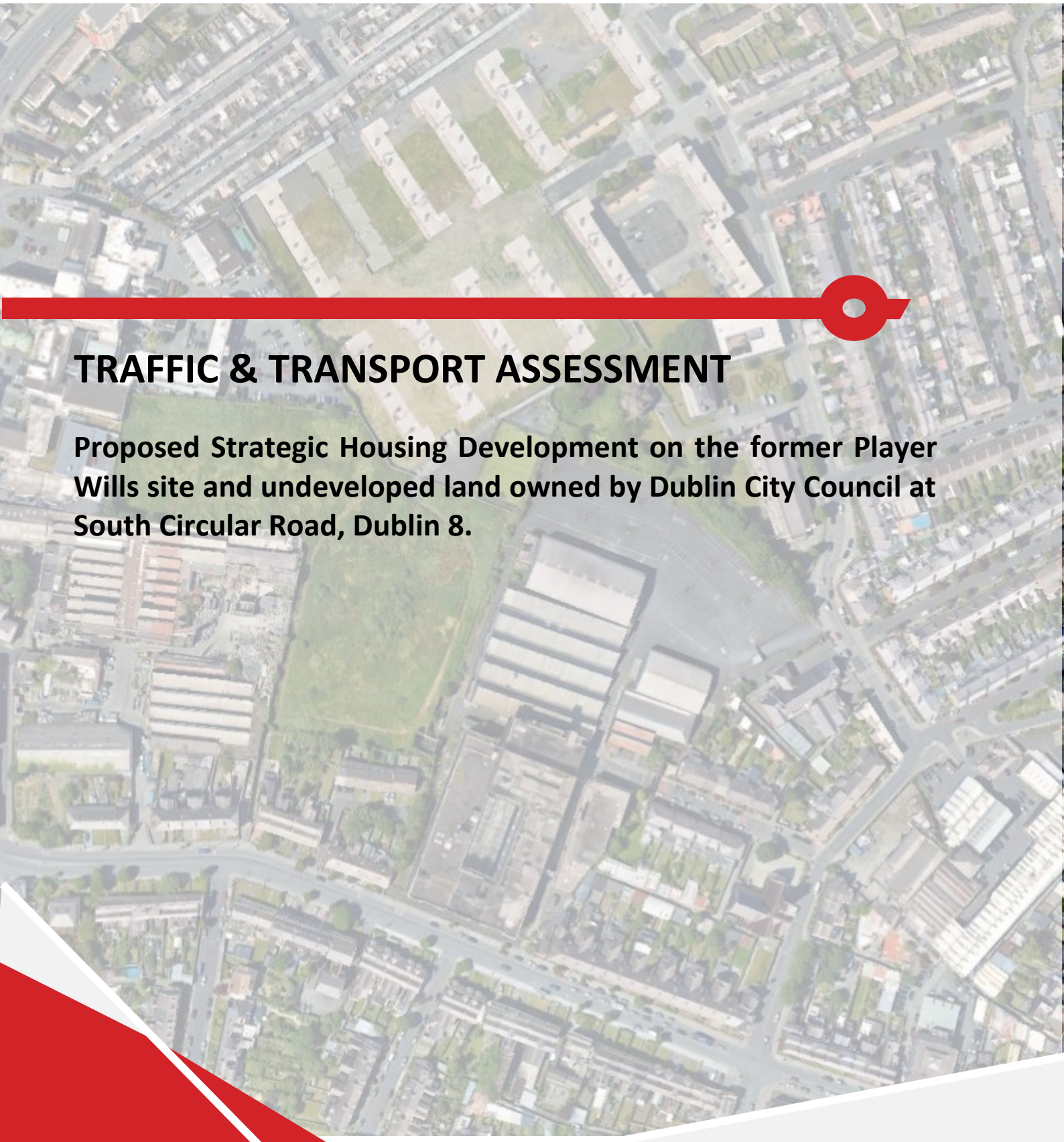

TRAFFIC & TRANSPORT ASSESSMENT

Proposed Strategic Housing Development on the former Player Wills site and undeveloped land owned by Dublin City Council at South Circular Road, Dublin 8.

December 2020

SYSTRA

DOCUMENT CONTROL SHEET

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1. INTRODUCTION

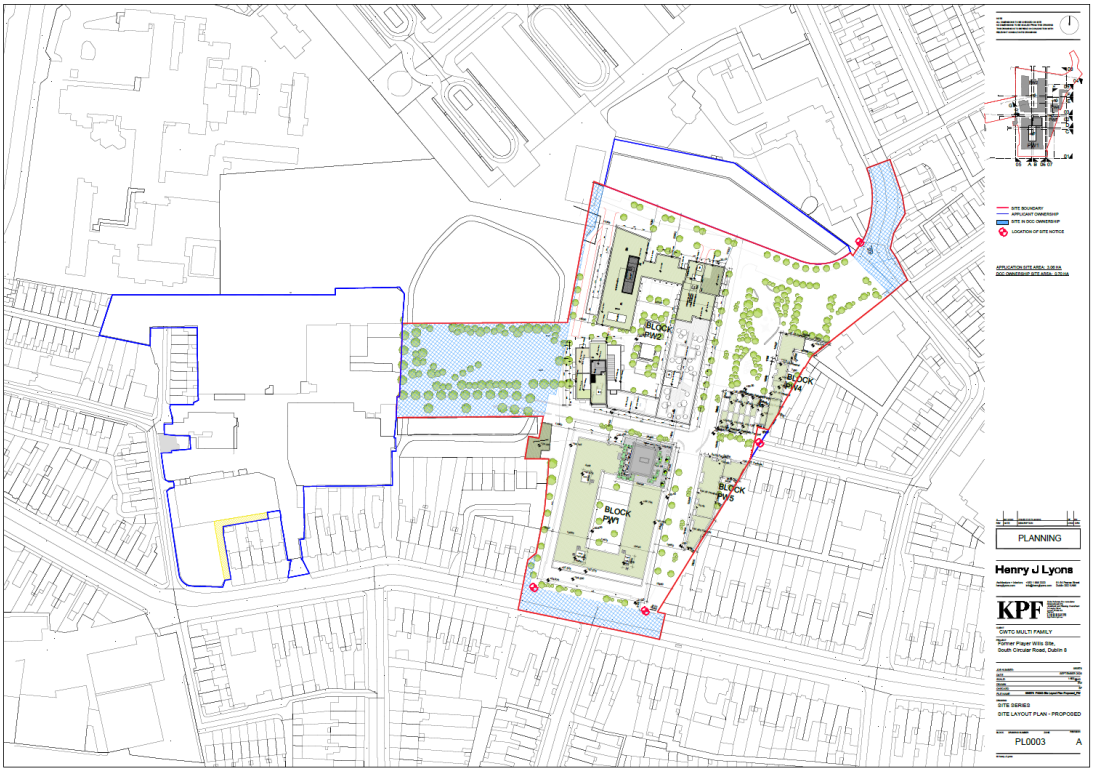
1.1 Background

1.1.1 SYSTRA have been appointed to prepare a Traffic & Transport Assessment (TTA) to accompany Strategic Housing Development (SHD) application to An Bord Pleanála for the proposed development at the former Player Wills Factory Site along the South Circular Road in Dublin 8. In addition, SYSTRA have prepared the Mobility Management Plan for the site , which has been summarised in Chapter 9, and the preliminary Construction Traffic Management Plan (CTMP) and both should be read in conjunction with this report.

1.1.2 The proposed development will consist of 732 residential units constructed in 4 blocks ranging from 3 to 19 floors in height. The units will comprise 240 shared accommodation units and 492 apartments units. The units will be made up of 32.8% shared accommodation units, 5.5% studios, 39.9% 1-bed, 14.8% 2-bed & 7.1% 3-bed units. Also included is tenant amenities comprising a concierge office, gymnasium, coworking facilities, communal living/kitchen and residents lounges, business lounger, cinema room and entertainment spaces. In addition, there will be a childcare facility, community spaces, artist studios and retail/retails services/food & beverage provided.

1.1.3 The application area is c. 3.06 hectares, it includes the Player Wills site (2.39 hectares) and an additional 0.67 hectares of land (owned by Dublin City Council) for the provision of a public park and to accommodate works to facilitate connections to municipal services and works proposed to public roads. Figure 1.1 outlines the red line boundary of the application. Further details on the proposed development can be found in Chapter 5 of this report.

Figure 1.1 Red Line Boundary



1.2 Report Purpose

1.2.1 The purpose of this report is to describe and evaluate the baseline traffic environment, identify forecast demand from the proposed development across all modes and assess the potential operational impact of this demand on the surrounding network. The report also details the proposed access arrangements to the development for all travel modes and identifies necessary mitigation measures required to support the operational phase of the development and limit adverse impacts on the surrounding network. The impact of the construction phase of the development and potential mitigaiton measures can be found in the CTMP.

1.3 Assessment Methodology

1.3.1 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 – *'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

Baseline Assessment	Site Visits, Data Collection (incl. Surveys), Existing Accessibility, Identification of Opportunities & Constraints, Local Travel Patterns & Policy Review.
Trip Generation	Forecast person trips to/from development. These are converted to modal trips based on the expected mode share, to be informed by modelling and baseline assessment.
Traffic Growth	Growth in traffic volumes to be forecast based on TII/NTA forecasts.
Trip Assignment & Distribution	Vehicular Trip to be assigned based on predicted final destination & distributed across the wider network based on strategic modelling and/or baseline travel patterns.
Impact Analysis	Assessment of the resultant impact of development on the wider network with detailed modelling undertaken locally.
Assessment Conclusion & Recommendations	Findings of the assessment, potential mitigation and supporting measures.

1.4 Report Structure

1.4.1 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 masterplan;
- 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.

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 The plan identifies 18 Strategic Development and Regeneration Areas (SDRAs) across the city which have the capacity for significant development. The site forms part of SDRA 12 which is intended for primarily residential development. The development outlines the guiding principles for SDRA 12, the principles relevant to this transport assessment are as follows;

- *"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."*

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 Player Wills site 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 Parking Standards

Parking Type	Requirement
Car Parking	1 per dwelling (maximum standard)
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

2.2.1 This document, published by the Department Housing, Planning and Local Government in March 2018, 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 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".*

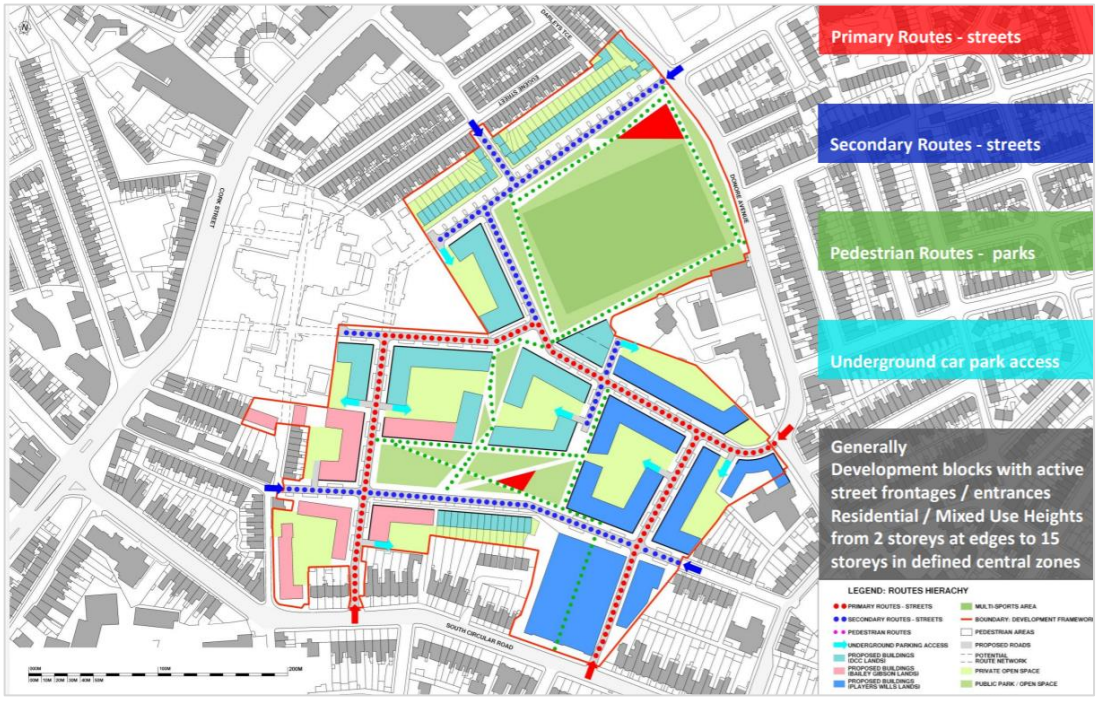
2.2.6 These reductions in parking standards for developments in suitable locations are a direct application of Objective 13 of the NPF which states *"There should also generally be no car parking requirement for new developments in or near the centres of the five cities, and a significantly reduced requirement 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 Development Framework for St. Teresa's Gardens & Environs

2.3.1 In 2017, DCC prepared a framework plan for SDRA 12 to translate the guiding principles for the site identified in the Dublin City Development Plan. This plan covered the DCC lands, the Player Wills site and part of the Bailey Gibson site. The plan included an internal road layout and street hierarchy which prioritised the integration of the three sites and strong permeability to generate movement east-west and north-south through the site. All roads within the masterplan were proposed to be 15m wide building to building. A detailed transport assessment was not undertaken as part of the original development framework. The proposed road layout and street hierarchy is shown in Figure 2.1.

Figure 2.1 SDRA 12 Development Framework – Proposed Road Layout and Street Hierarchy



2.3.2 As illustrated, the primary access points to site proposed were via the existing Bailey Gibson and Player Wills site entrances on South Circular Road with an additional primary access point onto Donore Avenue just north of St. Catherine's National School. Secondary access points were proposed onto Rehoboth Place, St. Catherine's Avenue, Donore Avenue North and Cameron Street. There is no indication within the development framework if all access points were to allow for vehicular movements.

2.4 SDRA 12 – Masterplan for Player Wills, Dublin City Council & Bailey Gibson Lands

2.4.1 A more detailed masterplan was developed by DCC to expand on the work previously undertaken as part of the development framework and to reflect the changes in national planning policy since the publication of the original framework plan. The masterplan was developed to demonstrate how the three sites, including Bailey Gibson in its entirety, could be developed in an integrated manner that delivers on the objectives of the SDRA development framework and the guiding principles set out in the DCC development as discussed in Section 2.1.4.

2.4.2 The masterplan includes an updated access strategy, road layout and street hierarchy which is similar to what was proposed in the development framework plan but reflects the opportunity and constraints of each site, the feasibility of access for each mode and access points not previously considered. The primary routes through the site were also increased from 15m to 18m to allow increased space to widen footpaths, landscaping and on-street car and cycle parking. Figure 2.2 shows the masterplan access strategy in full.

Figure 2.2 Masterplan – Proposed Road Layout and Access Strategy

2.4.3 The primary access points for vehicular traffic are located along the South Circular Road and Donore Avenue. The existing road and footpaths through Rehoboth Place are to be widened to accommodate a primary entry point to the Bailey Gibson Site. The primary exit point from the sites are proposed at the existing entry/exit point onto South Circular Road at Bailey Gibson & east of the Player Wills Factory Building. There is an east/west secondary route through the site connecting the 3 sites. This is proposed as shared surface route. This will connect the proposed pedestrian/cycle only links to St. Catherine's Avenue and Rehoboth Place. This provides a strong connection between Dolphin's Barn Street & Donore Avenue linking both streets with the proposed neighbourhood park and playground in the heart of the masterplan.

2.4.4 Pedestrians and cyclists will be accommodated at all primary and secondary access points but can also access the development through several dedicated pedestrian/cycle only access points off the South Circular Road, St. Catherine's Avenue, Rehoboth Place & Cameron Street. By providing these additional links the strategy seeks to provide permeability through the centre of the masterplan lands for pedestrians and cyclists, whereas vehicular traffic movements are primarily focused on the boundaries. This reduces conflicts and creates a safe/calmed environment conducive to walking and cycling. This permeability will benefit future residents but also existing residents of the wider neighbourhood. The plan also states that filtered permeability can be provided in some locations with retractable bollards to prevent rat running through the site. However, the low speed, traffic calmed environment should ensure it is not an attractive alternative for rat running.

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

2.5.1 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.

2.5.2 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.

2.5.3 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 residential development at Player Wills:

- 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.

2.5.4 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.

2.6 Greater Dublin Area Transport Strategy 2016-2035

2.6.1 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.

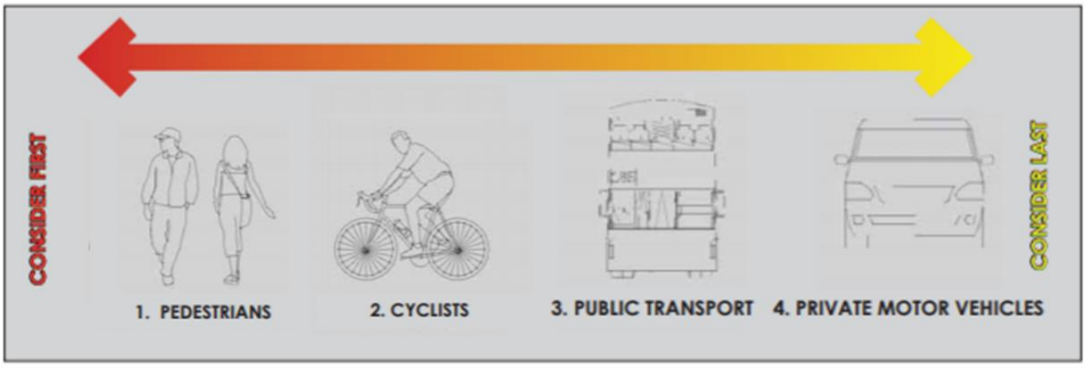
2.6.2 Based on the results outlined in the strategy, AM travel demand within the GDA will increase by 25% however car demand within the AM peak will increase by just 6.3% due to the significant increase in the sustainable transport mode share as a result of the proposed infrastructural improvements for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

2.6.3 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.

2.7 Design Manual for Urban Roads & Streets

2.7.1 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 2.2.

Figure 2.3 DMURS User Hierarchy



2.7.2 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 3.1 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.

2.7.3 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.

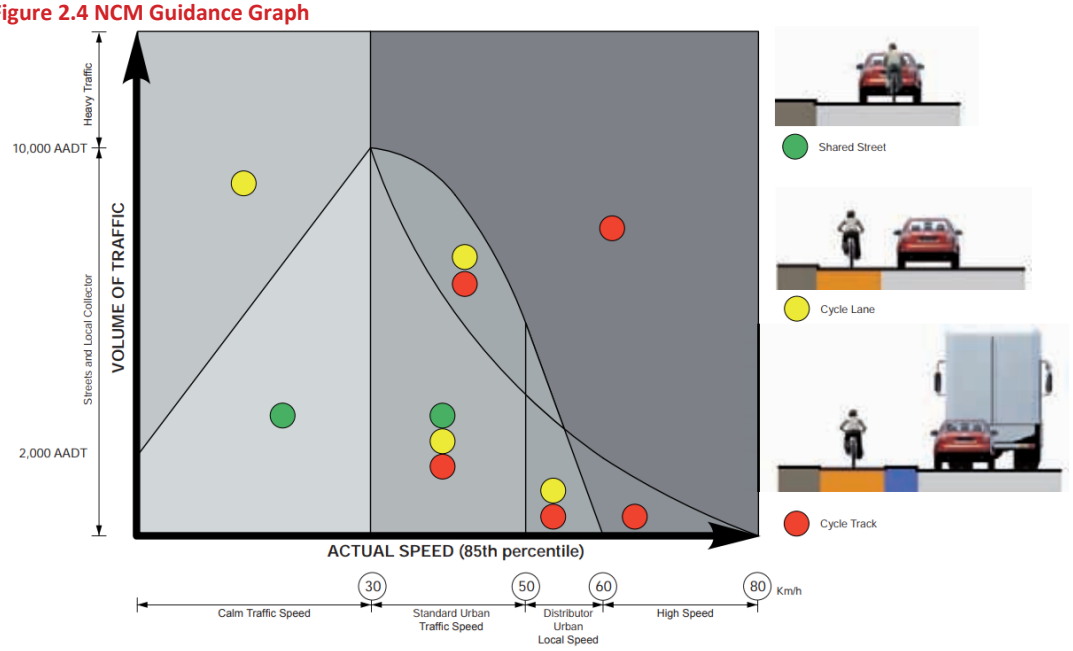
2.8 National Cycle Manual

2.8.1 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

2.8.2 The manual provides a guidance graph to help designers determine when segregation, steps 5 & 6, should be applied. Figure 2.4 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 2.4 NCM Guidance Graph



3. RECEIVING ENVIRONMENT

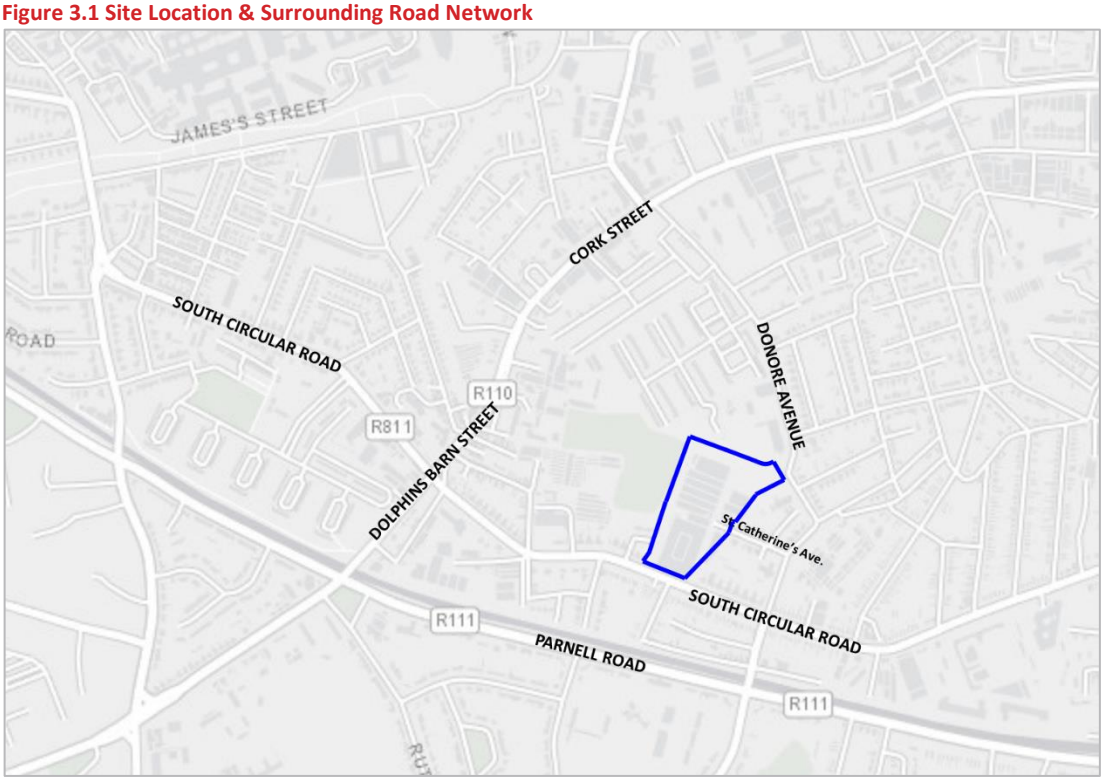
3.1 Surrounding Land Use

3.1.1 The surrounding land use is largely residential comprising of predominantly terrace housing. St. Catherine's National School is also located to the north-east adjacent to the existing site entrance on Donore Avenue. North of the site entrance is St. Teresa's Church and Donore Youth and community centre. To the north-west is St. Teresa's Gardens which forms part of SDRA 12. The site is currently discussed but formerly housed the Player Wills factory.

