spaces has been maximised whilst maintaining a quality public realm. This parking will be paid 'pay and display' car parking.

6.5.2 4 of the 15 visitor spaces provided on-street will be used for public Go Car, available to use for residents and the general public. Also included on street is a loading bay for drop offs to the concierge office and deliveries to the proposed retail. There is also a set-down area provided for drop-offs to the childcare facility and taxis with space for up to 3 vehicles.

6.5.3 In addition, 33 no. of on-street parking for visitors will be provided to serve the multi-purpose playing pitch. Being 4 spaces provided along Donore Avenue (including 2no. dedicated disabled parking), 20 spaces provided along Margaret Kennedy Road and 9 spaces provided along the new Western Connection Road. The provision a coach set down/visitor drop off located along Donore Avenue adjacent the pitches.

6.5.4 It should be noted that the site boundary has been extended to include sections of the public roads and footpaths to provide a number of infrastructural measures to improve accessibility. Consequently a number of existing car parking spaces are within the site boundary, these spaces will be maintained and are located on the following roads: 8no. of existing car parking spaces along Rehoboth Place, 7no. of parking along Rehoboth Avenue and 5no. of existing parking along Donore Avenue western side. Currently these spaces are marked as "Pay & Display and Permit Parking" and it is noted that are used by the existing residents mainly.

6.5.5 Drawings SYS-BG-3.1 & SYS-BG-3.2 shown the location of the on-street car parking provision.

6.6 Short Cycle Parking

6.6.1 In terms of visitor cycle parking, DCC guidance states this will be decided on a case by case basis, the DHLGH New Apartments Guidelines recommends a ratio of 1 space per 2 residential units.

6.6.2 It is proposed to provide Sheffield Stands on streetscape closer to the residential blocks, the Players Park and the Multi-use playing pitch area. The number of visitors' spaces will be reviewed in the future as part of the MMP to ensure it is adequate.

6.6.3 Table 6.4 outlines the proposed short stay car and cycle parking.

Table 6.4: Short Stay Parking Requirements & Provision

Type	DCC Standards	DHLGH New Apartments Guidelines	Spaces proposed
Car Parking	Decided on Case by Case basis	No Min or Max	15 at Residential Area 33 at Playing Pitch Area
Cycle Parking - visitor residential area		172 (0.5 per unit)	Residential Area: 118 standard + 4 cargo bike Players Park: 46 standard + 4 cargo bike Total: 172
Cycle Parking – visitor sports area		No Min or Max	Playing Pitch Area: 136 standard + 8 cargo bike

Figure 6.4: On-Street Parking Locations (SYS-BG-3.1)

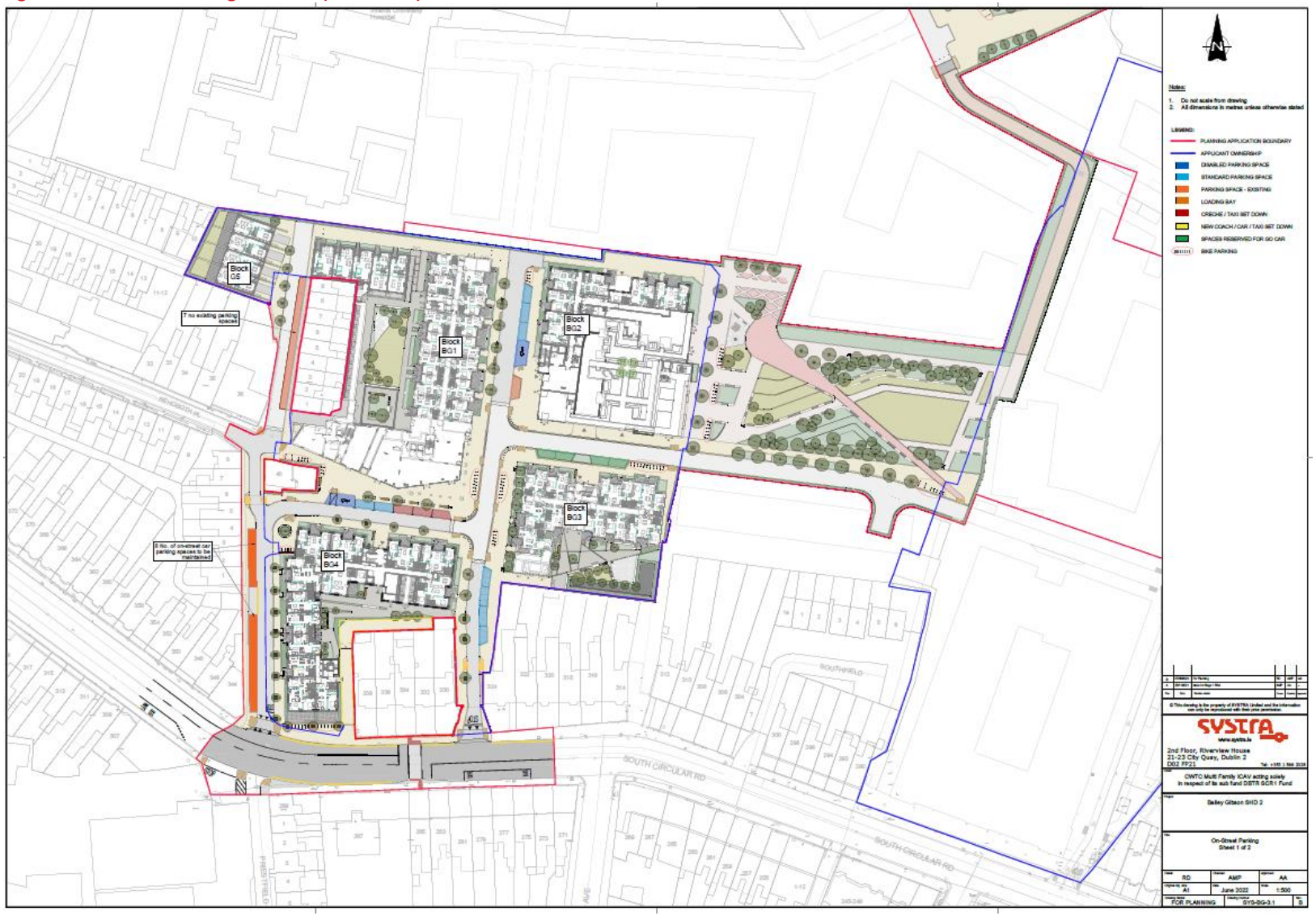


Figure 6.5: On-Street Parking Locations (SYS-BG-3.2)

6.7 Car Parking Management Plan

Resident Parking Management

6.7.1 The car parking spaces which are not used for car clubs will be let separately to the apartment units and will only be available to residents. Leasing the spaces will ensure they are used as efficiently as possible allowing disability and EV spaces to be allocated appropriately where needed. Leasing (as opposed to owning) also enables parking provision to be adaptable to future repurposing pending changes to transport technology or services. The leasing and allocation of parking within the development will be controlled by the management company. Residents with children and young families will be prioritised for parking spaces upon the development opening and any waiting list for parking thereafter.

6.7.2 In terms of on street parking the development lies in a medium demand zone. Under DCC parking regulations residents in an apartment building with 4 or more units are not entitled to permits within a heavy demand zone and 1 permit per unit in low demand zone. No residents will be entitled to on-street parking permits and the spaces provided at street level will be pay parking only to control potential overspill or to facilitate visitors to the development arriving by car.

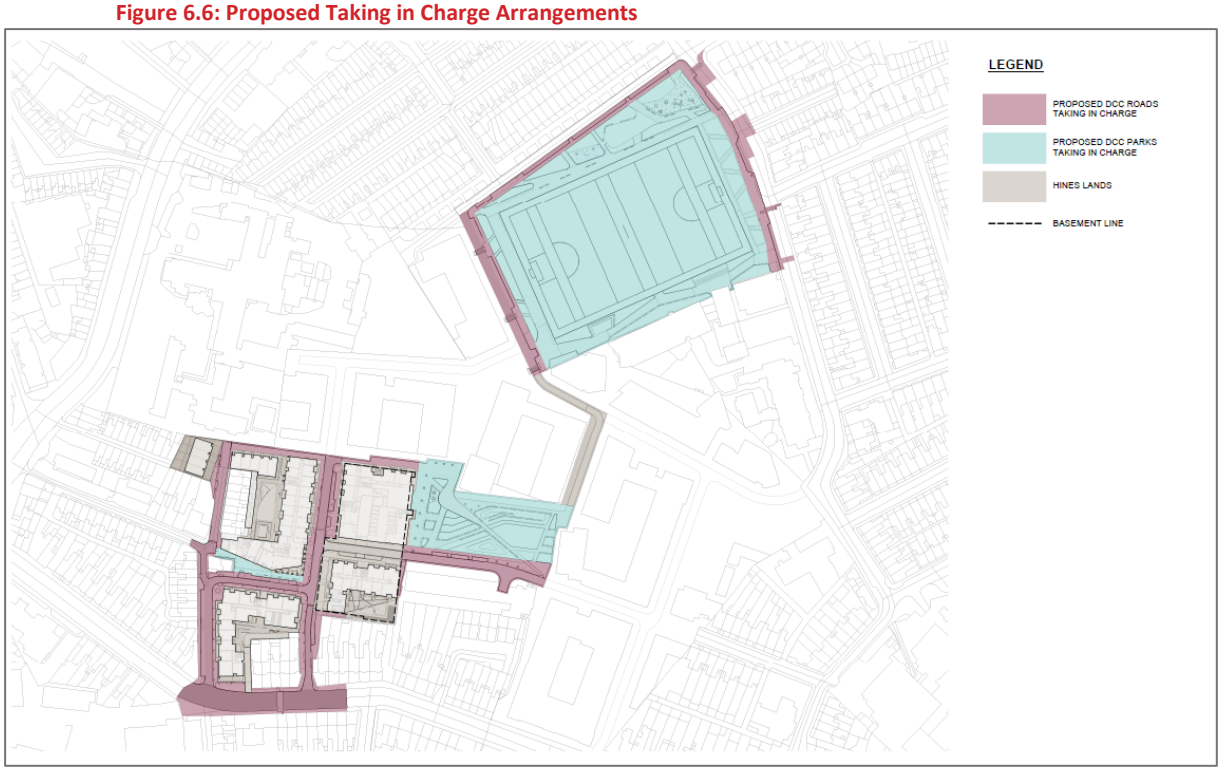
6.7.3 It is intended that no visitor permits will be provided to residents. This will be made clear to residents prior to occupancy. Other low car or car free developments in Europe provide a voluntary form for residents to sign to demonstrate they have been made aware of the parking arrangements and commitment to low car living.

Visitor Parking Management

6.7.4 The visitor spaces will be on street paid parking in line with the medium zone tariffs and controls as set out by DCC (currently €1.60 per hour). Those on-street spaces which are not intended for visitors, loading bays, set down spaces and Go Car spaces, will be clearly signed and marked accordingly. The applicant is agreeable to the permit for residents of Rehoboth place to be extended to include the 3 car spaces provided adjacent to Rehoboth Place in front of the creche to substitute for the loss of spaces on Rehoboth Place. However, the decision to extend their permit and management of these spaces will be decided by DCC who will take in charge the majority of on street car spaces.

6.7.5 It is proposed that DCC will take in charge the management of the majority of on-street parking spaces, footpaths and roads with the exception of any space, road or footpaths that is over basement or under a building overhang. An outline of the taking in charge drawings is shown in Figure 6.6. The drawing, Taking in Charge prepared by the landscape architects is enclosed in NMP drawing booklet.

Figure 6.6: Proposed Taking in Charge Arrangements



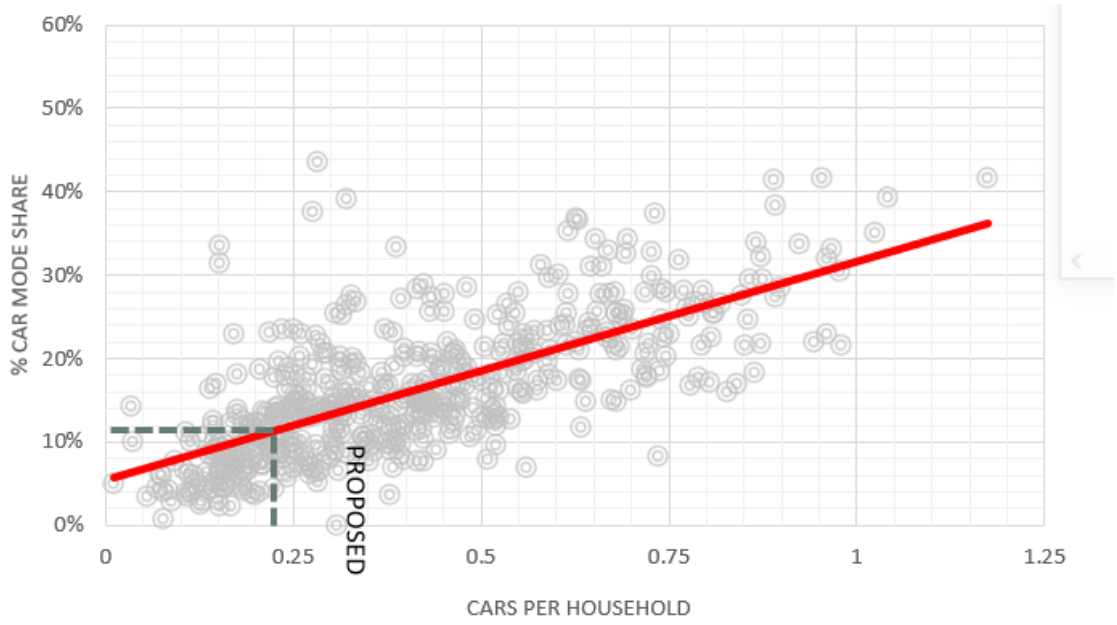
6.8 Benefits of Proposed Parking Strategy

Sustainable Trip Making & Congestion

6.8.1 As the population of Dublin grows, the road network will come under increasing pressure. This will be exacerbated if existing levels of car ownership and usage persist. This will cause increased congestion, reduced public transport reliability, increased journey times and impact on the overall quality of life for city residents.

6.8.2 The lower levels of parking have been proposed will encourage travel by sustainable means. Based on a ratio of 0.22 the expected commuting car mode share would be approximately 12% based on observed census data as outlined in Figure 6.7. This is significantly below the current DCC average of 36.4%.

Figure 6.7: City Cordon SAPS Data – Car per Household versus Commuting Car Mode Share



Physical Activity

6.8.3 According to World Health Organisation recommendations, adults need 30 minutes of moderate activity 5 times a week. However, according to the Irish Sport Monitor, which collects data on physical activity of the Irish Population, just 31.3% of adults, 12% of adolescents and 19% of children meet this requirement on a weekly basis.

6.8.4 The National Physical Activity Plan for Ireland, NPAP, is a cross sectoral evidence-based plan aimed at addressing these low levels of activity reported amongst the Irish population. The plan highlights the contribution of walking and cycling in everyday activity levels and importance of the built environment in encouraging these modes of transport. In London, a third of Londoners achieve the recommended 150 minutes of physical activity each week just through the walking and cycling they do for travel purposes. [8]

6.8.5 Car owners are traditionally much more likely to be inactive with decreased levels of walking and cycling observed in households with one car or more. Based on census information for the area and modelling outputs from the National Transport Authority's Eastern Regional Model (ERM), it is estimated that approximately 60-70% of journey from the development will be made by walking and cycling, this is discussed further in Section 7.

Environmental Impact

6.8.6 In 2017, just under 20% of greenhouse gas emissions nationally originated from the transport sector. This is estimated to increase to 25% within Dublin City. Though electric vehicles will contribute to a reduction in emissions in the future, it is unlikely that Ireland will meet our 2030 EU emissions targets without significant changes in travel behaviour. The most effective way to reduce transport emissions is through the reduction of car ownership and usage. Limiting the growth of car usage in the city will have impacts on emission growth, air quality and noise impacts. As discussed, the proposed development will have a significantly lower car mode share than current averages within the city.

[8] http://content.tfl.gov.uk/mts-challenges-and-opportunities-report.pdf

Road Safety and Use of Space

6.8.7 The prevalence of vehicles is a significant barrier to walking and cycling within many urban streets and neighbourhoods. It reduces the appeal of streets as public places and reduces availability of space for more sustainable modes.

6.8.8 For cyclists, congestion and perception of safety in urban areas is a deterrent. In a cycle study undertaken by Transport for London, the primary reason for not cycling was fear of road injury[9]. Reduced parking provisions in cities can help reduce the dominance of cars over other modes and allow public space to be repurposed for the promotion of walking and cycling.

6.8.9 In the proposed development, lower levels of parking will result in low levels of car traffic. This allows for the introduction of shared space, wider footpaths and narrower road widths, promoting the needs of pedestrians and cyclist above the car. Lower parking provision is key to achieving this and supports the creation of mixed public places that are designed for people rather than vehicles. In studies undertaken of developments with lower car parking levels, it was found that children played outdoors on the neighbourhood streets at a younger age than those in nearby developments with higher levels of parking provision.[10]

Car Ownership Costs

6.8.10 With rising costs of insurance, tax and car costs; car clubs and car sharing are becoming a more viable alternative for people living in cities who only need a car for occasional trips. Table 6.5 compares the cost of Car Ownership and Go Car Club Membership for 4 hours or 100km per week. The costs exclude parking costs, though parking within Dublin City would be free with Go Car membership.

Table 6.5: Go Car Membership versus Car Ownership Annual Cost

Cost	Go Car Membership	Car Ownership (Band A-G) *
Depreciation of Car	No monthly fee or joining fee	€1,451-8,098
Tax	Included	€120-1200
Insurance	€100 DEW	€998-1945
Petrol (assume 100km per week/25km per trip)	Included	€477-822
NCT	Included	€21
Maintenance/Tyres/ Servicing	Included	€195-380
Hourly/Daily Rate	€8-12 per hour/€60-€85 per day 50 free kms €0.5 per km thereafter	NA
Total Annual Cost (assume 4 hours usage per week/ cost of car over 5 years) *	€1,764-2,596	€3,257-12,466

*Based on AA 2018 Cost of Motoring, parking and misc. costs have been excluded.[11]

[9] http://content.tfl.gov.uk/attitudes-to-cycling-2014-report.pdf
[10] http://eprints.uwe.ac.uk/23566/12/Melia%20-%20Carfree%20Development%20Chapter%20with%20images.pdf
[11] https://www.theaa.ie/aa/motoring-advice/cost-of-motoring.aspx

6.8.11 The above table indicates that the annual cost of car travel for Go Car users is approximately 3-4 times less than private car users with similar travel characteristics.

6.9 Operational and Service Management Plan

6.9.1 The pandemic and propensity for people to work from home has increased significantly the number of deliveries to each household. As a result DCC have become increasingly aware of the importance of new developments including a comprehensive and well thought out servicing strategy to address the issues that may arise from this increase in goods vehicles needing to come onto the site.

6.9.2 The servicing strategy will need to include the following items

- Bulky Goods Delivery
- Standard Delivery Strategy
- Perishable Goods Delivery
- Playing Pitch servicing

Bulky Goods Delivery

6.9.3 It is envisaged that the delivery of bulky goods (such as furniture and electrical) will be an occasional, rather than regular occurrence. It should be noted that Blocks BG1, BG2 and BG3 are being proposed as BTR, therefore these apartments will be fully furnished prior to leasing. On that basis it is envisaged that the requirement for any bulky goods delivery to these homes will be minimal.

6.9.4 With households aware of the timing and size of delivery, the delivery of these items will be agreed with the management team and prior consent granted. These large delivery vehicles will be able to access to the development from South Circular Road and to park temporarily on the 3 car parking spaces provided for creche drop off and taxi set down.

Standard Delivery Strategy

6.9.5 Small deliveries would be left with the concierge in BG2 and the recipient then contacted for collection. A small loading bay is located right outside the concierge, in addition the three spaces located for creche drop off and taxi set down can be used for deliveries.

Perishable Goods Delivery (takeaways and supermarket deliveries)

6.9.6 The pandemic and subsequent increase in working from home has also resulted in an increase in the number of supermarket deliveries and hot food delivery expected on site. The following situations are expected:

- Takeaways and supermarket deliveries are left with the concierge who contacts the recipient for collection. A trolley / tug could be made available to facilitate the transfer of supermarket stuff through the site.

- Both delivery types are permitted to route through the site providing door step delivery, parking on the creche drop off and taxi set down spaces.

Figure 6.8: Delivery Strategy – Loading Bays location

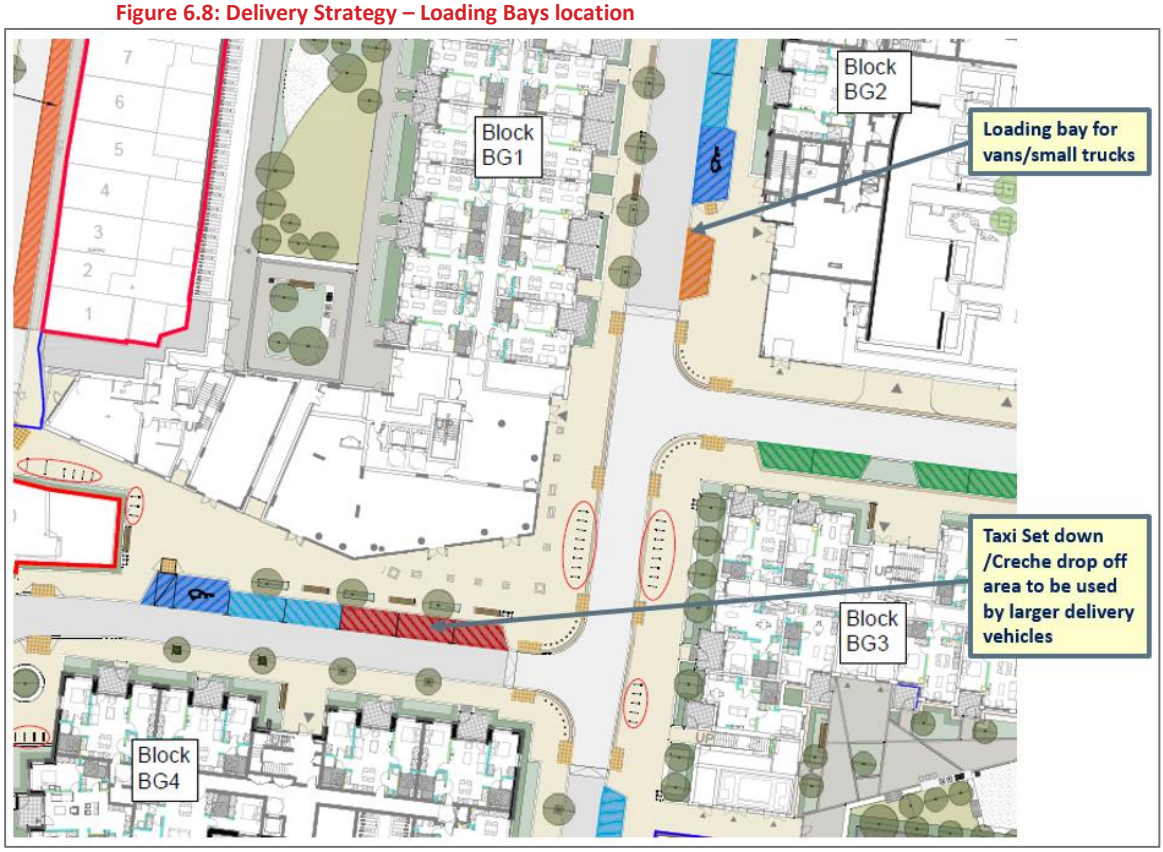
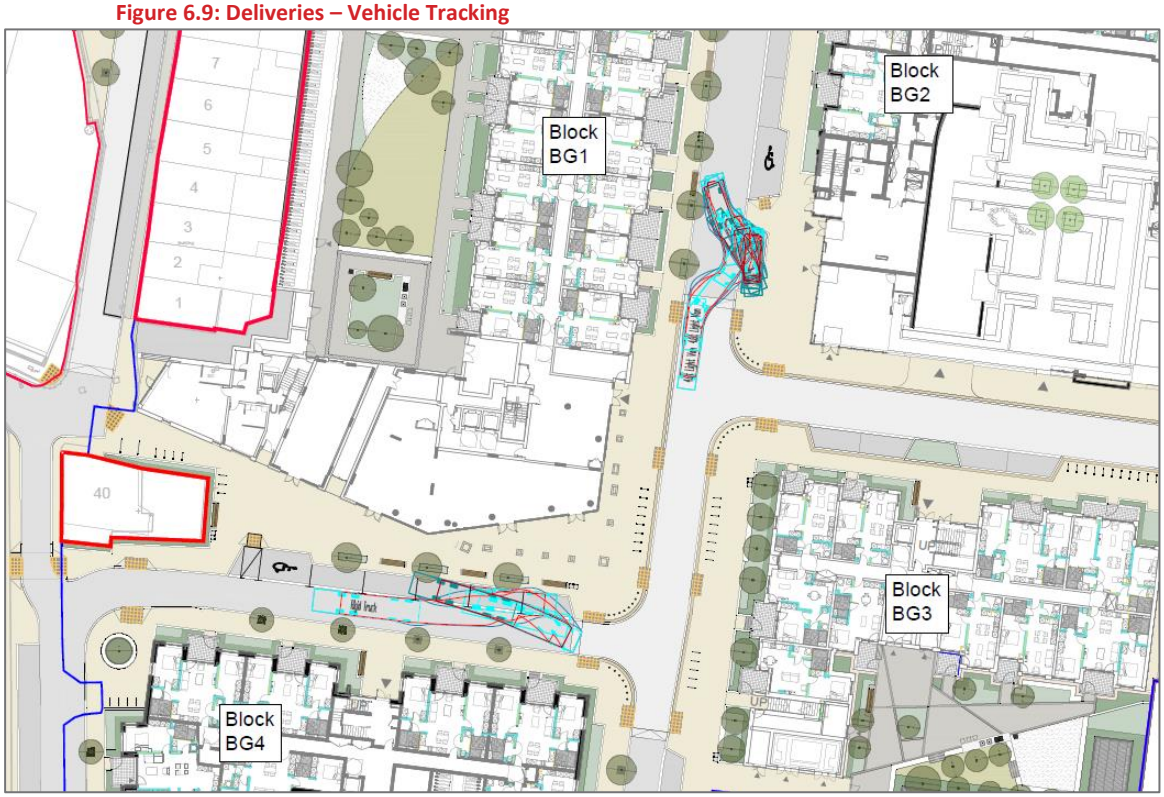


Figure 6.9: Deliveries – Vehicle Tracking



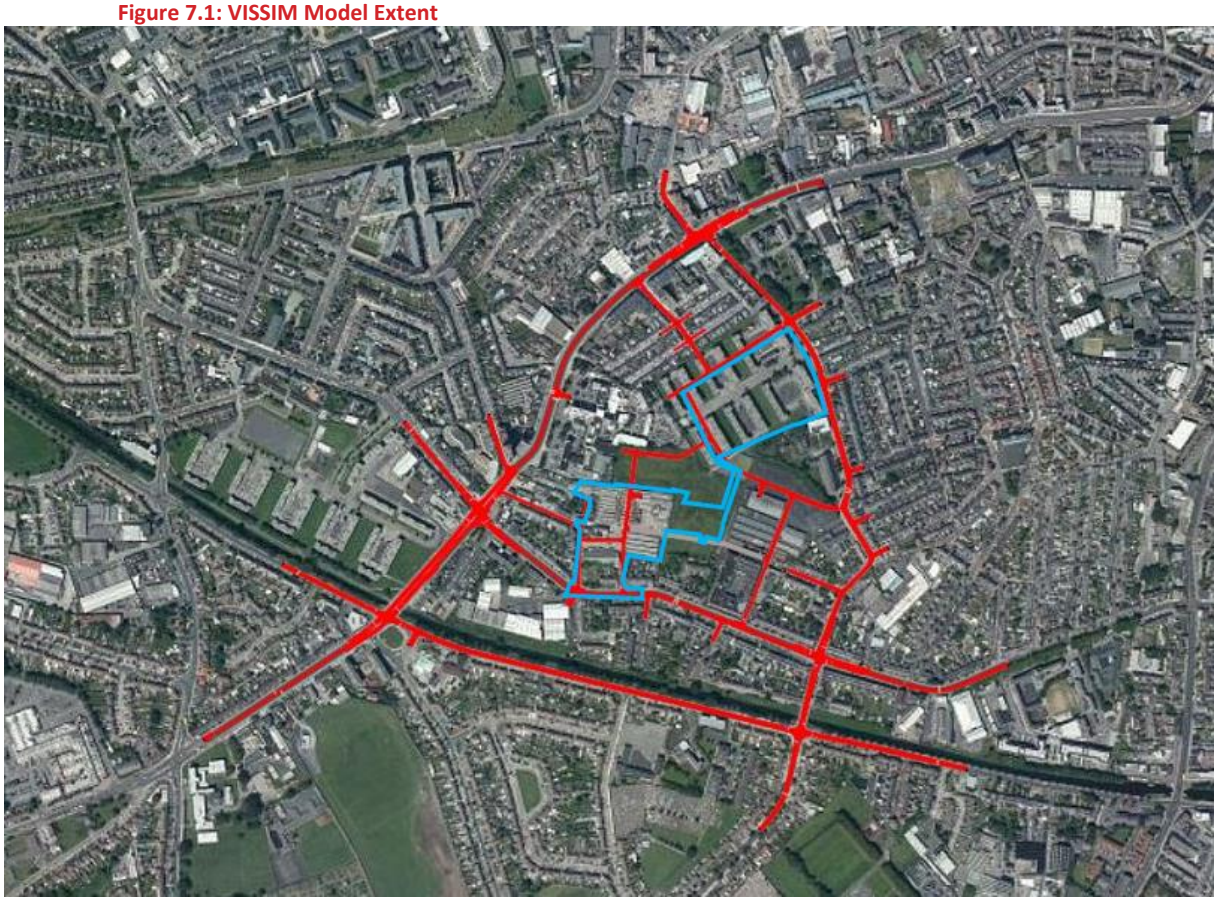
7. TRIP GENERATION & DISTRIBUTION

7.1 Modelling Overview

7.1.1 A combination of models and data sources has been used to determine the trip generation, assignment and distribution of demand from the proposed development. The development was first modelled using the NTA's Eastern Regional Model (ERM), one of five models which comprise the Regional Modelling System (RMS). The ERM is multi-modal, strategic, variable demand model which allows the response to different land use and population scenarios and transport networks to be tested. It provides data on modal split, trip generation and distribution across the network.

7.1.2 Outputs from the ERM were used to inform a local microsimulation VISSIM model. VISSIM allows the impact of individual driver behaviour characteristics on network operation and junction performance to be captured and explicitly models the effects of queuing and blocking back. It also allows the impact of upstream and downstream traffic to be captured at nearby junctions and provides greater analysis options and more realistic results than traditional junction models such as LinSig or Arcady/Picady. The extent of the VISSIM model developed for the assessment is shown below in Figure 7.1. The internal network of the proposed site has been included in the model but remains closed to traffic in most scenarios as discussed in Section 7.7.

Figure 7.1: VISSIM Model Extent



7.1.3 The local area model was developed for the AM & PM Peak hours of 08:00-09:00 & 17:00-18:00 based on the peak hour analysis outlined in Section 3.6.5. Light vehicles (LVs), Heavy Vehicles (HVs) and Buses were all modelled separately.

7.2 Model Calibration & Validation

7.2.1 The VISSIM model has been calibrated and validated in accordance with TII Project Appraisal Guidelines (PAGs) *'Unit 5.1: Construction of Traffic Models'*. The model has been calibrated against the traffic surveys data collated as part of baseline assessment, as discussed in Section 3.6. Table 7.1 outlines the calibration results for the model.

Table 7.1 Model Calibration Criteria

Criteria	Measure	Achieved
- **Individual flows within 100 v/h for flows less than 700 v/h** - **Individual flows within 15% for flows between 700 & 2,700 v/h.** - **Individual flows within 400 v/h for flows greater than 2,700 v/h.**	More than 85% of cases	100% (AM & PM)
GEH statistic: individual flows – GEH < 5	More than 85% of cases	100% (AM & PM for LV & HV)

7.2.2 The model was validated against the average max queue lengths outlined previously in Figure 3.23 & Figure 3.24. There are no validation guidelines or criteria set out in the PAG or any other best-practice guidance note with which to compare and validate observed and modelled queue lengths using VISSIM software. This is due to the highly subjective nature of monitoring slow moving queues, difficulty and variations in methods of measuring and the misleading effect this can have on the accuracy of models.

7.2.3 Nonetheless, to provide an indication of whether the model is accurately replicating observed queuing, modelled and observed average max queue length data has been compared. This comparison is presented in Figure 7.2 & Figure 7.3 for the AM & PM peak respectively. As shown the pattern and lengths of modelled maximum queue lengths closely replicates the observed queuing across the network with the majority of queue lengths within 20% of the observed.

Figure 7.2: AM Peak Average Maximum Queue Comparison

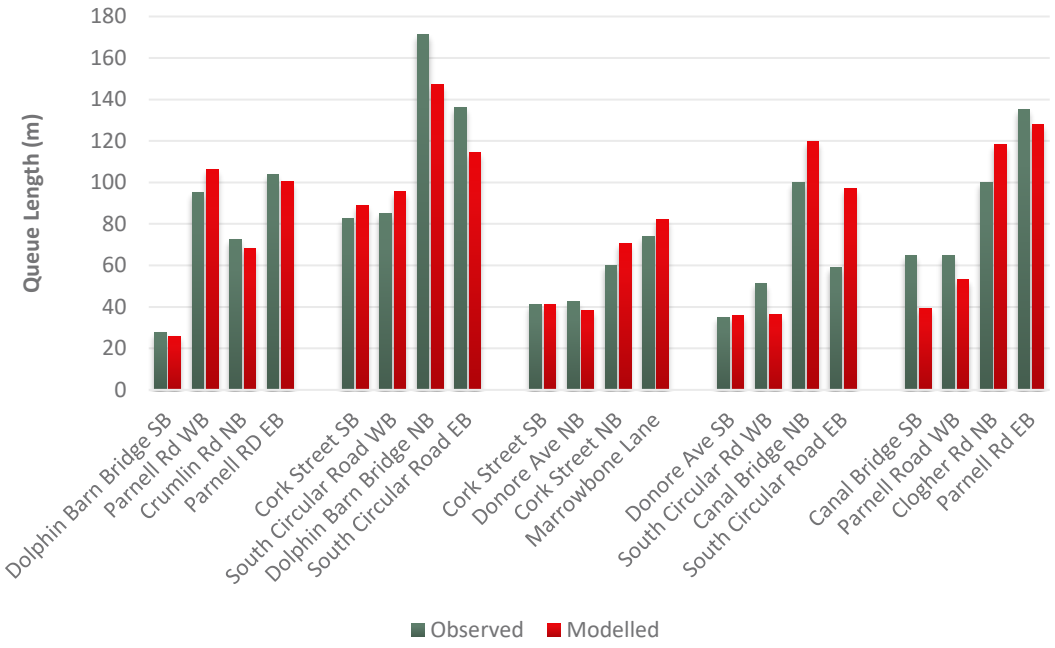
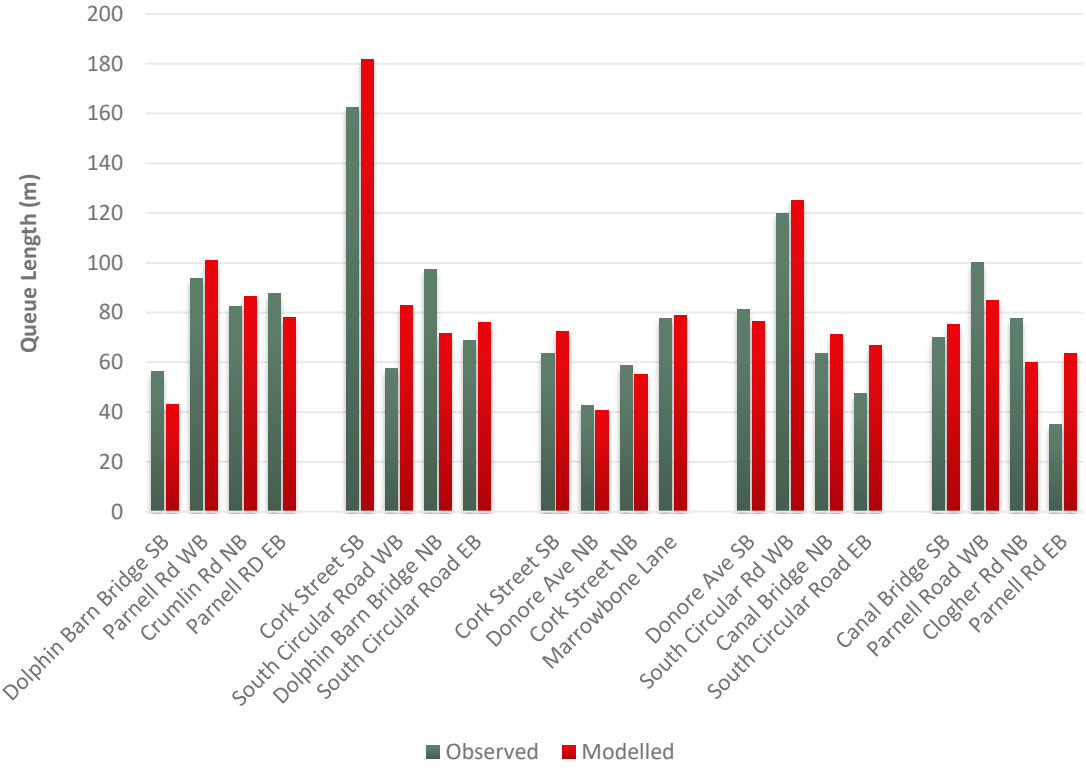


Figure 7.3: PM Peak Queue Comparison



7.2.4 In addition to the comparison of queue lengths video footage from the surveys of each of the junctions was analysed to ensure the driver behaviour and lane utilisation replicated the observed. An example of the available video footage is shown in Figure 7.4.

Figure 7.4: Queuing along Dolphin's Barn Bridge in the AM Peak

7.3 Trip Generation

Residential Development

7.3.1 The NTA's RMS was used for trip generation for the residential element of the development. The RMS has a National Trip End Model (NTEM) which predicts travel demand based on population and demographics. To use the NTEM the estimated resident population of the proposed development was required. This was estimated using the 2016 Census data for Dublin City. The census classifies households based on the number of occupied rooms (kitchen, living room and bedrooms) and provides the number of households within each class and the total persons living in this households. This allows the approximate average household size for different unit sizes to be estimated. Table 7.2 outlines this data and the resultant household sizes.

Table 7.2 DCC Household Size by number of occupied rooms (2016 Census – Statbank Table E1035)

Household Type (no. of rooms)	No. Households	No. of Person	Estimated Household Size
All households	211591	524687	2.48
1 room	11337	17353	1.53
2 rooms	26105	51726	1.98
3 rooms	31446	72930	2.32
4 rooms	31796	73817	2.32
5 rooms	39358	107892	2.74
6 rooms	28889	80990	2.80
7 rooms	13698	42238	3.08
8 rooms	7867	26153	3.32
9 rooms	2046	7072	3.46
10 or more rooms	1457	5395	3.70
Not stated	17592	39121	2.22

7.3.2 To estimate the development population the household sizes were applied to the proposed unit. For units with 2 bedrooms or more it was assumed that though most have a shared open plan kitchen and living area these would count as two rooms. This was to ensure the trip generation was robust and the potential travel demand was not underestimated. Table 7.3 outlines the estimated development population based on the proposed unit mix.

Table 7.3 Estimated Development Population by Unit Type

Unit Type	No. Units	Estimated Household Size	Estimated Population
Studio (1 room)	33	1.53	51
1 bed (2 rooms)	197	1.98	390
2 bed (4 rooms)	104	2.32	241
Duplex (4 rooms)	2	2.32	5
Triplex (5 rooms)	5	2.74	14
Town House (6 rooms)	4	2.80	11
All Household Type (no. of rooms)	**345**	**2.06**	**712**

7.3.3 Based on the above the average household size for the development is 2.06 with a total population of 712.

7.3.4 The estimated population was then input into the NTEM which in turn produced 24-hour trips ends which were inputted into the Eastern Regional Model (ERM). The ERM then calculated the demand by time period. Each 3-hour time period was converted to a 1-hour peak based on calibrated factors within the model. This provided departure and arrival person trips for the AM & PM peak hour, as outlined in Table 7.4.

Table 7.4 Estimated Peak Hour Residential Person Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Total	206	34	49	130

As a validation of the trip generation from the ERM, the demand for each peak was also estimated using data from the Trip Rate Information Computer System (TRICS). Using TRICS the trip generation was 213 departures and 45 arrivals in the AM peak and 169 arrivals and 73 departures in the PM peak all in person trips based on the proposed number of units. Based on this validation exercise the trips generated from the ERM are considered accurate and appropriate for this assessment.

Retail Development

7.3.5 The retail/food and beverage element of the development, consisting of 2 Commercial Units and a Bar/Restaurant/Café Unit are expected to predominantly be used by residents and by those within the walking catchment of the site. There is no extra traffic expected to be generated by these elements of the development particularly during weekday peak hours. However, to ensure a robust assessment of the impact of the development some vehicular trips have been estimated for these units to allow for deliveries and service vehicles. The total vehicle trips assumed is detailed below in Table 7.5.

Table 7.5 Assumed Peak Hour Retail Vehicular Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Vehicular Trips	2	2	2	2

Childcare Facility

7.3.6 TRICS, the trip rate database, was used again to estimate the likely trip generation for the proposed childcare facility. The number of person trips was estimated for the 2 peak hours based on developments of a similar scale and type, as outlined below in Table 7.6.

Table 7.6 Estimated Peak Hour Childcare facility Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Total Person Trips	5	12	10	5

Deliveries and Taxis

7.3.7 A TRICS assessment was undertaken of low parking developments within cities to determine the typical number of deliveries. All sites were filtered to include apartments with more than 100 units, in 'town centre' and 'edge of town centre' locations only. The site selection was manually adjusted to include sites within large cities only. The resultant multimodal TRICS outputs are provided in Appendix A.

7.3.8 All movements associated with Taxis, HGVs, LGVs and motorcycles have been assumed to be associated with delivery.

Table 7.7 Delivery Trip Generation

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Vehicular Trips	4	4	4	6

Multi-purpose Playing Pitch

7.3.9 A total number of 33 car spaces, including 2 disability spaces, will be provided to ensure adequate parking is facilitated for visitors to the development and the Multi-purpose playing pitch and negate any potential overspill onto the surrounding residential streets. The total number of visitor spaces has been maximised whilst maintaining a high quality public realm.

7.3.10 The on street visitor car parking located to the north along Margaret Kennedy Road and west of the playing field will serve players, officials, managers, coaches and supporters of the teams on match days. It is estimated that the total number of people attending a match will be 52 approximately, i.e. 20 players x 2, 6no. officials and 6no. of managers/coaches. With a car occupancy of 1.7, it is estimated that the maximum number of car parking spaces required are 31.

7.3.11 It is unlikely given the central location of the site that all players, managers and official will travel by private car. However, the additional spaces allow for potential additional trips by supporters. It should be noted that the DCC Car Mode Share in the area is 36%. Based in this it is likely that local teams will travel to the pitch via walking, cycling and public transport. Cork Street, which is Core Bus corridor, is less than 5 minute walk from the pitch and is served by high frequency bus services on weekdays and weekend. There will be also significant bike parking provided for cycle trips to the pitch.

7.3.12 In addition, to support non local teams travelling to the area a Coach set down is provided in Donore Avenue.

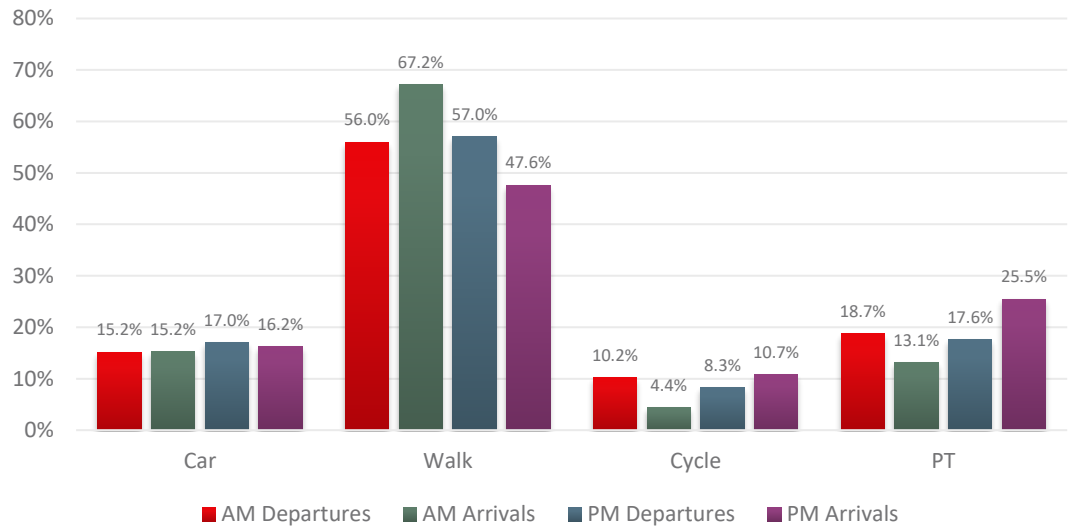
7.3.13 The trip generated by the multi-purpose playing pitch activities is expected to occur off peak hour, i.e. evenings and weekends, therefore it hasn't been included on the quantum of combined peak hour trips presented on Table 7.10.

7.4 Modal Split

7.4.1 Based on proposed parking provision for the development and trip generation from the ERM peak hour mode shares for demand to and from the development were estimated and are outlined in the graph shown in Figure 7.5. The car mode share which is on average 15.9% which correlates with the expected car mode share based on the CSO census car ownership versus usage graph presented in Figure 4.5.

7.4.2 It should be noted that the ERM cannot account for additional mobility measures provided on site such as increased cycling parking, car and bike sharing and personalised travel planning. A lower car and higher cycle mode share than those outlined will be targeted as part of the mobility management plan, particularly into the future as more public transport and cycle infrastructure is provided.

Figure 7.5: Peak Hour Model Split (Person Trips)



7.4.3 The above was applied to the person trips estimates in Table 7.8 to obtain the person trips by mode generated by the residential units as outlined below.

Table 7.8 Estimated Peak Hour Residential Person Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Car	31	5	8	21
Walk	115	23	28	62
Cycle	21	1	4	14
PT	39	4	9	33
Total	**206**	**34**	**49**	**130**

7.4.4 The car person trips above were converted to vehicle trips using a vehicle occupancy factor of 1.23 from Transport Infrastructure Ireland's Project Appraisal Guidelines (PAGs) Unit 6.11 '*National Parameter* Sheet'. The final vehicles trips generated by the residential component of the development are outlined below in Table 7.9.

Table 7.9 Estimated Peak Hour Residential Vehicular Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Car	25	4	7	17

7.4.5 The same mode shares and vehicle trip rates were applied to the person trips generated by the on-site creche facility. The combined trips generated by each element of the development, including the retail delivery and servicing vehicular trips is outlined in Table 7.10. In total, there will be just one vehicle leaving the site every 90 seconds on average during the AM peak and one returning every two minutes during the PM peak.

Table 7.10 Combined Peak Hour Vehicular Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Residential	25	4	7	17
Retail/Food & Beverage	2	2	2	2
Creche	1	2	1	1
Deliveries	4	4	4	6
Total	**32**	**12**	**14**	**26**

7.5 Trip Distribution

7.5.1 The distribution of vehicular traffic from the development has been taken from the ERM. The distribution of car trips to and from the ERM zone in which the subject site is located was extracted for the AM & PM peak periods and applied to the vehicular numbers in Table 7.9. Figures 7.6 & 7.7 show the distribution of traffic travelling to and from the development in the AM & PM peaks respectively.

Figure 7.6: AM Peak Development Traffic Distribution

Figure 7.7: PM Peak Development Traffic Distribution

7.6 Background Traffic Growth

7.6.1 In accordance with TII TIA guidelines the Development Opening Year, Opening Year +5 and Opening Year +15 have all been modelled. The TTA assumes an opening year of 2024 with forecast years of 2029 & 2039. To forecast the growth in background traffic for each of these years link based regional forecasts for the Dublin Metropolitan Area from TII 'Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections' have been applied. This results in the following growth in background traffic for each year:

- 2020 – 2024: 4.9%
- 2020 – 2029: 13.7%
- 2020 – 2039: 22.9%

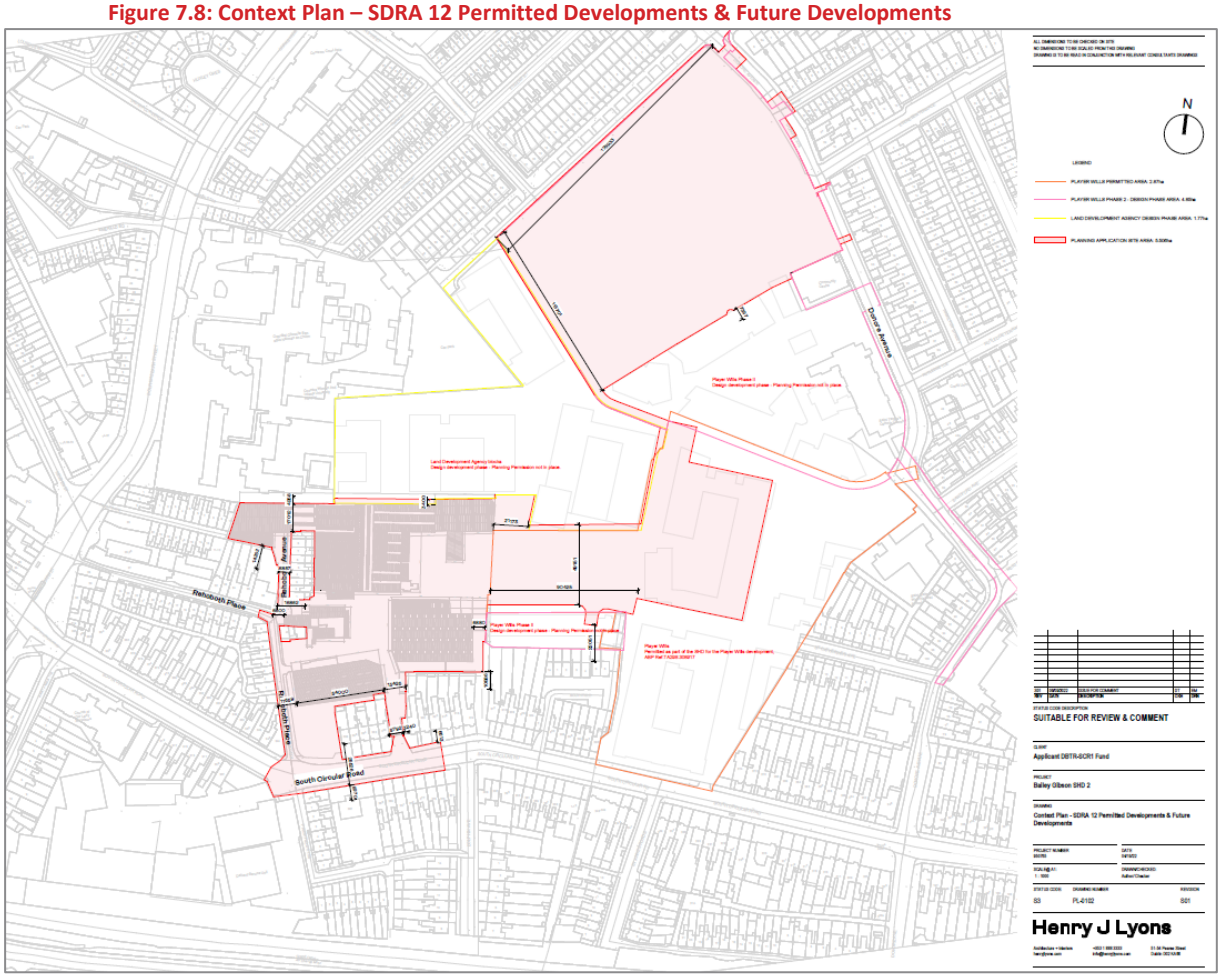
7.6.2 These forecasts are likely high considering the city location and proposed improvement to the public transport network within the city as part of Bus Connects & the GDA Transport Strategy. As discussed in Section 2.4.2, car demand is predicted to increase by just 6.3% within the GDA by 2035 with the full strategy in place. However, for the purposes of this assessment the above forecast rates have been used as 'worst case' scenario to ensure a robust assessment of the development impact.

7.7 Cumulative Trip Generation

7.7.1 As explained previously, the application area forms part of a wider **SDRA 12**, including the proposed development site, permitted Player Wills SHD 1, LDA/DCC Donore Project and Player Wills Phase 2. Proposed developments details:

- **Permitted Player Wills Phase 1** – construction of 492 no. Build to Rent (BTR) apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Including 280 car parking spaces (249 on basement, 31 on-street parking and creche/taxi set down and loading bays), 903 long stay cycle parking spaces and 110 short-stay bicycle spaces.
- **LDA/DCC Donore Project** - an application for permission on this site has not been lodged at the time of making this application. It is acknowledged that the project is in design development phase. The information used is derived from the available published information https://donoreproject.ie/ - It is envisaged circa 550 new homes will be provided over four separate buildings. The current proposal shows that car parking will be provided at ground floor level, with approximately 79 parking spaces.
- **Player Wills Phase 2** - an application for permission on this site has not been lodged at the time of making this application. It relates to the balance of land not in the permitted PW1 together with land associated with the adjacent St. Teresa's Church site. The applicant is progressing the design development phase and it will likely be a large scale residential development application to DCC. Envisaged number of units 403 BTR, envisaged car parking spaces approx. 81.

Figure 7.8: Context Plan – SDRA 12 Permitted Developments & Future Developments



7.7.2 In addition to the background growth the cumulative development of the full SDRA 12 area has also been assessed. The residential vehicular traffic demand for the permitted Player Wills Phase 1, the LDA/DCC Donore Project and the planned Player Wills Phase II have been estimated using the same method described in Section 7.3 for the Bailey Gibson Site. Table 7.11 & Table 7.12 outline the forecast population of each site based on an assumed unit mix estimated for the SRDA 12.

Table 7.11 Estimated Player Wills Phase 1 Resident Population by Unit Type

Unit Type	No. Units	Estimated Household Size	Estimated Population
Shared Accommodation	240	1.00	240
Studio (1 rooms)	40	1.53	61
1 bed (2 rooms)	292	1.98	578
2 bed (4 rooms)	108	2.32	251
3 bed (5 rooms)	52	2.74	142
TOTAL	**732**	**1.91**	**1272**

Table 7.12 Estimated Player Wills Phase 2 Resident Population by Unit Type

Unit Type	No. Units	Estimated Household Size	Estimated Population
Studio (1 rooms)	40	1.53	61
1 bed (2 rooms)	247	1.98	489
2 bed (4 rooms)	116	2.32	269
3 bed (5 rooms)	0	2.74	0
TOTAL	**403**	**2.03**	**819**

Table 7.13 Estimated LDA/DCC Donore Project Resident Population by Unit Type

Unit Type	No. Units	Estimated Household Size	Estimated Population
1 bed (1 rooms)	36	1.53	55
1 bed (2 rooms)	189	1.98	374
2 bed (3 rooms)	52	2.32	121
2 bed (4 rooms)	222	2.32	515
3 bed (5 rooms)	44	2.74	121
TOTAL	**543**		**1186**

7.7.3 Based on estimated populations the quantum of vehicle traffic generated by Player Wills Phase 1 and Player Wills Phase 2 has been estimated using the same trip rates generated for the Bailey Gibson from the ERM as both sites are proposed to have low parking ratios (0.25 – 0.30) per unit. The co-living units on Player Wills Phase 1 are assumed not to generate vehicular traffic.

7.7.4 Based on the information received of the LDA/DCC Donore Project, it is likely a lower parking ratio will apply to their lands. Approximately 79 spaces are provided at podium level which would result in a parking ratio of 0.15 spaces per unit. Based on this it has been assumed that the vehicles trips generated by the residential component of the DCC lands will be 50% of the vehicle trip rates per person applied to Bailey Gibson & Player Wills.

7.7.5 It has also been assumed that the mix of on-site retail/food and beverage on the other sites will be similar to the Bailey Gibson site and intended for predominantly residential use and for those within a walking catchment of the site with an allowance for delivery and service vehicles made. It is also assumed a creche will be accommodated on each site. Based on these assumptions the total vehicular trips for each site is outlined below in Table 7.14.

Table 7.14 Combined Peak Hour Vehicular Trips for wider SDRA 12

Site	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Bailey Gibson	32	12	14	26
Player Wills 1	42	12	23	39
Player Wills 2	22	5	13	24
LDA/DCC Donore Project	41	15	16	30
Total	**137**	**44**	**66**	**119**

7.8 Assessment Scenarios

7.8.1 In accordance with TII TIA guidelines the Development Opening Year, Opening Year +5 and Opening Year +15 have all been modelled. The TTA assumes an opening year of 2024 with forecast years of 2029 & 2039.

7.8.2 For each modelled year a number of scenarios have been tested for both peak periods to assess the impact of the subject development individually and cumulative impact of the full development of the SDRA 12. The modelled scenarios are as follows:

- Do-Minimum: Background growth in Traffic only.
- Scenario 1 (DS1): Background Traffic growth & Bailey Gibson SHD 2.
- Scenario 2 (DS2): Background Traffic growth, Bailey Gibson SHD 2 & Player Wills Phase 1 Developments.
- Scenario 3 (DS3): Background Traffic growth, Bailey Gibson SHD 2, Player Wills Phase 1, Player Wills Phase 2 & LDA/DCC Donore Project.

7.8.3 With the information available at the time of preparing the Traffic and Transport Assessment, it is assumed that both LDA/DCC Donore Project and Player Wills Phase 2 would not be in place for the opening year of 2024, therefore those two developments haven't been included in Scenario 3. A summary of all scenarios included in the assessment and the years modelled is provided in Table 7.15 Summary of Scenarios Assessed.

Table 7.15 Summary of Scenarios Assessed

Year	Do-Minimum	Scenario 1	Scenario 2	Scenario 3
2024	✓	✓	✓	
2029	✓	✓	✓	✓
2039	✓	✓	✓	✓

7.8.4 There have been no upgrades to the network included. However, the signal timings have been reviewed for each Do-Minimum scenario with minimum green times increased for some arms at particularly busy junctions in 2029 & 2039, with a corresponding decrease in minimum

green times for other arms. The increase in green times generally applies to northbound and southbound traffic travelling across the two canal bridges. The bridges have limited stacking capacity due to distance between signalised junctions. No further changes in signal timings have been applied in the Do-Something Scenarios and the pedestrian green times, staging and phasing remain unchanged in all scenarios.

7.9 Development Contribution

7.9.1 The traffic generated from the additional development has been calculated as a proportion of the total traffic at each junction for the scenarios outlined. This is presented for the morning peak in Table 7.15. As shown, for Scenario 1 the contribution is less than 2% for any junction modelled. In Scenario 2 the maximum contribution is 3.3% at Dolphin's Barn Cross in 2024. With the other projects within SDRA 12 in place traffic generated by the three sites combined 4.4% of total traffic in 2029.

Table 7.16 Development Junction Contribution – AM Peak

Junction	2024		2029			2039		
	DS1	DS2	DS1	DS2	DS3	DS1	DS2	DS3
Crumlin Rd/Dolphin's Barn Bridge/Canal	0.7%	1.7%	0.6%	1.5%	2.3%	0.6%	1.5%	2.1%
Dolphin's Barn Cross	1.4%	3.3%	1.3%	3.0%	4.4%	1.2%	3.0%	4.1%
Cork St/Donore Ave.	0.2%	0.5%	0.2%	0.4%	0.6%	0.2%	0.4%	0.6%
Donore Ave./South Circular Rd	1.3%	3.0%	1.2%	2.8%	4.1%	1.1%	2.8%	3.8%
Donore Avenue/Canal	0.6%	1.5%	0.6%	1.4%	2.0%	0.5%	1.4%	1.9%

7.9.2 In the evening peak, the contribution of the development(s) is less than the AM peak as outlined in Table 7.17. The maximum contribution of any scenario is 3.5% which occurs in 2029 Scenario 3 at the Donore Avenue & South Circular Road junction.

Table 7.17 Development Junction Contribution – PM Peak

Junction	2024		2029			2039		
	DS1	DS2	DS1	DS2	DS3	DS1	DS2	DS3
Crumlin Rd/Dolphin's Barn Bridge/Canal	0.4%	0.9%	0.3%	0.8%	1.2%	0.3%	0.8%	1.1%
Dolphin's Barn Cross	1.0%	2.5%	1.0%	2.3%	3.3%	0.9%	2.3%	3.1%
Cork St/Donore Ave.	0.4%	1.0%	0.4%	1.0%	1.4%	0.4%	1.0%	1.3%
Donore Ave./South Circular Rd	1.1%	2.6%	1.0%	2.4%	3.5%	0.9%	2.4%	3.2%
Donore Avenue/Canal	0.5%	1.3%	0.5%	1.2%	1.7%	0.5%	1.2%	1.6%

7.10 Construction Traffic Generation

7.10.1 As discussed in Section 5.10, a Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) have been provided as part of the application under separate cover. The CTMP sets out construction vehicle and construction staff movements to the site and the migration measures proposed to alleviate any potential impacts.

7.10.2 Heavy Construction Vehicles will enter and exit Bailey Gibson Site from the South Circular Road, and from Donore Avenue to access the Playing Pitch Area, via designated routes for HGVs within the DCC HGV strategy. The number of heavy vehicles will be dependent on the

construction activity taking place on site. Based on work to date the most onerous construction period with regards to traffic generation is expected to be during the basement excavation, it is estimated that the maximum number of HGVs trips during this period will be 70, however this will be temporary lasting 3 months. The average number of HGVs to site over the entire construction phase will be closer to 30-40 one-way HGV trips (trips to and away from site).