3.2 Site Location

3.2.1 The site is located on the South Circular Road with connections to St. Catherine's Avenue and Donore Avenue to the North. The primary access points to the site is currently located along the South Circular Road and along Donore Avenue north of St. Catherine's National School. The location of the site in relation to the surrounding road network is shown in Figure 3.1 below.

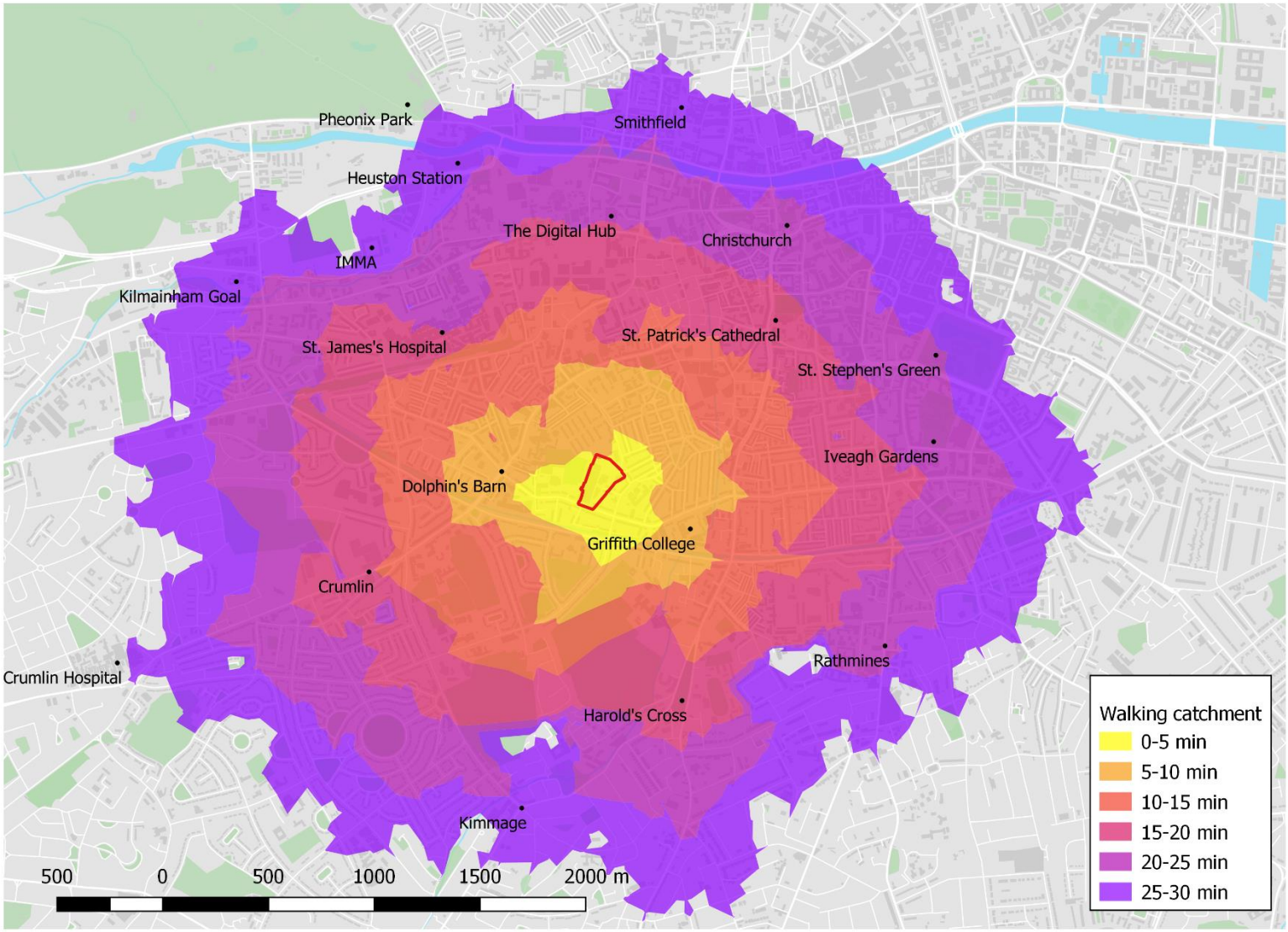
Figure 3.1 Site Location & Surrounding Road Network



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 20-minute walk of the site and Griffith College is within 10-minutes. The city centre is a 25-30-minute walk. Heuston Station and the Royal Hospital Kilmainham are also within a 30-minute walk of the site. The Phoenix Park is just over 30-minute walk away. Figure 3.2 below outlines the walking catchment in 5-minute intervals.

Figure 3.2 Walking Catchment



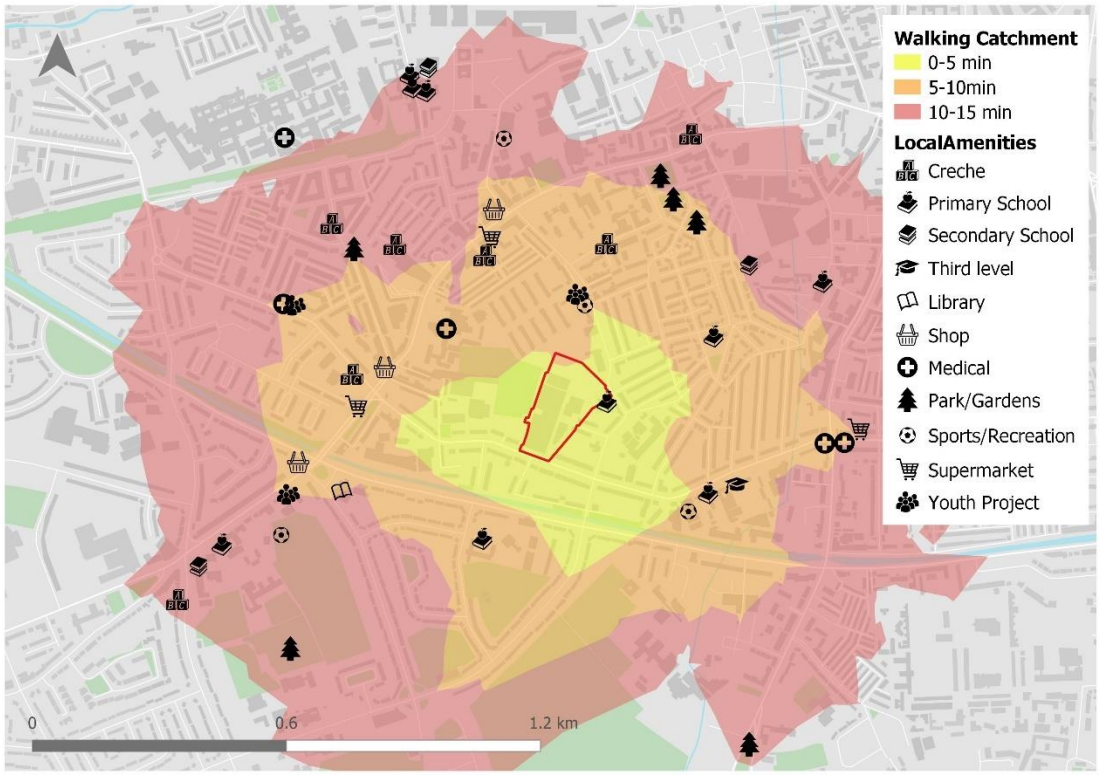
3.3.2 In total, there are over 87,000 jobs within the total catchment area shown. Table 3.1 outlines the cumulative number of jobs accessible within each 5-minute interval.

Table 3.1 Jobs Accessible by Walking

Time Travelled	Jobs Accessible
0-5 min	772
0-10 min	3,404
0-15 min	8,304
0-20 min	21,680
0-25 min	51,892
0-30 min	87,541

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 from Donore Avenue to Dolphin's Barn Cross and good quality lighting. However, there is an unmarked pedestrian crossing, with dropped kerb lines and traffic island directly in front of the Bailey Gibson Site and signalised pedestrian crossings at the Donore Avenue/SCR junction. Along St. Catherine's Avenue & Donore Avenue the footpaths vary in width from 1.4m-2.7m. There is a marked zebra crossing on Donore Avenue directly in front of the school. Figures 3.4-3.9 capture the pedestrian environment on the surrounding streets.

Figure 3.4 Pedestrian Environment - Overview

Figure 3.5 Pedestrian Environment – Viewpoint 1

Figure 3.6 Pedestrian Environment – Viewpoint 2

Figure 3.7 Pedestrian Environment – Viewpoint 3

Figure 3.8 Pedestrian Environment – Viewpoint 4

3.3.5 There are also signalised pedestrian crossing points at Dolphin's Barn Cross, west of the site, and between Donore Avenue and Cork Street, north 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

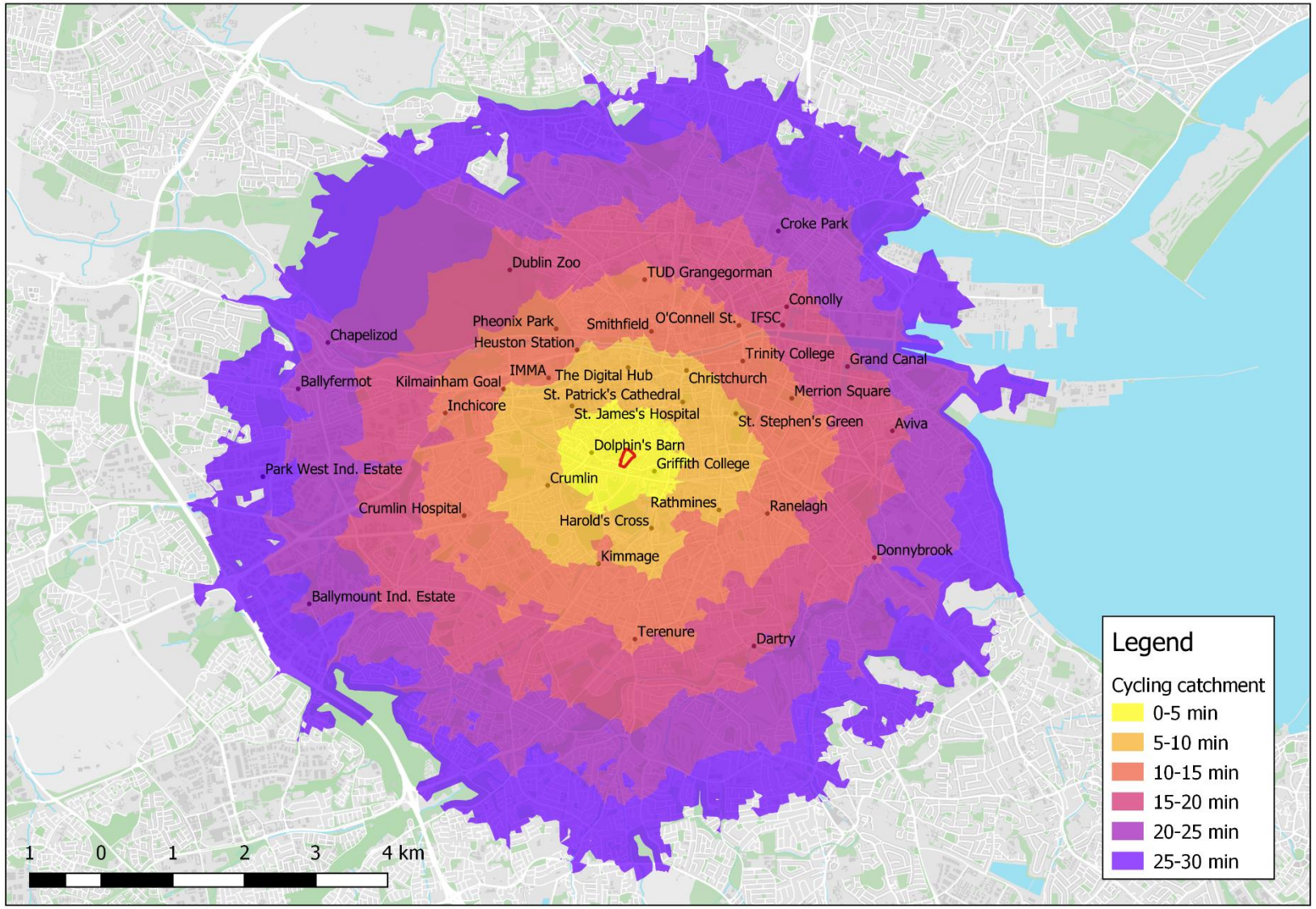
3.4.1 The site is also highly accessible by cycling. The city centre, TUD Grangegorman, St. James's Hospital and Heuston Station are all within a 15-minute cycle of the site. There are an

estimated 165,000 jobs within a 15-minute cycle of the site and over 340,000 within a 30-minute cycle. Figure 3.9 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

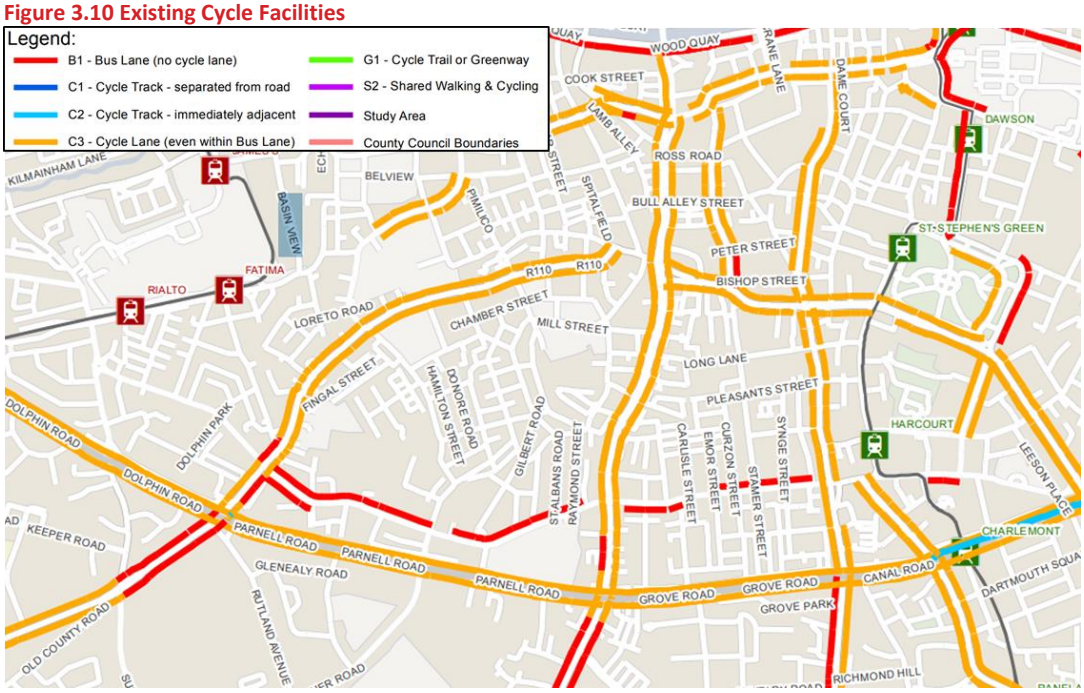
Time Travelled	Jobs Accessible
0-5 min	5,804
0-10 min	60,312
0-15 min	165,046
0-20 min	258,309
0-25 min	301,680
0-30 min	343,066

Figure 3.9 Cycling Catchment



3.4.2 There are cycle lanes provided the majority of the way from Dolphin's Barn Cross to the City Centre and along the length of the Canal towards the docklands as shown from the existing facilities map taken from the Greater Dublin Area Cycle Strategy and illustrated in Figure 3.10. There are currently no cycle lanes along the South Circular Road and Donore Avenue but there is a bus lane eastbound along the South Circular Road and westbound on approach to Dolphin's Barn Cross.

Figure 3.10 Existing Cycle Facilities



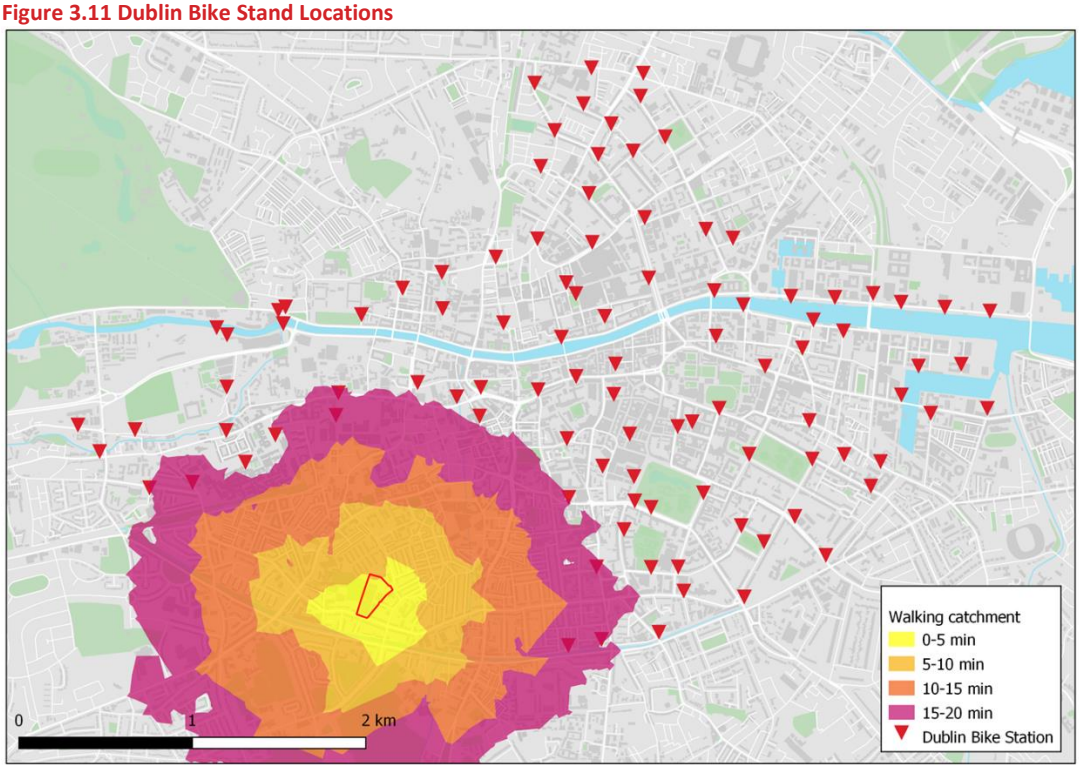
(Map Data © National Transport Authority[1])

3.4.3 In terms of bike sharing infrastructure there are two main bike sharing schemes within Dublin, Dublin Bikes and BleeperBikes. Dublin Bikes is a public bike rental scheme facilitated by numerous stations around Dublin City primarily within the Canal Cordon. BleeperBikes is a station-less bike sharing scheme where users park the bike at designated parking spaces through the city with the scheme extending well beyond the canals into the north and south of the city.

3.4.4 There are limited Dublin Bike stations within walking distance of the sites with the nearest sites approximately 15 minutes' walk, as illustrated in Figure 3.11. Currently there are no plans to expand the Dublin Bikes Scheme with any future stations dependent on the availability of additional funding for capital and operational costs.