7.10.3 Further information on trip generation throughout the construction period is provided in the CTMP.

8. NETWORK ANALYSIS

8.1 Overview

8.1.1 The performance of the network for each year has been assessed based on a number of outputs from the model including:

- Network Delay per vehicle (seconds) which provides the average delay incurred by each vehicle passing through the network;
- Average speed of all vehicles across the network (kph);
- Latent Demand (vehicles) which represent vehicles which cannot enter the network due to blocking back. High levels of latent demand indicate a network over capacity;
- Average Queue Length (m) from of each junctions arm; and
- Journey Times (secs) along key routes.

8.1.2 The above is presented for each year and scenario outlined in Table 7.15 in the following section of the report.

8.2 Do-Minimum

Network Statistics

8.2.1 The network statistics for AM Peak Do-Minimum (DM) scenario are presented in Table 8.1 and show the change in delay, speeds and latent demand for each modelled year compared to the 2020 base model. As expected, delays across the network increase as the background traffic grows, particularly by 2039, with no additional development in place. As discussed in section 7 it is likely the actual car traffic in 2039 will be lower than forecast in the model if the objectives of the GDA transport strategy are realised.

Table 8.1 AM Peak Do-Minimum Network Statistics

	2020	2024	2020-2024	2029	2020-2029	2039	2020-2039
Average Delay	82.5	86.2	4.5%	92.4	12.1%	111.4	35.0%
Average Speed	26.2	25.6	-2.1%	24.7	-5.8%	22.3	-14.9%
Latent Demand	0.2	0.0	-0.2	0.0	-0.2	19.2	19.0

8.2.2 Delays in the PM peak also increase with traffic growth though to a lesser extent in 2039. The level of latent demand is relatively low in the AM & PM in the future year scenarios indicating that though congestion has increased across the network it is not yet overcapacity.

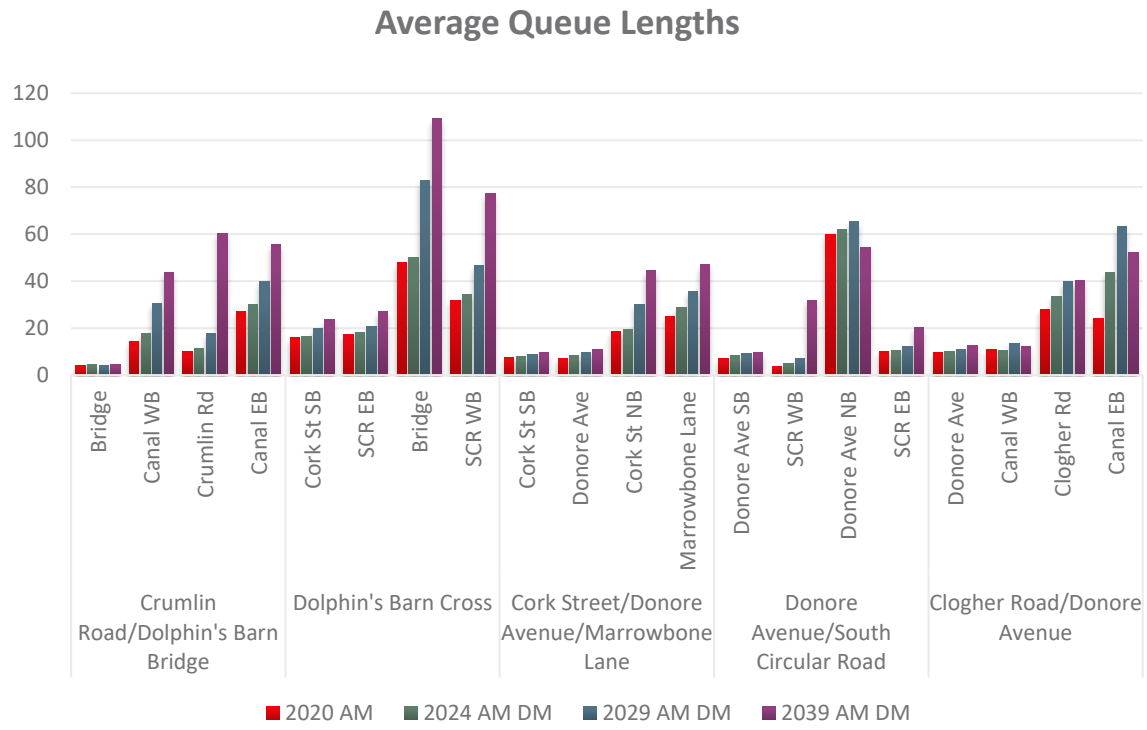
Table 8.2 PM Peak Do-Minimum Network Statistics

	2020	2024	2020-2024	2029	2020-2029	2039	2020-2039
Average Delay	87.8	91.4	4.1%	98.6	12.3%	110.8	26.3%
Average Speed	25.0	24.5	-2.0%	23.5	-6.0%	22.0	-12.0%
Latent Demand	0.0	0.6	0.60	0.0	-0.60	8.0	8.60

Queue Lengths

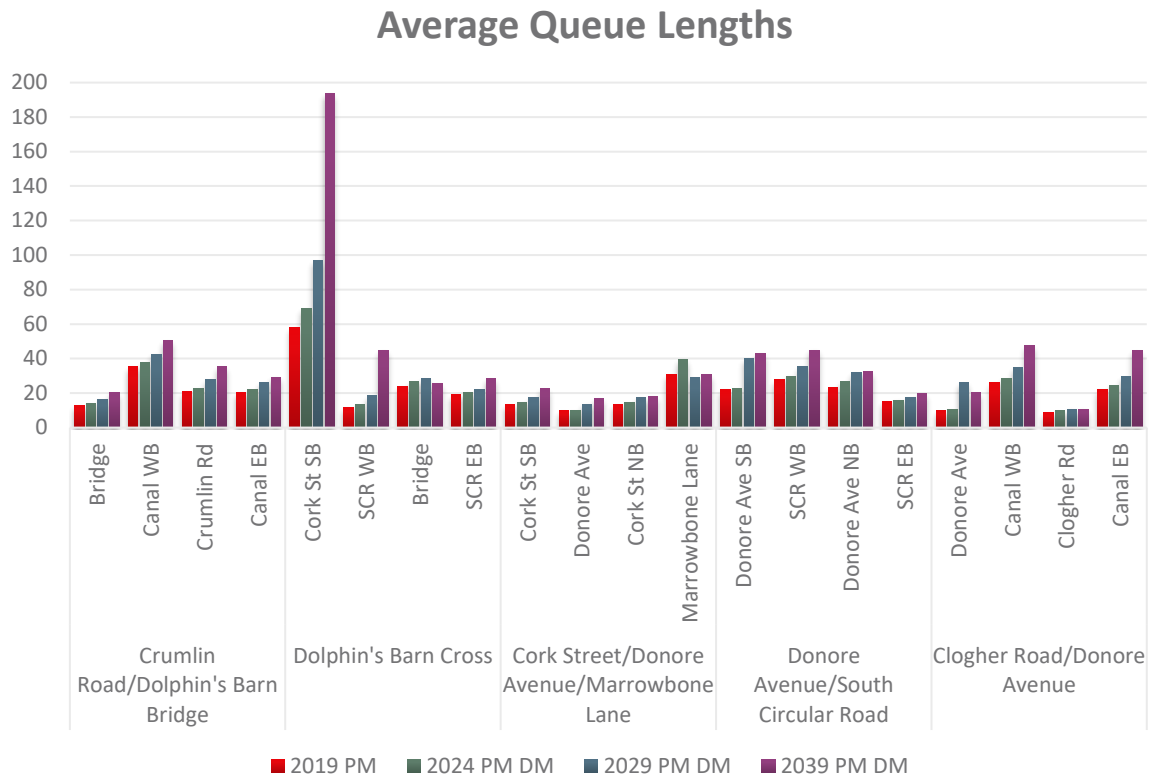
8.2.3 The average queue lengths for the morning and evening peak are presented in Figure 8.1 & 8.2 respectively. Queue lengths at the Crumlin Road junction & at Dolphin's Barn Cross increase for traffic travelling north and eastbound into the city particularly at the Dolphin's Barn Bridge. As discussed in section 7.8.4, both arms have been assigned an extra green time in future year scenarios which results in an increase in queuing for west and eastbound traffic travelling along the Canal and the South Circular Road particularly in 2039.

Figure 8.1: AM Peak Average Queue Lengths



8.2.4 In the evening peak, the greatest increase in queueing is modelled travelling southbound along Cork Street/Dolphin's Barn Street where queues extend back from Dolphin's Barn Cross. This traffic has been assigned additional green time in 2039 which results in decreased green time for traffic on the South Circular Road resulting in an increase in the queuing for westbound traffic through the junction.

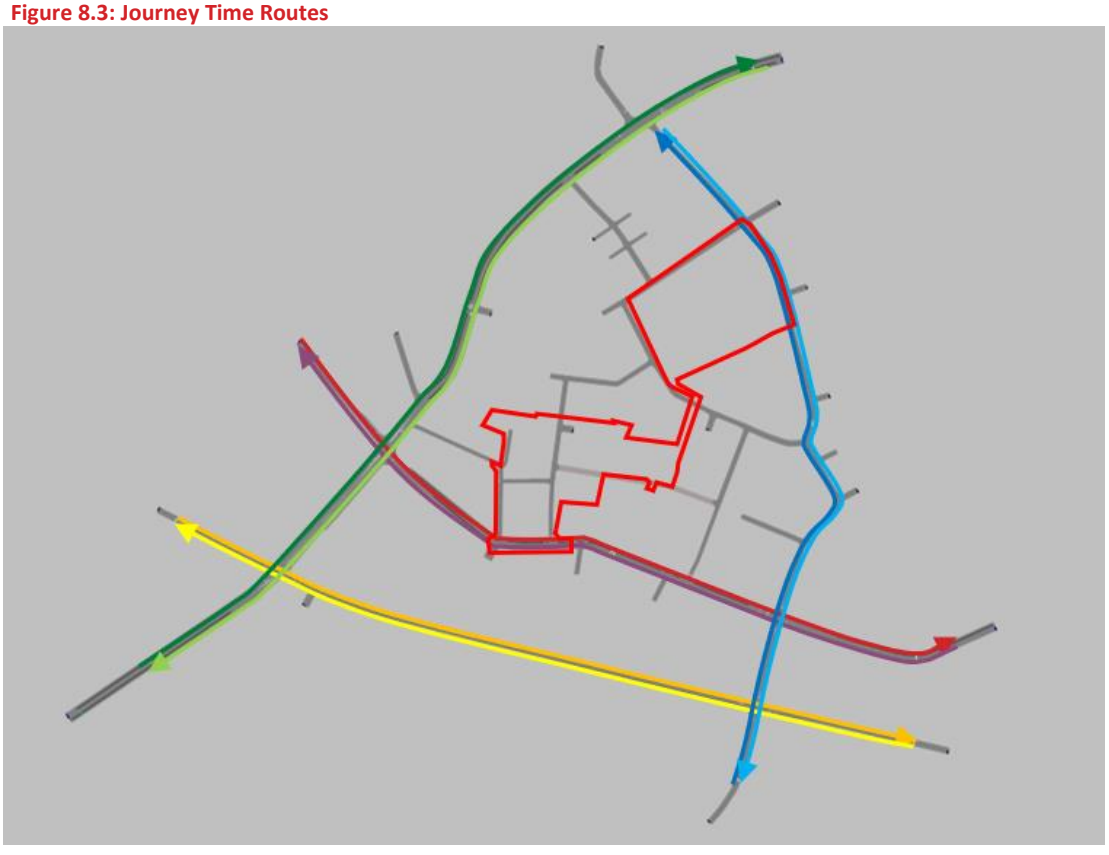
Figure 8.2: PM Peak Average Queue Lengths



Journey Times

8.2.5 Modelled Journey Times were recorded along 4 key corridors close to the development as shown in Figure 8.3.

Figure 8.3: Journey Time Routes



8.2.6 In the morning peak, the most notable increases in journey times relative to the 2020 base model is travelling eastbound along the canal in all modelled years. This is due to blocking back from the northbound traffic on the canal bridges. By 2039 there are increases along both the Canal & South Circular Road in both directions. This is partially due to the increased demand but also the reduced green time for traffic on these routes as green time for northbound traffic has been increased to prevent blocking back from the bridges which have limited stacking capacity. The slight decreases in journey times along Donore Avenue northbound are due to this change in minimum green times for traffic travelling northbound over Donore Avenue Bridge.

Table 8.3 Do-Minimum AM Modelled Journey Times (sec) by modelled year

Route	2020	2024	2020-24	2029	2020-29	2039	2020-39
SCR EB	133	134	1.1%	140	5.9%	176	32.6%
SCR WB	119	122	2.5%	127	6.5%	163	37.2%
Canal WB	113	115	1.7%	118	4.9%	137	21.1%
Canal EB	141	164	16.3%	172	21.8%	182	28.9%
Cork Street NB	190	190	0.1%	198	4.2%	232	21.9%
Cork Street SB	125	126	0.8%	129	3.2%	137	9.9%
Donore Avenue NB	179	183	2.3%	182	1.5%	171	-4.8%
Donore Avenue SB	121	125	3.0%	129	6.7%	128	5.1%

8.2.7 In the evening peak, journey times are relatively unchanged in 2024. By 2029, journey times are starting to increase particularly along Donore Avenue southbound. In 2039, most journey times along southbound and westbound routes carrying peak hour traffic away from the city have notably increased.

Table 8.4 Do-Minimum PM Modelled Journey Times (sec) by modelled year

Route	2020	2024	2020-24	2029	2020-29	2039	2020-39
SCR EB	137	138	0.9%	138	1.1%	145	4.1%
SCR WB	119	122	2.1%	125	5.2%	151	27.2%
Canal WB	168	169	0.5%	172	2.0%	181	7.5%
Canal EB	146	148	1.5%	154	5.4%	173	18.5%
Cork Street NB	213	219	2.6%	225	5.7%	230	7.8%
Cork Street SB	132	134	1.3%	143	7.9%	161	21.7%
Donore Avenue NB	171	175	2.2%	185	8.1%	189	10.4%
Donore Avenue SB	132	129	-0.8%	160	20.2%	160	20.6%

8.3 Scenario 1 Results – Proposed Development

Network Statistics

8.3.1 Table 8.5 outlines the AM peak network statistics for the Do-Minimum and Do-Something Scenario 1 which includes the proposed development. As shown, there are modest increases of 2.5-4.3% in the average delay experienced in the network with corresponding reductions in speed. In absolute terms, this represents a marginal increase in delay of 2.2-4.7 seconds per vehicle. There is no notable change in latent demand compared to the Do-Minimum.

Table 8.5 AM Peak Network Statistics – Do-Minimum vs Scenario 1

Network Stats	2024			2029			2039		
	DM	DS1	Diff	DM	DS1	Diff	DM	DS1	Diff
Average Delay (s)	86.2	88.4	2.5%	95.0	98.9	4.1%	111.4	116.1	4.3%
Average Speed (kph)	25.6	25.3	-1.3%	24.7	24.1	-2.4%	22.3	21.7	-2.6%
Latent Demand (vehs)	0.0	0.0	0.00	0.0	0.4	0.40	19.2	18.5	-0.70

8.3.2 In the evening peak the impact of the development is marginal with increases in average of delay 0.3%-1.1% between the Do-Minimum and Do-Something Scenario 1. This is just 0.2-1.2 seconds per vehicle. Again, there is no notable increases in latent demand.

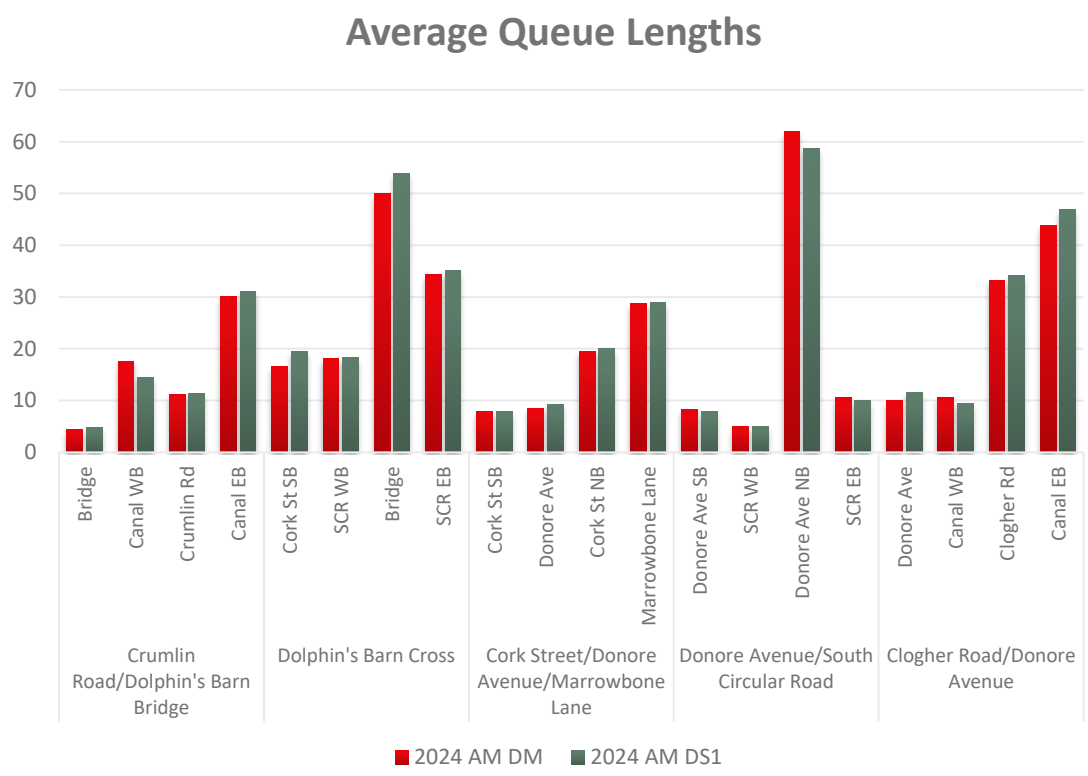
Table 8.6 PM Peak Network Statistics – Do-Minimum vs Scenario 1

Network Stats	2024			2029			2039		
	DM	DS1	Diff	DM	DS1	Diff	DM	DS1	Diff
Average Delay (s)	91.4	91.6	0.3%	98.6	99.3	0.8%	111.9	113.1	1.1%
Average Speed (kph)	24.5	24.5	-0.2%	23.5	23.4	-0.5%	21.9	21.7	-0.9%
Latent Demand (vehs)	0.6	0.6	0.0	0.0	0.0	0.0	6.6	9.4	2.8

Queue Lengths

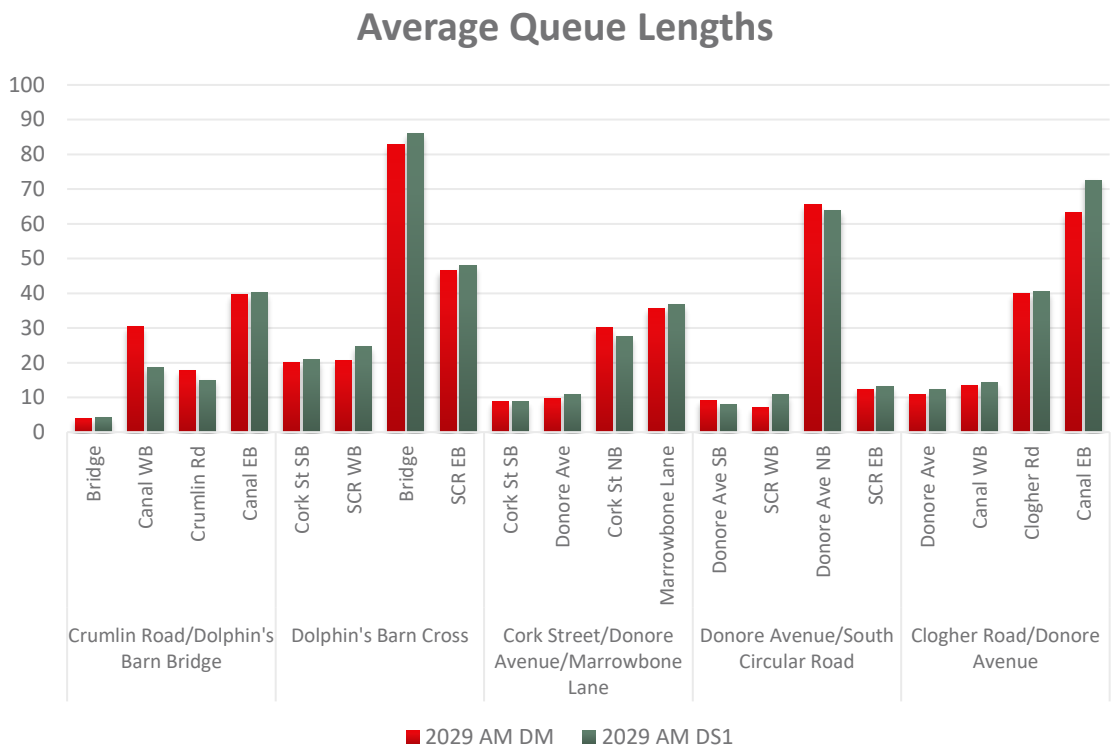
8.3.3 The average queue lengths in the morning peak for each scenario and modelled year are presented in Figures 8.4-8.6. As illustrated by the graphs, there is little change in the queue lengths with the development in place. In the development opening year, there are some minor increases at Dolphin's Barn Cross for traffic travelling northbound and along the South Circular Road eastbound at Donore Avenue. However, the average increase across all arms is just 1m.

Figure 8.4: 2024 Do-Minimum vs Scenario 1 AM Peak – Average Maximum Queue Lengths



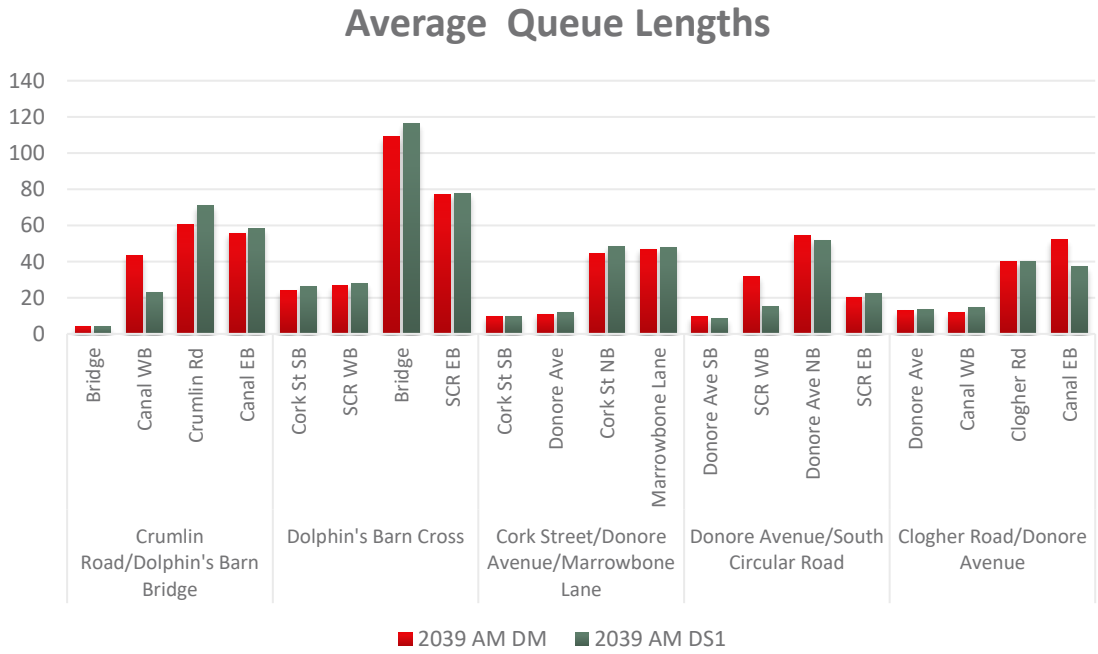
8.3.4 In 2029, queue lengths again remain relatively unchanged with only some minor increases in a few locations. The increases are again at Dolphin's Barn bridge northbound , +3m, and along the South Circular Road westbound, +2.2m, and canal eastbound, +3.8m. However, on average the increases across all arms are just 1.4m.

Figure 8.5: 2029 Do-Minimum vs Scenario 1 AM Peak– Average Maximum Queue Lengths



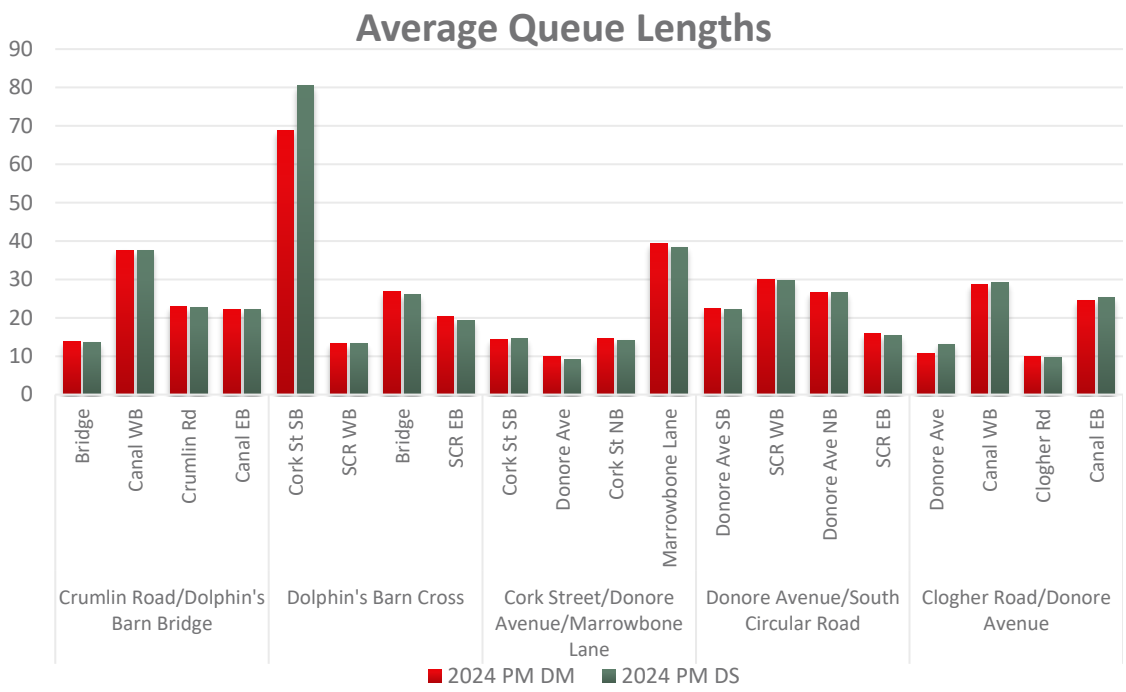
8.3.5 In 2039, the main increases are along the Crumlin Road & Dolphin's Barn Bridge northbound & South Circular Road eastbound at Donore Avenue. These increases however, are small and represent approximately 3 vehicles. The average increase across all arms is 2.6m.

Figure 8.6: 2039 Do-Minimum vs Scenario 1 AM Peak– Average Maximum Queue Lengths



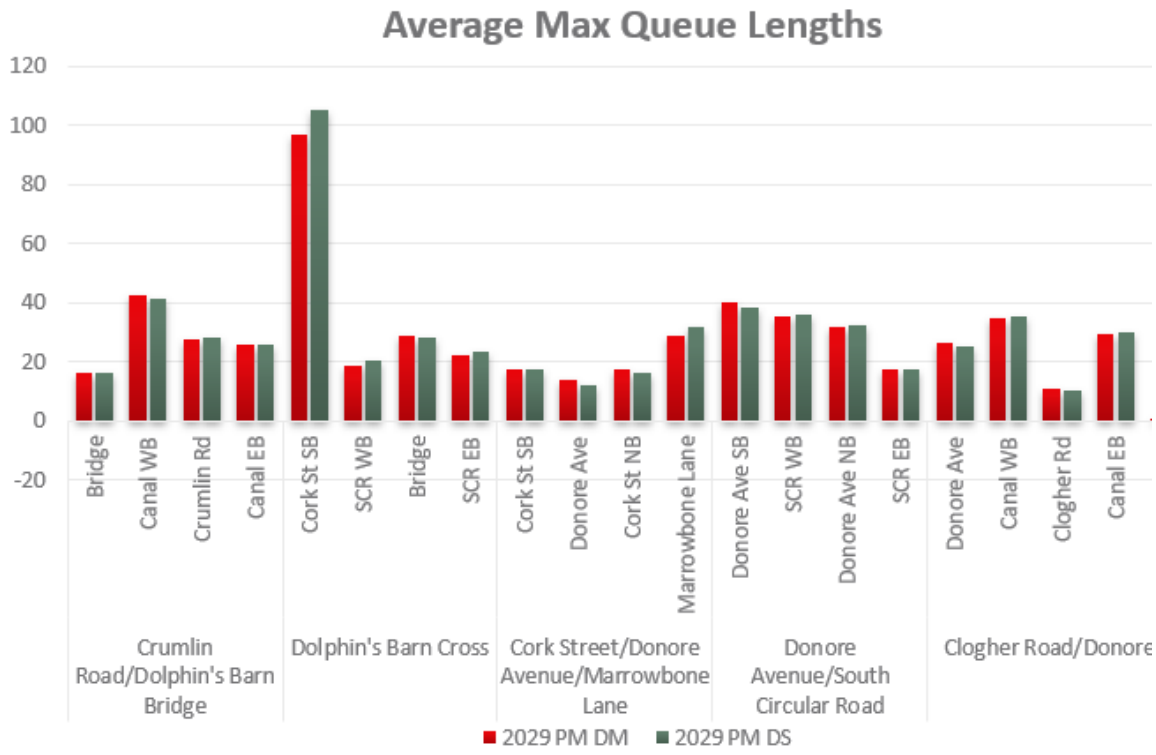
8.3.6 The average maximum queue lengths in the evening peak for each scenario and modelled year are presented in Figures 8.7-8.9. As shown, there are only minor increase in 2024 with a slight increase in traffic queueing along Cork Street/Dolphin's Barn Street travelling southbound. All other queue lengths remain relatively unchanged.

Figure 8.7: 2024 Do-Minimum vs Scenario 1 PM Peak – Average Maximum Queue Lengths



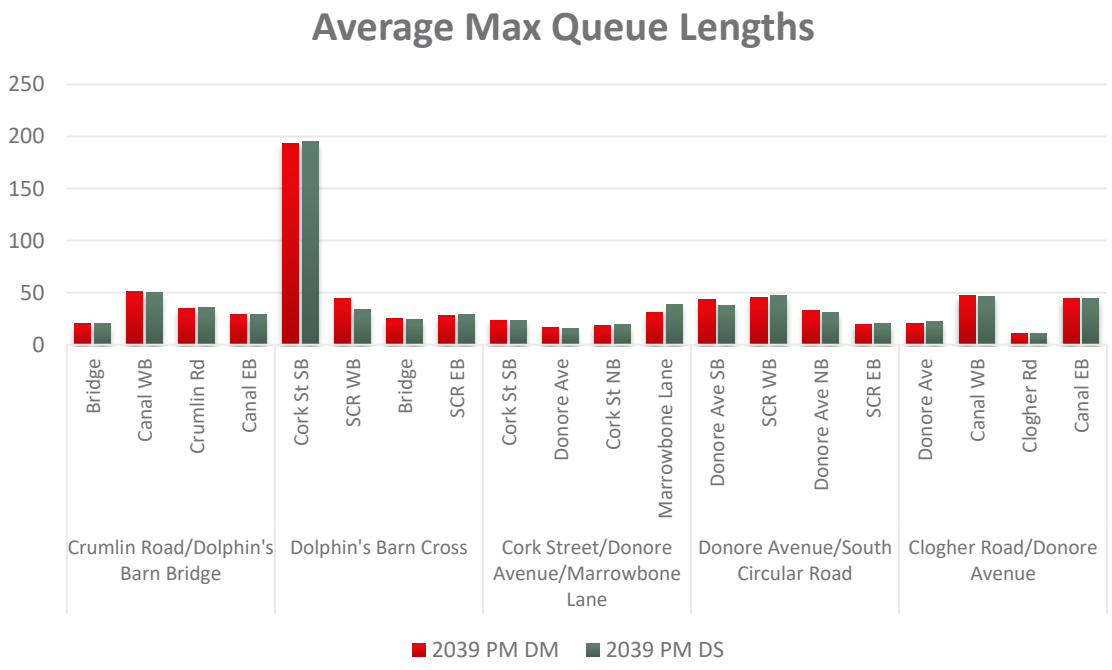
8.3.7 In 2029, there is again a minor increase in the level of queuing experienced by traffic travelling southbound along Cork Street as illustrated in Figure 8.8. The queuing on the majority of other junctions' arms modelled are slight and on average the increase across all arms is just 0.5m.

Figure 8.8: 2029 Do-Minimum vs Scenario 1 PM Peak – Average Maximum Queue Lengths



8.3.8 By 2039, the proposed development has slightly more notable impacts in queuing, again along Cork Street Southbound towards Dolphin's Barn Cross. However, this is still just a 10% increase compared to Do-Minimum queue lengths. Elsewhere, there are slight changes in queue lengths along the Crumlin Road heading northbound and westbound along the canal. Overall, the average increase across all arms is just 2.2m.

Figure 8.9: 2039 Do-Minimum vs Scenario 1 PM Peak – Average Maximum Queue Lengths



Journey Times

8.3.9 The difference between journey times along the routes shown on the previous figures with the development in place during the morning peak are outlined in Table 8.7. In all modelled years there is a similar impact with the development in place as journey times increase by 6-11 seconds travelling northbound along Cork Street/Dolphin's Barn Street. There are also some increased delays along the South Circular Road by 2039. However, changes along the remaining routes are marginal.

Table 8.7 AM Peak Journey Times – Do-Minimum vs Scenario 1

Route	2024			2029			2039		
	DM	DS1	Diff	DM	DS1	Diff	DM	DS1	Diff
SCR EB	134	134	-0.4%	140	145	3.5%	176	177	0.7%
SCR WB	122	123	0.4%	127	136	7.2%	163	146	-10.7%
Canal WB	115	110	-4.2%	118	115	-2.7%	137	118	-13.3%
Canal EB	164	165	0.9%	172	191	11.5%	182	168	-7.7%
Cork Street NB	190	196	2.9%	198	204	3.0%	232	243	4.7%
Cork Street SB	126	125	-0.5%	129	131	1.8%	137	138	0.6%
Donore Ave.NB	183	178	-2.9%	182	182	0.0%	171	171	0.5%
Donore Ave. SB	125	123	-1.1%	129	126	-2.5%	128	128	0.6%

8.3.10 In the evening peak, the changes in modelled journey times are slight with no significant changes in 2024 or 2029. In 2039, there is a more notable increase in journey times along Cork Street southbound however in absolute terms this increase is less than 7 seconds.

Table 8.8 PM Peak Journey Times – Do-Minimum vs Scenario 1

Route	2024			2029			2039		
	DM	DS1	Diff	DM	DS1	Diff	DM	DS1	Diff
SCR EB	138	136	-1.7%	138	140	1.0%	145	146	0.4%
SCR WB	122	121	-0.4%	125	128	2.3%	151	153	1.0%
Canal WB	169	170	0.6%	172	172	0.2%	181	182	0.5%
Canal EB	148	150	1.3%	154	154	0.0%	173	176	1.4%
Cork Street NB	219	221	1.2%	225	232	2.9%	230	228	-0.8%
Cork Street SB	134	138	3.0%	143	148	3.7%	161	167	3.7%
Donore Ave.NB	175	173	-0.9%	185	182	-1.6%	189	190	0.5%
Donore Ave. SB	129	131	1.9%	160	153	-4.5%	160	153	-4.8%

8.4 Scenario 2 Results – Proposed Development & Player Wills Site Development

Network Statistics

8.4.1 With both the Bailey Gibson & Player Wills developments in place, the morning peak average delay increases from the figures outlined in Table 8.9 for Scenario 1. However, the increases are still modest relatively to the do-minimum given the quantum of development with the absolute increase in average delay per vehicle just 2 seconds by 2039. The level of latent demand is relatively unchanged.

Table 8.9 AM Peak Network Statistics – Do-Minimum vs Scenario 2

Network Stats	2024			2029			2039		
	DM	DS2	Diff	DM	DS2	Diff	DM	DS2	Diff
Average Delay (s)	86.2	87.8	1.8%	95.0	100.1	5.4%	111.4	113.1	1.6%
Average Speed (kph)	25.6	25.3	-1.1%	24.7	23.6	-4.3%	22.3	21.9	-1.6%
Latent Demand (vehs)	0.0	0.0	0.0	0.0	0.6	0.6	19.2	22.6	3.4

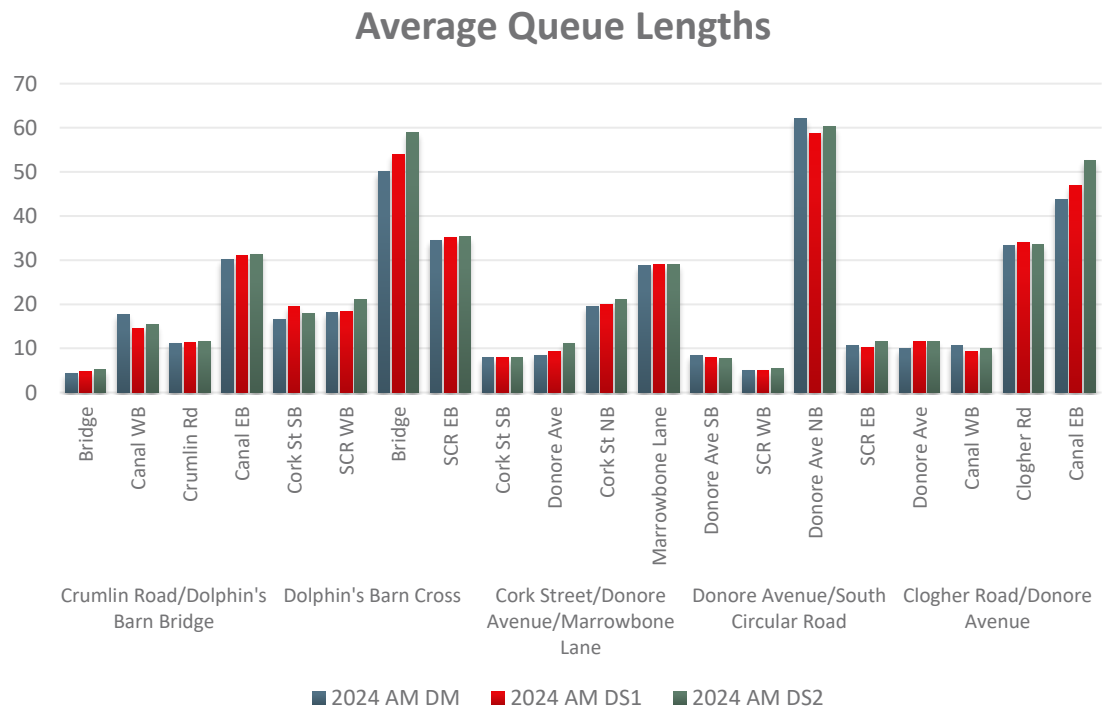
Table 8.10 AM Peak Network Statistics – Do-Minimum vs Scenario 2

Network Stats	2024			2029			2039		
	DM	DS2	Diff	DM	DS2	Diff	DM	DS2	Diff
Average Delay (s)	91.4	92.6	1.3%	98.6	101.9	3.4%	110.8	110.3	-0.5%
Average Speed (kph)	24.5	24.3	-1.0%	23.5	23.1	-2.0%	22.0	22.0	0.1%
Latent Demand (vehs)	0.6	0.4	-0.2	0.0	0.8	0.8	8.0	11.4	3.4

Queue Lengths

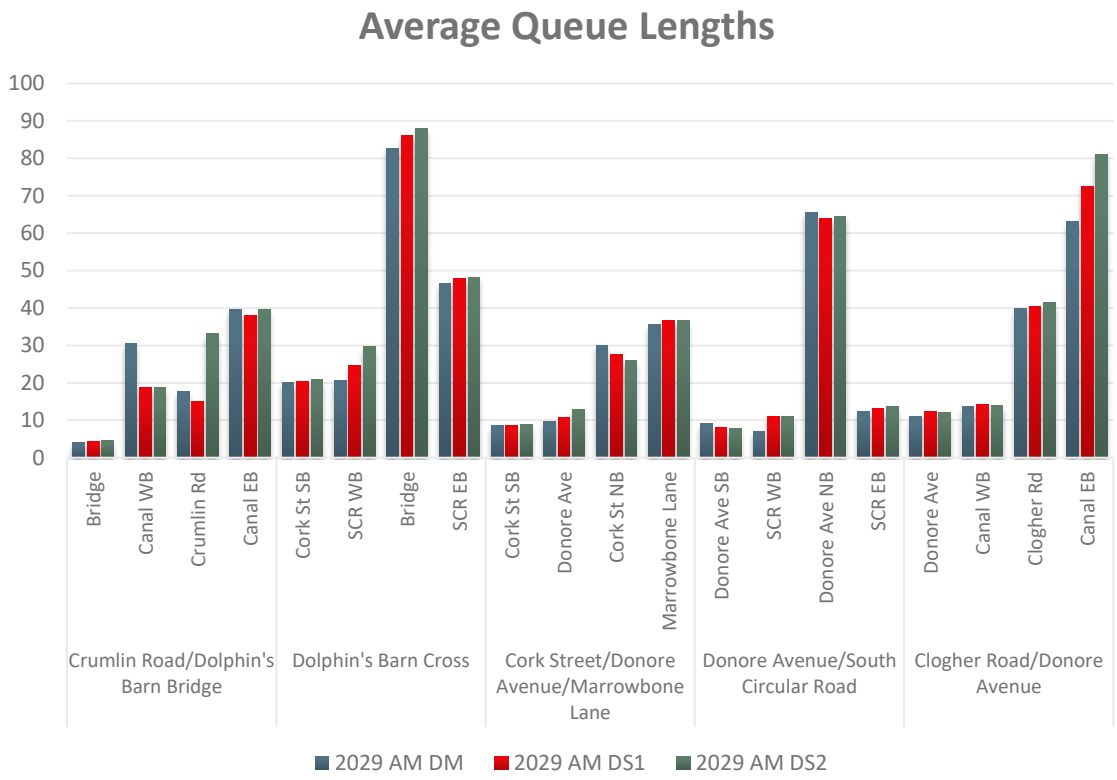
8.4.2 The average queue length in the morning peak is outlined for each year in Figures 8.10-8.12 for the Do-Minimum, Scenario 1 & Scenario 2. In 2024, the differences in queue lengths are slight between Scenarios 1 & 2. There are some slight increases along the canal west and eastbound, particularly at the Clogher Road/Donore Avenue junction, along the South Circular Road westbound at Dolphin's Barn Cross & northbound at Donore Avenue and the canal eastbound. On average, queues lengths increase by 1.5m compared to Scenario 1 and by 2.5m compared to the Do-Minimum.

Figure 8.10: 2024 Do-Minimum, Scenario 1 vs Scenario 2 AM Peak – Average Queue Lengths



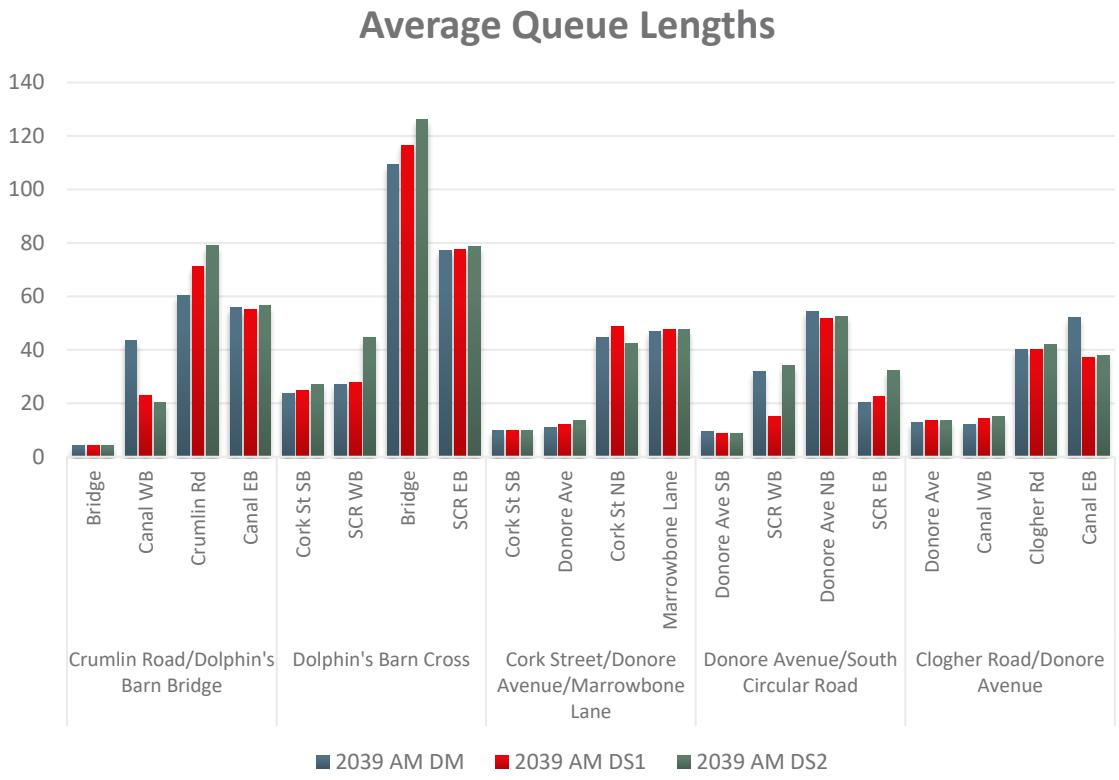
8.4.3 By 2029, there are slightly more notable increases in queuing as a result of the additional traffic from the combined developments. These increases are along the canal eastbound. Clogher Road northbound and westbound along the South Circular Road at Dolphin's Barn Cross. The increases are generally slight and less than one vehicle in length compared to Scenario 1. Across all arms the average increase is 2.1m & 3.6m compared to Scenario 1 and the Do-Minimum respectively.

Figure 8.11: 2029 Do-Minimum, Scenario 1 vs Scenario 2 AM Peak – Average Queue Lengths



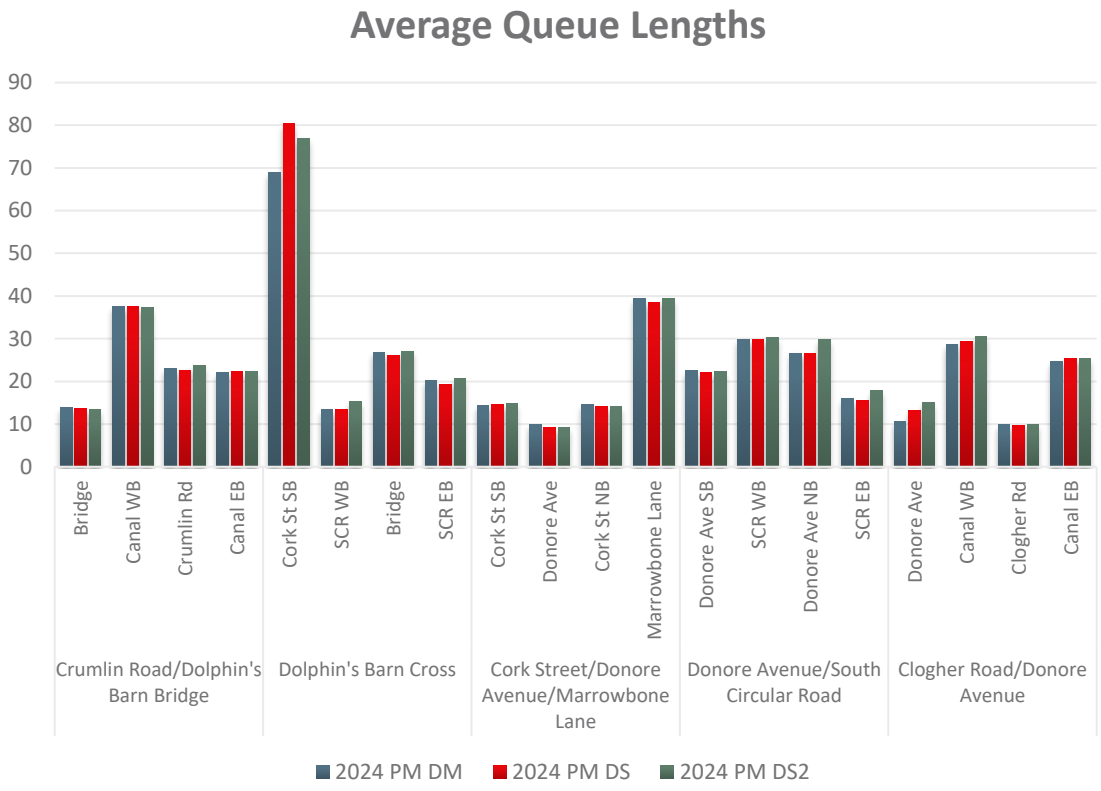
8.4.4 In 2039, the main increases are along the South Circular Road eastbound towards Donore Avenue and westbound towards Dolphin's Barn Cross. However, the level of queuing is still comparable to the Do-Minimum and other arms of the junctions remain relatively unchanged.

Figure 8.12: 2039 Do-Minimum, Scenario 1 vs Scenario 2 AM Peak – Average Queue Lengths



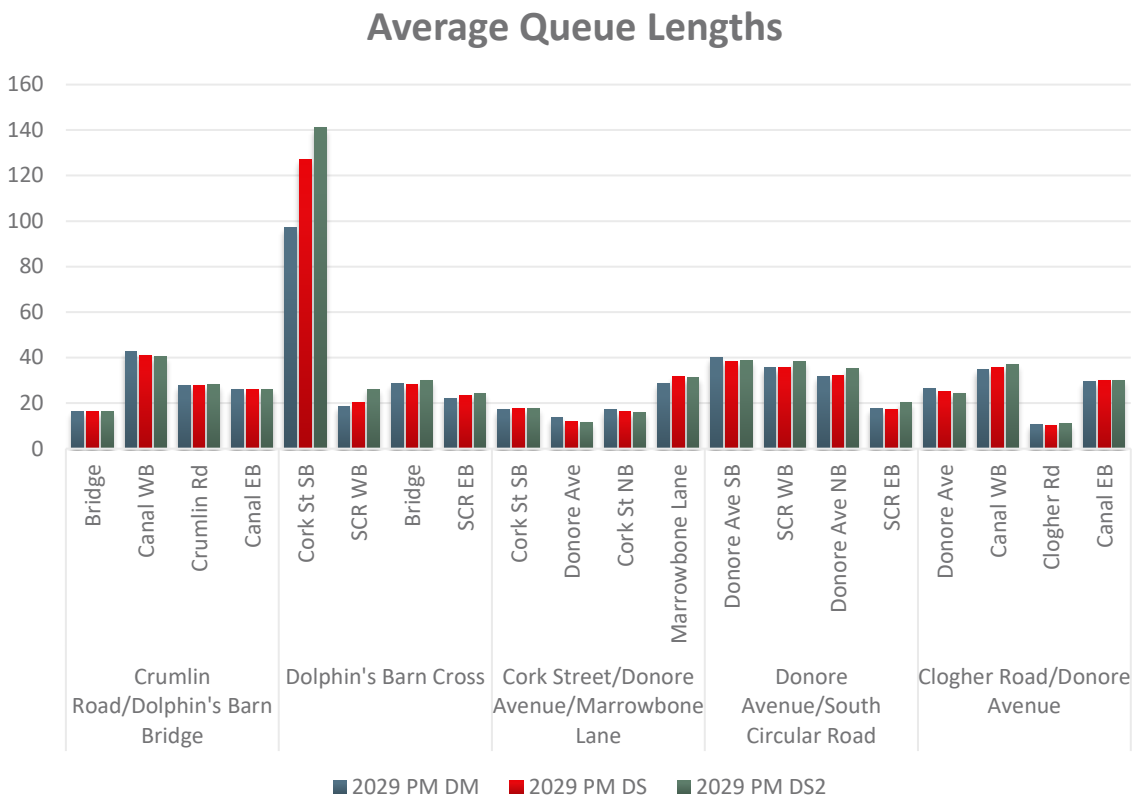
8.4.5 The average queue lengths for the PM peak hour are graphed in Figure 8.13-8.15 for each modelled year. In 2024, there are no significant changes in the levels of queuing across the network with marginal increases modelled along Cork Street southbound, the South Circular Road and northbound on Donore Avenue.

Figure 8.13: 2024 Do-Minimum, Scenario 1 vs Scenario 2 PM Peak – Average Queue Lengths



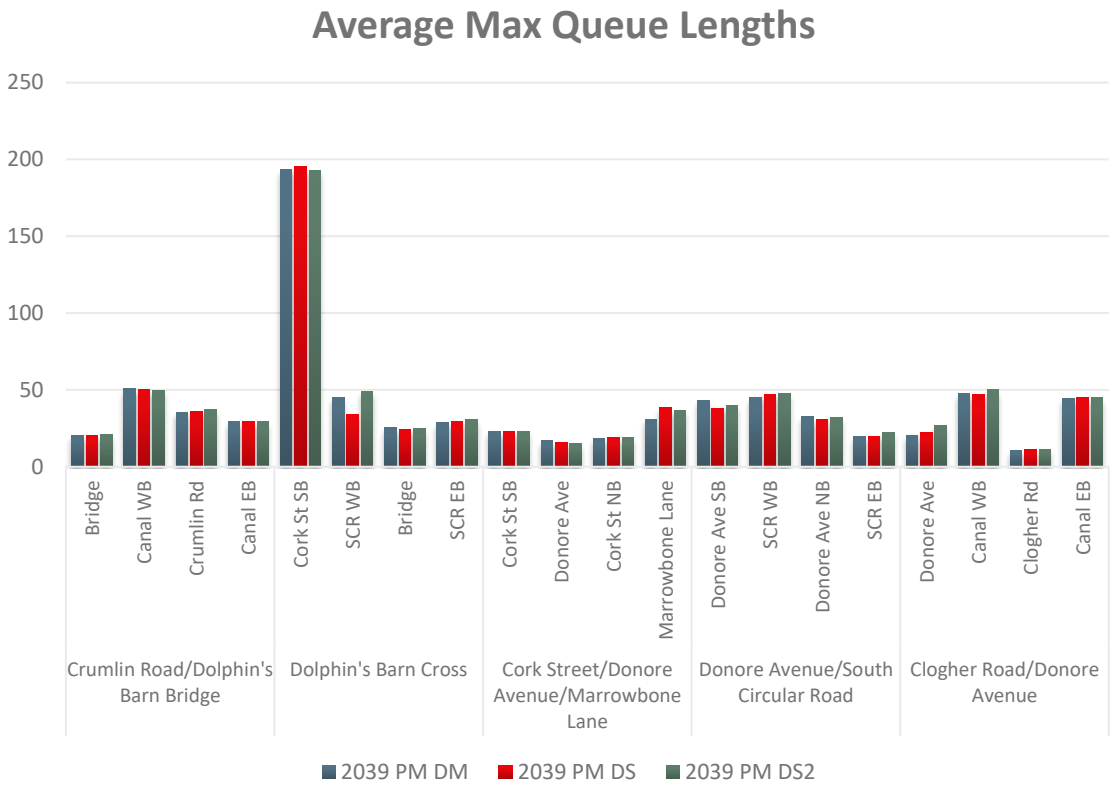
8.4.6 In 2029, the queue lengths again remain relatively unchanged from Scenario 1 with some increases southbound along Cork Street, both directions along South Circular Road and Donore Avenue northbound. All other increases as a result of the combined development traffic are slight with an average increase of just 1.3m across all arms compared to Scenario 1 & 1.8m compared to the Do-Minimum.

Figure 8.14: 2028 Do-Minimum, Scenario 1 vs Scenario 2 PM Peak – Average Queue Lengths



8.4.7 By 2039, there is a more notable increase in queuing travelling southbound along Cork Street with both developments in place. However, this is still the equivalent of less than 3 vehicles. There is also an increase of 22m in average queue lengths along the South Circular Road travelling westbound towards Dolphin's Barn Cross. Change in queue lengths along other arms is marginal and on average just 3.4m greater than Scenario 1.

Figure 8.15: 2039 Do-Minimum, Scenario 1 vs Scenario 2 PM Peak – Average Queue Lengths



Journey Times

8.4.8 The difference between journey times along the routes shown in Figure 8.3 with the combined developments in place during the morning peak are outlined in Table 8.11. Compared to the Scenario 1 results outlined in Table 8.7 there is a more notable impact on modelled journey times along the South Circular Road where the majority of additional traffic enters and exits the network and along the canal particularly by 2039. However, delays are similar along Cork Street and Donore Avenue.

Table 8.11 AM Peak Journey Times – Do-Minimum vs Scenario 2

Route	2024			2029			2039		
	DM	DS2	Diff	DM	DS2	Diff	DM	DS2	Diff
SCR EB	134	134	-0.3%	140	145	3.5%	176	184	4.9%
SCR WB	122	125	2.1%	127	140	10.4%	163	184	12.6%
Canal WB	115	111	-2.8%	118	114	-3.4%	137	148	8.3%
Canal EB	164	174	5.9%	172	182	6.0%	182	171	-6.1%
Cork Street NB	190	197	3.7%	198	212	7.3%	232	244	5.5%
Cork Street SB	126	126	-0.3%	129	131	1.3%	137	137	-0.6%
Donore Ave.NB	183	181	-1.0%	182	186	2.3%	171	176	3.3%
Donore Ave. SB	125	124	-0.8%	129	123	-4.9%	128	132	3.6%

8.4.9 In the evening peak, the greatest increases in delay are along the South Circular Road westbound & Cork street southbound as the additional traffic generated by the development joins the outbound commuting traffic from the city. There are no increases greater than 10% however.

Table 8.12 PM Peak Journey Times – Do-Minimum vs Scenario 2

Route	2024			2029			2039		
	DM	DS2	Diff	DM	DS2	Diff	DM	DS2	Diff
SCR EB	138	138	-0.4%	138	142	2.3%	145	146	0.6%
SCR WB	122	122	0.0%	125	134	6.8%	151	156	3.1%
Canal WB	169	170	0.7%	172	172	0.2%	181	183	1.2%
Canal EB	148	150	1.2%	154	154	0.2%	173	175	1.0%
Cork Street NB	219	223	1.8%	225	235	4.3%	230	228	-0.7%
Cork Street SB	134	135	0.8%	143	150	5.1%	161	164	2.1%
Donore Ave.NB	175	177	1.3%	185	183	-0.9%	189	190	0.7%
Donore Ave. SB	129	132	2.6%	160	154	-3.4%	160	155	-3.2%

8.5 Scenario 3 Results – Full Build Out of the SRDA 12

Network Statistics

8.5.1 As discussed in Section 7.8, It has been assumed that the full development of the SRDA 12 including LDA/DCC Donore Project and Player Wills Phase 2 will not be in place by 2024. Therefore, the results for scenario 3 are present for the years 2029 and 2039. The morning network statistics show that for these years even with the full SRDA 12 build out, accommodating a population of over 4,000, the maximum increase in average delay per car in the local network is just 6 seconds.

Table 8.13 AM Peak Network Statistics – Do-Minimum vs Scenario 3

Network Stats	2029			2039		
	DM	DS3	Diff	DM	DS3	Diff
Average Delay (s)	95.0	101.0	6.4%	111.4	116.1	4.3%
Average Speed (kph)	24.7	23.4	-5.1%	22.3	21.5	-3.3%
Latent Demand (vehs)	0.0	0.6	0.6	19.2	28.6	9.4

8.5.2 In the evening peak, the impact is less again with just a 3.9 second increase in delay per car modelled by 2039. The latent demand in both peak hours also remains relatively unchanged.