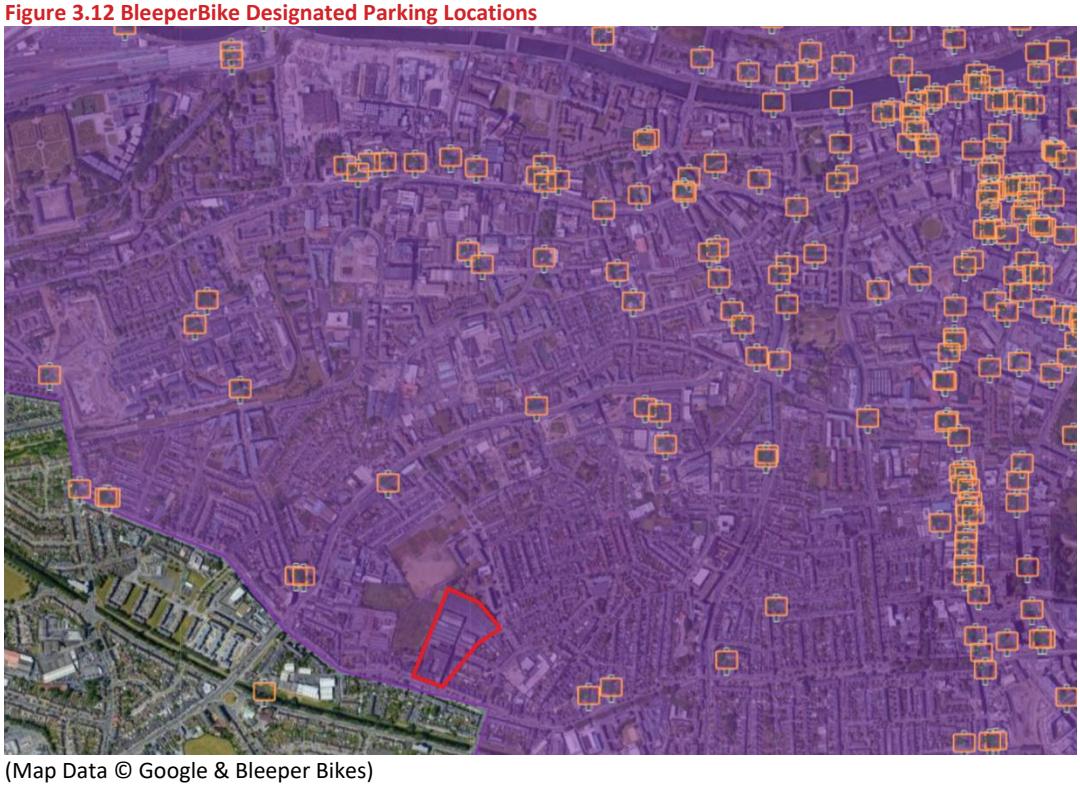
[1] GDA Cycle Network Plan- Existing Facilities Maps https://www.nationaltransport.ie/wp-content/uploads/2014/04/Existing_Facilities_Maps11.pdf

Figure 3.11 Dublin Bike Stand Locations



3.4.5 There are several designated bleeper bike parking spaces close to the proposed development as shown in Figure 3.12. 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 3.12 BleeperBike Designated Parking Locations

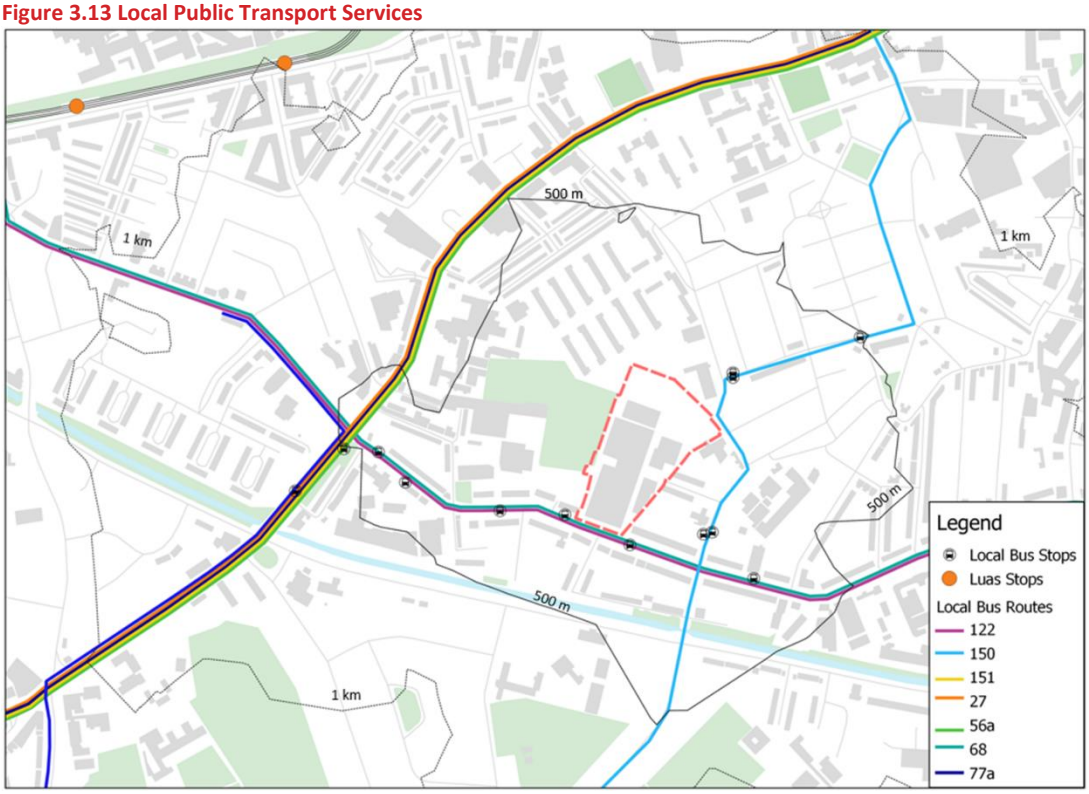


(Map Data © Google & Bleeper Bikes)

3.5 Public Transport Accessibility & 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 12-minute walk to the Fatima Red line Luas stop. Figure 3.13 below illustrates the existing public transport network and stop locations.

Figure 3.13 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 3.15 shows the approximate distances to each local bus stop from the nearest site entrance.

Figure 3.14 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. Bases on the frequencies outlined the site is an *"accessible urban location"* as defined by the DHPLG apartment guidelines, previously discussed in section 2.2.3.

Table 3.3 Local Public Transport Services Frequency (min)

Route		Week Day		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/Foxborugh	20	20	20	30
150	Hawkins St/Rossmore	15	20	20	30
17	Blackrock/UCD/Rialto	20	20	20	30
Luas	Tallaght/Saggart/Citywest-Connolly/Point	4	4	6	9

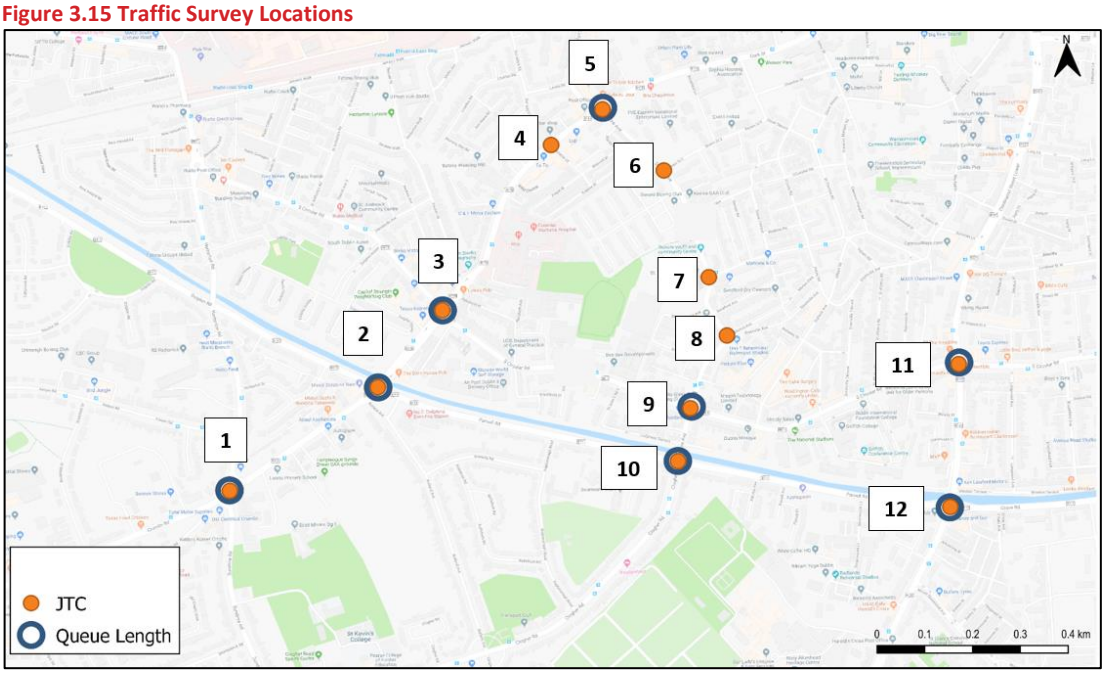
3.6 Road Network Infrastructure & Traffic Conditions

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. There are several busy signalised junctions, such as the Dolphin's Barn Cross, along the South Circular Road as well as along the Canal. These roads carry heavier volumes of traffic particularly during the morning and evening peaks.

3.6.2 Dolphin's Barn Street & Cork Street have bus lanes in both direction for much of their length. The South Circular Road has an eastbound bus lane which operates in the morning from 0700-1000. Donore Avenue provides a more local link connecting residential streets with the South Circular Road and Cork Street. St. Catherine's is a residential cul-de-sac with a narrow carriageway and on-street parking along both sides.

3.6.3 As part of the baseline assessment extensive traffic surveys were undertaken in the local area. 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 in April within the school term. Figure 3.15 illustrates the location of these surveys.

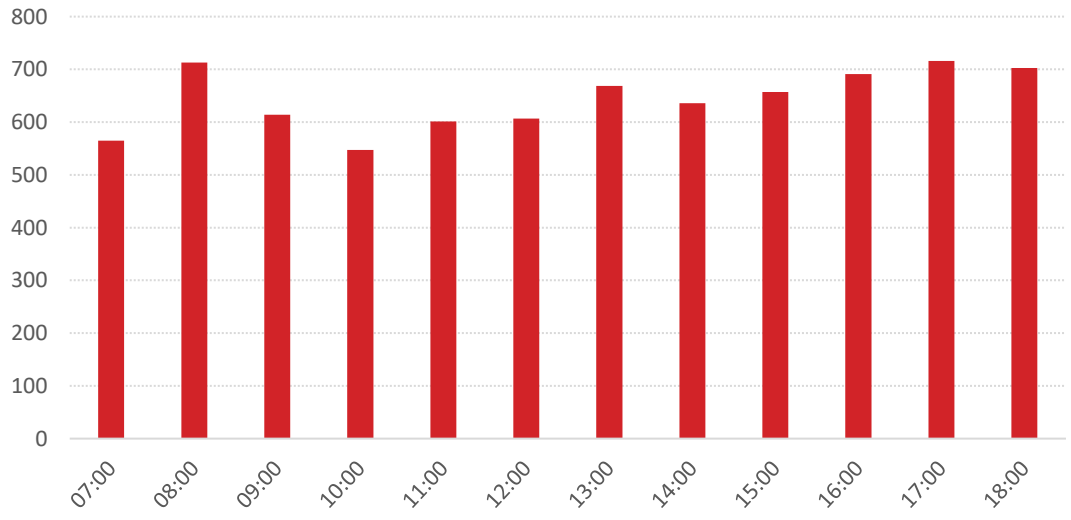
Figure 3.15 Traffic Survey Locations



Link Flows

3.6.4 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 3.16. There is 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 3.16 South Circular Road – Daily Profile of Traffic



3.6.5 The peak hour traffic flows along each of the main links close to the development is outlined for the AM and PM peaks in Figures 3.18 & 3.19 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 3.17 AM Peak Traffic Volumes

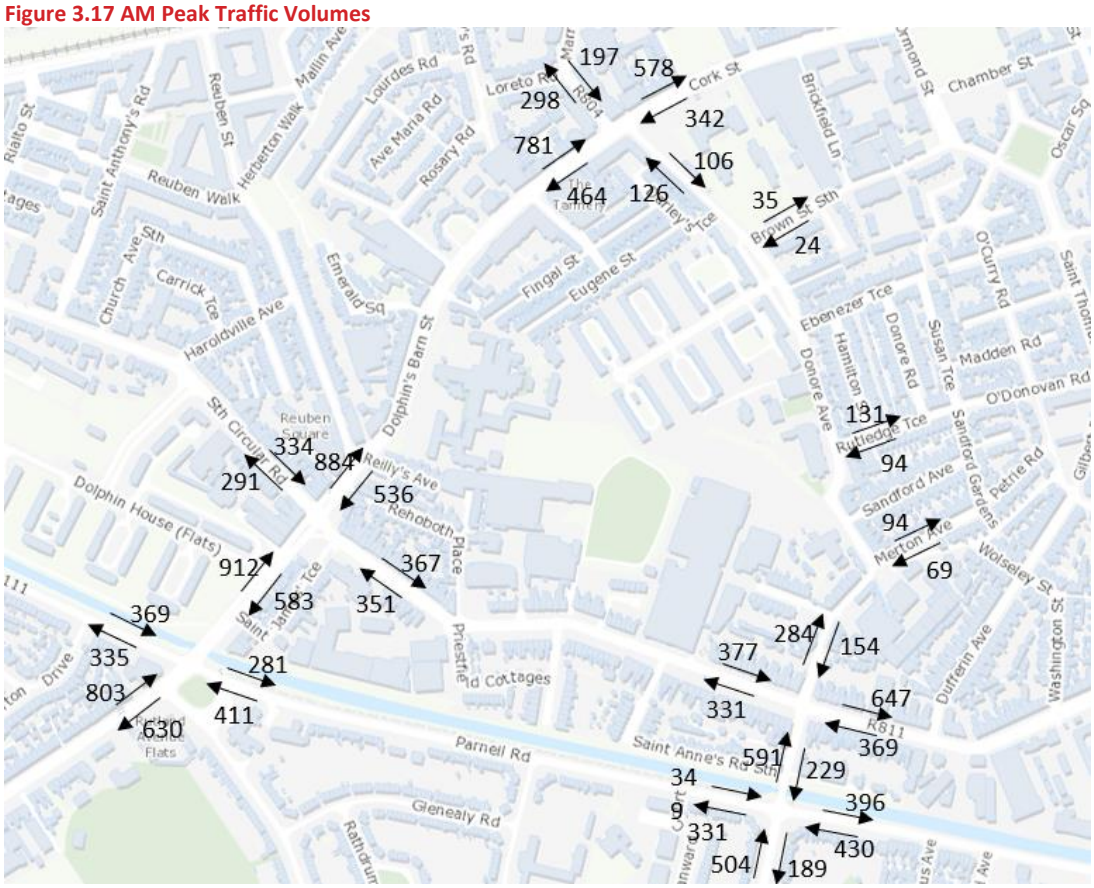
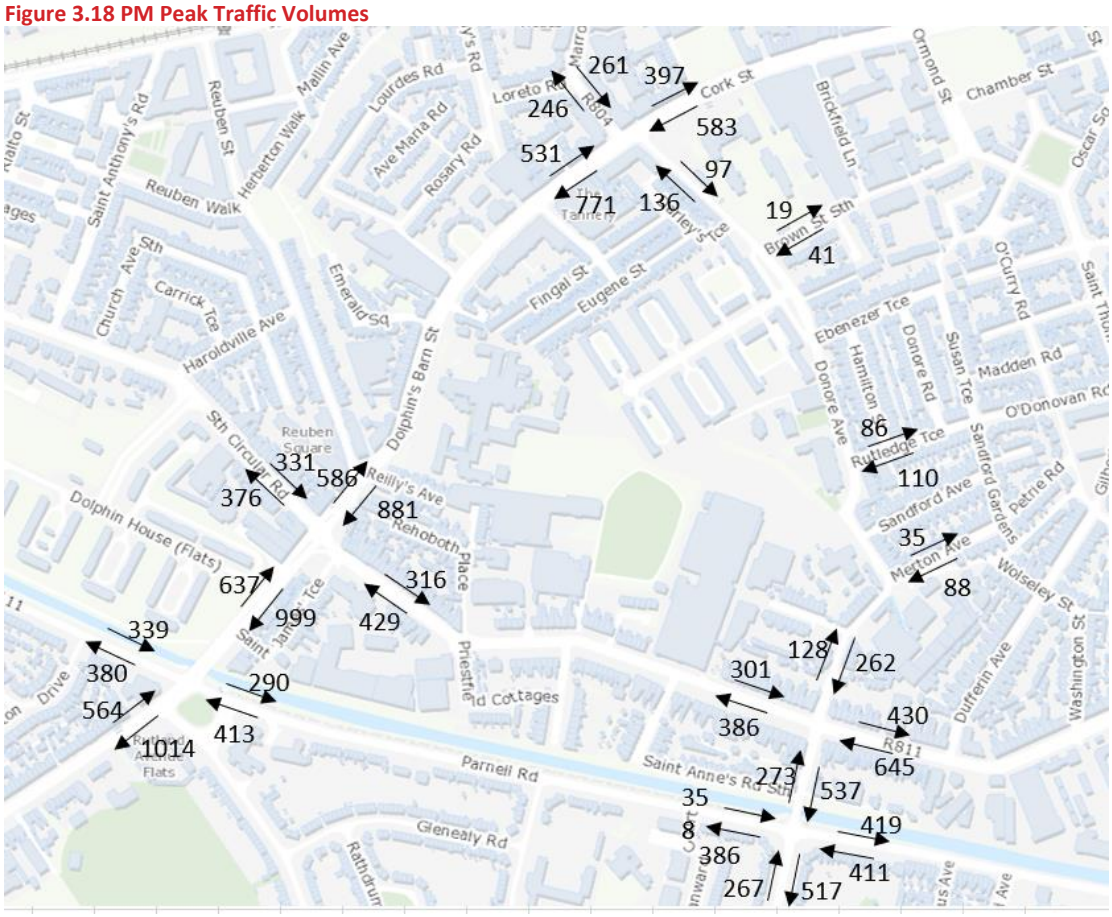


Figure 3.18 PM Peak Traffic Volumes

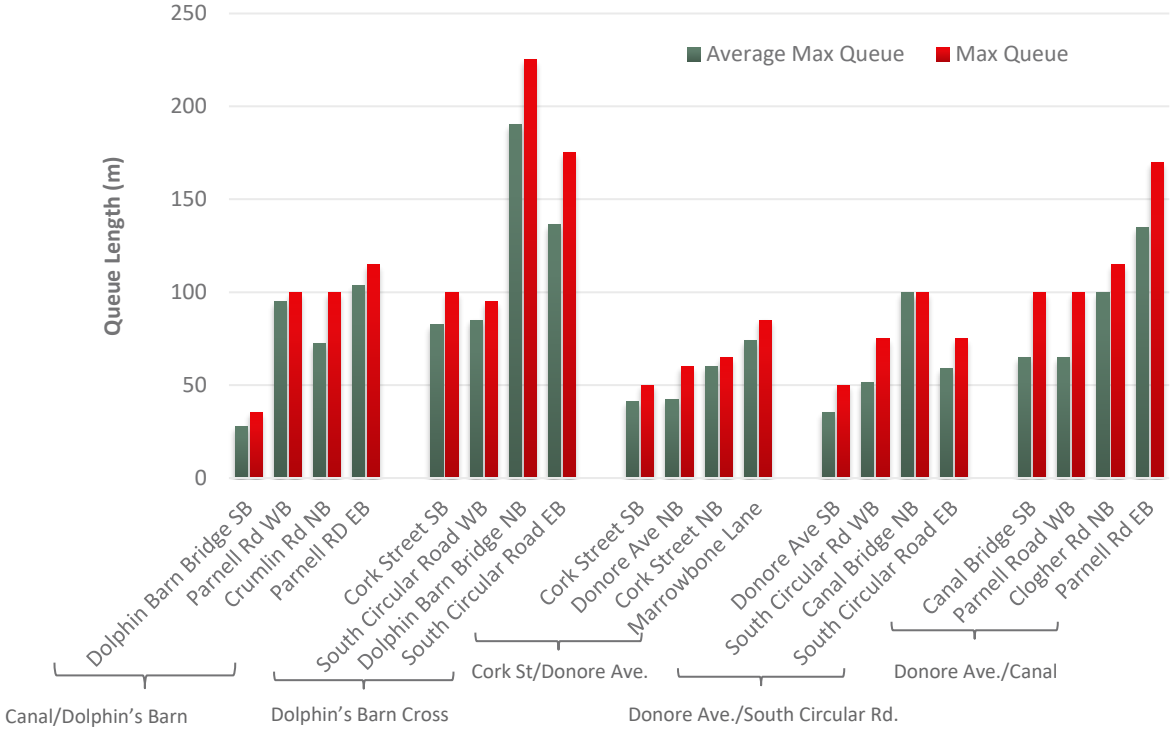


Queue Length Results

3.6.6 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 Figures 3.20 & 3.21 for the AM and PM peak hour respectively.