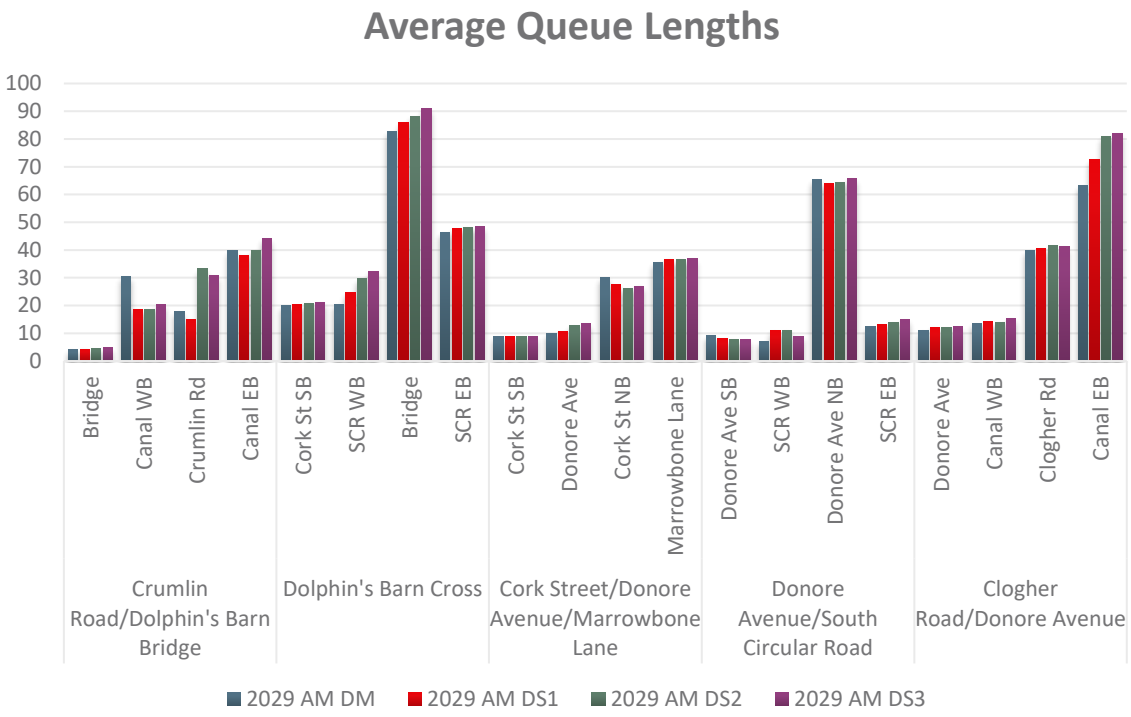
Table 8.14 AM Peak Network Statistics – Do-Minimum vs Scenario 3

Network Stats	2029			2039		
	DM	DS3	Diff	DM	DS3	Diff
Average Delay (s)	98.6	102.1	3.6%	110.8	114.7	3.5%
Average Speed (kph)	23.5	23.0	-2.2%	22.0	21.5	-2.5%
Latent Demand (vehs)	0.0	2.0	2.0	8.0	14.0	6.0

Queue Lengths

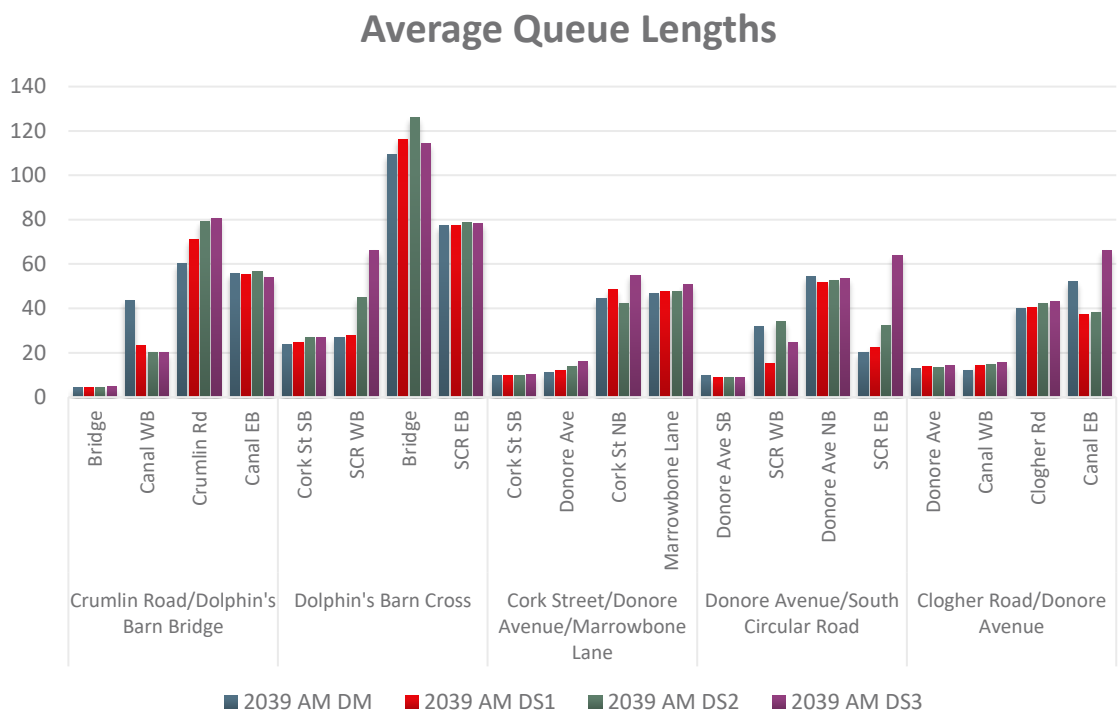
8.5.3 The average queue lengths in morning peak for all scenarios for 2029 & 2039 are presented in Figures 8.16 & 8.17. As shown, the increase on the vast majority of junction arms is slight and on average between 1-2m longer compared to Scenario 2. There is a greater increase along the canal eastbound which is caused by additional traffic crossing the bridge and blocking traffic travelling straight and eastbound. However, in absolute terms this only represents approximately 3 additional vehicles queueing.

Figure 8.16: 2029 Do-Minimum, Scenario 1, Scenario 2 vs Scenario 3 AM Peak – Average Queue Lengths



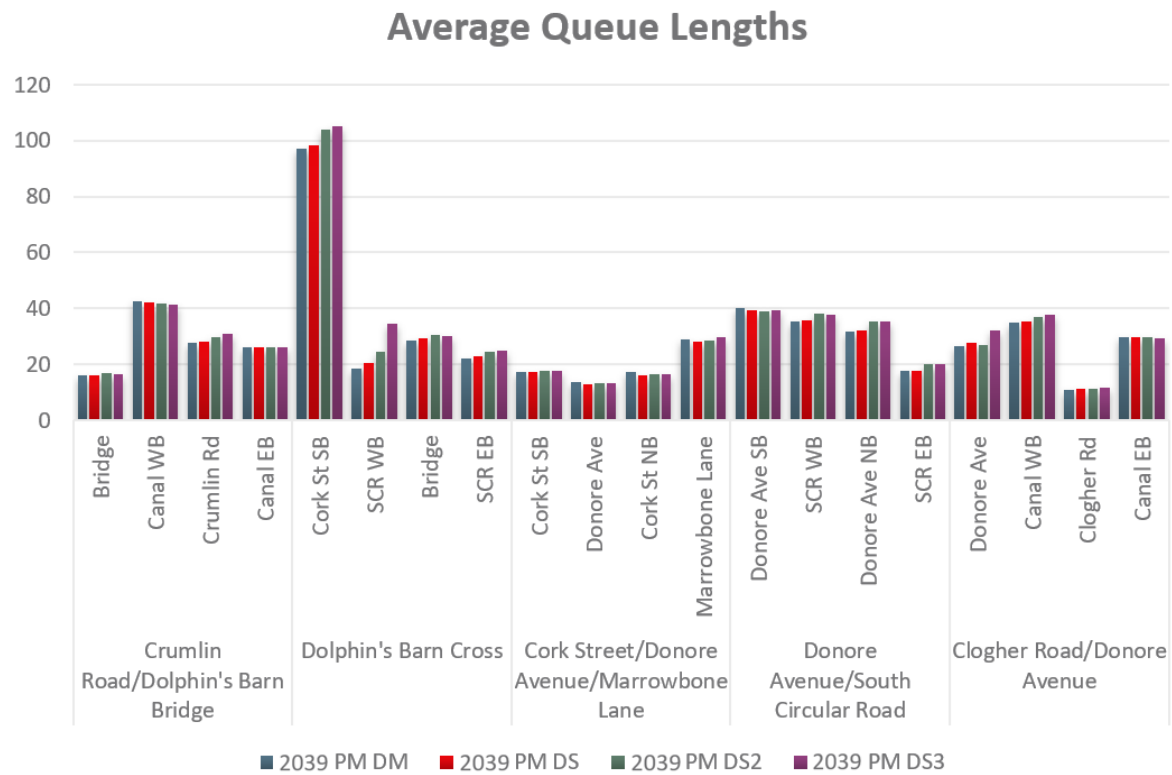
8.5.4 By 2039, there are slightly more notable impacts as a result of the additional traffic with increased queueing northbound along the Crumlin Road and Dolphin's Barn Bridge. Eastbound into the city there is also an increase of approximately 2-3 vehicles queuing along the South Circular Road at Donore Avenue. The change in queuing along other junction arms is slight compared to Scenario 2 with an average increase across all arms less than 2.4m.

Figure 8.17: 2039 Do-Minimum, Scenario 1, Scenario 2 vs Scenario 3 AM Peak – Average Queue Lengths



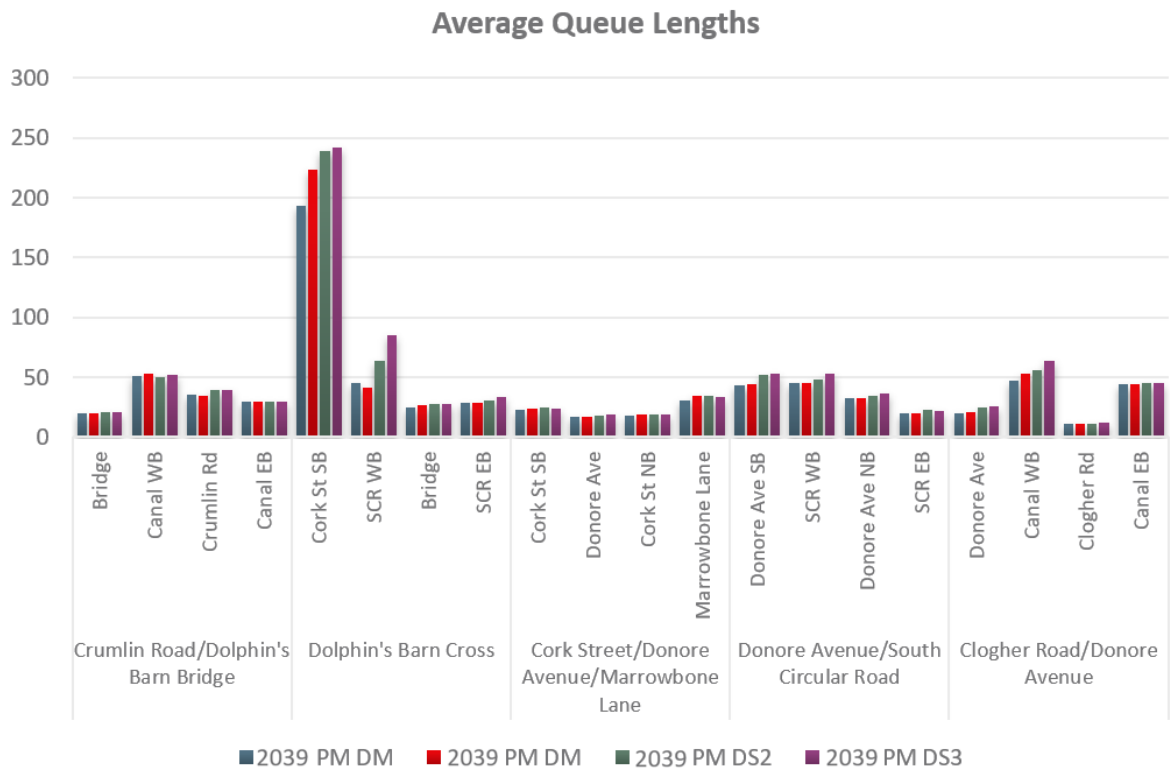
8.5.5 For the evening peak the average queue lengths are presented in Figures 8.18 and 8.19 for 2028 and 2038 respectively. In 2029, the main increases compared to Scenario 2 are along Cork Street southbound, the increase across other arms are marginal. On average across all arms the queue lengths increase by just 1m compared to Scenario 2.

Figure 8.18: 2029 Do-Minimum, Scenario 1, Scenario 2 vs Scenario 3 PM Peak – Average Queue Lengths



8.5.6 By 2039, there is a more significant change in queueing along the South Circular Road travelling westbound towards Dolphin's Barn Cross due to the additional development traffic. The increases on other arms is less notable with an average increase of 2.2m compared to Scenario 2.

Figure 8.19: 2039 Do-Minimum, Scenario 1, Scenario 2 vs Scenario 3 PM Peak – Average Queue Lengths



Journey Times

8.5.7 The difference between journey times with the full SRDA 12 in place is outlined in Table 8.5 and Table 8.16 for the morning and evening peak respectively. In the AM peak there is a more significant increase in journey times along the South Circular Road than previous scenario. However, given the quantum of development and the proportion of traffic using the South Circular Road as the primary access point onto the network this is not unexpected. As before, journey time northbound along Cork Street increase with any additional development in place. Journey times southbound along Cork Street and along Donore Avenue remain similar to the Do-Minimum.

Table 8.15 AM Peak Journey Times – Do-Minimum vs Scenario 3

Route	2029			2039		
	DM	DS3	Diff	DM	DS3	Diff
SCR EB	140	145	3.5%	176	188	7.2%
SCR WB	127	138	9.1%	163	191	16.9%
Canal WB	118	119	0.9%	137	116	-15.4%
Canal EB	172	182	6.0%	182	169	-6.8%
Cork Street NB	198	219	10.7%	232	247	6.4%
Cork Street SB	129	130	0.7%	137	139	1.5%

Donore Ave.NB	182	185	1.5%	171	180	5.5%
Donore Ave. SB	129	125	-3.5%	128	135	6.1%

8.5.8 In the evening peak, the greatest increases in delay are along again the South Circular Road primarily in the westbound, peak direction. There are also increases travelling southbound in the peak direction along Cork Street. The average delay across all routes however is just 4 seconds in 2029 and 11 seconds in 2039.

Table 8.16 PM Peak Journey Times – Do-Minimum vs Scenario 3

Route	2029			2039		
	DM	DS3	Diff	DM	DS3	Diff
SCR EB	138	140	1.1%	145	147	0.8%
SCR WB	125	137	9.2%	151	168	10.7%
Canal WB	172	175	2.0%	181	185	2.3%
Canal EB	154	154	0.0%	173	175	1.2%
Cork Street NB	225	233	3.6%	230	234	2.0%
Cork Street SB	143	152	6.5%	161	178	10.6%
Donore Ave.NB	185	182	-1.6%	189	194	3.0%
Donore Ave. SB	160	153	-4.5%	160	159	-1.1%

9. MITIGATION & SUPPORTING MEASURES

9.1 Overview

9.1.1 Though the impact of the development, individually and cumulatively, is relatively low given the scale of the development and the population accommodated, mitigation measures have been identified as part of the Mobility Management Plan (MMP) to limit any adverse impacts.

9.1.2 The aim of these measures is to further reduce the proportion of car trips, from an already low base, and promote sustainable travel by future residents of the development. These mobility measures will also support and enable those residents who may be living 'car-free' providing them with a range of sustainable mobility options and negating the need to own a car.

9.2 Alternatives & On-Site Mobility Measures

9.2.1 As demonstrated in Chapter 3, the site is easily accessible by public transport, walking and cycling. In some instances, these modes will be faster than travelling by car. To encourage the use of these modes and reduce the need for car ownership, an MMP has been developed. The overall aim of the MMP for the proposed developments is to minimise the proportion of single occupancy vehicle trips and address the forecast transport impacts of the end-users of the site. The objectives can be summarised as follows:

- Consider the needs of residents in relation to accessing facilities for employment, education, health, leisure, recreation and shopping purposes, including identifying local amenities available that reduce the need to travel longer distances;
- Reduce the vehicular traffic generated by the development to a lower level of car trips than that predicted within the Traffic and Transport Assessment – including developing measures to reduce the need to travel;
- Develop good urban design by ensuring permeability of the development to neighbouring areas and provision of cycle facilities including storage and cycle hire.

9.2.2 To achieve the above, a range of "hard" and "soft" tools have been developed with the objective of influencing travel choices. These can be summarised into the following broad areas as follows;

- Mobility Manager
- Reducing the need to travel
- Welcome Travel Pack
- Marketing and Travel Information
- Personalised Travel Planning
- Walking
- Cycling
- Public Transport
- Managing Car Use

9.2.3 Further details on each of the above are provided in the following sections.

9.3 Mobility Manager

9.3.1 A Mobility Manager will be appointed by the management company, and their role is to manage the implementation of the Residential MMP. The role involves being the main point

of contact for travel information, promotion and improvements. This may also be organised in the form of a resident's group once the development is fully occupied and operational. The remit of the Mobility Manager includes the following:

- To develop and oversee the implementation of the initiatives outlined in the MMP Action Plan.
- To monitor the progress of the plan, including carrying out annual Residential Travel Surveys.
- To actively market and promote the social, economic and environmental benefits of sustainable travel to residents.
- To provide sustainable travel information, support and advice to residents including: available bus service timetables, walking and cycling maps, car-sharing, the site's car club and cycle hire services, and local cycling and walking schemes and events.

9.3.2 As the development is BTR, there is a 15-year covenant which includes a management company. This guarantee will enhance the ease and effectiveness of the implementation of the MMP and appointment of the Mobility Manager.

9.4 Reducing the need to travel

9.4.1 The provision of on-site services to reduce the need of residents to utilise a vehicle to travel will be crucial to embedding a sustainable travel culture within the site from the outset. On-site services need to be actively promoted to occupants, and will include:

- Retail/Retail Services/Food & Beverage
- Gym
- Entertainment Areas
- Business area / co-working spaces
- Parcel delivery / collection services
- Childcare Facility
- Residents lounge and communal kitchen/living area

9.5 Welcome Travel Pack

9.5.1 A 'Welcome travel pack' can be provided to all new residents with the intention that each resident is made fully aware of the travel choices available to them. This will also give the best possible opportunity to the new residents to consider more sustainable modes of travel at a key moment of life change (i.e. moving home) – where new travel habits are more easily encouraged.

9.5.2 The Welcome pack will include a variety of sustainable travel information and incentives about the development and the wider local area. It can include measures such as:

- Information on the site's available sustainable travel services (including cycle parking, cycle hire and the Car Club) and on-site facilities (e.g. parcel collection).
- Incentives to trial sustainable travel, such as:
  - Public transport 'taster tickets' via a Leap 'pay as you go' card for each resident.
  - Discounts at a local bike shop to subsidise a bike purchase; first month's free membership of the site's cycle hire scheme; free branded cycling accessories

(e.g. high vis reflectors, seat covers, water bottles); free or subsidised cycle skills training or cycle maintenance training.

- Subsidised initial usage of the site's Car Club (e.g. 3 free hours a month usage for the first three months).

This can be offered to residents on a 'pick-and-mix' basis up to a certain value (e.g. €100), with residents selecting the incentive package that best meet their own individual travel needs.

- Information on services and amenities provided locally (both on-site and nearby), particularly those within walking and cycling distance.
- Maps showing the pedestrian and cycle routes in proximity to the site, including site cycle parking and cycle hire locations; advised routes (with journey times) into the city centre and to public transport interchanges (e.g. Heuston station).
- Information about local public transport services and tickets, including a plan showing the location of bus and Luas stops, and bus routes to rail stations.
- Information on the health benefits of walking and cycling.
- Details of online car-sharing services (e.g. Liftshare and Faxi) along with the benefits of car sharing, such as reduced congestion, better air quality, reduction in traffic noise and cost savings to the individuals taking part.
- Provide information on the financial and environmental costs associated with driving and support regarding tips for green driving techniques.

9.6 Marketing and Travel Information

9.6.1 Marketing and raising awareness will involve directly engaging with individuals and raising awareness of travel options as well the benefits of sustainable and active travel.

9.6.2 The Mobility Manager can market and promote the MMP to residents of the site in the following ways:

- Production and distribution of the Welcome Travel Pack as described above
- Producing dedicated printed Travel Options Leaflets (in addition to the Welcome Packs) and online information which can be personalised to suit the individual needs of the site.
- Once travel surveys have been undertaken, additional leaflets can be provided which are tailored to encourage travel by a specific mode of transport.
- Organising events and activities (e.g. Dr Bike sessions, Pedometer challenges, led walks, cycle training) to coincide with Bike Week, European Mobility Week and any other national / local sustainable travel or community events.
- Displaying regular updates on MMP targets and activities in communal areas of the residential development.
- Promotion of sustainable travel options to residents, focusing marketing initiatives on areas where there is willingness to change and promoting positive messages e.g. getting fit and active, reducing congestion and CO2 emissions.

9.6.3 If a Resident's intranet or App is being developed as part of post-occupation implementation, this is an ideal communication channel to promote sustainable travel information, events and

initiatives to residents. It can also incorporate a real-time user-friendly booking platform for the site's travel facilities including the Car Club and Cycle Hire.

9.6.4 Continued incentivisation of sustainable travel using gamification may also be considered as part of the future development of the MMP – for example through the use of app platforms such as BetterPoints (https://www.betterpoints.ltd/app/), where residents are rewarded for sustainable travel. Typically, initiatives like this are organised on a city-wide or local-area basis – therefore if implemented on a wider scale, the development could benefit from participation in such challenges/competitions.

9.7 Personalised Travel Planning

9.7.1 Personal Travel Planning (PTP) is a well-established and proven method that encourages people to make more sustainable travel choices. Typically using motivational interviewing techniques, it seeks to overcome the habitual use of the car, enabling more journeys to be made on foot, bike, public transport or in shared cars. This is achieved through the provision of tailored information, incentives and motivation directly to individuals to help them voluntarily make more informed travel choices.

9.7.2 PTP tools and techniques that can be used as part of a Residential MMP to encourage people to travel sustainably include:

- One-to-one conversations, either at the doorstep or by telephone, between individuals and trained field officers to encourage and motivate a change in behaviour;
- The provision of information and support on how to travel sustainably (for example, maps or guides about the local bus network, walking and cycling routes, adult and child cycle training and bike maintenance classes.

9.7.3 PTP techniques have been reported to reduce car driver trips by 11% and the distance travelled by car by 12%. A successful PTP can deliver:

- Reduced congestion and reduce car use
- Individual health improvements through increased walking and cycling
- Greater use of public transport
- Better air quality and reduction in traffic noise
- More use of local services by residents
- Support sustainable economic growth by reducing peak hour congestion
- Encourage more active lifestyles to address health and well-being issues
- Promote environmentally responsible travel choices and carbon reduction by helping reduce individual carbon footprints.

9.7.4 PTP forms an important Smarter Choices tool to enable residents to consider sustainable travel and if appropriate upon completion of the Post-Occupation baseline travel survey, could be implemented as part of the Residential Mobility Management Plan.

9.8 Walking

9.8.1 Depending on the outcome of the Post-Occupation Baseline Residents Travel Survey, the following measures could be implemented to promote walking to residents:

- Participation in a Residents' 'Pedometer Challenge'.
- Organise events such weekend led walks.
- Display local walking maps in communal areas (and online if applicable).
- Highlight the direct savings and health and wellbeing benefits of walking.

9.9 Cycling

9.9.1 As detailed earlier, high quality pedestrian and cyclist routes will be provided as part of the design of the development, in addition to secure and accessible cycle parking. To maximise the potential for cycling by residents, the following facilities will also be provided (and promoted to residents):

- On-site cycle hire provision (e.g. through Bleeper Bikes on-street or potentially Brompton folding bike hire solutions) for use by residents
- On-site cycle maintenance and repair facilities (e.g. fixed bike pumps located adjacent to cycle parking; bike repair kits available through the concierge service)

9.9.2 Depending on the outcome of the Post-Occupation Baseline Residents Travel Survey, the following measures can also be implemented to promote cycling to residents:

- Provide and publicise cycle parking for residents and visitors.
- Display local cycling maps in communal areas (and online if applicable).
- Host a Bike Week (www.bikeweek.ie) event for residents, inviting local bike suppliers for residents to try bikes before buying and run bike maintenance / Dr Bike sessions.
- Set up a residents Bicycle User Group (BUG) to promote cycling and encourage Bike Buddy scheme and led cycle rides through this forum.
- Highlight the direct savings and health and wellbeing benefits of cycling.

9.10 Public Transport

9.10.1 Depending on the outcome of the Post-Occupation Baseline Residents Travel Survey, the following measures can be implemented to promote public transport to residents:

- Provide timetables and maps of local bus routes and the nearest bus stops, (including walk times) in communal areas.
- Promotion of the National Public Transport Journey Planner (www.journeyplanner.transportforireland.ie) for travel by bus and rail.
- Promotion of the availability of Real Time Information on the Dublin Bus app and website (www.dublinbus.ie) which provides live information on bus departure times for main bus routes that serve the site).
- If required, liaise with the NTA and local bus operators about any feedback gained from residents such as location of bus stops, timing of routes, or where you have market information about a potential new route.

9.11 Managing Car Use

9.11.1 As detailed earlier, private car parking will be provided as part of the design of the development. To maximise the potential for shared vehicle, use by residents, a car-club facility will be provided suitable for short duration car trios. Go Car have committed to providing 10

on site cars exclusively for the use of residents of the development. As mentioned previously, these will be located in a separate smaller parking area at podium level for convenient access. Go Car have also stated they will provide up to 6 more cars over time subject to demand for the initial cars provided. Up to 50% of these cars will be electric vehicles. In addition, 4 GoCars have been provided for general public use and will be located on street as discussed in Section 6. A letter of commitment from Go Car is included in Appendix B.

9.11.2 Depending on the outcome of the Post-Occupation Baseline Residents Travel Survey, the following measures can also be implemented to help manage residents' car use:

- Promotion of car-sharing services (e.g. Liftshare) in communal areas and online.
- Discounts or promotion of longer-term car-rental services (e.g. through Hertz) for tenants requiring car use for longer periods of time.
- Organise a car-share matching event for residents. This can match residents willing to offer / find a lift for specific journeys.
- Marketing of the financial and carbon benefits of car-sharing incorporated in communication messages to residents.
- Promote green driving techniques and tips.

10. SUMMARY & CONCLUSION

10.1 Summary

10.1.1 This TTA has been undertaken for a planning application to ABP for a proposed mixed-use strategic housing development (SHD) on a site of approx. 5.5 hectares in Dublin 8.

10.1.2 Briefly, it is proposed to demolish the existing vacant buildings and structures on the Bailey Gibson site to make way for development of 345 new homes across 5 blocks, BG 1 - BG 5, ranging in height from 2-7 storeys. The residential blocks will be contained within the Bailey Gibson site. The typology is predominantly apartments with 4 townhouses proposed in block BG5. Over 2 hectares of public open space including a multi-sport play pitch, a playground, 'St. Teresa's Playground', a boulevard, 'St. Teresa's Boulevard', a park, 'Players Park', a plaza, 'Rehoboth Plaza'.

10.1.3 The purpose of this TTA is to quantify the existing transport environment and to detail the results of the assessment to identify impact and influence of traffic generated by the proposed development. The TTA has included an assessment of the Opening Year 2024 and future design years 2029 and 2039 as per TII guidelines.

10.1.4 The TTA has also detailed the proposed access strategy and arrangement to the site, improvements to the existing network required to facilitate this access strategy and proposed mobility measures that will be undertaken to support reduced car traffic from the site.

10.2 Conclusion

10.2.1 The principal conclusions and findings from the TTA are as follows:

- The site is ideally situated with excellent accessibility by all modes to local amenities and employment and leisure centres across the city. The site is served by a number of high frequency bus services along Cork Street and South Circular Road. In addition, the site is within the walking catchment of the Red Line Luas.
- There are also planned improvements to the service frequency and public transport priority along Cork Street and the South Circular Road as part of the Bus Connects network redesign and core corridor project. The cycle facilities along these routes will also be improved as part of the Greater Dublin Area Cycle Network Plan.
- Existing trends for the local area and areas with similar developments show the potential for a high number of walking, cycling and public transport trips from the site, with the car mode share likely to be approximately 15% in the peak hours.
- It is proposed to provide 93no. long stay car parking for residents, of which 4no. will be allocated to each of the Town houses and 89no. will be for the apartment units (0.26 ratio). Based on the site location, availability of alternative modes, proposed on-site mobility services, baseline levels of existing car ownership, national and international guidance, a parking ratio of 0.26 car spaces per apartment unit is proposed for the development. This figure aligns with the current commuting car mode share in the local area, which is 25.9%.
- 10 Go-Cars will be provided on site to provide 'car-free' residents the option to travel by car for leisure trips.
- In Bailey Gibson site, street parking will be provided for visitors to the Residential Development, childcare facility set down and loading. In total there will be 15 visitor spaces on street with 3 additional spaces for childcare facility and taxi set down and one

loading bay. 4 visitor spaces on-street will be reserved for the provision of publicly available Go Car.

- Additional street parking will be provided to serve the Multi-purpose Playing Pitch, in total there will be 33 visitor spaces in the vicinity of the Multi-purpose Playing Pitch and a coach / car set down will be provided along Donore Avenue.
- Residents cycle parking will be provided at a rate of 1 space per bedroom (461no), above the standards set out in the DCC development plan. Secure cycle parking will be provided for staff working in the commercial unit and the childcare facility (7no.). The cycle parking will be provided at ground level or basement level in secure locations. 316 cycle spaces will be provided on street for visitors, including 16 spaces for cargo bikes.
- The internal road network has been designed to maximise priority and permeability for pedestrians and cyclists limiting vehicular priority and speeds through the use of narrow carriageways, surface treatments and shared surfaces. Refuse & emergency vehicles will be able to access the site internal based on the swept path analysis undertaken.
- Based on the modelling and analysis undertake the proposed development will generate 32 vehicular departures and 12 arrivals in the AM peak hour and a further 14 vehicular departures and 26 arrivals in the PM peak. This traffic will primarily travel southbound and outbound from the site in the AM peak using the South Circular Road, Parnell Road and Crumlin Road. The contribution of the traffic to the surrounding junctions is less than 2% in any given year.
- The impact of this additional traffic on the surrounding network has been thoroughly assessed for the opening and forecast years of 2024, 2029 and 2039. As shown, in Section 8 the traffic has limited impact on the wider network with average delays increasing by a maximum of 4.7 seconds. The delays occur primarily along Cork Street/Dolphin's Barn street and the South Circular Road.
- The cumulative impact of proposed development combined with the proposed development of the Player Wills Phase 1 and the full SDRA 12 (i.e. LDA/DCC Donore Project and Player Wills 2) has also been assessed. Even with the combined traffic from all three sites the contribution to any single junction across the local network is less than 5%. The combined traffic results in maximum average delays of 13.5 and 7 seconds in the morning and evening peaks respectively.
- Though the expected car mode share for the site is expected to be very low as a result of the site's location and proximity to faster and more sustainable modes a number of supporting measures have been identified to further decrease the number of car trips and thus lessen the impact on the wider network. The Mobility Management Plan (MMP) presents a list of a range of "hard" and "soft" tools have been developed with the objective of influencing travel choices. These include car sharing, increased cycle parking, subsidised travel/sustainable travel incentives, personalised travel planning and appointment of an on-site mobility manager. Long list of Mitigation and Supporting Measures are described in Section 5.
- In addition, there are a number of measures proposed on the external network to help improve access to the site including: new controlled pedestrian crossing across the South Circular Road; widening of Rehoboth Place providing 2m wide footpaths on both sides; narrowing South Circular Road bend; improve pedestrian facilities along the eastern side of Donore Avenue; new controlled pedestrian crossing and new courtesy crossing in Donore Avenue.

10.2.2 In conclusion, the TTA has demonstrated that the impact on the surrounding network as a result of the development at the Bailey Gibson site will be limited. This is a result of the highly accessible nature of the city by walking, cycling and public transport and the sustainable parking strategy proposed. The proposed roads layout and access arrangements have been

designed to comply with the standards and principles set out in DMURS, the NCM and the DCC Development Plan and reflect the balance of modes accessing the site.

Accordingly, it is concluded that the proposals will not result in a material deterioration of existing road conditions and as a result there are no significant traffic or transportation related reasons that should prevent the granting of planning permission for the proposed development.