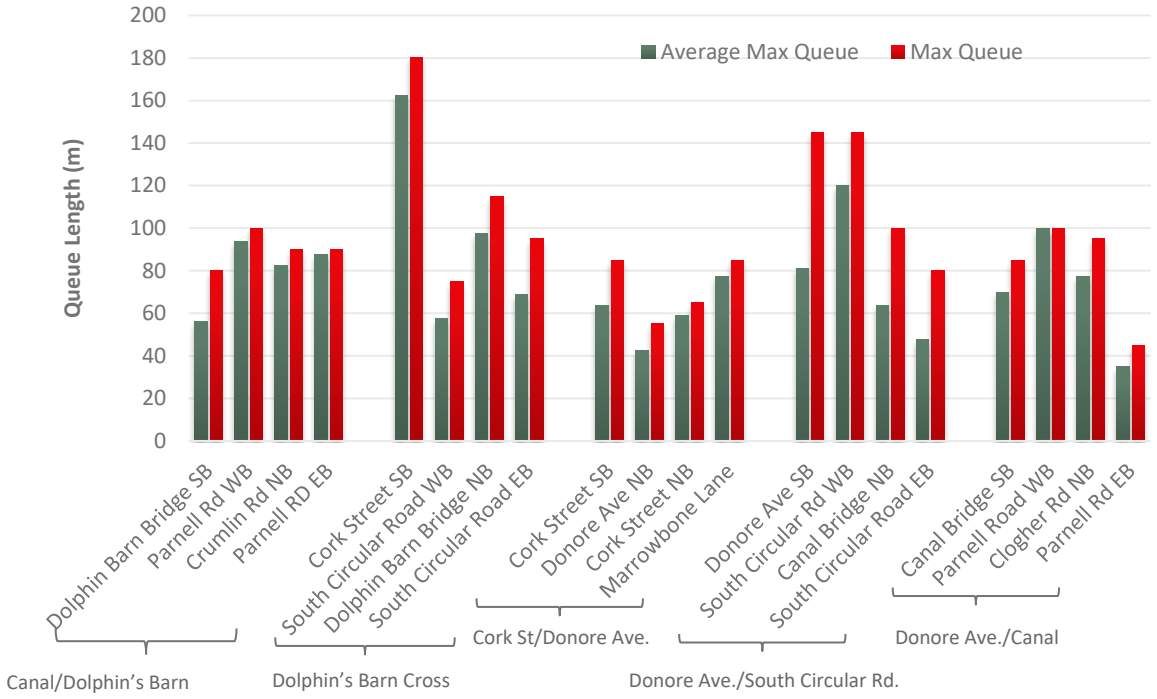
3.6.7 As shown in Figure 3.19, the highest levels of queuing are observed at Dolphin's Barn Cross travelling northbound across the bridge and eastbound along the South Circular Road in the morning peak. There are also higher levels of queueing observed travelling eastbound along the canal at Donore Avenue.

Figure 3.19 AM Peak (8-9) Queue Lengths



3.6.8 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.

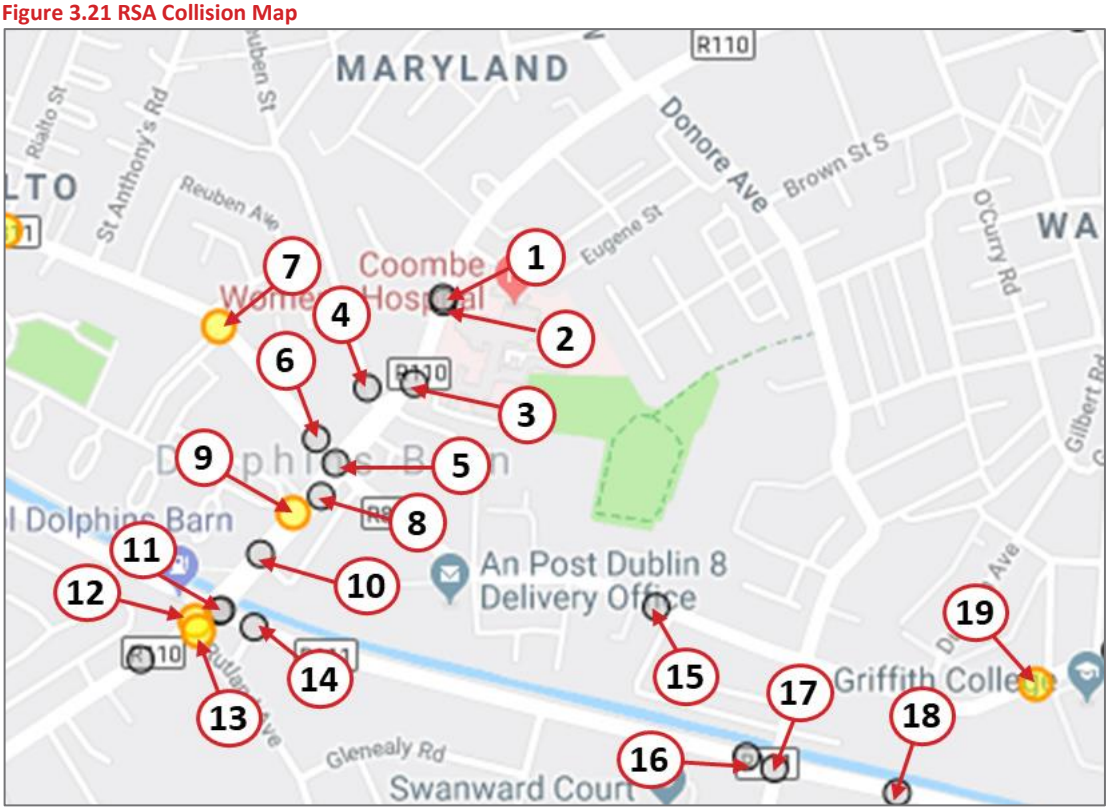
Figure 3.20 PM Peak (17-18) Queue Lengths



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 3.21.

Figure 3.21 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 3.21 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

No.	Severity	Vehicle	Circumstances	Day	Time	No. Causalities
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

3.8 Future Infrastructural Improvements

BusConnects

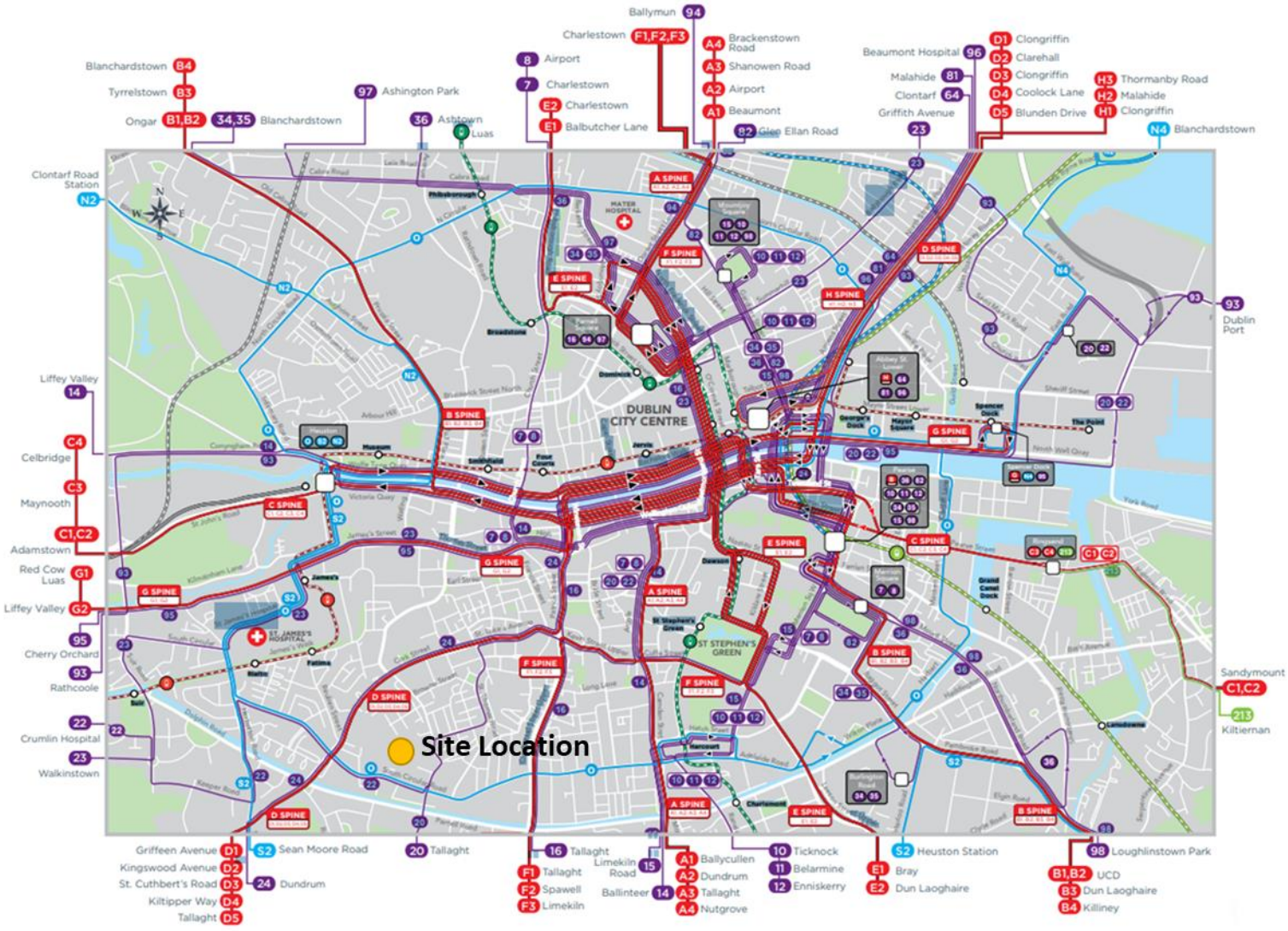
3.8.1 BusConnects is a major investment programme to improve and enhance the bus network of Dublin. It aims to overhaul the current system through a 10-year programme of integrated actions to deliver a more efficient, reliable, integrated and better bus system with a capacity to carry for more people. 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 total 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 the National Transport Authority based on feedback from public consultation.

3.8.3 The Greenhills-City Centre corridor is classified as a very high frequency spine with frequencies of 2.7-3.7minutes 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 3.22 shows the planned network redesign, as of November 2019, which has been revised based on the first round of public consultation. Bus connects is currently in planning stages and will undergo further rounds of public consultation.

Figure 3.22 Bus Connects Network Resign – City Routes & Frequencies

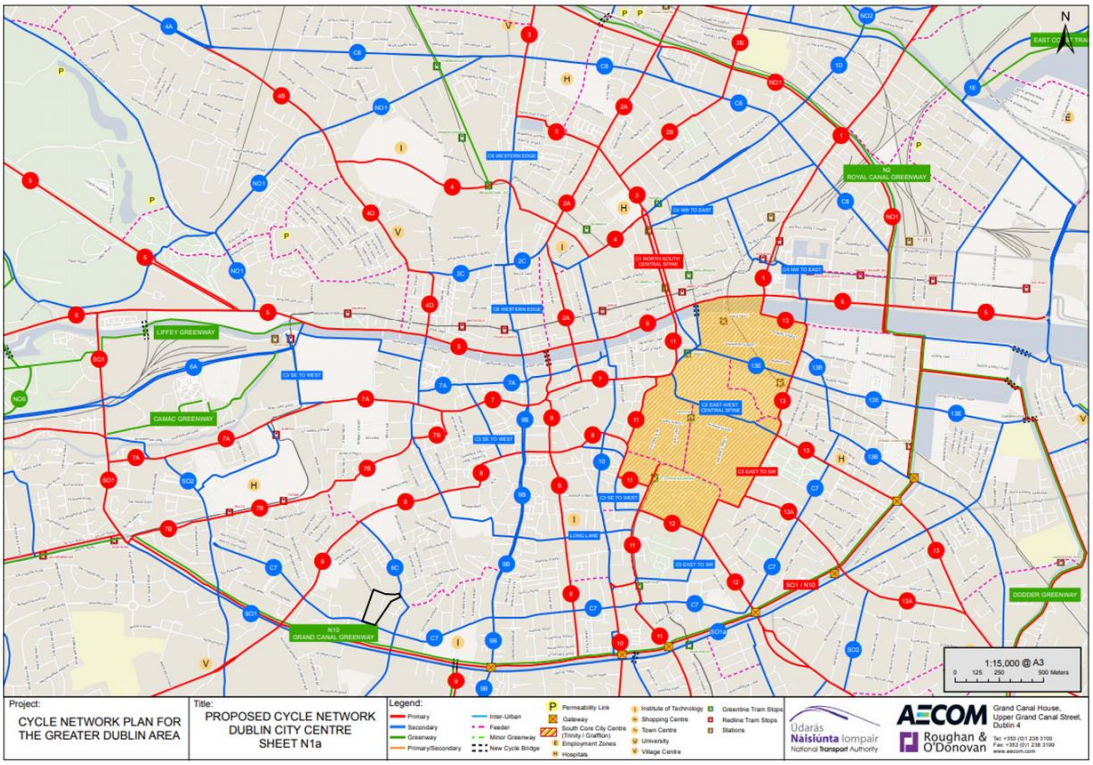


Greater Dublin Area Cycle Network Plan, 2013

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 close to the site as shown in Figure 3.23.

Figure 3.23 GDA Cycle Network Plan – City Centre

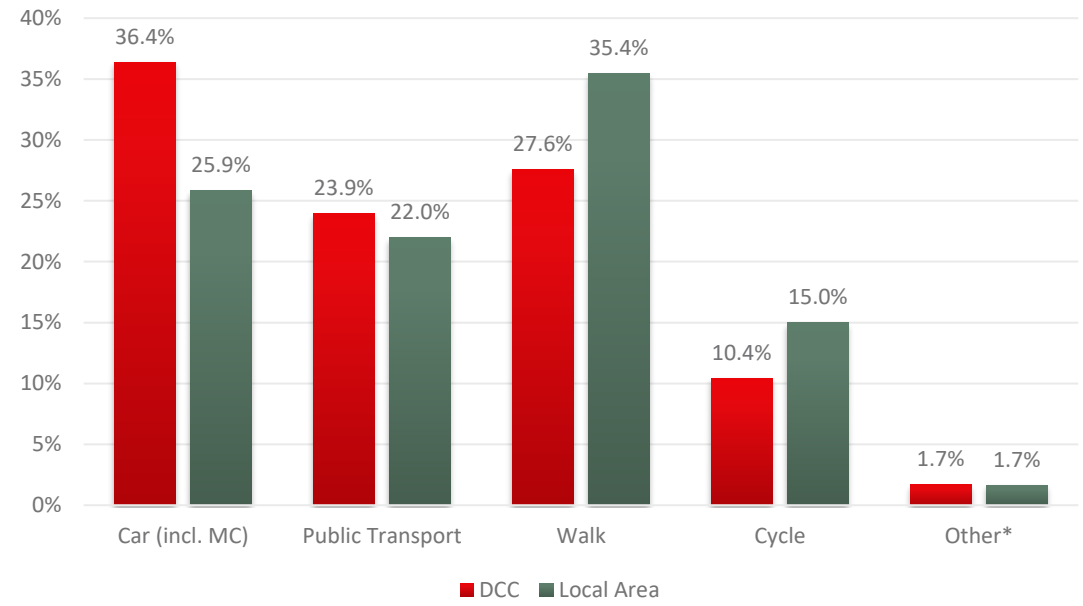


4. BASELINE TRAVEL CHARACTERISTICS

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.

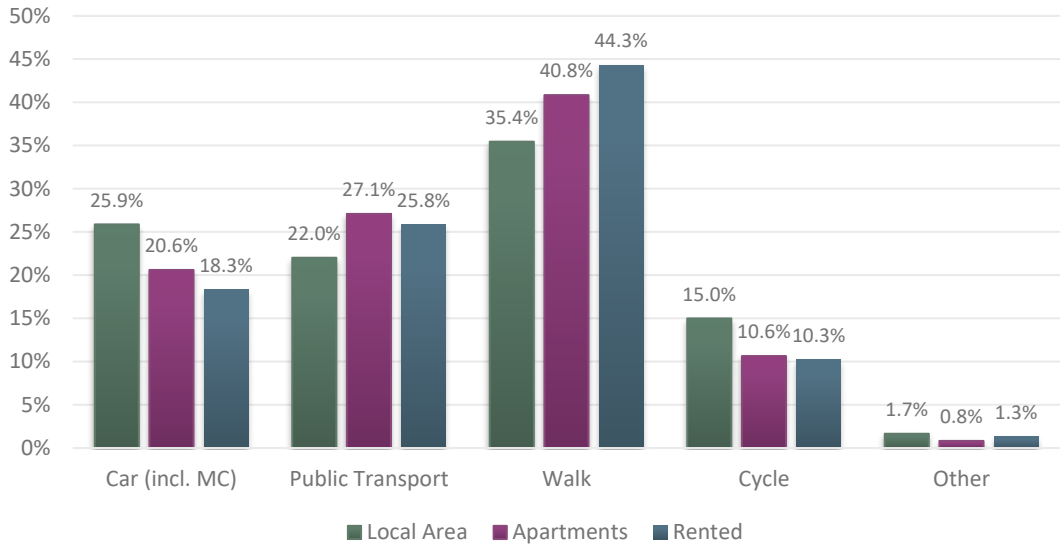
Figure 4.1: DCC & Local Commuting Mode Shares



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. 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 just 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.

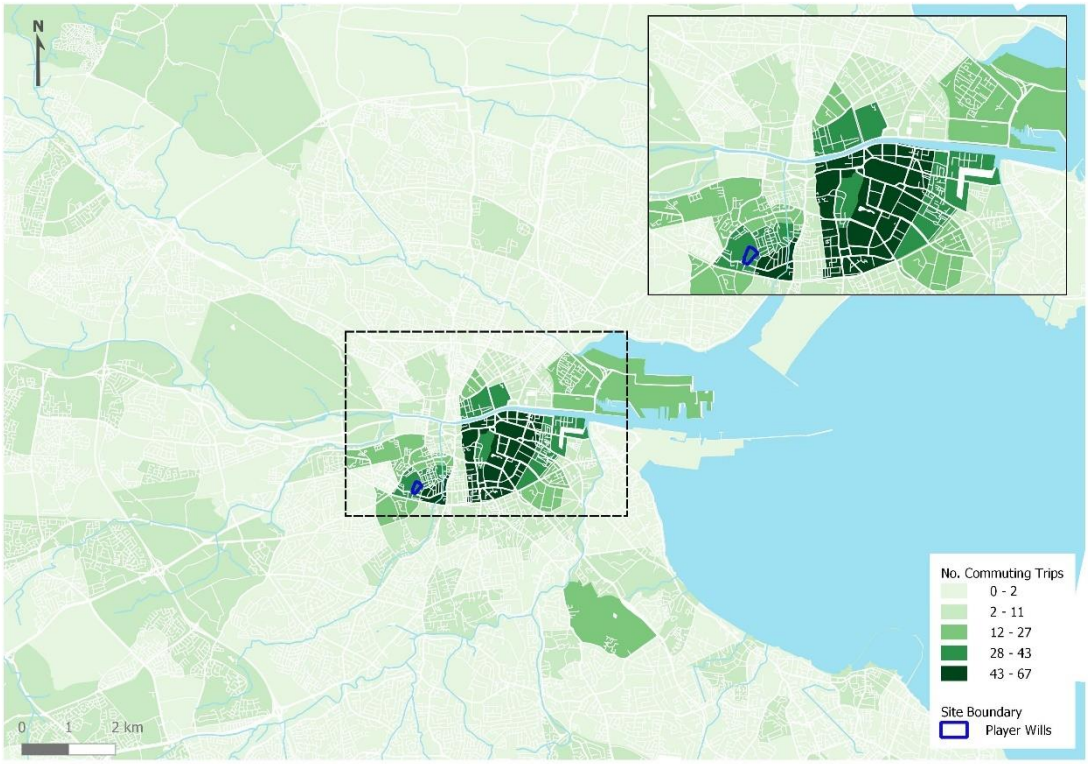
Figure 4.2: Local Commuting Mode Shares by Housing Type



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.

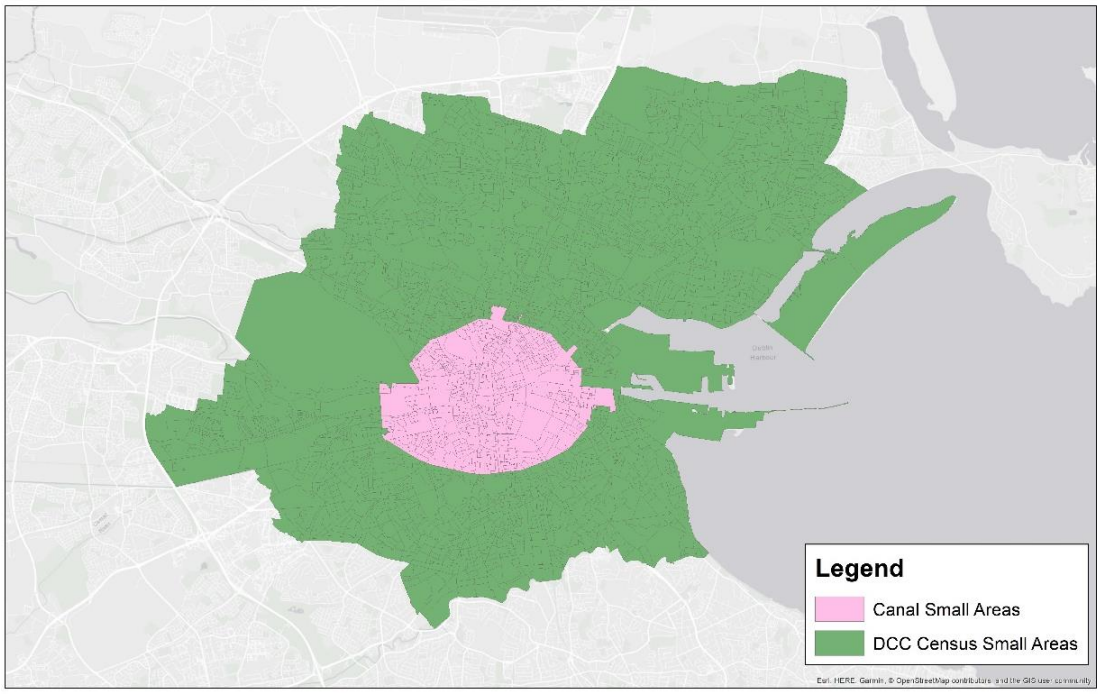
Table 4.1: DCC Estimated Average Car Ownership per Household, Proportion of Households with no Car & Commuting Car Mode Share

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.

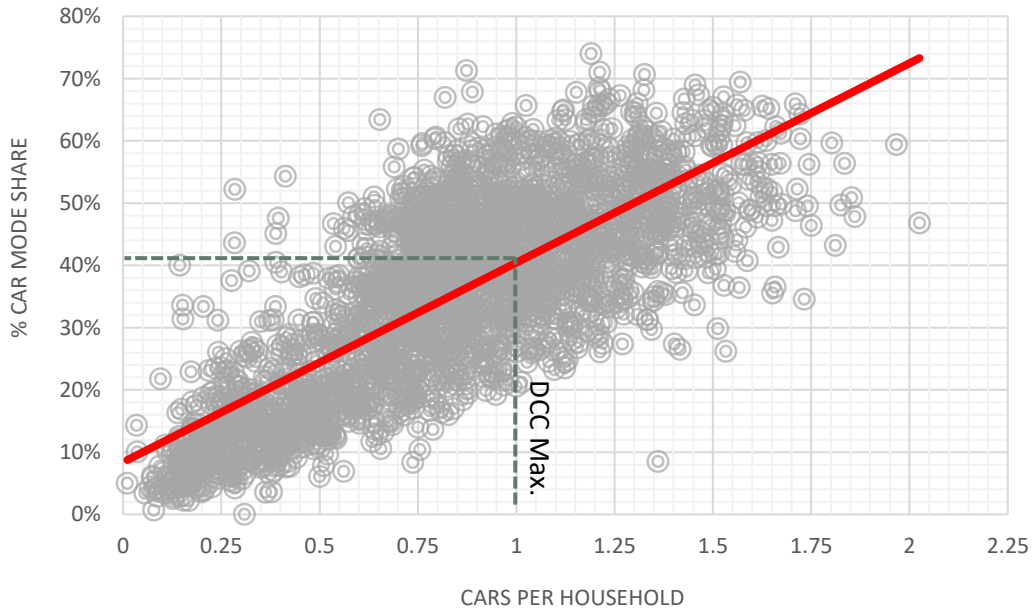
Table 4.2: City Centre Car Ownership Data – By Household Type

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

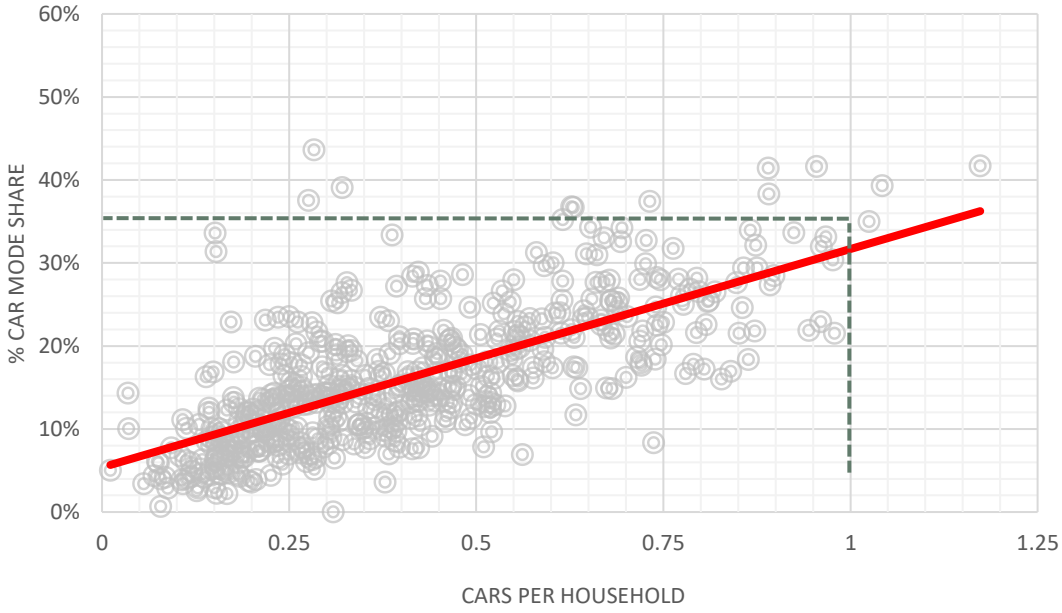
4.4.1 To help understand the likely commuting mode share for differing levels of car ownership the average commuting car mode share was plotted against the average number of cars per household for each small area within DCC and is illustrated in Figure 4.5. The graph illustrates the direct relationship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

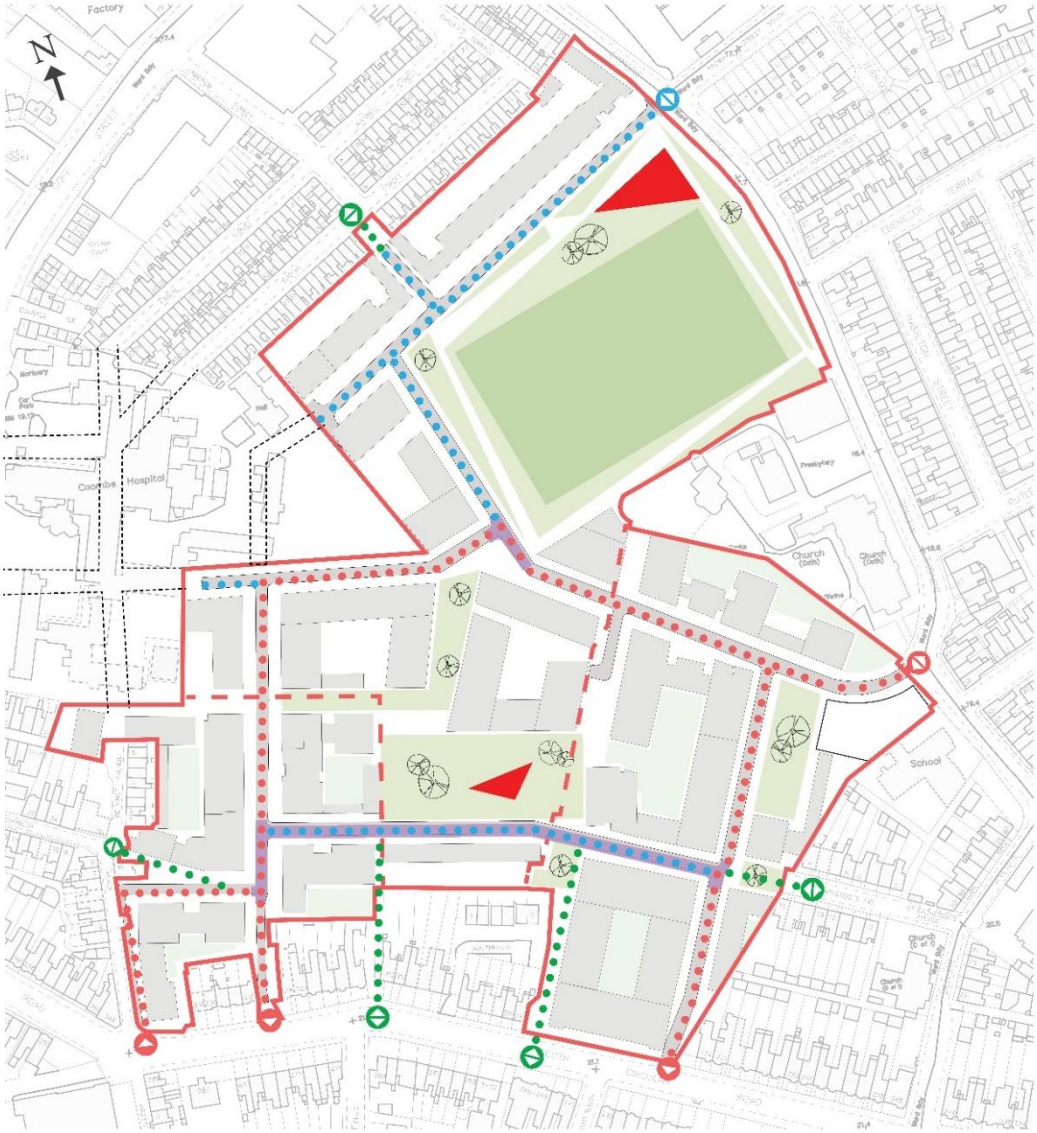


5. PROPOSED DEVELOPMENT & ACCESS ARRANGEMENTS

5.1 Wider Context

5.1.1 As discussed in Section 2.4 of this report, the development forms part of a wider SDRA for which a masterplan has been prepared. 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 as per the masterplan access strategy shown previously in Figure 2.2 and again in Figure 5.1. Though the proposed development and access strategy can operate independently of the delivery and phasing of the remainder of masterplan, it should be considered in the context of the wider masterplan.

Figure 5.1 Masterplan – Proposed Road Layout and Access Strategy



5.2 Development Description

5.2.1 DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV intend to apply to An Bord Pleanála for permission for a mixed-use Build to Rent Strategic Housing Development at the former 'Player Wills' site (2.39 hectares) and adjoining lands (0.67 hectares) under the control of Dublin City Council. A public park, public road and works to South Circular Road and to facilitate connections to municipal services at Donore Avenue are proposed on the Dublin City Council land. The former 'Player Wills' site incorporates Eircode's: D08 T6DC, D08 PW25, D08 X7F8 and D08 EK00 and has frontage onto South Circular Road, St. Catherine's Avenue and Donore Avenue, Dublin 8. The Dublin City Council undeveloped land adjoins the former 'Player Wills' site to the west and the former 'Bailey Gibson' site to the east. The total area of the proposed development site is 3.06 hectares.

5.2.2 The design rationale is to create and deliver a high quality, sustainable, residential led mixed use strategic housing development within this inner-city brownfield site which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on Drawing No. PL0003 contained within the architectural suite of drawings.

5.2.3 The development will consist of:

- the demolition of all buildings (15,454 sq.m GFA), excluding the original fabric of the former Player Wills Factory, to provide for the development of a mixed use(residential, community, arts and culture, creche, food and beverage and retail) scheme comprising predominantly build to rent apartment dwellings (492 no.) together with a significantly lesser quantity of single occupancy shared accommodation private living areas (240 no.), with an average private living floor area of 24.6 sq.m (double the minimum private living space size required for single occupancy shared accommodation) and a arts/culture/community hub within the repurposed ground floor of the former factory building;
- change of use, refurbishment, modifications and alterations to the former Player Wills Factory building (PW1) to include the removal of 1 no. later addition storey (existing 4th storey) and the later addition rear (northern) extension, retention and modification of 3 no. existing storeys and addition of 2 no. storeys set back on the building's south, east and west elevations with an 8-storey projection (max. height 32.53m) on the north eastern corner, with a cumulative gross floor area of 17,630 sq.m including ancillary uses, comprising;
    - at ground floor 852 sq.m of floor space dedicated to community, arts and cultural and exhibition space together with artist and photography studios (Class 1 and Class 10 Use), 503 sq.m of retail floor space (Class 1 Use), 994 sq.m of café/bar/restaurant floor space, 217 sq.m of co-working office floor space (Class 3 Use) and ancillary floor space for welfare facilities, waste management and storage;
    - 240 no. single occupancy shared accommodation private living areas, distributed over levels 1-4, including 2 no. rooms of 30 sq.m, 49 no. rooms of 25 sq.m; 14 no. rooms of 23 sq.m, 58 no. rooms of 22.5 sq.m, 8 no. rooms of 20 sq.m, 104 no. rooms of 19 sq.m and 5 no. disabled access (Part M) rooms (3 no. 32 sq.m and 2 no. 26 sq.m); 21 no. kitchen/dining areas, and, 835 sq.m of dedicated shared accommodation services, amenities and facilities distributed across levels 1-4, to accommodate uses including lounge areas, entertainment (games) area, 2 no. external terraces (Level 03 and 04), laundry facilities, welfare facilities and waste storage;

- 47 no. build-to rent apartments distributed across levels 1-7 including 12 no. studio apartments; 23 no. 1 bed apartments, 8 no. 2 bed apartments: and, 4 no. 3-bed apartments;
- 1,588 sq.m of shared (build to rent and shared accommodation) services, amenities and facilities including at ground floor reception/lobby area, parcel room, 2 no. lounges and administration facilities; at Level 01 entertainment area, TV rooms, entertainment (games room), library, meeting room, business centre; at Level 02 gym and storage and at Level 07, a lounge area.
- Provision of communal amenity outdoor space as follows; PW1 - 450 sq.m in the form of roof terraces dedicated to shared accommodation and 285 sq.m roof terrace for the proposed apartments .
- a basement (190 sq.m) underlying the proposed 8-storey projection to the northeast of PW1 to accommodate plant.

- the construction of 445 no. Build to Rent apartment units, with a cumulative gross floor area of 48,455 sq.m including ancillary uses distributed across 3 no. blocks (PW 2, 4 and 5) comprising;
  - PW2 (45,556 sq.m gross floor area including ancillary uses) - 415 no. apartments in a block ranging in height from 2-19 storeys (max. height 63.05m), incorporating 16 no. studio units; 268 no. 1 bed apartments, 93 no. 2 bed apartments and 38 no. 3-bed apartments. At ground floor, 2 no. retail unts (combined 198 sq.m) (Class 1 use), and a café/restaurant (142 sq.m). Tenant services, amenities and facilities (combined 673 sq.m) distributed across ground floor (lobby, mail room, co-working and lounge area), Level 06 (terrace access) and Level 17 (lounge). Provision of communal amenity open space including a courtyard of 1,123 sq.m and roof terraces of 1,535 sq.m
  - Double basement to accommodate car parking, cycle parking, waste storage, general storage and plant.
  - PW4 (1,395 sq.m gross floor area including ancillary uses) - 9 no. apartments in a part 2-3 storey block (max. height 10.125m) comprising, 2 no. 2-bed duplex apartment units and 7 no. 3-bed triplex apartment units. Provision of communal amenity open space in the form of a courtyard 111 sq.am
  - PW5 (1,504 sq.m gross floor area including ancillary uses) - 21 no. apartments in a 4 storey block (max. height 13.30m) comprising 12 no. studio apartments, 1 no. 1-bed apartment, 5 no. 2-bed apartments, and 3 no. 3-bed apartments. Provision of communal amenity space in the form of a courtyard 167sq.m. Provision of communal amenity open space in the form of a courtyard 167 sq.m

- the construction of a childcare facility (block PW4) with a gross floor area of 275 sq.m and associated external play area of 146 sq.m;
- the provision of public open space with 2 no. permanent parks, 'Players Park' (3,960 sq.m) incorporating active and passive uses to the northwest of the former factory building on lands owned by Dublin City Council; 'St. Catherine's Park' (1,350 sq.m)a playground, to the north east of the Player Wills site adjacent to St. Catherine's National School. A temporary public park (1,158 sq.m) to the northeast of the site set aside for a future school extension. The existing courtyard (690 sq.m) in block PW1 (former factory building) to be retained and enhanced and a public plaza (320 sq.m) between proposed blocks PW and PW4.

- 903 no. long-stay bicycle parking spaces, with 861 no. spaces in the PW2 basement and 42 no. spaces at ground level in secure enclosures within blocks PW4 and PW5. 20 no. spaces reserved for non-residential uses and 110 no. short-stay visitor bicycle spaces provided at ground level.
- 4 no. dedicated pedestrian access points are proposed to maximise walking and cycling, 2 no. from South Circular Road, 1 no. from St. Catherine's Avenue and 1 no. from Donore Avenue.
- in the basement of PW2, 148 no. car parking spaces to serve the proposed build to rent apartments including 19 no. dedicated disabled parking spaces and 6 no. motorcycle spaces. 20 no. spaces for a car sharing club ('Go Car' or similar). 10% of parking spaces fitted with electric charging points.
- in the basement of PW2, use for 81 no. car parking spaces (1,293 sq.m net floor area) including 5 no. dedicated disabled parking spaces, 3 no. motorcycle spaces and 10% of parking spaces fitted with electric charging points to facilitate residential car parking associated with future development on neighbouring lands. The area will not be used for carparking without a separate grant of permission for that future development. In the alternative, use for additional storage (cage/container) for residents of the proposed development.
- 37 no. surface level car parking spaces including 3 no. disabled access and 3 no. creche set down spaces and 10% fitted with electric charging points. 2 no. loading bays and 2 no. taxi set-down areas.
- development of internal street network including a link road (84m long x 4.8m wide) to the south of the proposed 'Players Park' on land owned by Dublin City Council that will provide connectivity between the former 'Bailey Gibson' site and the 'Player Wills' site.
- vehicular access will be provided via Donore Avenue with a one-way exit provided onto South Circular Road to the east of block PW1(the former factory building);
- replacement and realignment of footpaths to provide for improved pedestrian conditions along sections of Donore Avenue and South Circular Road and realignment of centreline along sections of Donore Avenue with associated changes to road markings;
- a contra-flow cycle lane is proposed at the one-way vehicular exit to the east of PW1 (former factory building) to allow 2-way cycle movements via this access point;
- decommissioning of existing 2 no. ESB substations and the construction of 2 no. ESB substations and associated switch rooms, 1 no. single ESB substation in PW 1 (43.5 sq.m) and 1 no. double ESB substation in PW2 (68 sq.m);
- the construction of a waste and water storage building (combined 133 sq.m, height 4.35m) to the west of building PW1;
- all ancillary site development works; drainage, rooftop solar photovoltaics (20 no. panels total), landscaping, boundary treatment and lighting.

5.3 Design Aim & Objectives

5.3.1 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 2.7.

5.3.2 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;
- Reduce vehicle speeds to a minimum throughout the development;
- Limit the impact on the surrounding area;
- Ensure the safety of all users across all modes;
- Future proof the layout and strategy for the future delivery of the full masterplan.

5.4 Design Criteria & Considerations

5.4.1 To achieve the objectives outlined 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 2m 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. Lower kerbs or no kerbs with 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.

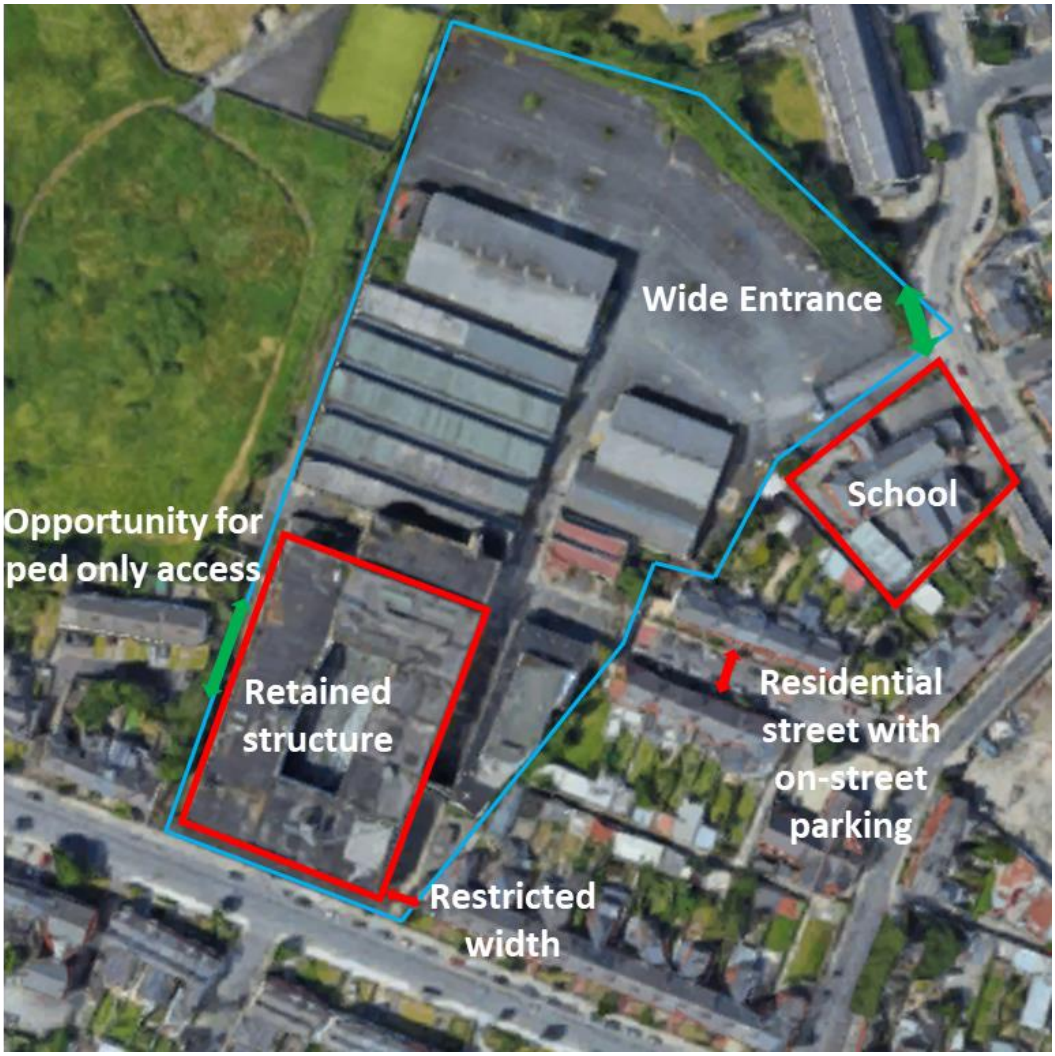
5.5 Site Access Constraints & Opportunities

5.5.1 On the Player Wills Site, it is not feasible to provide two-way entry and exit through the existing site entrance onto the South Circular Road with appropriate footpath provision based on the available width and encroaching boundary wall. However, the access point onto Donore Avenue is sufficiently wide to accommodate two-way flow for all modes though this is next to a primary school. The opportunities and constraints described are summarised below in Figure 5.3.