Appendix A

TRICS Trip Rate

Calculation Reference: AUDIT-700705-190822-0850

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

01	GREATER LONDON		
	BM	BROMLEY	1 days
	HM	HAMMERSMITH AND FULHAM	2 days
	HO	HOUNSLOW	3 days
	IS	ISLINGTON	3 days
	KI	KINGSTON	1 days
	KN	KENSINGTON AND CHELSEA	1 days
	NH	NEWHAM	1 days
	SK	SOUTHWARK	2 days
	WH	WANDSWORTH	1 days
02	SOUTH EAST		
	BD	BEDFORDSHIRE	3 days
	EX	ESSEX	2 days
	HC	HAMPSHIRE	1 days
04	EAST ANGLIA		
	NF	NORFOLK	1 days
	SF	SUFFOLK	1 days
08	NORTH WEST		
	GM	GREATER MANCHESTER	2 days
09	NORTH		
	CB	CUMBRIA	1 days
10	WALES		
	CO	CONWY	1 days
	DB	DENBIGHSHIRE	1 days
11	SCOTLAND		
	SA	SOUTH AYRSHIRE	1 days
	SR	STIRLING	2 days
14	LEINSTER		
	LU	LOUTH	3 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

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:	6 to 203 (units:)
Range Selected by User:	6 to 493 (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 06/06/19

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	6 days
Tuesday	11 days
Wednesday	6 days
Thursday	8 days
Friday	6 days

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

Selected survey types:

Manual count	37 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	7
Edge of Town Centre	25
Neighbourhood Centre (PPS6 Local Centre)	5

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:

Development Zone	2
Residential Zone	17
Built-Up Zone	14
High Street	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:

C3	37 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	2 days
5,001 to 10,000	3 days
10,001 to 15,000	5 days
15,001 to 20,000	3 days
25,001 to 50,000	16 days
50,001 to 100,000	4 days
100,001 or More	4 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	1 days
25,001 to 50,000	3 days
50,001 to 75,000	7 days
75,001 to 100,000	3 days
125,001 to 250,000	4 days
250,001 to 500,000	3 days
500,001 or More	16 days

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

Car ownership within 5 miles:

0.5 or Less	5 days
0.6 to 1.0	15 days
1.1 to 1.5	17 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:

Yes	7 days
No	30 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	22 days
2 Poor	2 days
3 Moderate	3 days
5 Very Good	3 days
6a Excellent	3 days
6b (High) Excellent	4 days

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

LIST OF SITES relevant to selection parameters

1 BD-03-C-01 BLOCKS OF FLATS BEDFORDSHIRE
WING ROAD
LEIGHTON BUZZARD
LINSLADE
Edge of Town Centre
Residential Zone
Total Number of dwellings: 175
Survey date: TUESDAY *15/05/18* *Survey Type: MANUAL*

2 BD-03-C-02 BLOCKS OF FLATS BEDFORDSHIRE
STANBRIDGE ROAD
LEIGHTON BUZZARD

Edge of Town Centre
Residential Zone
Total Number of dwellings: 62
Survey date: TUESDAY *15/05/18* *Survey Type: MANUAL*

3 BD-03-C-03 BLOCKS OF FLATS BEDFORDSHIRE
COURT DRIVE
DUNSTABLE

Edge of Town Centre
No Sub Category
Total Number of dwellings: 146
Survey date: TUESDAY *15/05/18* *Survey Type: MANUAL*

4 BM-03-C-01 BLOCKS OF FLATS BROMLEY
RINGER'S ROAD
BROMLEY

Town Centre
Built-Up Zone
Total Number of dwellings: 160
Survey date: MONDAY *12/11/18* *Survey Type: MANUAL*

5 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*

6 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*

7 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*

8 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*

LIST OF SITES relevant to selection parameters (Cont.)

9 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*

10 EX-03-C-01 FLATS ESSEX
WESTCLIFF PARADE
SOUTHEND-ON-SEA
WESTCLIFF
Edge of Town Centre
Residential Zone
Total Number of dwellings: 6
Survey date: TUESDAY *22/10/13* *Survey Type: MANUAL*

11 EX-03-C-02 BLOCK OF FLATS ESSEX
WESTCLIFF PARADE
SOUTHEND-ON-SEA
WESTCLIFF
Edge of Town Centre
Residential Zone
Total Number of dwellings: 94
Survey date: TUESDAY *22/10/13* *Survey Type: MANUAL*

12 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*

13 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*

14 HC-03-C-01 BLOCKS OF FLATS HAMPSHIRE
CROSS STREET
PORTSMOUTH

Edge of Town Centre
Built-Up Zone
Total Number of dwellings: 90
Survey date: TUESDAY *05/06/18* *Survey Type: MANUAL*

15 HM-03-C-01 BLOCK OF FLATS HAMMERSMITH AND FULHAM
VANSTON PLACE
FULHAM

Town Centre
High Street
Total Number of dwellings: 42
Survey date: WEDNESDAY *16/07/14* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

16 HM-03-C-02 BLOCKS OF FLATS HAMMERSMITH AND FULHAM
GLENTHORNE ROAD
HAMMERSMITH

Town Centre
Built-Up Zone
Total Number of dwellings: 194
Survey date: TUESDAY *30/04/19* *Survey Type: MANUAL*

17 HO-03-C-02 BLOCK OF FLATS HOUNSLOW
HIGH STREET
BRENTFORD

Town Centre
Built-Up Zone
Total Number of dwellings: 86
Survey date: WEDNESDAY *03/09/14* *Survey Type: MANUAL*

18 HO-03-C-03 BLOCKS OF FLATS HOUNSLOW
COMMERCE ROAD
BRENTFORD

Edge of Town Centre
Development Zone
Total Number of dwellings: 150
Survey date: FRIDAY *18/11/16* *Survey Type: MANUAL*

19 HO-03-C-04 BLOCKS OF FLATS HOUNSLOW
LONDON ROAD
ISLEWORTH

Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of dwellings: 203
Survey date: TUESDAY *03/07/18* *Survey Type: MANUAL*

20 IS-03-C-05 BLOCK OF FLATS ISLINGTON
LEVER STREET
FINSBURY

Edge of Town Centre
Built-Up Zone
Total Number of dwellings: 15
Survey date: WEDNESDAY *29/06/16* *Survey Type: MANUAL*

21 IS-03-C-06 BLOCK OF FLATS ISLINGTON
CALEDONIAN ROAD
HOLLOWAY

Edge of Town Centre
Residential Zone
Total Number of dwellings: 14
Survey date: MONDAY *27/06/16* *Survey Type: MANUAL*

22 IS-03-C-07 BLOCK OF FLATS ISLINGTON
CITY ROAD
ISLINGTON

Edge of Town Centre
Development Zone
Total Number of dwellings: 185
Survey date: THURSDAY *06/06/19* *Survey Type: MANUAL*

23 KI-03-C-03 BLOCK OF FLATS KINGSTON
PORTSMOUTH ROAD
SURBITON

Edge of Town Centre
Residential Zone
Total Number of dwellings: 20
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

24 KN-03-C-03 BLOCK OF FLATS KENSINGTON AND CHELSEA
ALLEN STREET
KENSINGTON

Edge of Town Centre
Residential Zone
Total Number of dwellings: 72
Survey date: FRIDAY *11/05/12* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

25 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*

26 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*

27 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*

28 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*

29 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*

30 NH-03-C-01 BLOCK OF FLATS NEWHAM
ARTHINGWORTH STREET
STRATFORD

Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of dwellings: 12
Survey date: THURSDAY *14/11/13* *Survey Type: MANUAL*

31 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*

32 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*

LIST OF SITES relevant to selection parameters (Cont.)

33 SK-03-C-01 BLOCK OF FLATS SOUTHWARK
PARK STREET
SOUTHWARK

Edge of Town Centre
Built-Up Zone
Total Number of dwellings: 53
Survey date: FRIDAY *19/09/14* *Survey Type: MANUAL*

34 SK-03-C-02 BLOCK OF FLATS SOUTHWARK
LAMB WALK
BERMONDSEY

Edge of Town Centre
Built-Up Zone
Total Number of dwellings: 29
Survey date: THURSDAY *23/04/15* *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*

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 WH-03-C-01 BLOCKS OF FLATS WANDSWORTH
AMIES STREET
CLAPHAM JUNCTION

Edge of Town Centre
Residential Zone
Total Number of dwellings: 30
Survey date: WEDNESDAY *09/05/12* *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.

Parameter summary

Trip rate parameter range selected:	6 - 203 (units:)
Survey date date range:	01/01/11 - 06/06/19
Number of weekdays (Monday-Friday):	37
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

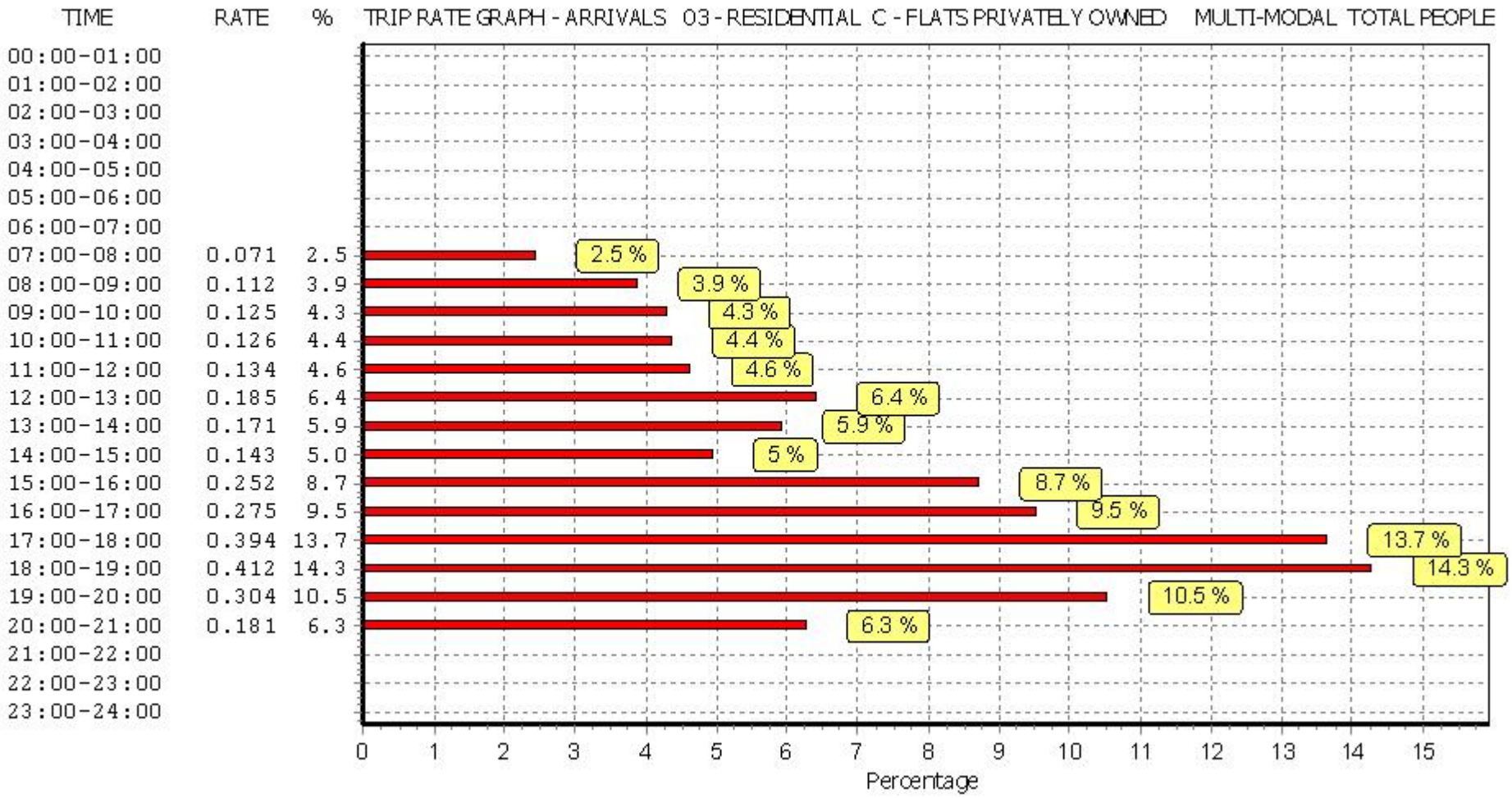
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected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

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

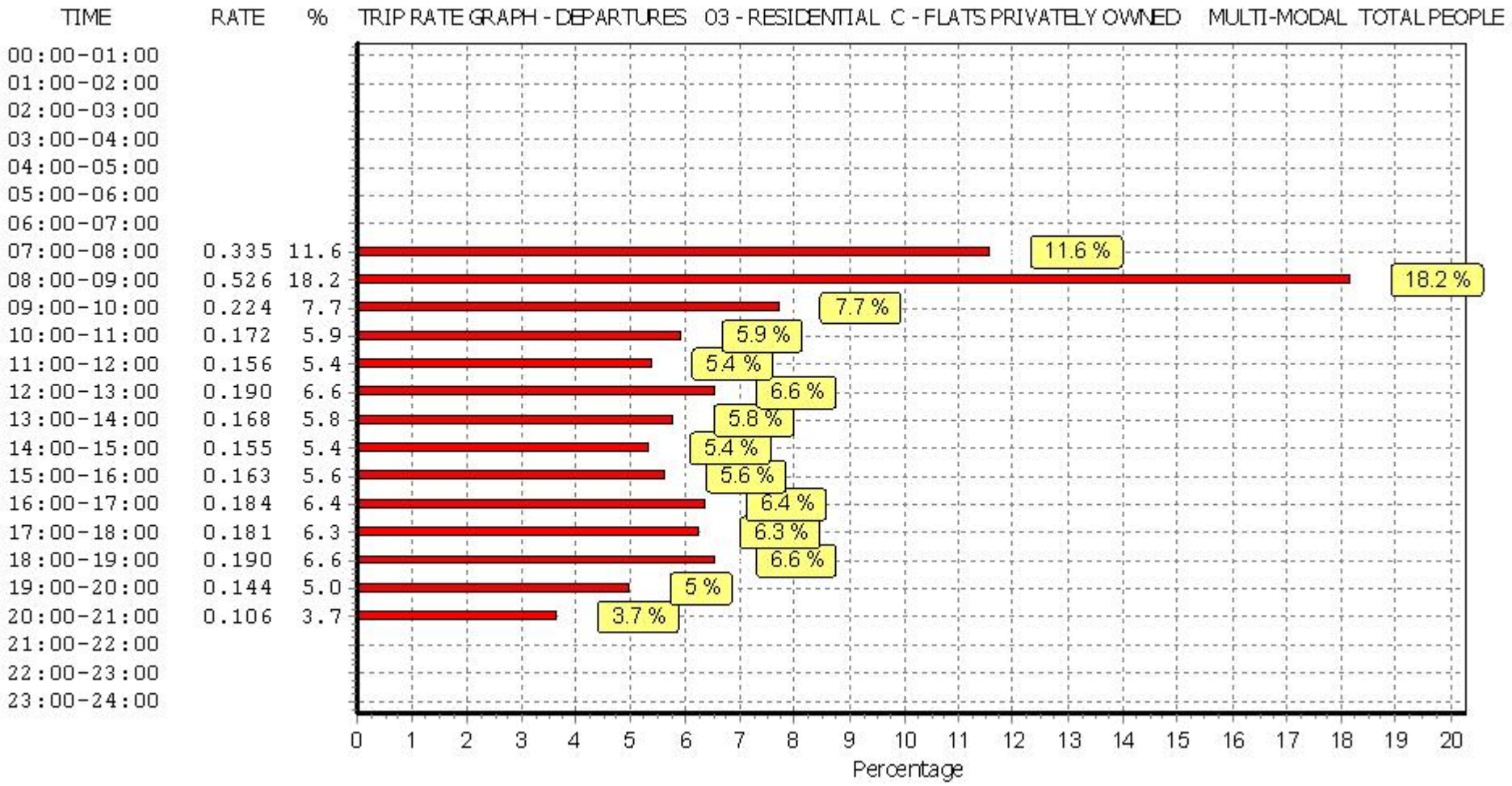
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	37	73	0.071	37	73	0.335	37	73	0.406
08:00 - 09:00	37	73	0.112	37	73	0.526	37	73	0.638
09:00 - 10:00	37	73	0.125	37	73	0.224	37	73	0.349
10:00 - 11:00	37	73	0.126	37	73	0.172	37	73	0.298
11:00 - 12:00	37	73	0.134	37	73	0.156	37	73	0.290
12:00 - 13:00	37	73	0.185	37	73	0.190	37	73	0.375
13:00 - 14:00	37	73	0.171	37	73	0.168	37	73	0.339
14:00 - 15:00	37	73	0.143	37	73	0.155	37	73	0.298
15:00 - 16:00	37	73	0.252	37	73	0.163	37	73	0.415
16:00 - 17:00	37	73	0.275	37	73	0.184	37	73	0.459
17:00 - 18:00	37	73	0.394	37	73	0.181	37	73	0.575
18:00 - 19:00	37	73	0.412	37	73	0.190	37	73	0.602
19:00 - 20:00	9	108	0.304	9	108	0.144	9	108	0.448
20:00 - 21:00	9	108	0.181	9	108	0.106	9	108	0.287
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.885			2.894			5.779

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.

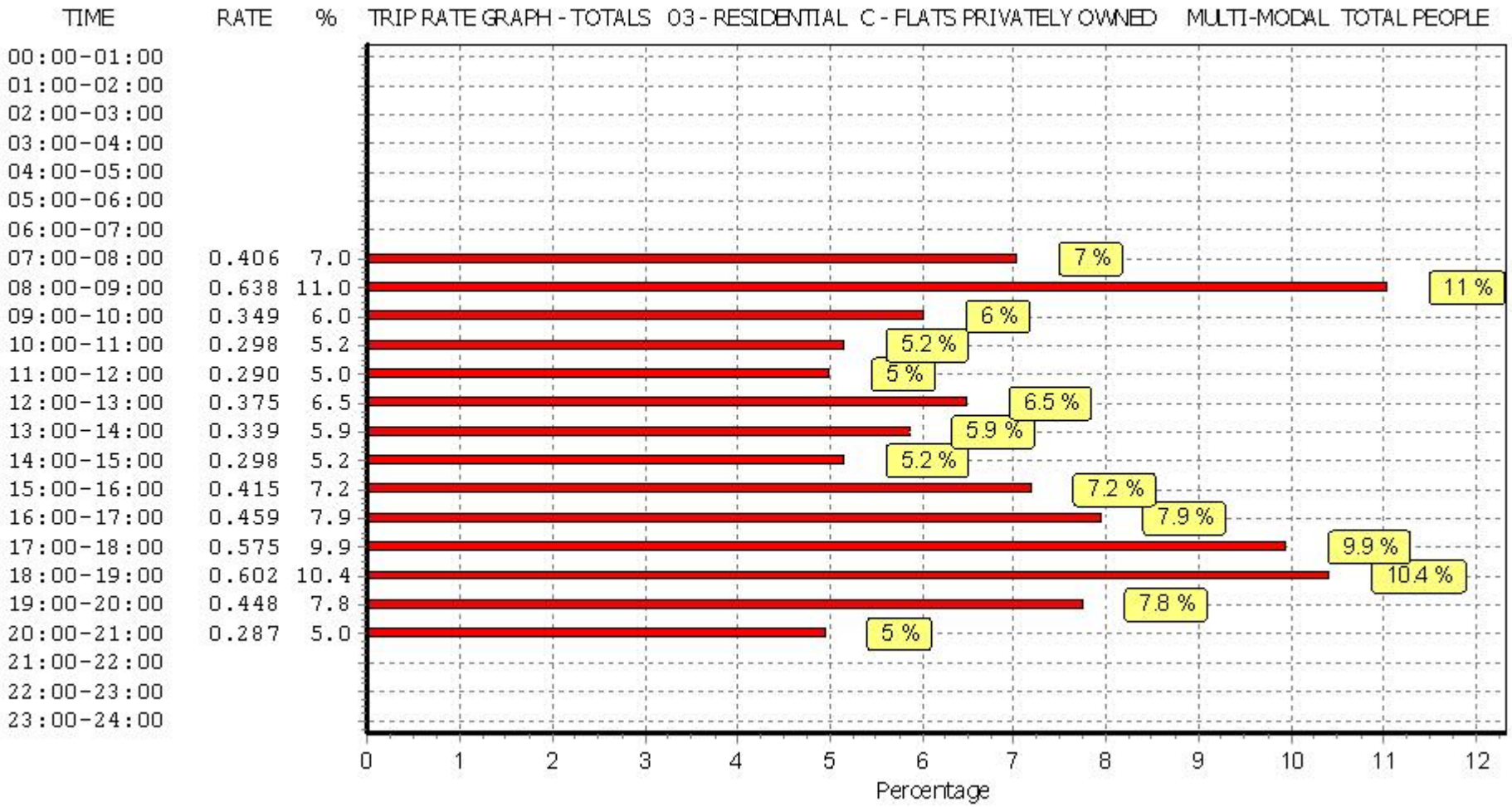
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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.



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-700705-190822-0811

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY
MULTI-MODAL VEHICLES

Selected regions and areas:

04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
09	NORTH		
	TW	TYNE & WEAR	2 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: Gross floor area
Actual Range: 400 to 750 (units: sqm)
Range Selected by User: 176 to 2350 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/11 to 21/05/19

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
Tuesday	3 days
Wednesday	2 days

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

Selected survey types:

Manual count	6 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 Centre	2
Suburban Area (PPS6 Out of Centre)	4

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	5
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:

D1	6 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:

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

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

Population within 5 miles:

75,001 to 100,000	2 days
125,001 to 250,000	2 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:

0.5 or Less	1 days
0.6 to 1.0	2 days
1.1 to 1.5	2 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	6 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	6 days

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

LIST OF SITES relevant to selection parameters

1 CA-04-D-02 NURSERY CAMBRIDGESHIRE
EASTFIELD ROAD
PETERBOROUGH

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 400 sqm
Survey date: TUESDAY *18/10/16* *Survey Type: MANUAL*

2 CH-04-D-01 NURSERY CHESHIRE
CHESTER ROAD
MACCLESFIELD

Edge of Town Centre
No Sub Category
Total Gross floor area: 500 sqm
Survey date: MONDAY *24/11/14* *Survey Type: MANUAL*

3 LN-04-D-01 NURSERY LINCOLNSHIRE
NEWARK ROAD
LINCOLN
SWALLOW BECK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 600 sqm
Survey date: TUESDAY *31/10/17* *Survey Type: MANUAL*

4 SF-04-D-03 NURSERY SUFFOLK
CAMP ROAD
LOWESTOFT

Edge of Town Centre
Residential Zone
Total Gross floor area: 750 sqm
Survey date: WEDNESDAY *10/12/14* *Survey Type: MANUAL*

5 TW-04-D-02 NURSERY TYNE & WEAR
ETTRICK GROVE
SUNDERLAND
HIGH BARNES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 500 sqm
Survey date: WEDNESDAY *28/11/12* *Survey Type: MANUAL*

6 TW-04-D-03 NURSERY TYNE & WEAR
JUBILEE ROAD
NEWCASTLE UPON TYNE
GOSFORTH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 725 sqm
Survey date: TUESDAY *21/05/19* *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.

Parameter summary

Trip rate parameter range selected:	400 - 750 (units: sqm)
Survey date date range:	01/01/11 - 21/05/19
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
MULTI-MODAL TOTAL PEOPLE
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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	579	2.302	6	579	0.489	6	579	2.791
08:00 - 09:00	6	579	5.813	6	579	2.331	6	579	8.144
09:00 - 10:00	6	579	1.496	6	579	0.806	6	579	2.302
10:00 - 11:00	6	579	0.489	6	579	0.374	6	579	0.863
11:00 - 12:00	6	579	1.151	6	579	1.640	6	579	2.791
12:00 - 13:00	6	579	2.676	6	579	2.791	6	579	5.467
13:00 - 14:00	6	579	1.209	6	579	1.612	6	579	2.821
14:00 - 15:00	6	579	0.518	6	579	0.633	6	579	1.151
15:00 - 16:00	6	579	1.669	6	579	1.468	6	579	3.137
16:00 - 17:00	6	579	1.813	6	579	3.079	6	579	4.892
17:00 - 18:00	6	579	2.590	6	579	4.489	6	579	7.079
18:00 - 19:00	6	579	0.115	6	579	2.043	6	579	2.158
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00	1	400	0.000	1	400	0.000	1	400	0.000
21:00 - 22:00	1	400	0.000	1	400	0.000	1	400	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			21.841			21.755			43.596

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

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Appendix B

Go Car Letter of Commitment

Hines Real Estate Ireland Limited
1st Floor, Block 2
Clanwilliam Court
Clanwilliam Place
Dublin 2

31/03/2022

To Whom It May Concern,

This is a letter to confirm that GoCar intends to provide a total of 14 shared GoCar car club vehicles in the proposed residential development at the Bailey Gibson site on South Circular Road. GoCar representatives have discussed the project with representatives of Systra who are the Engineers for the Project, and are excited to provide a car sharing service at this location.

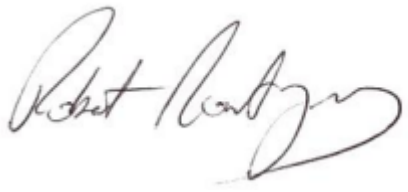
It is understood that ten (10) of the vehicles at this development will be exclusively shared between the residents of the development. GoCar will work with the eventual management company to arrange the process for communicating the service to residents and adding residents to the service. The remaining four (4) vehicles will be placed at surface level of the development, at a point that is accessible to other local residents. This vehicle will be open to use for all GoCar members.

GoCar is Ireland's leading car sharing service with over 60,000 members and over 860 cars and vans on fleet. Each GoCar which is placed in a community has the potential to replace the journeys of up to 15 private cars. The Department of Housing's Design Standards for New Apartments - Guidelines for Planning Authorities 2020 outline: "For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure... provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles."

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

By having GoCar car sharing vehicles in a development such as this, the residents and existing GoCar members therein will have access to pay-as-you-go driving, in close proximity to their homes or workplace, will increase usership of the service.

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



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

Appendix C

Quality Audit

TABLE OF CONTENTS

1. INTRODUCTION

1.1 General

This report was prepared in response to a request from An Bord Pleanála to provide a Quality Audit as part of the Planning Application of a proposed Strategic Housing Development (SHD) at the Former Bailey Gibson Site, former Player Wills Site, Dublin City Council land (formerly Boys Brigade pitch and part of St. Teresa's Gardens (all within Strategic Development Regeneration Area 12)), South Circular Road and Donore Avenue, Dublin 8.

The Quality Audit shall consider the following elements:

- **Stage 1 Road Safety Audit:** Prepared by Barry and Partners Consulting Engineers
- **Collision History:** Prepared by SYSTRA Limited
- **Accessibility and Walkability Audit:** Prepared by SYSTRA Limited with information obtained from the wider multidisciplinary team
- **Non-Motorised User and Cycle Audit:** Prepared by SYSTRA Limited with information obtained from the wider multidisciplinary team

The Quality Audit followed extensive work undertaken to deliver the Traffic and Transport Assessment and the Mobility Management Plan Reports for the proposed development. The completion of these reports included a site visit the 17th of November 2021 and the continued cooperation between the different disciplines of the design team.

This report contains three primary sections, with each section focussing on different implication to the users of the development. **The Road Safety Audit** identifies safety implications of the scheme, whilst the **Accessibility and Walkability Audit** focuses on implications for vehicles and pedestrians associated with the development. Finally, the Non-Motorised User and Cycle Audit's primary concern is on cycle use, as pedestrians are discussed in the prior section, and there are currently no requirements for equestrians as part of this development.

1.2 Background

The Bailey Gibson application site is located between the South Circular Road and Cork Street in Dublin 8. It borders on the south the South Circular Road, on the west Rehoboth Place & Rehoboth Avenue, on the east Donore Avenue and on the north Margaret Kennedy Road. The proposed strategic housing development comprises 345 no. Build to Rent and Build to Sell residential units, tenant amenities, retail space and crèche.

Vehicular Access to the residential development will be limited to a one-way entrance via South Circular Road/Rehoboth Place and one-way exit through the existing entrance directly onto the South Circular Road. Both junctions off the South Circular Road will be priority junctions. The road network will ultimately link to the DCC lands north and east of the development which will provide further accesses to Donore Avenue. A secondary access will be provided to the north of Rehoboth Avenue; however, this will provide access to just 4 houses and accompanying parking spaces. The

access to the multi-purpose playing pitch on-street car parking will be from Donore Avenue, along Margaret Kennedy Road and the proposed new road Western Connection Road, which will be a no through road with a turning facility for cars.

2. STAGE 1 ROAD SAFETY AUDIT

An independent Stage 1 Road Safety Audit of the proposed development street layout and access arrangements was undertaken by **Barry and Partners Consulting Engineers** on behalf of the Applicant in December 2021.
The recommended measures were discussed with DCC and the wider team. Design changes have been made in response to the accepted recommendations of the RSA.

Systra

Bailey Gibson Revised Application Residential Development

Stage 1 Road Safety Audit

December 2021

BARRY & PARTNERS
consulting engineers
CIVIL • STRUCTURAL • ENVIRONMENTAL • TRANSPORTATION

Document Control Sheet

Client:	Systra
Project Title:	Bailey Gibson Revised Application Residential Development
Document Title:	Stage 1 Road Safety Audit
File Name:	780419-20640-RP-0006_Stage_1_Road_Safety_Audit__P01

Table of Contents ***(incl. Y/N)***	**List of Tables** *(incl. Y/N)*	**List of Figures** ***(incl. Y/N)***	**Pages of Text** ***(No.)***	**Appendices** ***(No.)***
Y	N	N	14 No.	1 No.

Document Revision				**Document Verification**			
Issue Date *(DD/MM/YY)*	**Revision Code**	**Suitability Code**	**Author** *(Initials)*	**Checker** *(Initials)*	***Reviewer*** As Per PMP *(Initials)*	**Approver** *As Per PMP (Initials)*	**Peer Review** *(Initials or N/A)*
Add hyperlink to Verification Email on PIM Register for each issue							
22/12/2021	P01	S03	TD	AM	-	AM	N/A

Table of Contents

SECTION 1: Introduction

This Road Safety Audit report will assess the proposed changes to and impact upon existing road infrastructure for the proposed housing development at the Bailey Gibson site, South Circular Road, Dublin 8. It will also examine the internal road layout within the site.

The proposed development includes:

- Apartments and townhouses.
- Underground parking.
- On-street visitor car parking.
- Concierge offices.
- Gymnasium.
- Childcare facility.
- Retail facilities.
- Restaurant/café/bar.
- Communal gardens, parks and open spaces.
- Multi-purpose playing pitch.
- Community resource building.
- Internal roads.

This report makes up part of the accompanying documents for a planning application to Dublin City Council for the proposed development.

The site is located in Dolphin's Barn in Dublin 12, on the South Circular Road and borders Rehoboth Place to the West and Donore Avenue to the East. *See* Figure 1.1.