[2] Section 1.7.3. https://www.cyclemanual.ie/

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

Figure 5.2: Site Access Opportunities & Constraints

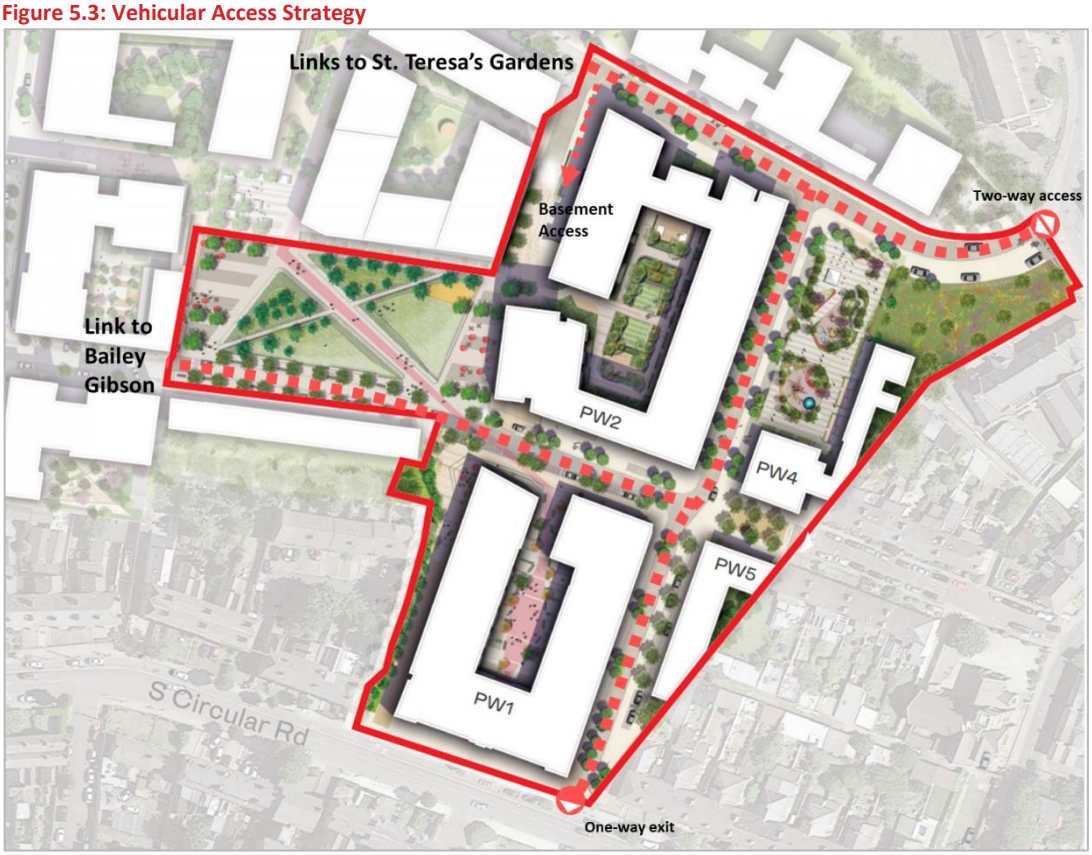


5.6 Proposed Access Strategy

5.6.1 The access strategy for the proposed development has been designed to prioritise sustainable transport modes, while allowing for required vehicular access to car parking and for service vehicles. Not only will it seek to provide a safe and permeable environment for residents of the proposed development, it will also aim to provide a safe and direct link between the site and the external pedestrian and cycling networks and a future link to the full masterplan area.

5.6.2 The proposed vehicular access strategy is shown in Figure 5.4. This has been developed based on the site constraints and opportunities outlined. As shown, access will be limited to a one-way exit onto South Circular Road and two-way access into Donore Avenue. Both junctions will be priority junctions. The road network will ultimately link to the DCC lands and connect to the road network on the Bailey Gibson site. There will be no vehicular access through St. Catherine's Avenue. The majority of vehicular traffic will exit onto the South Circular Road in the morning peak, traveling south and westwards away from the city. Providing an exit at this point will reduce the need for traffic to travel past the school during the morning peak. The majority of cars will return to site in the evening, after school hours.

Figure 5.3: Vehicular Access Strategy



5.6.3 Pedestrian and cyclist access will be provided from multiple access points along the South Circular Road, St. Catherine's Avenue and Donore Avenue. The access points to the west of the factory building and onto St. Catherine Avenue will be pedestrian and cyclists only with pedestrians also permitted to enter via the retained factoru building, PW1, and through the courtyard. Figure 5.4 & Figure 5.5 illustrates the access strategy for pedestrians and cyclists respectively.

Figure 5.4 Pedestrian Access Strategy

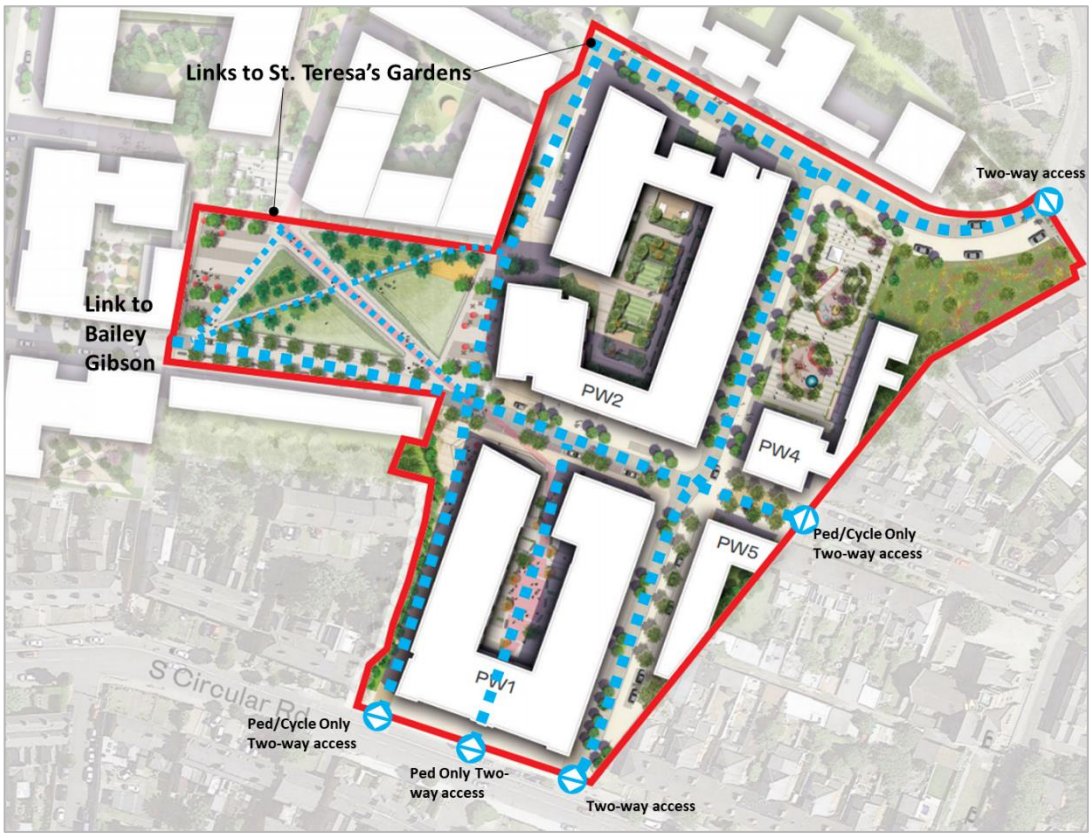


Figure 5.5 Cyclist Acces Strategy

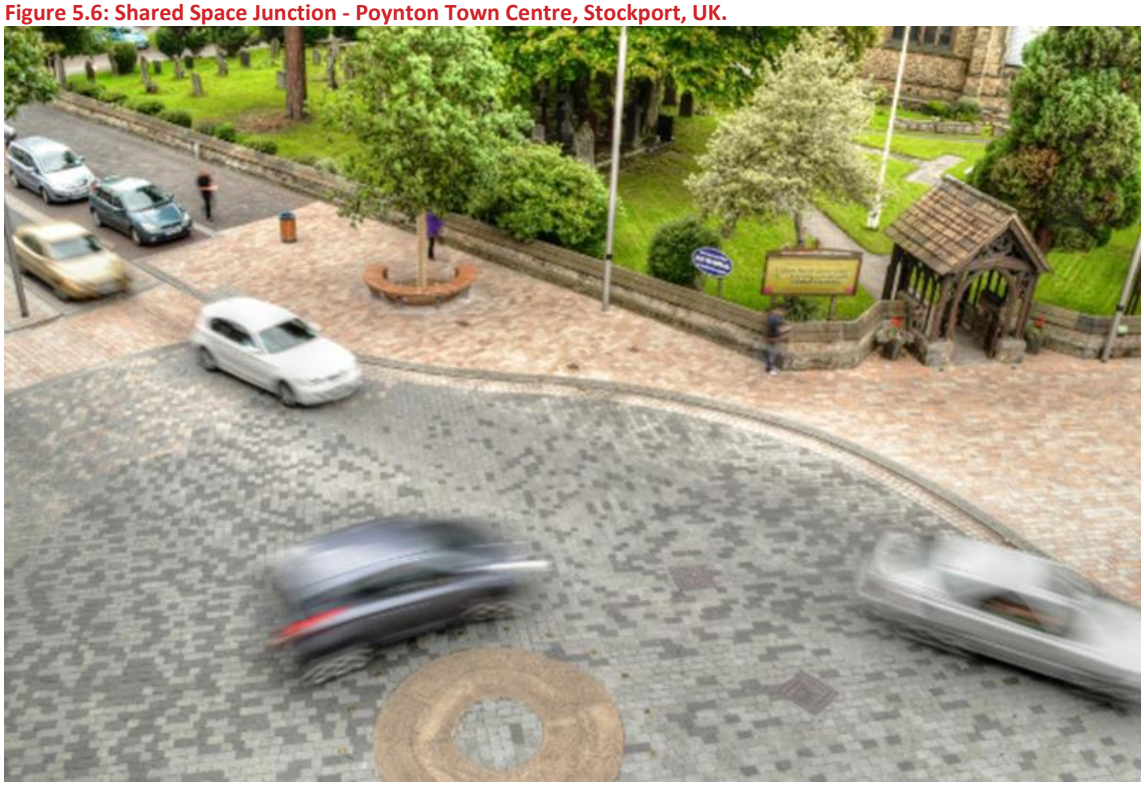
5.7 Internal Road Layout & Design

5.7.1 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.Footpath widths have been maximised internally and range between 2m-8m in width. There are also a number of pedestrian/cyclist only routes and two neighbourhoods parks with open space for pedestrians to walk through.

5.7.2 The road linking east-west has been designed as a shared surface road connecting to the Bailey Gibson site south of the neighbourhood park. This is as proposed in the masterplan. 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.

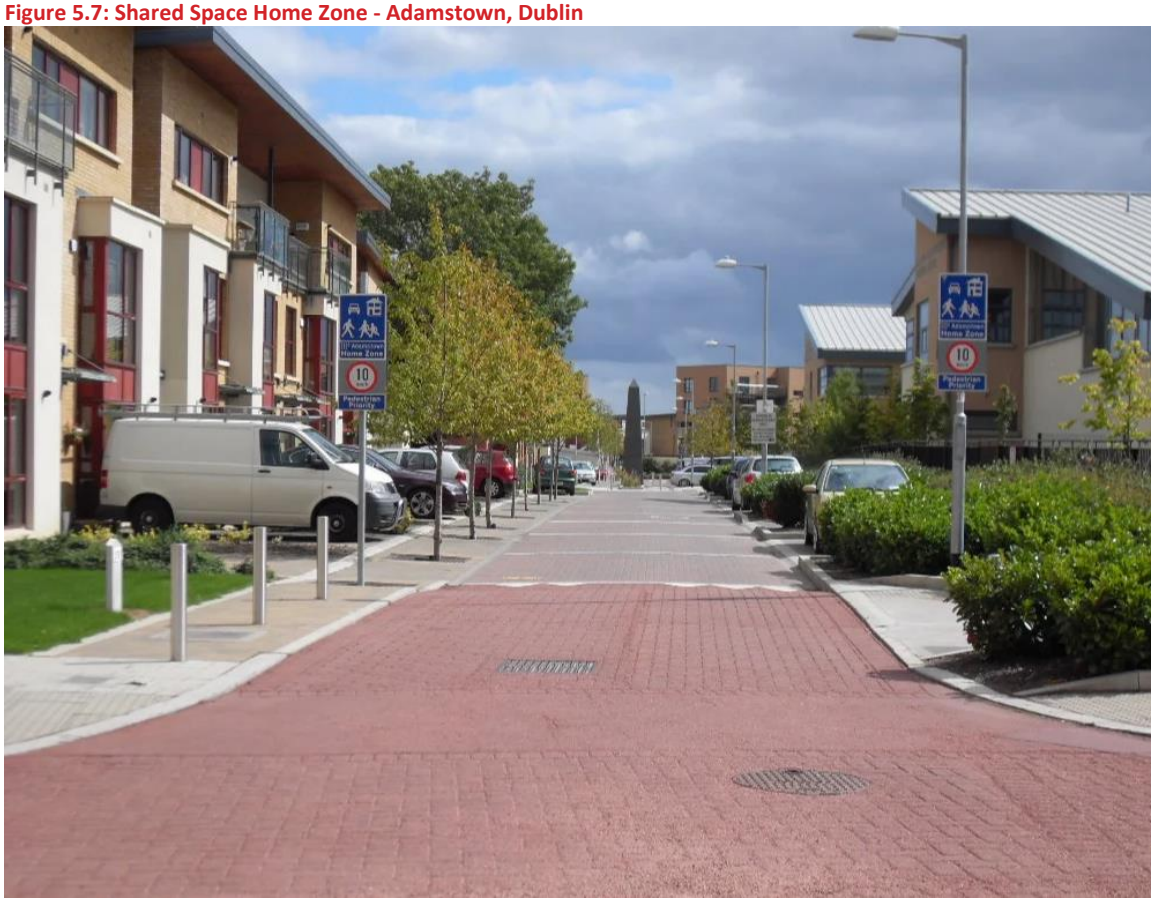
5.7.3 The purpose of the shared space is to encourage pedestrian priority through the heart of the development, reducing vehicles speeds and contributing to the sense of place and quality of public realm. It is in line with the guidance set out in DMURS which states shared surfaces and junction are highly 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. Research has shown that changes in surface material alone (such as block paving) can reduce vehicle speeds by 4-7 kph[4]. Examples of the use of shared surface in junction and street design is provided in Figure 5.6 & Figure 5.7.

Figure 5.6: Shared Space Junction - Poynton Town Centre, Stockport, UK.



[4] Refer to Section 7.2.15 of Manual for Streets. 2007

Figure 5.7: Shared Space Home Zone - Adamstown, Dublin



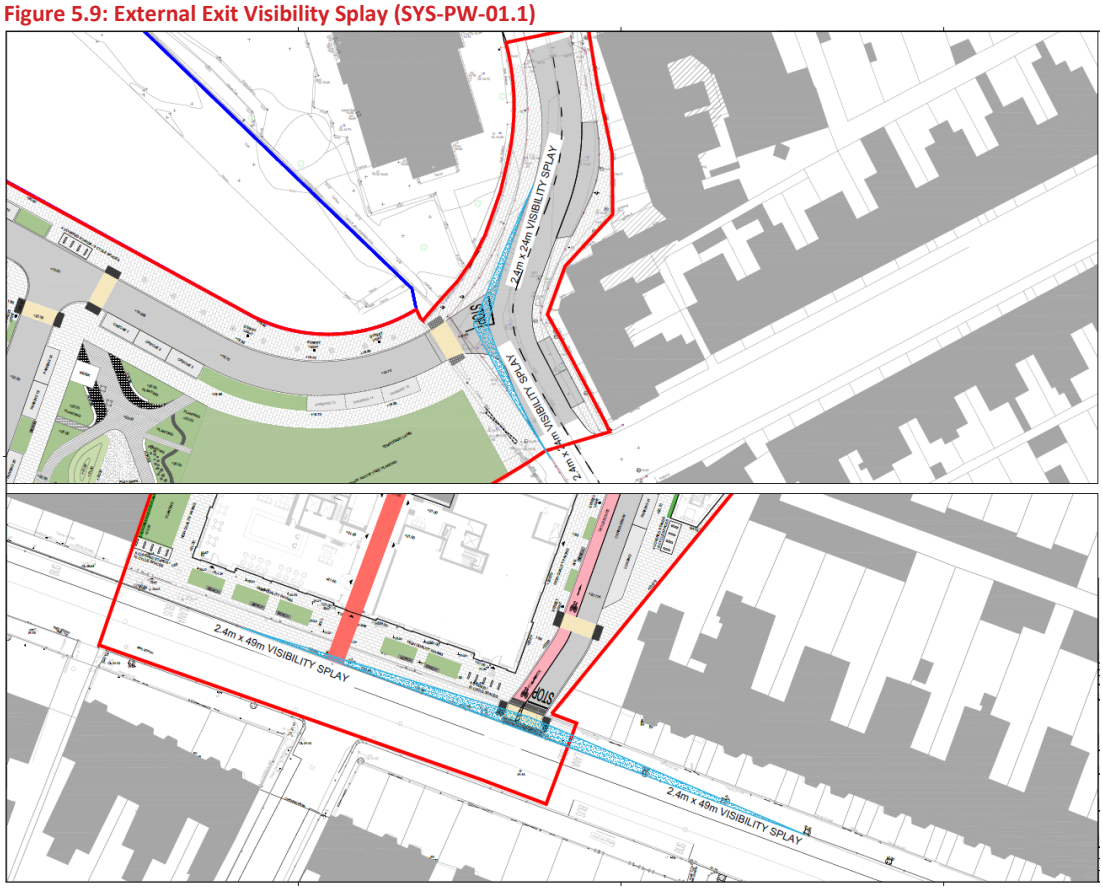
1.1.1 Figure 5.9 shows in the internal road layout in full with the proposed pedestrian crossings and shared surface. This drawing, SYS-PW-02, is also included in Appendix A and the suite of traffic and transport drawings provided with the application. Further details on the landscaping, public realm and cross sections can be found in the Landscape Design Statement provided under separate cover as part of the application.

Figure 5.8: Internal Road Layout (SYS-PW-02)

5.8 Visibility Splay Assessment

5.8.1 In accordance with DMURS a sightline of 49m is required from the site exit on the South Circular Road at a setback of 2.4m based on the design speed of 50kph along South Circular Road. Along Donore Avenue a sightline of 24m is required based on the lower speed limit of 30kph. These visibility splay requirements are achieved for the proposed exits at the existing access points as shown in Figure 5.9 and in SYSTRA drawing SYS-PW-01 included within Appendix A. A scaled drawing of the visibility splay is also provided with the planning pack.

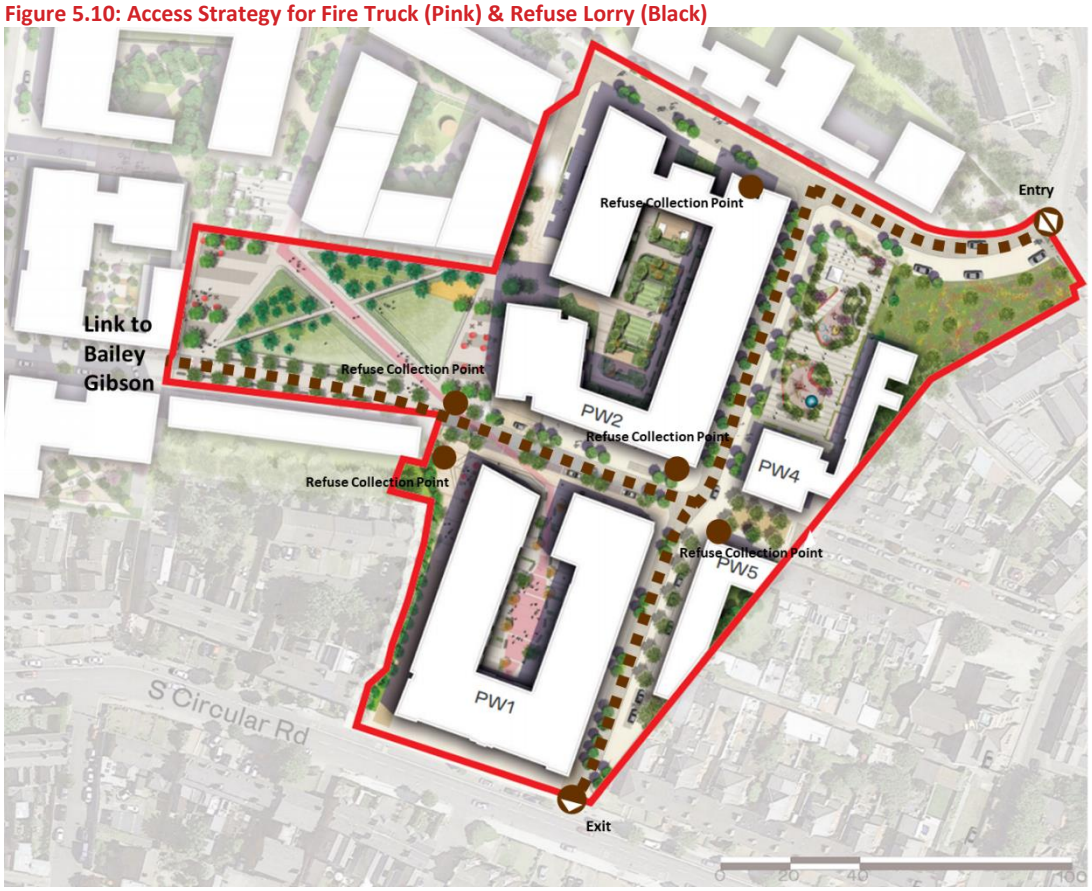
Figure 5.9: External Exit Visibility Splay (SYS-PW-01.1)



5.9 Refuse Vehicle Access

5.9.1 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 points by the management company one hour prior to collection and returned to the bin stores directly after collection. Each collection point has been reviewed to ensure the bins, when on-street, do not block footpaths provided or impact access through the public realm. The proposed access strategy for refuse vehicles is outlined below in Figure 5.11.