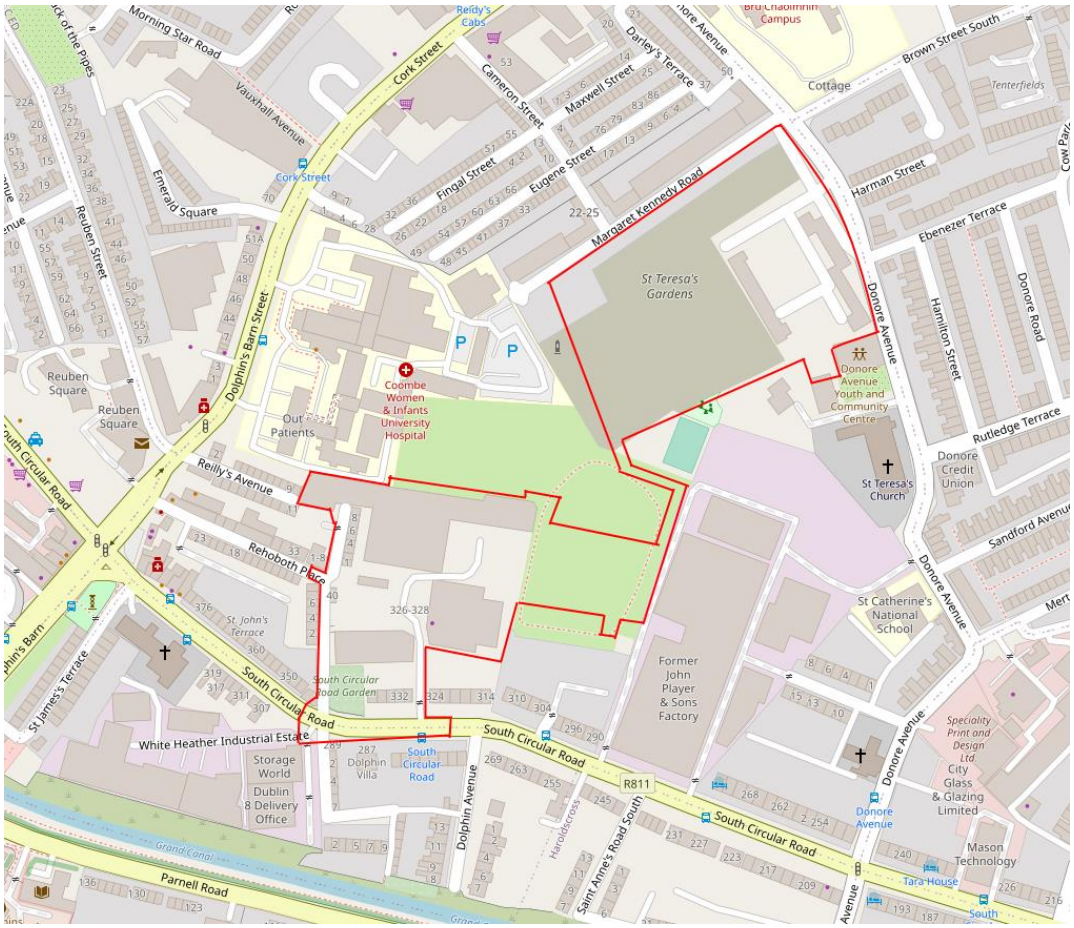


Figure 1: Site Location

This audit has been prepared in accordance with the TII publication "GE-STY-01024 - Road Safety Audit". The Audit Team has examined and reported on only the road safety implications of the scheme and has not examined or verified the compliance of the design to any other criteria. This audit is confined to the details as shown on the scheme drawing provided. Identified problems and recommendations are detailed in Section 2.

The Audit Team is as follows:

Tristan Dunne BE MEngSc CEng MIEI
Audit Team Leader,
J. B. Barry and Partner's Ltd,
Classon House,
Dundrum Business Park,
Dublin 14.

Alan Moriarty BEng BEng (Ord) MSc HDip CEng MIEI MTPS
Audit Team Member,
J. B. Barry and Partner's Ltd,
Classon House,
Dundrum Business Park,
Dublin 14.

The site visit for this audit was carried out on Wednesday 22nd December 2021 during daylight hours by the audit team. Weather conditions during the site visit were dry, road surfaces were wet and traffic volumes were low.

An Audit Team Statement is included at the end of this report.

Drawings and documents supplied for this audit comprise the following drawings:

- SYS-BG-1.1 A "External and Internal Road Layout Sheet 1 of 2"
- SYS-BG-1.2 A "External and Internal Road Layout Sheet 2 of 2"
- SYS-BG-2.1 A "Vehicle Tracking – Fire Tender Sheet 1 of 2"
- SYS-BG-2.2 A "Vehicle Tracking – Fire Tender Sheet 2 of 2"
- SYS-BG-3 A "Vehicle Tracking – Refuse Truck and Family Car"

SECTION 2: Audit Items

2.1 Problem: On-Street Parking at Controlled Pedestrian Crossing

There are no restrictions proposed for car parking on the south side of the road beside the controlled pedestrian crossing on South Circular Road. The inter-visibility between drivers and pedestrians could be blocked if vehicles are parked here. Also a high-sided vehicle parked here could block the view to signal heads leading to some drivers failing to stop at the signals and colliding with pedestrians.

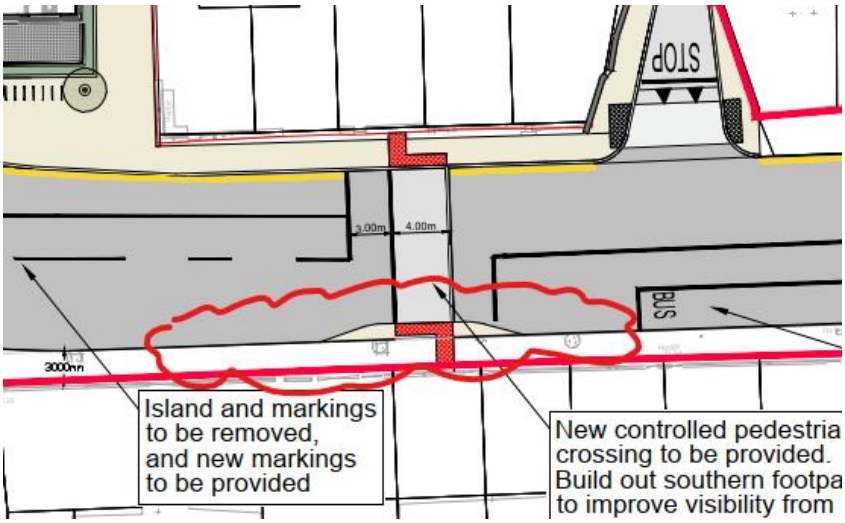


Figure 1

Recommendation

Provide the required visibility splays by prohibiting on-street parking at the controlled pedestrian crossing on South Circular Road.

2.2 Problem: Parking at New Build-Out will Restrict Visibility

The proposed build-out at Prestfield Cottages will bring parked cars closer to the roadway and thereby potentially restricting the view to the right for drivers emerging from the laneway. This could lead to drivers edging out into the running carriageway, risk taking and side-on collisions involving other vehicles.

Recommendation

Introduce parking restrictions along this build-out.

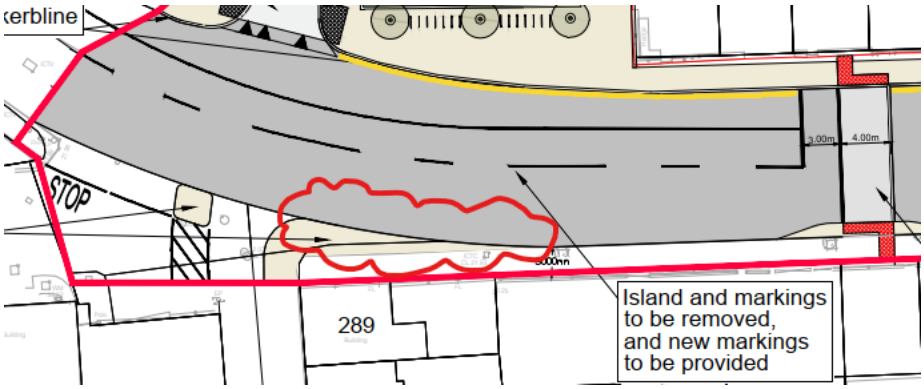


Figure 2

2.3 Problem: Existing Trees Could Restrict Visibility to Signals

Existing trees on South Circular Road could restrict visibility to the proposed signals for the pedestrian crossing.

Recommendation

Existing trees should be pruned or removed as required to establish unrestricted visibility to proposed traffic signal heads.

2.4 Problem: Restricted Visibility Exiting from Rehoboth Place

The existing visibility to the right for drivers emerging from Rehoboth Place to South Circular Road is very limited. Drivers must edge out into the bus lane to get a better view and this could lead to side-on collisions involving other vehicles. Additionally, cars legally parked in the South Circular Road bus lane could further restrict visibility.

Figure 3

Recommendation

Extend the existing parking restrictions on South Circular Road to afford better visibility for drivers exiting from Rehoboth Place. Consider moving the junction further east to afford better visibility to the right. Consider making the junction entry only.

2.5 Problem: Insufficient Space for Turning Vehicles at Cul-de-sac

The proposed cul-de-sac on Rehoboth Ave does not have sufficient space for drivers to turn and could lead to drivers reversing back along the roadway, potentially colliding with other road users.

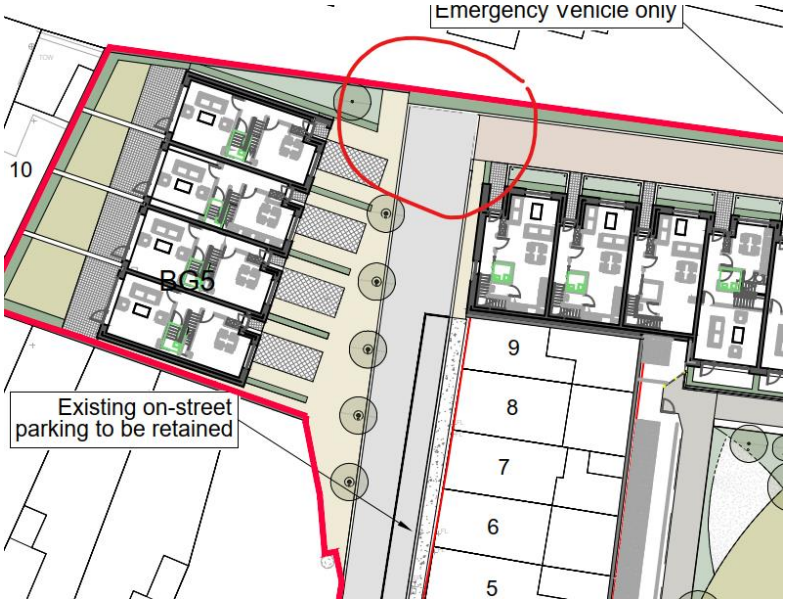


Figure 4

Recommendation

Provide sufficient space for drivers to perform a U-turn at the end of the cul-de-sac.

2.6 Problem: Tight Junction Corner

The tight junction corner at the location indicated, may result in drivers mounting the kerb and endangering pedestrians.

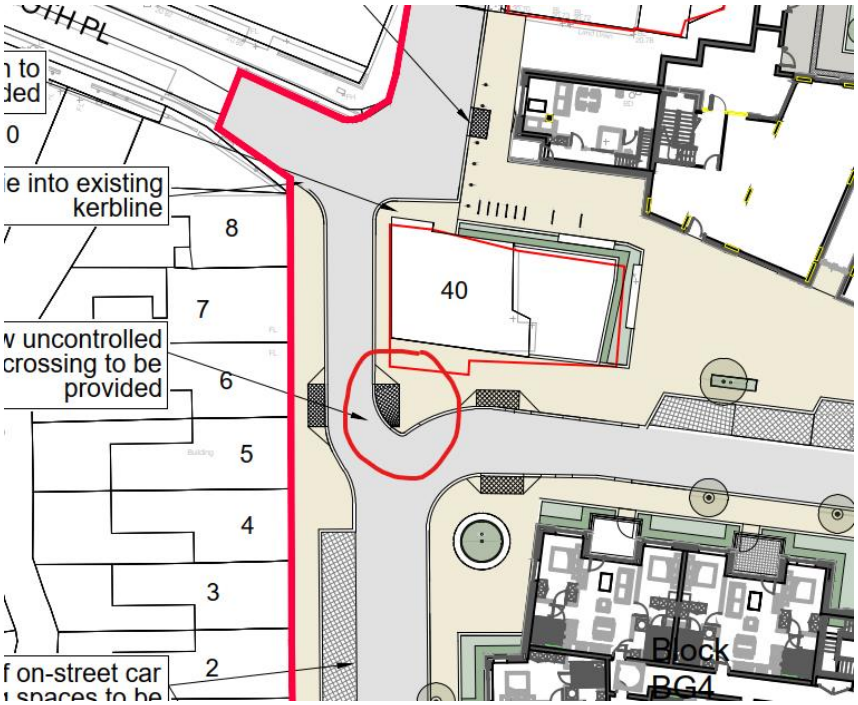


Figure 5

Recommendation

Ensure that drivers can manoeuvre at the junction without overrunning the footpaths.

2.7 Problem: Width of One-Way Road

The one-way vehicular route exiting onto South Circular Road is shown as 3.7m wide. This width is slightly excessive: a narrower width would discourage speeding and allocate more space for pedestrians. A narrower width would also discourage drivers from parking on the road and discourage overtaking of cyclists.

Figure 6

Recommendation

Narrow the road width so that speeding, parking on the road and overtaking of cyclists is discouraged.

2.8 Problem: Long Uninterrupted Straight Roads

The proposed scheme will incorporate two long uninterrupted straight roads. There is limited traffic calming and tree planting proposed on the streets. This could encourage excessive and inappropriate speed and present a hazard for all road users, particularly pedestrians and cyclists.

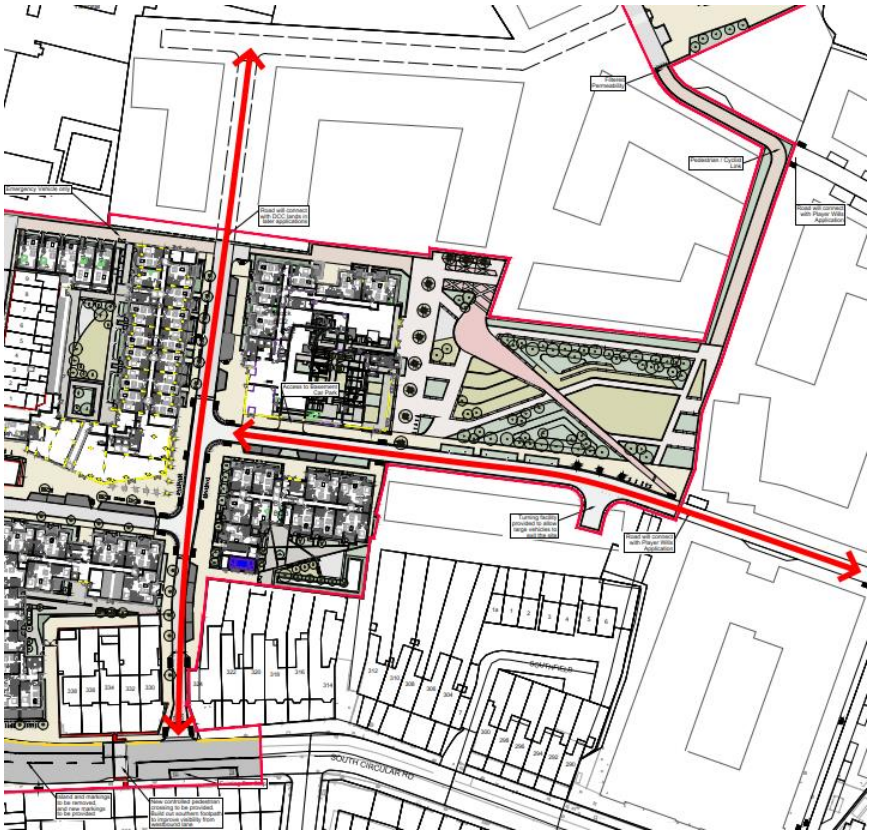


Figure 7

Recommendation

The streets should be engineered to be naturally traffic calmed without reliance upon traffic signs or road markings. The streets should be tree lined to augment any traffic calming.

2.9 Problem: Pedestrian/Cycle Route Unnecessarily Stops at Roadway

The proposed pedestrian/cycle route as indicated below, unnecessarily stops at the proposed access road. As there is likely to be a high use of this off-road leisure facility by families with young children, the pathway should be continuous here to avoid any interaction with motor vehicles.

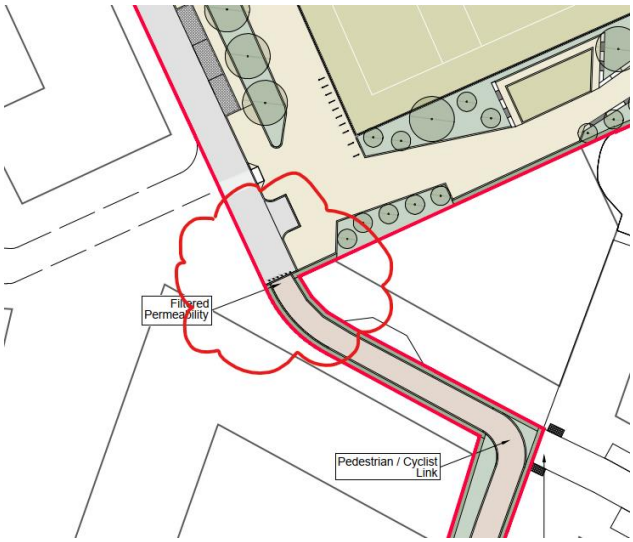


Figure 8

Recommendation

The roadway should terminate further north of this location thereby allowing for a continuous off-road and safe environment for families.

2.10 Problem: Restricted Visibility at Controlled Crossing on Donore Ave

Retention of existing car parking on Donore Avenue could restrict inter-visibility between drivers and pedestrians or could cause high-sided parked vehicles to block the view to traffic signal heads potentially resulting in drivers failing to stop at the lights and colliding with pedestrians.

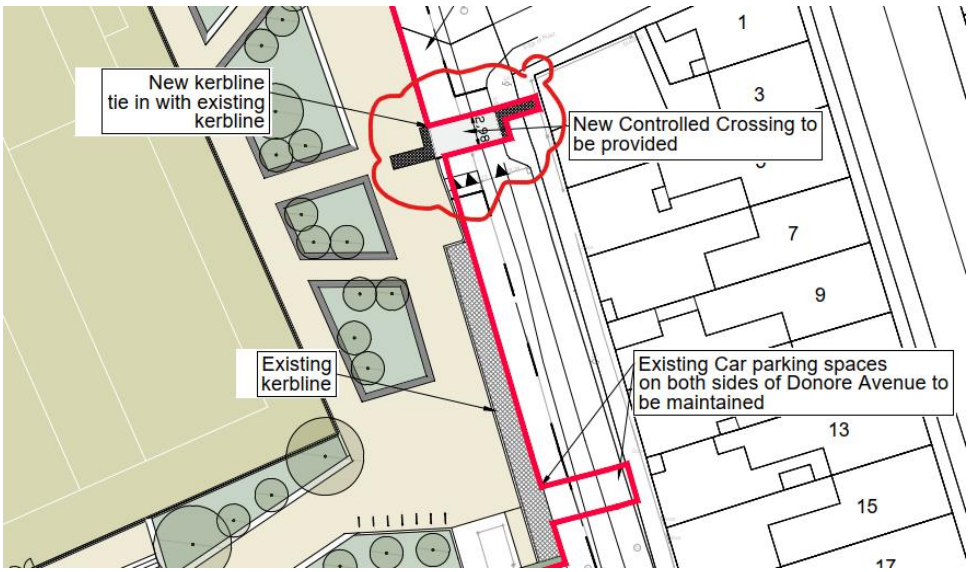


Figure 9

Figure 10

Recommendation

Introduce restricted parking at the crossing.

2.11 Problem: Restricted Visibility Exiting from Margaret Kennedy Road

The existing visibility to the left for drivers emerging from Margaret Kennedy Road to Donore Avenue is restrictive. Drivers must edge out into the carriageway to get a better view and this could lead to side-on collisions involving other vehicles. Additionally, cars legally parked on Donore Avenue could further restrict visibility.

Figure 11

Recommendation

Introduce restricted parking at the junction. Consider signalising the junction.

2.12 Problem: Potential for Excessive Speed on Margaret Kennedy Road

Margaret Kennedy Road is proposed to be integrated into the plan for the recreational area and will have parking and open access along the roadway. There is potential for a lot of activity here involving children. The long straight road with generous width and limited existing traffic calming, does not discourage inappropriate speed. There is therefore a risk of pedestrians being struck by vehicles travelling too fast. It was observed during the site visit that Margaret Kennedy Road may be currently used as a “rat run” for drivers coming from Cork Street.

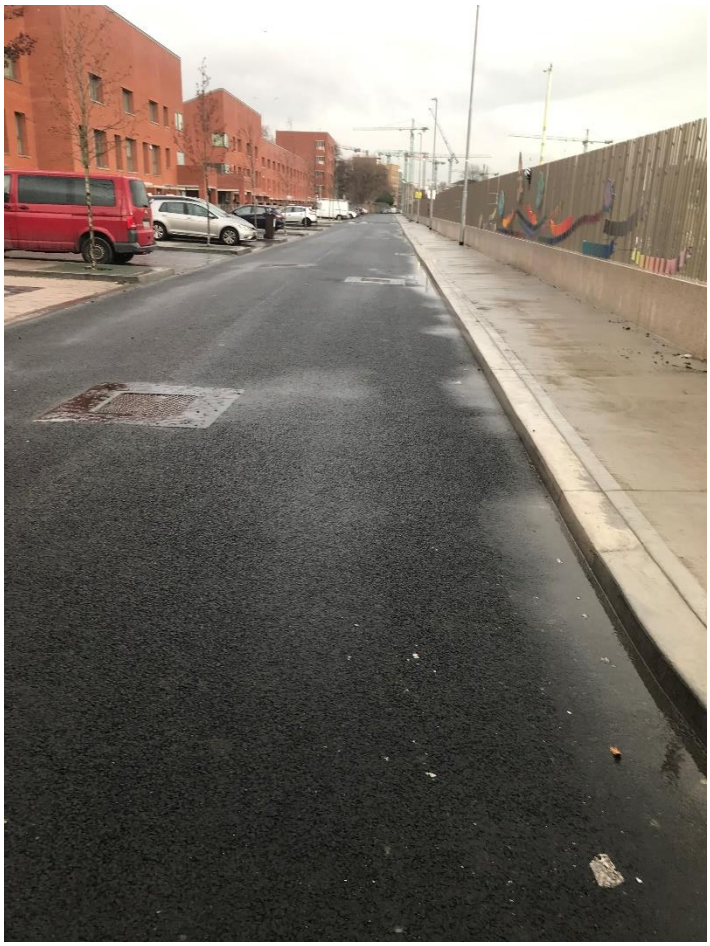


Figure 12

Recommendation

Re-engineer the street to be naturally traffic calmed without reliance upon traffic signs or road markings. Reduce the road width and provide tree planting close to the carriageway. Measures should be put in place to discourage “rat running” traffic.

SECTION 3: COMMENTS

3.1 Comment: Missed Opportunity at Pedestrian Crossing

There is a missed opportunity to provide a larger build-out at the South Circular Road controlled pedestrian crossing, e.g. equivalent to the width of on-street car parking at this location, thus reducing the length of crossing for pedestrians.

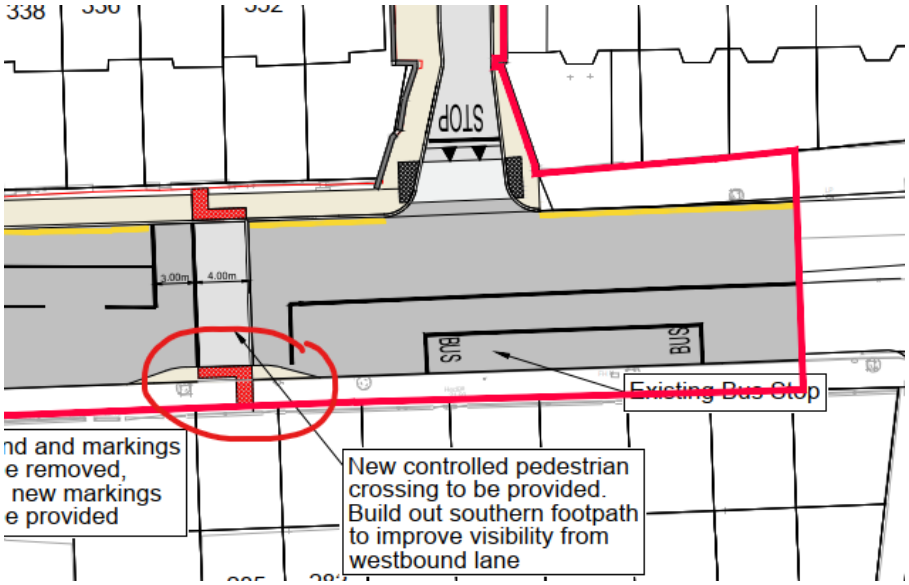


Figure 13

3.2 Comment: Unnecessary Flaring Out of Approach to Junction

The proposal to flare out the exit onto South Circular Road appears to be unnecessary based on the Autotrack drawings provided. A narrower exit would discourage drivers from attempting to enter the one-way street from South Circular Road, provide more footpath space and provide a narrower pedestrian crossing.

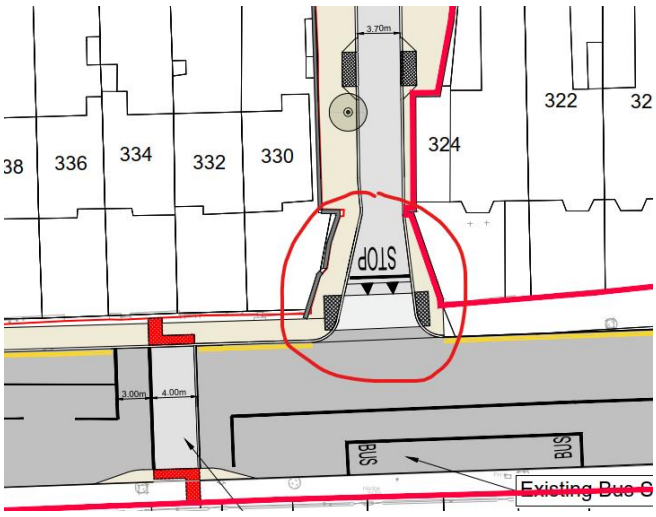


Figure 14

3.3 Comment: Access to Parking Bays

There is insufficient splay on the entries/exits to on-street parking bays throughout the scheme, to permit proper use of the bays by drivers. Some drivers could as a result overrun onto footpaths and endanger pedestrians. Some drivers could park not fully inside the parking bay or partially on the footpath. Examples shown in the figure below.

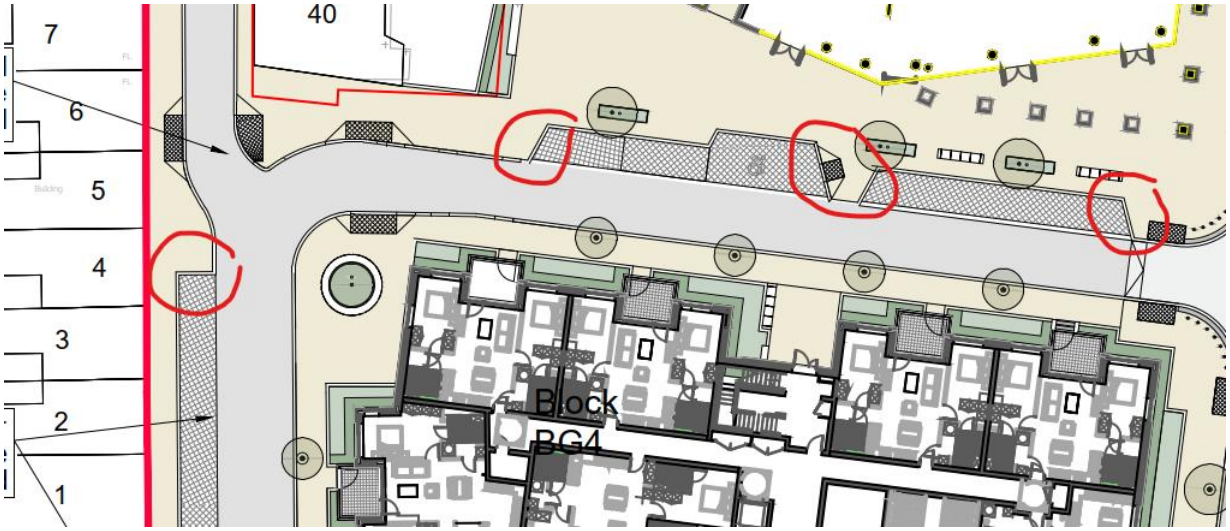


Figure 15

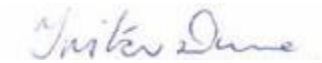
SECTION 4: AUDIT TEAM STATEMENT

We certify that we have examined the scheme on-site during daylight hours.

The examination and subsequent report was made with the sole purpose of identifying any features of the scheme that could be removed or modified in order to improve the safety of the proposals.

The problems identified have been noted in this report together with associated safety improvement suggestions, which we recommend should be studied for implementation.

No one on the Audit Team has been involved with the scheme design.

Audit Team Leader		
Name:	Tristan Dunne BE MEngSc CEng MIEI	Signed:  Date: 22/12/21
Organisation:	J. B. Barry and Partner's Ltd	
Address:	Classon House, Dundrum Business Park, Dundrum Road, Dublin 14.	

Audit Team Member		
Name:	Alan Moriarty BEng BEng (Ord) MSc HDip CEng MIEI	Signed:  Date: 22/12/21
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Address:	Classon House, Dundrum Business Park, Dundrum Road, Dublin 14.	