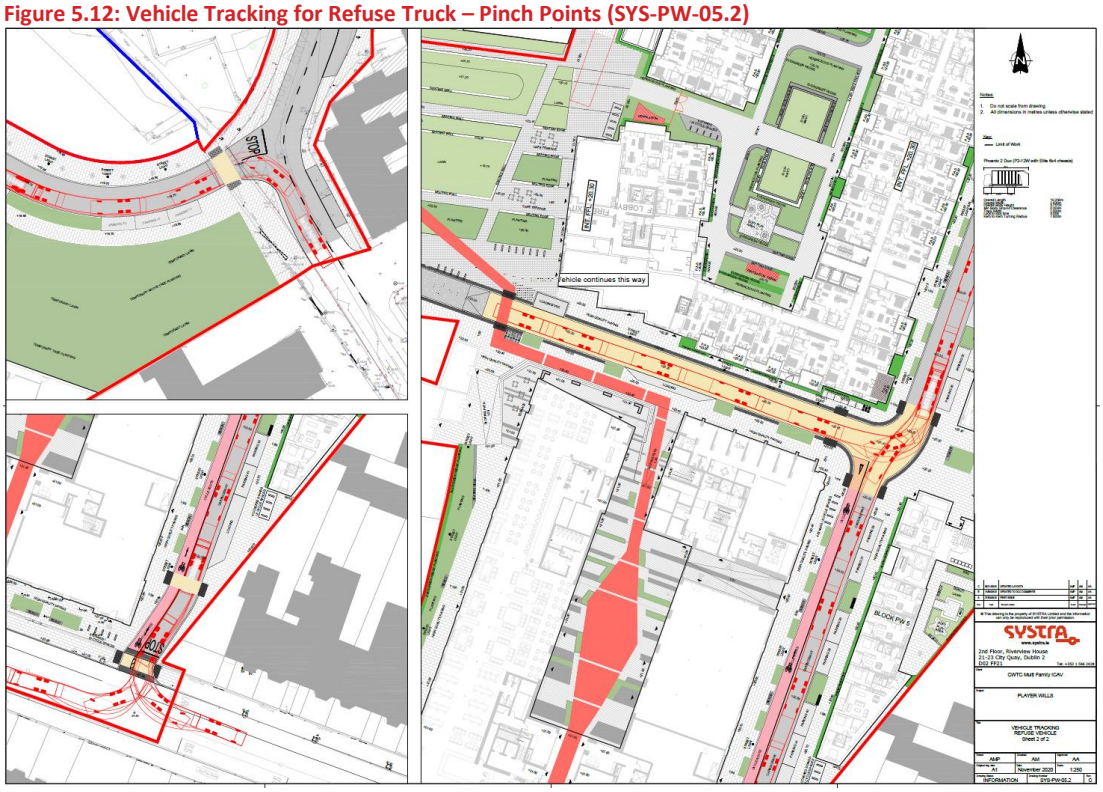
Figure 5.10: Access Strategy for Fire Truck (Pink) & Refuse Lorry (Black)



5.9.2 The access routes have been assessed using AutoTrack to ensure a 11.2m refuse lorry can use the accesses provided and navigate the internal road network easily. The results of this assessment, shown in Figure 5.11, show the internal network can cater for the refuse vehicles. These drawings, SYS-PW-05.1 & SYS-PW-05.2, are included in Appendix A and within the set of scaled drawings provided.

Figure 5.11: Vehicle Tracking for Refuse Truck (SYS-PW-05.1)

Figure 5.12: Vehicle Tracking for Refuse Truck – Pinch Points (SYS-PW-05.2)



5.10 Emergency Vehicle Access

5.10.1 In addition to refuse vehicle the access for fire tender has also been tracked to ensure emergency access of the entry and exit points and internal road network. A fire tender of 8.7m length has been tracked. The fire tender will require access into both the PW2 courtyard

and park to access the PW2 apartment block and the creche respectively. The park and courtyard have been design to enable access to both. Where the tender does have to traverse the park the paving and grass has been design flat to ensure access. The access strategy for the fire tender is shown in Figure 5.13 with the vehicle tracking shown in Figure 5.14 &

5.10.2 Figure 5.15. These drawings, SYS-PW-04.1 & SYS-PW-04.2, are provided in Appendix A and within the set of scaled drawings provided with the application.

Figure 5.13: Fire Tender Access Strategy

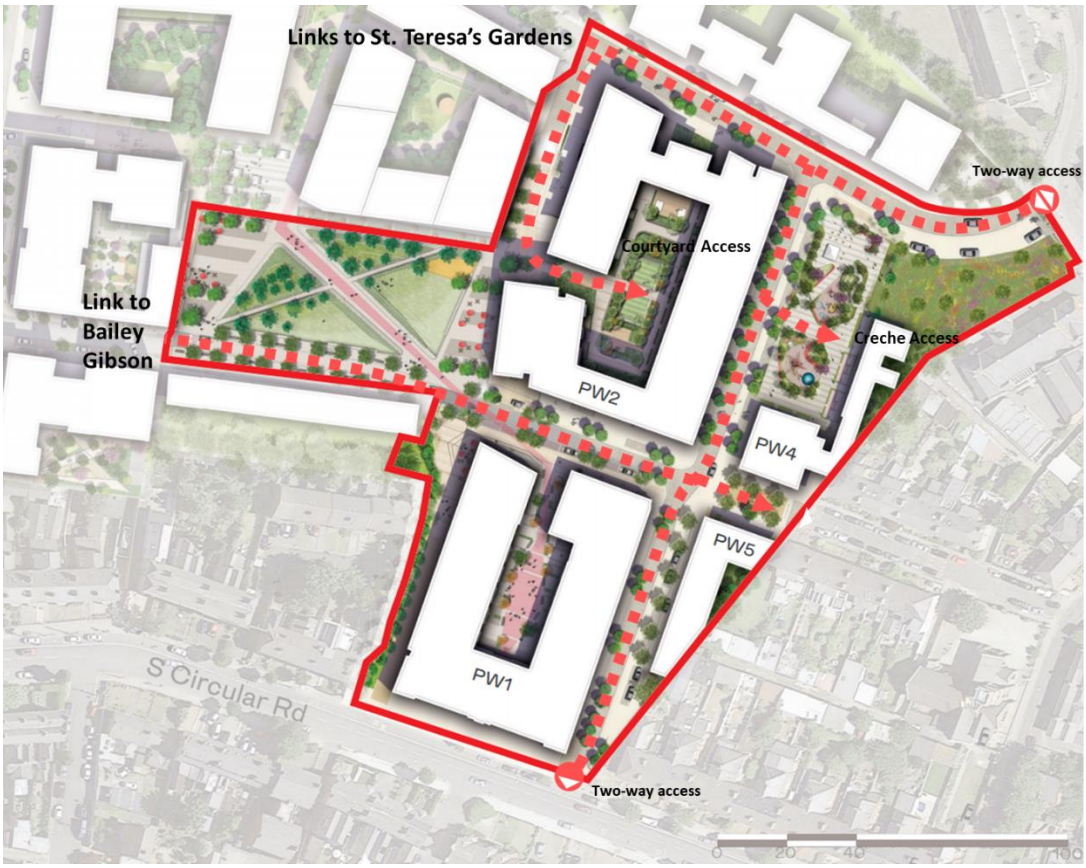
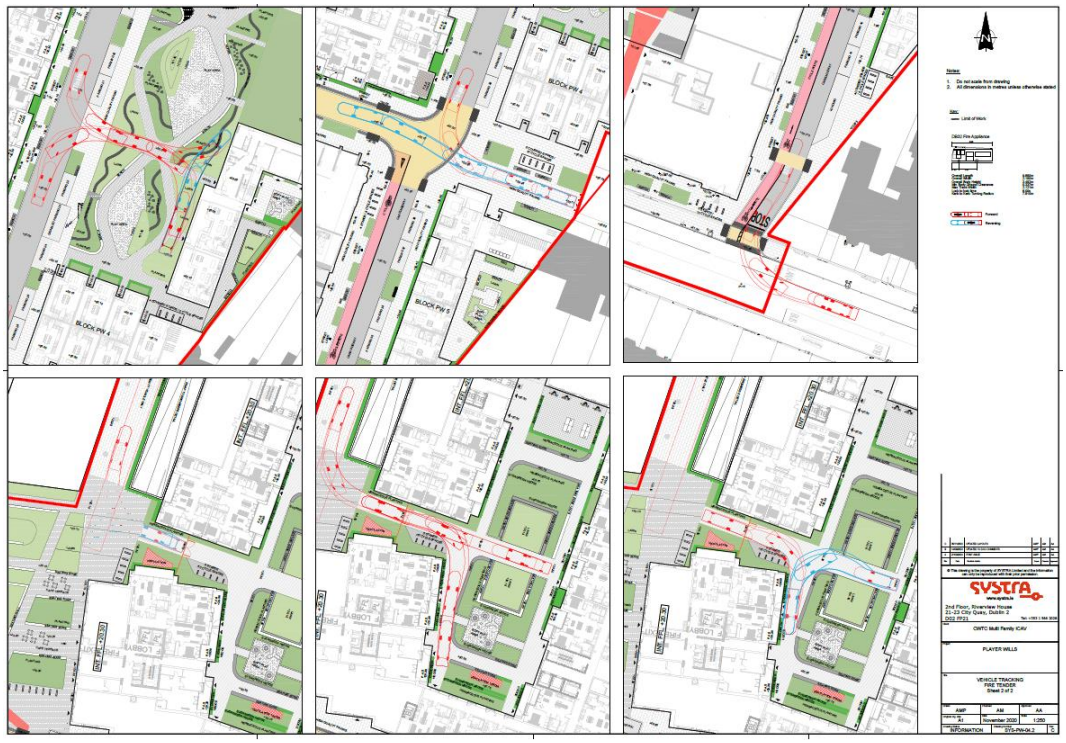


Figure 5.14: Vehicle Tracking for Fire Truck (SYS-PW-04.1)

Figure 5.15: Vehicle Tracking for Fire Truck – Pinch Points (SYS-PW-04.2)



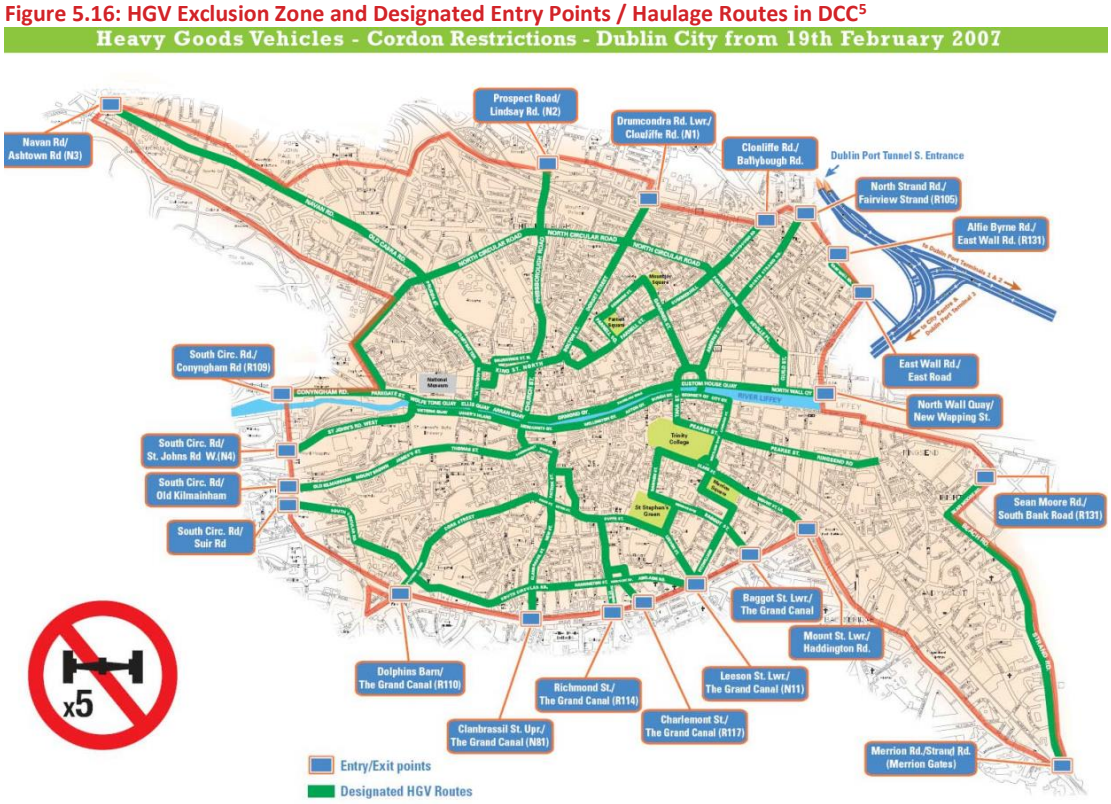
5.11 Access during Construction Phase

5.11.1 A seperate Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) have been prepared and are provided under separate cover within the application. 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 based on work undertaken to the on CTMP.

5.11.2 The DCC HGV strategy 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 5.12. 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 5.16: HGV Exclusion Zone and Designated Entry Points / Haulage Routes in DCC[5]



5.11.3 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 sites will share construction access strategy and site facilities and compounds subject to agreement with the final contractor(s) and Dublin City Council where access to DCC's lands is required.

5.11.4 General access to the site will be permitted through a number of pedestrian turnstiles located across both the Bailey Gibson and Player Wills sites. Staff and visitor vehicular entrance gates will also be located on both sites with staff and visitor parking provided to the north of the Player Wills site. A limited number of contractor parking spaces (150 spaces) will be provided on site, however mobility management measures and restrictions will be recommended in the CTMP for construction staff to limit the volume of vehicular traffic to site during construction. Figure 5.20 provides a broad overview of access to the site and HGV Routes during various phases of construction.

[5] https://www.dublincity.ie/sites/default/files/media/file-uploads/2018-07/map_hgv_restricted_zone.pdf

Figure 5.17: Preliminary Construction Access Strategy & Site Layout (subject to approval & licensing)

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 is a maximum of 1 space per unit. 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 As outlined in Sections 2.2.3 & 2.2.5 the DHPLG apartment guidelines 2018 recommend minimised or significantly reduced parking levels for higher density residential developments in central and accessible locations and no parking requirements specifically for BTR developments, such as that proposed. The guidelines do not however provide guidance the quantum of car parking that is considered appropriate to facilitate a level of car storage and and accommodate a mixed demographic of residents in 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 Draft London Plan 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.

Table 6.2 Draft London Plan Residential Parking Standards

Location	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	Car-free
Inner London PTAL 3	Up to 0.25 spaces per unit
Inner London PTAL 2 Outer London PTAL 4 Outer London Opportunity Areas	Up to 0.5 spaces per unit
Inner London PTAL 0 – 1 Outer London PTAL 3	Up to 0.75 spaces per unit
Outer London PTAL 2	Up to 1 space per unit
Outer London PTAL 0 – 1	Up to 1.5 spaces per unit[1]

6.1.7 Based on the guidance[7] provided by Transport for London on calculating PTAL the subject site falls within PTAL 3 & 2. According to the guidance where a site falls between 2 level the more stringent parking standards should apply. 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.

[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

[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 20 Go Cars provided exclusively for the use of Player Wills Residents, personalised travel planning, on site services and sustainable travel incentives amongst others. Further details are outlined in Chapter 9.

6.3 Long Stay Parking Provision

6.3.1 As outlined in Section 2.2, the default car parking provision for Shared Accommodation and Build-to-Rent should be minimal or significantly reduced. However, in order to accommodate a mix of residents including familes and to prevent overspill on to the surrounding network long stay parking has been provided on site. This is however allocated to the Build-to-Rent apartment units and not the residents of the shared accommodation. There residents are likely to be young professional rather than families and have a limited need for a car. They will still however be able to avail of the GoCar onsite for occasional car trips.

6.3.2 Based on the site location, availability of alternative modes, proposed on-site mobility services, baseline levels of existing car ownership, the BTR nature of the development and national and international guidance, a parking ratio of 0.3 long stay car parking spaces per apartment unit is proposed.

6.3.3 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 1.3 cycle spaces per unit will be provided for the apartments and a ratio of 1 per unit will be provided for the shared accommodation. This results in a site wide ratio of 1.20 per unit which is significantly above DCC standards (1 per unit).

6.3.4 The target cycle mode share for development is 16% which based on an estimated future population of approximately 1300 equates to a need for 208 bikes for commuting purposes. However, it is recognised that additional spaces will be needed for bike storage and leisure use thus 903 long stay spaces have been provided (861 in PW2 Basement and 42 in secure storage at ground level at PW4 and PW5). The provision of cycle parking will continue to be reviewed as part of the MMP and the potential provision of additional cycle parking will be reviewed should the demand arise.

6.3.5

6.3.6

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

Table 6.3: Long Stay Parking Requirements & Provision

	DCC Standards	DHPLG	Proposed
Car Parking	492 (maximum)	No or Minimal Parking	148
Motorcycle	20 (maximum)		6
Cycle Parking	732	944	903

6.3.8 Of the 148 car parking spaces provided 12% will be disability parking (19no. spaces), 7% over the minimum requirement set out in DCC parking standards. A further 20 spaces will be reserved for Go Car car sharing for the exclusive use of all residents including those in the shared accommodation.

6.3.9 The general long stay car parking will be located at basement level, as shown in Figure 6.1 & 6.2. A total of 10% 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.

6.3.10 The proposed development includes an additional 81 no. car parking spaces, including 5 disability spaces, and 3 motorcycle spaces in the basement of PW2 for future residential development within the wider Masterplan area and lands contiguous with SDRA 12, that will be subject to a separate application for permission. It is noted that while residential parking is incidental to the primary purpose of the building, in this case, the proposed 81 no. spaces are included to serve a future development proposal and as such constitute 'other use' for the purpose of this SHD application, as they are not associated with the residential use proposed in this application.

6.3.11 The proposed inclusion of these 81 no. car parking spaces is not intended to pre-empt and/or prejudice the outcome of any future application for permission. The 81 no. car parking spaces will not be set out or used in the absence of a separate grant of planning permission. Accordingly, an alternative use for this area is proposed in the event that a positive decision was not forthcoming for future residential development. In this event, the applicant would be satisfied to accept a condition requiring that the 81 no. spaces together with the circulation area would be used as storage ancillary to the proposed residential development.

6.3.12 The basement is a double level basement, both levels are shown in Figure 6.1 & Figure 6.2. The scaled drawings, PW2 PL1198 & PL1199, can be found within the architectural suite of drawings.