Appendix 1: Road Safety Audit Feedback Form

Scheme: Bailey Gibson Revised Application Residential Development

Audit Stage: Stage 1 Road Safety Audit

Date Audit Completed: 22 December 2021

Paragraph No. in Report	To Be Completed by the Design Team			To Be Completed by the Audit Team
	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Designer's Response / Alternative measures (describe)	Designer's Response / Alternative Measures accepted by Auditors (yes/no)
2.1	Yes	Yes	Double yellow lines to be provided	
2.2	Yes	Yes	Double yellow lines to be provided	
2.3	Yes	Yes	Trees to be pruned (no removed). Additionally, to increase the visibility to the proposed traffic signals head, it is proposed to provide cantilever signal head on the southern path and secondary signal head on the northern path.	
2.4	Yes	Partially	Dublin City Council Area Engineers will assess on site the parking restrictions along South Circular Road which are outside of this planning application 'red line boundary'. The application is proposing the widening of Rehoboth Place, as a result the STOP line will be relocated further east achieving an improved visibility. Rehoboth Place is currently 2-way, it has been agreed with the residents and the Council that the 2-way will be maintained.	Yes
2.5	Yes	Yes	This road end is being redesigned to provide turning facilities for drivers.	
2.6	Yes	Yes	This junction corner is being redesigned to avoid overrunning the footpaths	
2.7	No	No	As indicated in DMURS: A minimum of 3.7m (3.1m at 'gateways') is required for fire vehicle access as per Table 5.2 of the	Yes

			Building Regulations 2006 (Technical Guidance Document B – Fire Safety).	
2.8	No	No	The internal roads have been designed to self-regulate the speed, i.e. narrow roads (2-way is 4.8-5m), high quality surfacing, shared surfaces, etc	Yes
2.9	Yes	Yes	A revised design is being prepared to continue the cycleway to tie with the footpaths around the playing pitch	
2.10	Yes	Yes	Bollard and road markings being introduced to avoid parking at the crossing	
2.11	Yes	No	Margaret Kennedy Road is an existing road which has been built recently. Dublin City Council Area Engineers will assess on site the parking restrictions along Donore Avenue which are outside of this planning application 'red line boundary'	Yes
2.12	No	No	Margaret Kennedy Road is an existing road which has been built recently, including 2 bump ramps. Once Bailey Gibson application is constructed, there will be parking on both sides of the road which will act additionally as traffic calming.	Yes

Signed: …….. Designer Date 7th February 2022

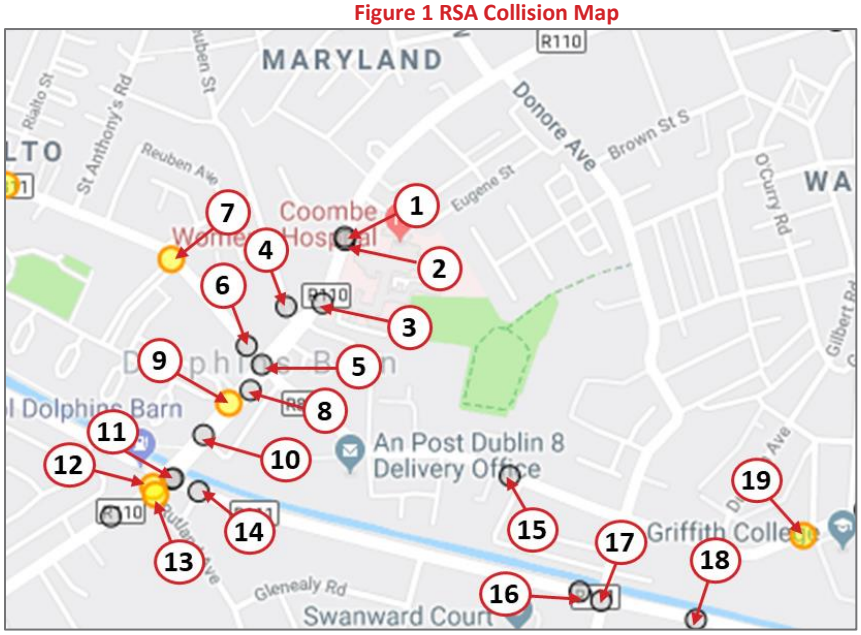
Signed: …….. Audit Team Leader Date 9th February 2022

Signed: …….. Client Date 2nd June 2022

3. COLLISION HISTORY

The Road Safety Authority's (RSA's) online collision map was reviewed to assess any local accidents and safety trends which may impact the proposed development. The collision map includes all fatal, serious, and minor accidents officially recorded between 2005 and 2016. The data for subsequent years is not yet available on the RSA's website. The recorded accidents near the subject site are shown in Figure 1.

Figure 1 RSA Collision Map



As shown, there is only one minor accident in the immediate vicinity of the site along the South Circular Road. There were more accidents reported further from the site along Dolphin's Barn Street including a number of serious accidents but no fatal. Details of the accidents shown in Figure 1 are given below in Table 1.

Table 1 Local Accident Summary

No.	Severity	Vehicle	Circumstances	Day	Time	No. Causalities
1	Minor	Car	Rear end, left turn	Mon.	0700-1000	1
2	Minor	Goods Vehicle	Rear end, straight	Wed.	1000-1600	1
3	Minor	Car	Other	Wed.	1000-1600	2
4	Minor	Car	Single Vehicle only	Sat.	1900-2300	1
5	Minor	Bus	Head-on conflict	Sat.	0300-0700	4
6	Minor	Car	Head-on conflict	Fri.	1900-2300	2

7	Serious	Car	Pedestrian	Fri.	1000-1600	1
8	Minor	Undefined	Pedestrian	Thu.	1600-1900	1
9	Serious	Bicycle	Other	Wed.	1000-1600	1
10	Minor	Bus	Pedestrian	Sun.	2300-0300	1
11	Minor	Bus	Other	Sat.	0300-0700	1
12	Serious	Bicycle	Other	Fri.	1600-1900	1
13	Serious	Undefined	Pedestrian	Mon.	1600-1900	1
14	Minor	Bicycle	Other	Wed.	1000-1900	1
15	Minor	Car	Single Vehicle only	Fri.	1900-2300	1
16	Minor	Car	Rear end, straight	Tue.	1000-1600	1
17	Minor	Bicycle	Other	Mon.	0700-1000	1
18	Minor	Motorcycle	Other	Mon.	1600-1900	1
19	Serious	Bicycle	Other	Wed.	1000-1600	1

4. ACCESSIBILITY AND WALKABILITY AUDIT

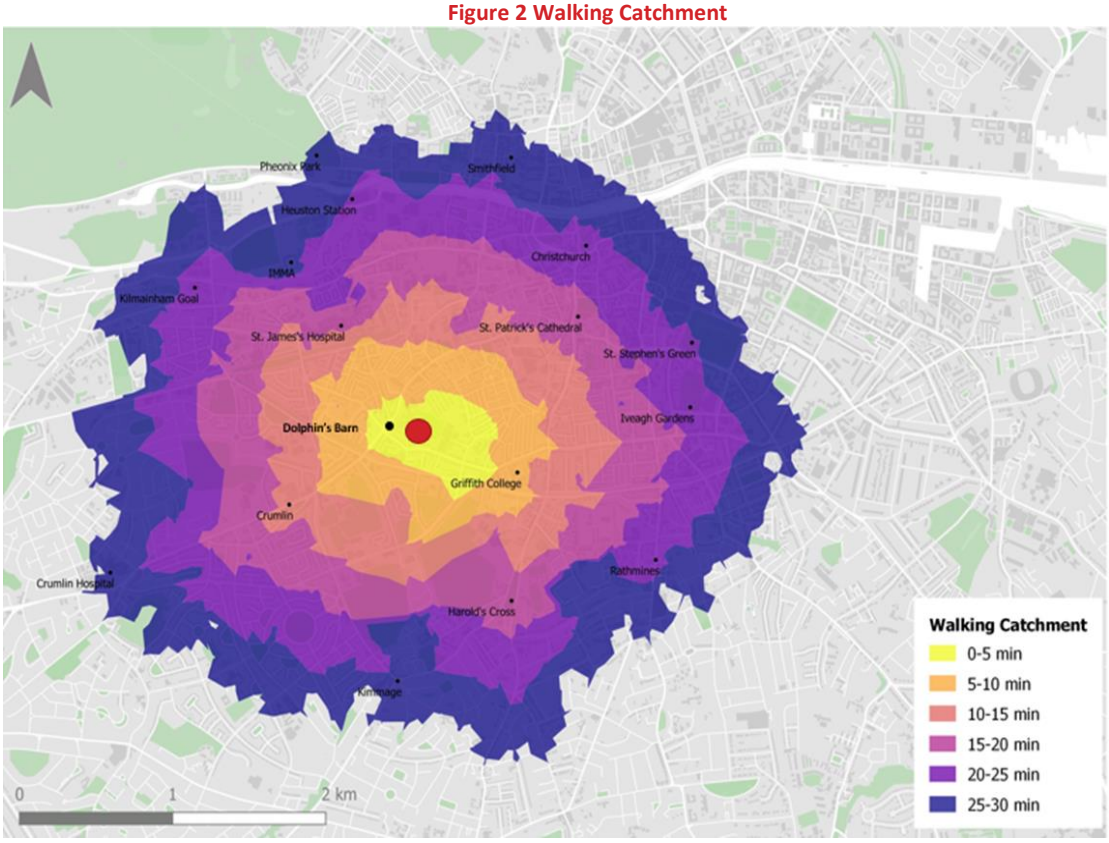
4.1 Introduction

4.1.1 Location

The development is centrally located in Dublin 8, less than 2km from St. Stephens Green to the North East of the site. Existing pedestrian access along the South Circular Road is provided by wide footpaths of up to 4.2m between the intersections of Dolphins Barn Road and Donore Avenue but is lacking marked or signalised crossing. An unmarked crossing in place is facilitated by drop kerb lines and a traffic island. Footpaths to the West of the site at Rehoboth Place are narrow at 1.1-1.6m and will require widening to accommodate predicted increased flows.

Enhancements to pedestrian access will be necessary to achieve the desired levels of sustainable/active travel with limited provisions for resident parking in the proposed development. Improved crossing points at multiple points along the site's perimeter will help fulfil sustainable mobility goals of a permeable site.

Figure 2 Walking Catchment



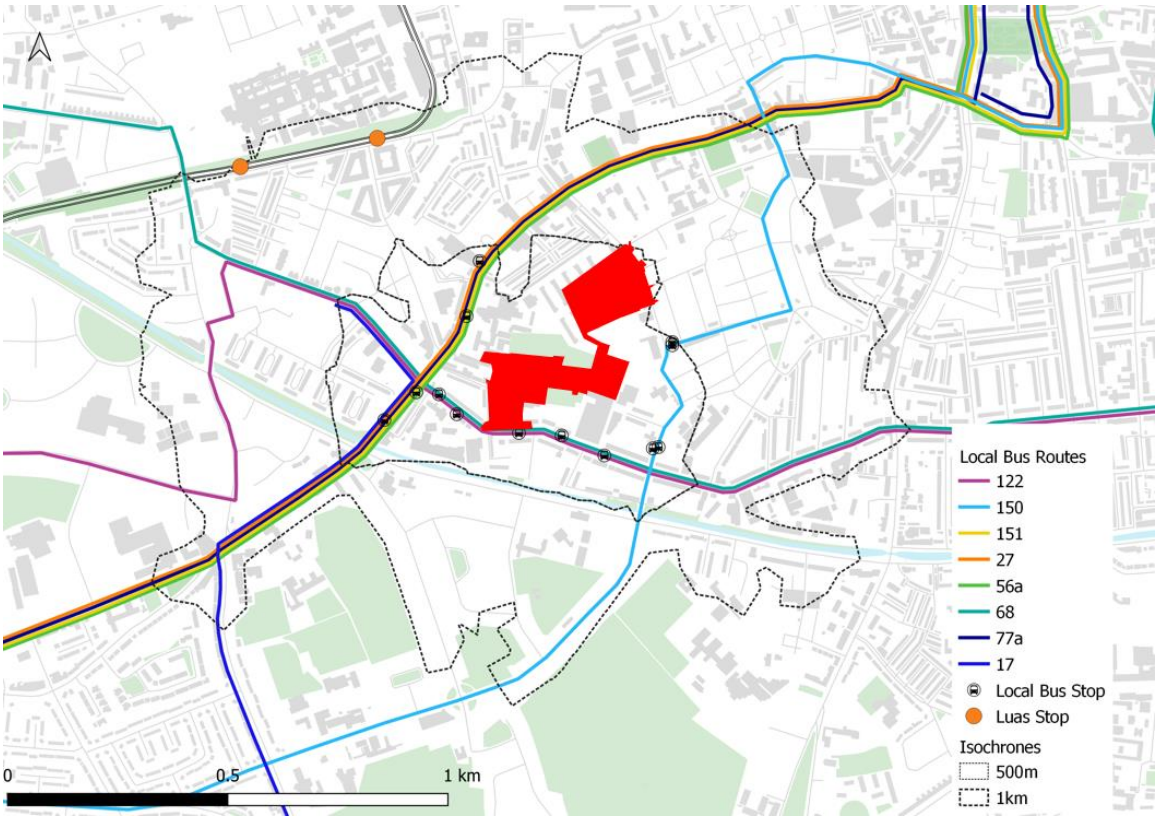
4.1.2 Access to local Public Transport network

The proposed site's location close to Dublin City Centre benefits from several nearby public transport links.

Prominent current and future bus services are provided to the West of the site along Dolphins Barn Street/Cork Street and the South Circular Road. The former is accommodated with a Quality Bus Corridor and both roads have high frequency Dublin Bus or Go-Ahead services in operation. Buses within a five-minute walk include the 122, 150, 151, 27, 56a, 68, 77a and 17, taking several routes towards the city centre and providing links to west and south west suburbs. As part of BusConnects Dolphins Barn Street and the South Circular Road are currently being examined as high frequency spines with services potentially less than five minutes apart and no greater than 10 minutes.

In addition, the nearest Luas stop is a 9-minute walk to Fatima on the Red Line providing additional access to locations in the North City Centre to The Point and (south) west suburban areas to Citywest. Future residents will have a broad access to a variety of public transport options for in and outbound journeys connecting theme to key education, employment, and retail services/locations across Dublin.

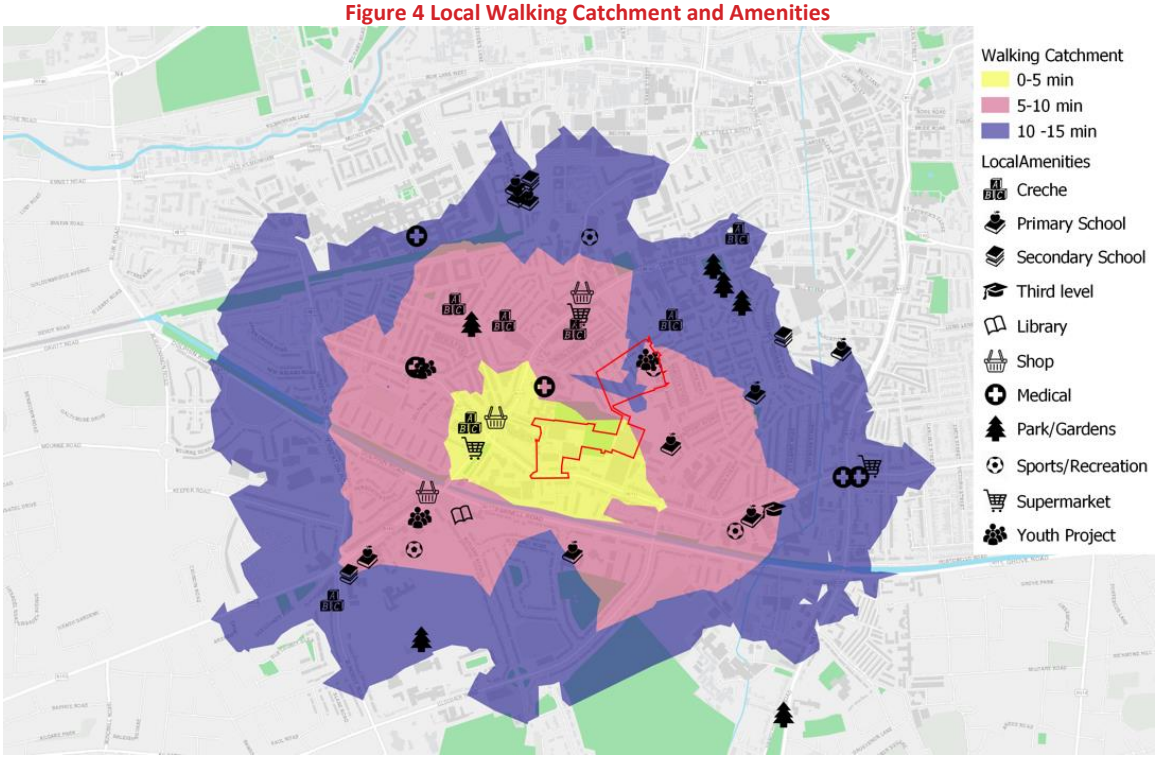
Figure 3 Local Public Transport Services



4.1.3 Local Amenities

The developments' location less than 2km from the city centre offers countless options of supermarkets, restaurants, and leisure facilities in addition to those being provided within the development. While adequate public transport links are in place pedestrian journeys to these services are facilitated by footpaths of varying width, dropped kerbs and good pedestrian crossings along Dolphins Barn Street/Cork Street.
Recognising the variety of amenities being provided within the development and the immediate vicinity the development is considered to be well served by both essential and recreation services.

Figure 4 Local Walking Catchment and Amenities



4.2 Audit Items

4.2.1 Building Access

Issue
Distinction of access to residential buildings and ground floor units from street level.

Recommendation
Ground floor residential units will have a primary access point through main lobbies with other residents but also direct street access via unit terraces. The latter distinctions from the public realm should be marked by marginal height differences from the street levels and inclusion of manicured hedging to provide additional privacy. Primary access to residential buildings will be

pronounced with the inclusion of ground floor lobbies and concierge services with hedging and porticos used to soften the division of private and public spaces.

4.2.2 Existing External Pedestrian Crossing Facilities – Primary Access

Issue

Current uncontrolled pedestrian crossing points limit safety at primary access points to the proposed development along the South Circular Road and Donore Avenue.

Recommendation

At primary exits and entrances signalled pedestrian crossing should be installed. This includes removing the existing uncontrolled crossing and pedestrian island in South Circular Road and providing a new controlled crossing east closer to a bus stop for boarding and alighting.

In addition, the existing uncontrolled raised crossing at Donore Avenue should be upgraded to controlled crossing.

Figure 5 Pedestrian Environment- South Circular Road Westwards

Figure 6 Pedestrian Environment- Donore Avenue

4.2.3 Pedestrian crossings along the perimeter

Issue
Improved pedestrian crossings to ensure safety along the permitter as the current number of crossings are unsuitable for the proposed focus on active and sustainable travel.

Recommendation
Pedestrians shall be guided to informal crossing points at strategic points along the perimeter with dropped kerbs, tactile paving, and tighter radii to reduce crossing distances.

4.2.4 Pedestrian Permeability

Issue
The existing brownfield site has no permeability through the lands.

Recommendation
Provide a connected network with strong permeability for pedestrians and cyclists for the benefit of future and existing residents alike.

The proposed internal roads in the development to be designed to significantly improve permeability at this site for the wider community, creating key connections through the site at ground level to adjacent streets, including East-to-west "Connecting Dolphin's Barn Street and Cork Street with Donore Avenue" and north-to-south "connecting Cork Street and Donore Avenue with the South Circular Road and Grand Canal Corridor".

4.2.5 Shared Spaces

Issue
Shared spaces can lead to difficulties for visually impaired users who may rely on kerb lines to navigate streets.

Recommendation
Promote low speed environments and choose an appropriate layout and colour of tactile paving to assist the visually impaired in navigating the pedestrian environment on shared streets.

4.2.6 Deliveries

Issue
Increased frequency of home deliveries as a result of working from home and pandemic restrictions requires procedures to be in place as vehicle access to and through the proposed development is to be minimal and discouraged.

Recommendation
A Delivery Strategy to be prepared and included in the Traffic and Transport Assessment Report.

4.2.7 Junctions

Issue
Junctions at current access points and in the local area need to be assessed and reviewed for the increase in active travel to, from and through the proposed development.

Recommendation
Within the proposed development and along its boundary junctions must be (re)designed to prioritise active travel. Crossing distances at junctions should be reduced through extending path radii at corners at external points. Internal junctions should alert road users through differentiated paving.

4.2.8 Information of Travel Options

Issue
Determining the best methods to communicate sustainable transport benefits/options to residents encouraging them to reduce car dependency and fulfil goals of the mobility management plan.

Recommendation
Prepare a Mobility Management Plan (MMP). With the appointment of an onsite Mobility Manager tasked with implementing the MMP. To ensure that all residents are informed of initial active/sustainable travel options and provide updates on the improvements to the local transport network (BusConnects) and receive a Welcome Travel Park to encourage sustainable travel highlighting on site facilities available, GoCar, cycle hire, Car Club, and local amenities within walking/cycling distance.

4.2.9 Public Transport

Pedestrian access to public transport will be improved through implementation of recommendations discussed throughout the Quality Audit.

4.2.10 Lighting

No accessibility issues have been identified related to Lighting.

4.2.11 Carriageway Markings for Pedestrians

Issue
Lack of road markings creates dangerous conditions for pedestrians crossing along perimeter roads.

Recommendation
Reinstatement of centreline markings along Donore Avenue to coincide with additional pedestrian crossing mentioned in section 4.2.2.

4.2.12 Visibility

Issues related to visibility were examined at the existing crossing point on the South Circular Road and resolved by changing its mentioned location in section 4.2.2.

4.2.13 Waste Facilities within the Development

Issue
Location of bins on public realm areas and footpaths could block the safe pass of pedestrians.

Recommendation
Identify appropriate collection points to avoid pinch points when bins are on street for collection.

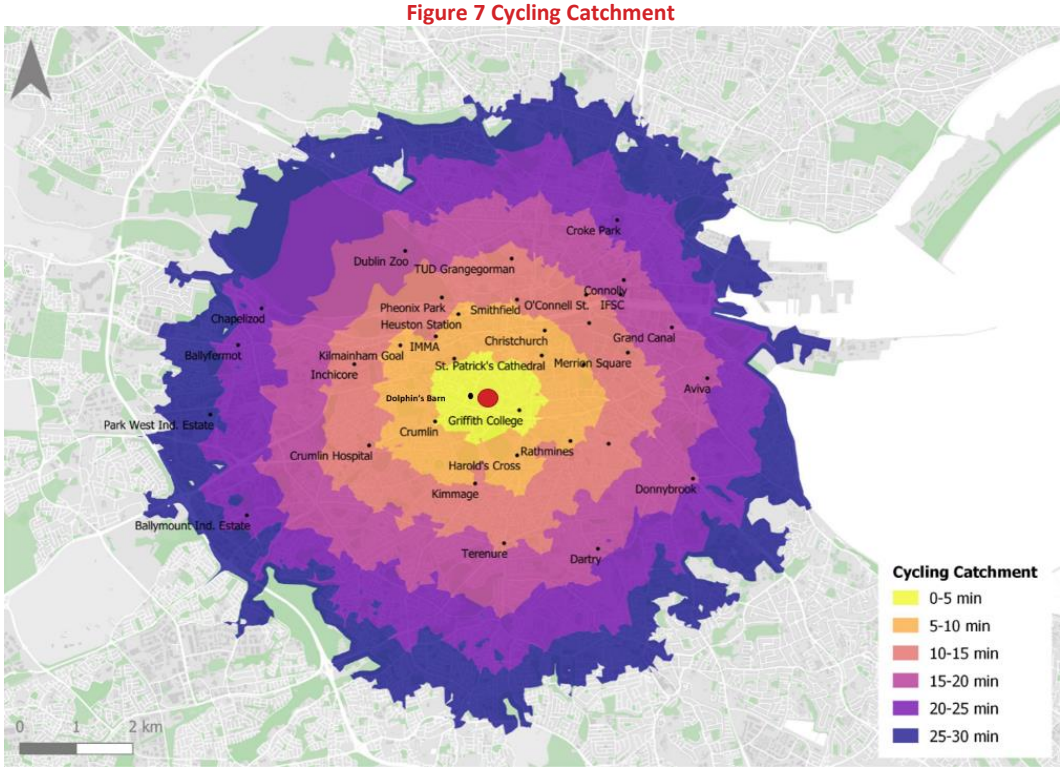
5. NON-MOTORISED USER AND CYCLE AUDIT

5.1 Introduction

The proposed developments accessibility by bike is pronounced by the short distance to the city centre being located within the Grand Canal. The IFSC, TUD Grangegorman, St. James's Hospital and Heuston Station are all within a 20-minute cycle of the site. There are an estimated 148,050 jobs within a 15-minute cycle of the site and over 340,000 within a 30-minute cycle.

The developments' location less than 2km from the Phoenix Park, National War Memorial Gardens and countless urban parks offers a host of outdoor public spaces areas within a 15-minute cycle.

Figure 7 Cycling Catchment



5.2 Audit Items

5.2.1 External Cycle Provisions

There are cycle lanes provided along the majority of the way from Dolphin's Barn Cross to the City Centre and along the length of the Canal towards the docklands. There are currently no cycle lanes along the South Circular Road and Donore Avenue, but shared space is available along South Circular Road in the form of bus lanes.

A review of the Road Safety Authority's collision records does highlight 2no. of serious cycling collisions during the period 2005 to 2016 at Dolphin's Barn.

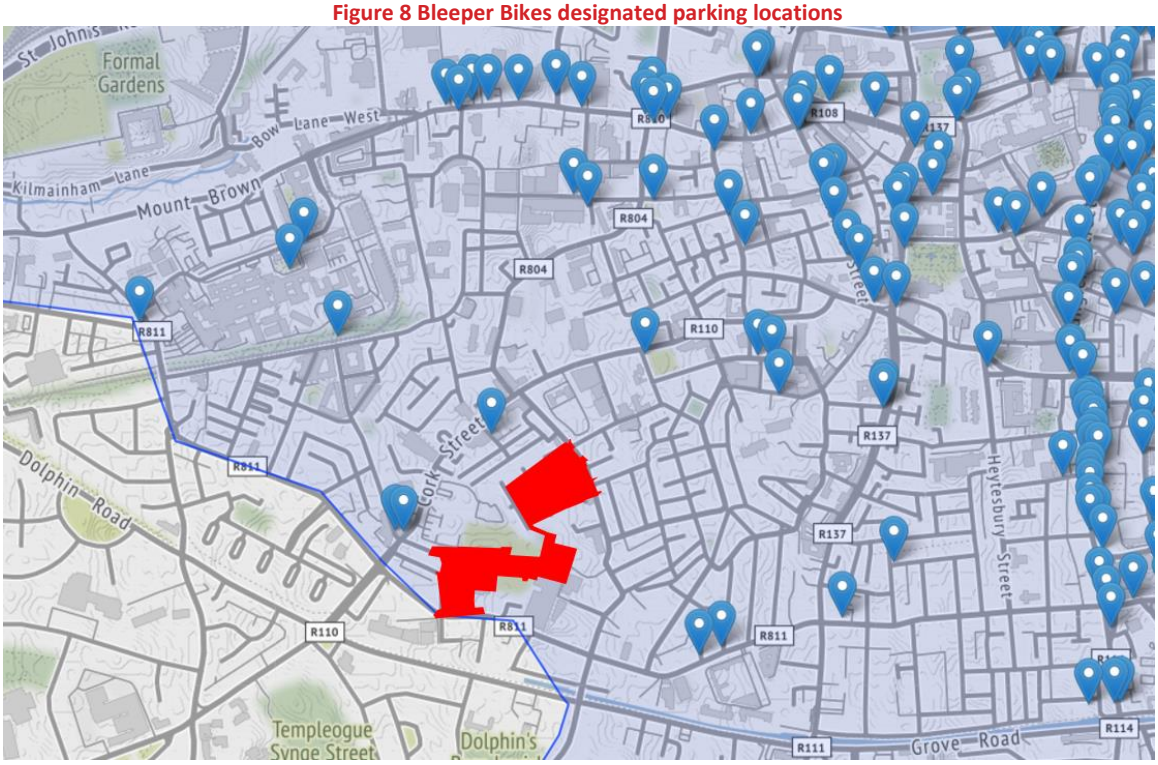
The proposals incorporated into the GDA Cycle Network and BusConnects scheme include enhancements to cycle infrastructure along Dolphin's, Cork Street, South Circular Road and Donore Avenue from which the proposed development will greatly benefit.

5.2.2 Bike Sharing

Issue
Lack of DublinBikes sharing stations close to the proposed development

Recommendation
Promote use of Station-less Bicycles, BleeperBike and Moby, the current operators of the scheme in Dublin. Such bikes can be parked at designated stands close to and within the proposed development at short stay visitor bicycle parking.

Figure 8 Bleeper Bikes designated parking locations



5.2.3 Internal Cycle Provision

Issue
Bike parking for residents insufficient.

Recommendation
A ratio of 1 cycle space per bedroom for the studios and apartments to be provided in line with the DHLGH New Apartments Guidelines standards.

6. QUALITY AUDIT ACTION PLAN

Issue	Situation	Action/Adjustment
4.2.1	Distinction of access to residential buildings and ground floor units from street level.	Ground floor residential units will have a primary access point through main lobbies with other residents but also direct street access via unit terraces. The latter distinctions from the public realm should be marked by marginal height differences from the street levels and inclusion of manicured hedging to provide additional privacy. Primary access to residential buildings will be pronounced with the inclusion of ground floor lobbies and concierge services with hedging and porticos used to soften the division of private and public spaces.
4.2.2	Current uncontrolled pedestrian crossing points limit safety at primary access points to the proposed development along the South Circular Road and Donore Avenue.	At primary exits and entrances signalled pedestrian crossing should be installed. This includes removing the existing uncontrolled crossing and pedestrian island in South Circular Road and providing a new controlled crossing east closer to a bus stop for boarding and alighting. In addition, the existing uncontrolled raised crossing at Donore Avenue should be upgraded to controlled crossing.
4.2.3	Improved pedestrian crossings to ensure safety along the permitter as the current number of crossings are unsuitable for the proposed focus on active and sustainable travel.	Pedestrians shall be guided to informal crossing points at strategic points along the perimeter with dropped kerbs, tactile paving, and tighter radii to reduce crossing distances.
4.2.5	Shared spaces can lead to difficulties for visually impaired users who may rely on kerb lines to navigate streets	Promote low speed environments and choose an appropriate layout and colour of tactile paving to assist the visually impaired in navigating the pedestrian environment on shared streets.
4.2.6	Increased frequency of home deliveries as a result of working from home and pandemic restrictions requires procedures to be in place as vehicle access to and through the proposed development is to be minimal and discouraged.	A Delivery Strategy to be prepared and included in the Traffic and Transport Assessment Report.

4.2.7	Junctions at current access points and in the local area need to be assessed and reviewed for the increase in active travel to, from and through the proposed development.	Within the proposed development and along its boundary junctions must be (re)designed to prioritise active travel. Crossing distances at junctions should be reduced through extending path radii at corners at external points. Internal junctions should alert road users through differentiated paving. Pedestrian traffic should be monitored in order to assess if changes to light sequences are required.
4.2.8	Determining the best methods to communicate sustainable transport benefits/options to residents encouraging them to reduce car dependency and fulfil goals of the mobility management plan.	Prepare a Mobility Management Plan (MMP). With the appointment of an onsite Mobility Manager tasked with implementing the MMP. To ensure that all residents are informed of initial active/sustainable travel options and provide updates on the improvements to the local transport network (BusConnects) and receive a Welcome Travel Park to encourage sustainable travel highlighting on site facilities available, GoCar, cycle hire, Car Club, and local amenities within walking/cycling distance.
4.2.11	Lack of road markings creates dangerous conditions for pedestrians crossing along perimeter roads.	Reinstatement of centreline markings along Donore Avenue to coincide with additional pedestrian crossing mentioned in Section 4.2.2
4.2.13	Location of bins on public realm areas and footpaths could block the safe pass of pedestrians.	Identify appropriate collection points to avoid pinch points when bins are on street for collection.
5.2.2	Lack of DublinBikes sharing stations close to the proposed development	Promote use of Station-less Bicycles, BleeperBike and Moby, the current operators of the scheme in Dublin. Such bikes can be parked at designated stands close to and within the proposed development at short stay visitor bicycle parking.
5.2.3	Bike parking for residents insufficient.	A ratio of 1 cycle space per bedroom for the studios and apartments to be provided in line with the DHLGH New Apartments Guidelines standards

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