Figure 6.1 Basement Car Park Layout- Level 1

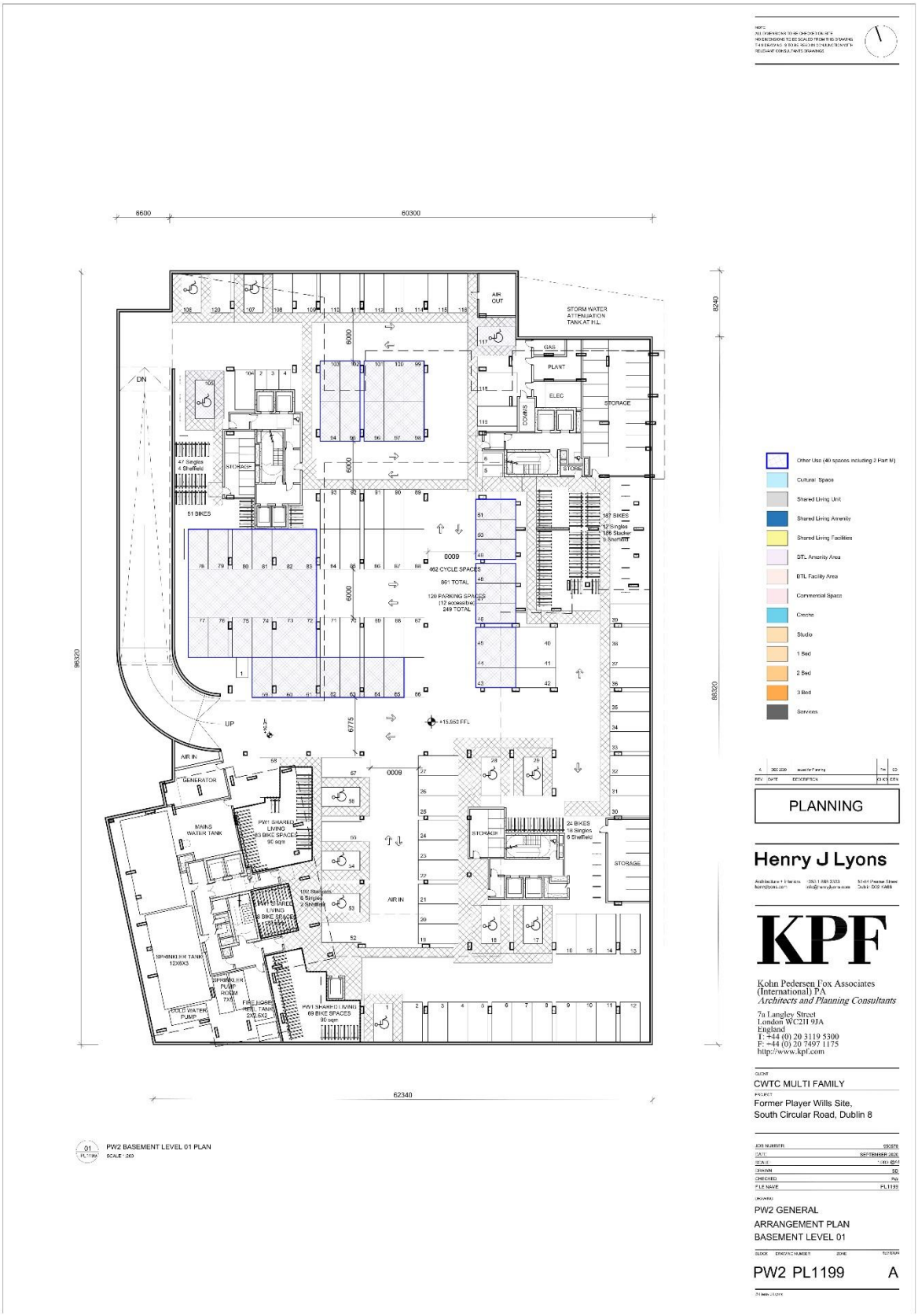
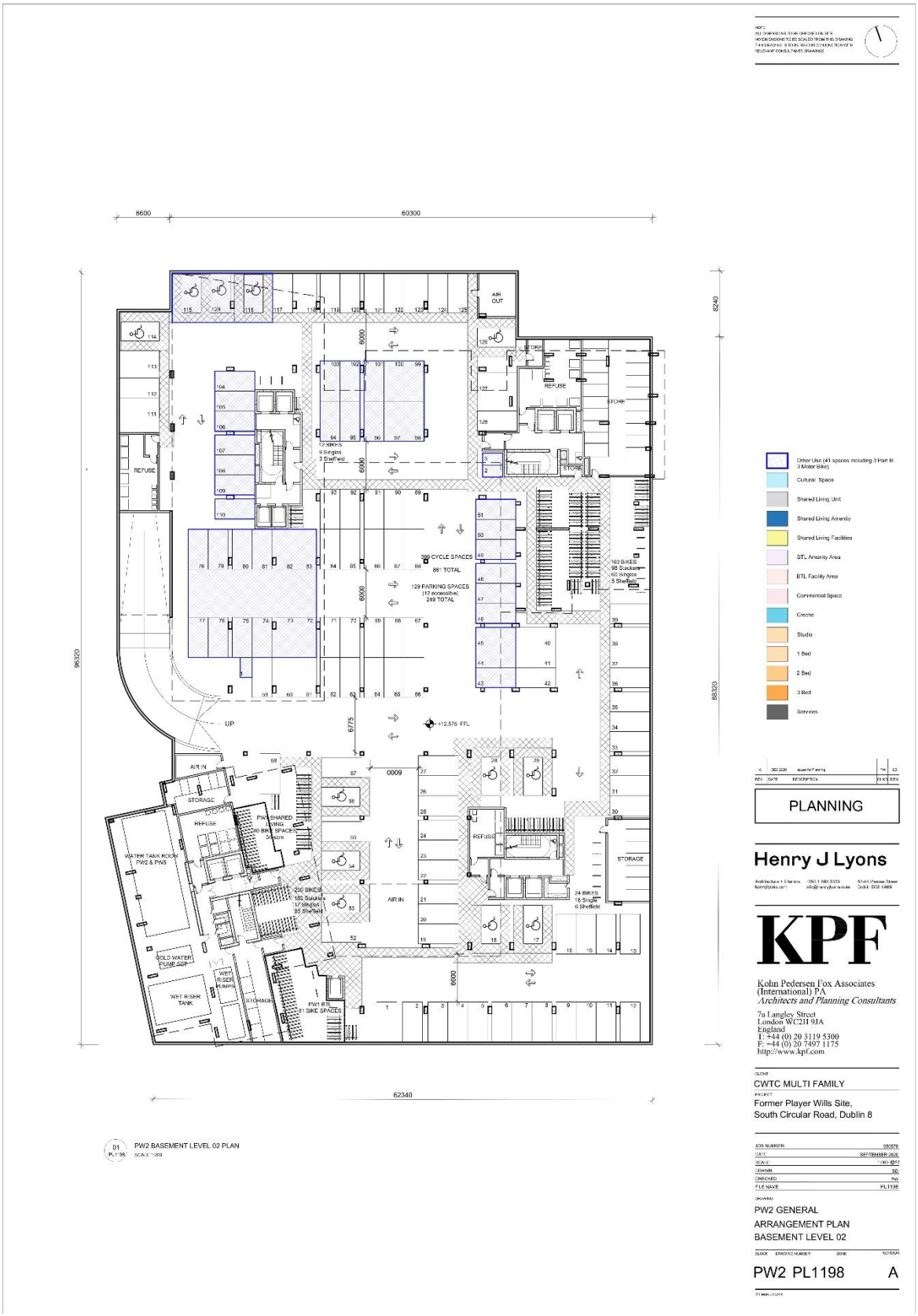


Figure 6.2 Basement Car Park Layout – Level 2

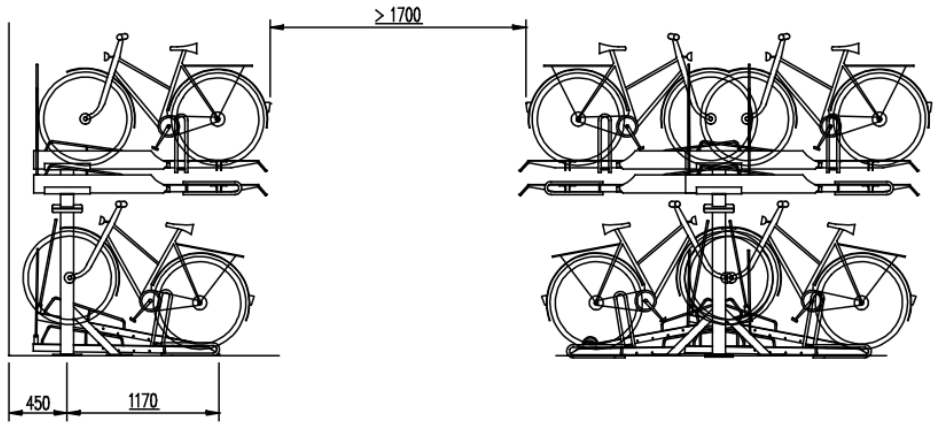


6.3.13 Long stay cycle parking for PW1 & PW2 will all be at basement level and accessed via 2 separate bikelifts. One of these lifts will be accessed from the street directly behind PW 1 for ease of access for PW1 residents. The bike parking will be located across both level in locations close to staircores. Residents will be assigned a bike parking area to ensure efficient use of the spaces with PW1 residents assigned spaces closed to the on-street bike lift. Clear cycle pathways will parked in between parking areas as shown in the drawings.

6.3.14 Long stay cycle parking for PW4 & 5 will be provided in separate, easily accessible bike rooms for each block. All bike rooms will be secure as per DCC guidelines contained in the Dublin City Development Plan[8]. The majority of the bike parking will be two tier stacked parking, an example of which is shown in Figure 6.2. The ceiling heights and aisle widths of the bike room have all been designed to accommodate the dimensions illustrated. There are also 30+ sheffield stands at basement level.

6.3.15 Long cycle parking for staff working in the commerical units of the development will be provided. 20 spaces will be made available at basement level for staff of the retail and community units and 3 spaces provided for staff of the creche in the bike room of PW4.

Figure 6.3 Two-Tier Cycle Parking with dimensions



6.4 Short Stay Parking

6.4.1 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 34 car spaces (incl. 3 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.

6.4.2 In terms of visitor cycle parking, DCC guidance[8] states this will be decided on a case by case basis. DHPLG guidance recommends approximately 366 visitors cycle spaces on site. However, it is very unlikely 366 visiting cyclists will be on site at any given time. It proposed 110 spaces are provided for visiting cyclists. The number of visitors' spaces will be reviewed in the future as part of the MMP to ensure it is adequate. Table 6.4 outlines the proposed short stay car and cycle parking.

[8] https://www.dublincity.ie/dublin-city-development-plan-2016-2022

Table 6.4: Short Stay Parking Requirements & Provision

	DCC Standards	DHPLG	Proposed
Car Parking	Decided on Case by Case basis	No Min or Max	34
Cycle Parking		366	110

6.4.3 Also included are 2 taxi set-down/ pick up spaces, an additional 3 set-down spaces for the creche, and two on-street long-length loading bays (one for deliveries to the proposed retail and one for deliveries to the food/beverage outlet). It is envisaged that the southwestern loading bay adjacent to the South Circular Road will be used as a loading bay during the day, up to 5pm, and taxi pick-up / drop-off spaces thereafter. This will allow deliveries to be made to the proposed retail unit during the day and for taxis to collect or drop visitors to the site in the evening. 4 spaces on-street will also be reserved for the parking of GoCars and will be available for use by all Go-Car members.

6.4.4 All setdown spaces, taxi spaces and loading bays will be marked accordingly with signage and yellow lines. The conduit to allow for future installation of an EV charging point will be provided for 4 spaces on-street. Figure 6.3 shows the location of on-street car and cycle parking spaces. This drawing, SYS-PW-03, is also available in Appendix A and within the set of scaled drawings provided with the application.

Figure 6.4 On-Street Parking Locations (SYS-PW-03)

6.5 Parking Management

Resident Parking Management

6.5.1 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.

6.5.2 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.

6.5.3 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

6.5.4 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 will be clearly signed accordingly and enforced by the management company.

6.5.5 It is proposed that DCC will take in charge the management 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 6.5. The drawing can be found in the architectural suite of drawings provided under separate cover as part of the application.

Figure 6.5 Proposed Taking in Charge

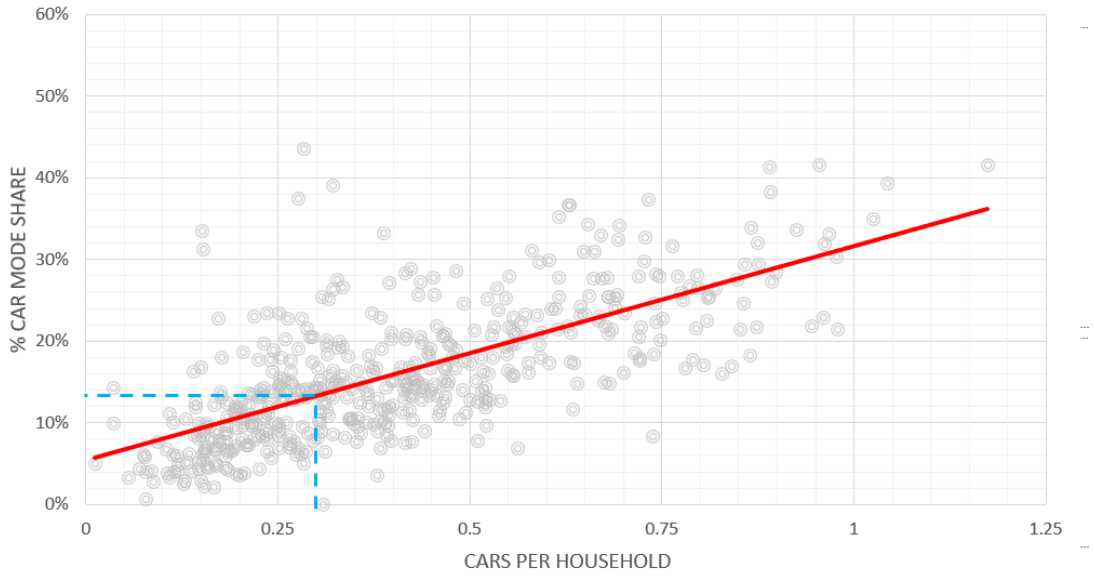
6.6 Benefits of Proposed Parking Strategy

Sustainable Trip Making & Congestion

6.6.1 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.

6.6.2 The lower levels of parking have been proposed will encourage travel by sustainable means. Based on a ratio of 0.3, the expected commuting car mode share would be approximately 15% based on observed census data as outlined in Figure 6.6. This is significantly below the current DCC average of 36.4%.

Figure 6.6: City Cordon SAPS Data – Car per Household versus Commuting Car Mode Share



Physical Activity

6.6.3 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.

6.6.4 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. [9]

6.6.5 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

6.6.6 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.

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

Road Safety and Use of Space

6.6.7 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.

6.6.8 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[10]. 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.

6.6.9 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.[11]

Car Ownership Costs

6.6.10 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.*[12]

[10] http://content.tfl.gov.uk/attitudes-to-cycling-2014-report.pdf

[11] http://eprints.uwe.ac.uk/23566/12/Melia%20-%20Carfree%20Development%20Chapter%20with%20images.pdf

[12] https://www.theaa.ie/aa/motoring-advice/cost-of-motoring.aspx

6.6.11 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.

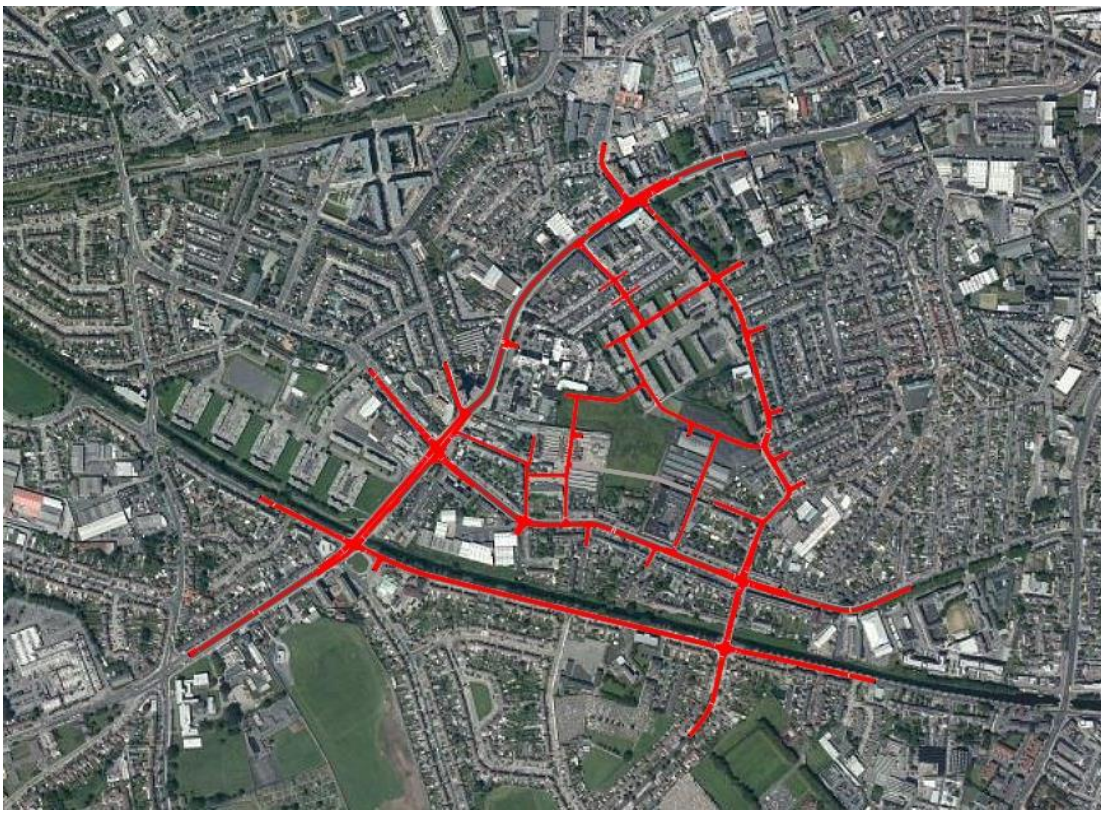
7. TRIP GENERATION & DISTRIBUTION

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 in 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 network 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 3.6.4. 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 3.19 & Figure 3.20. 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

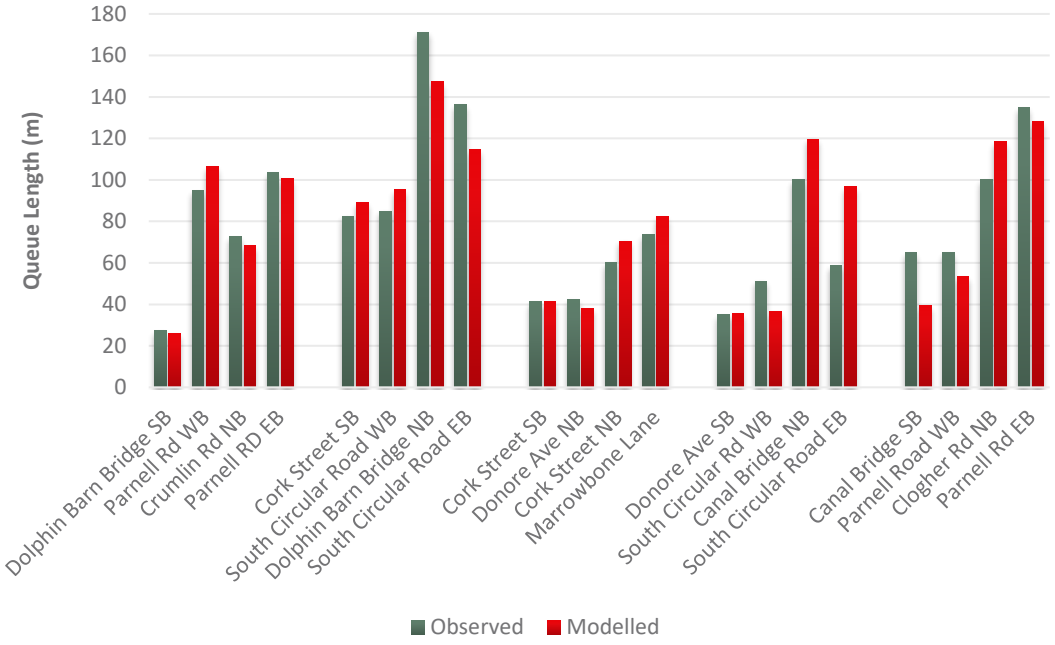
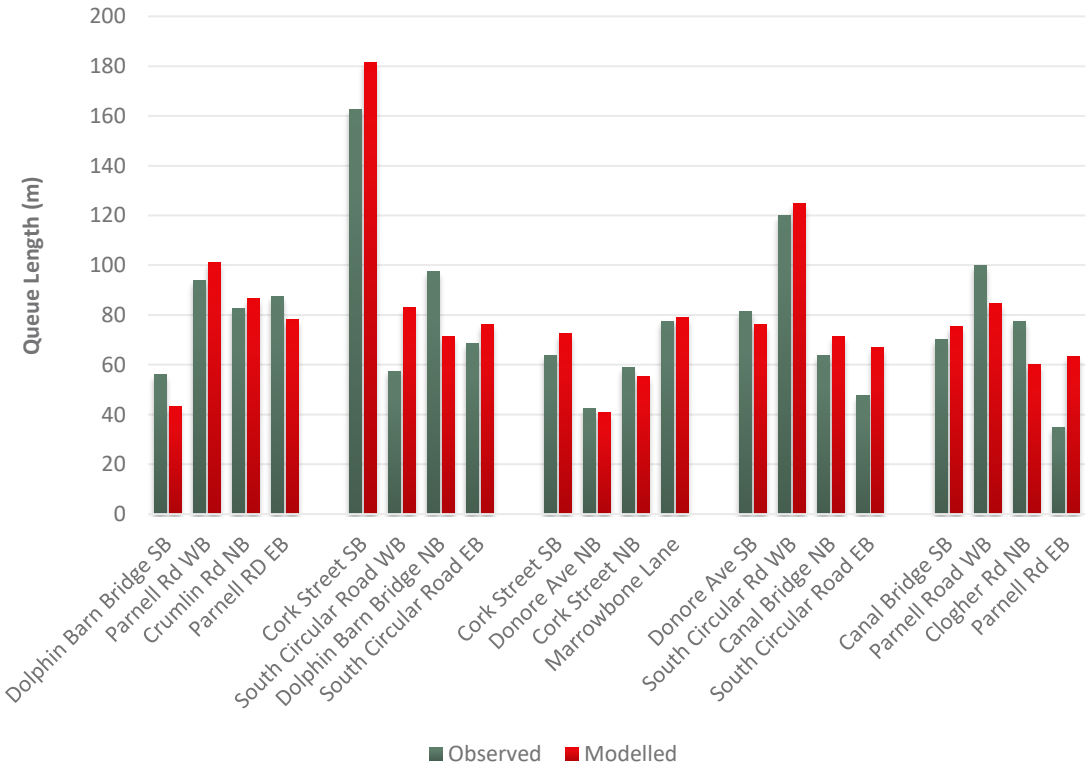
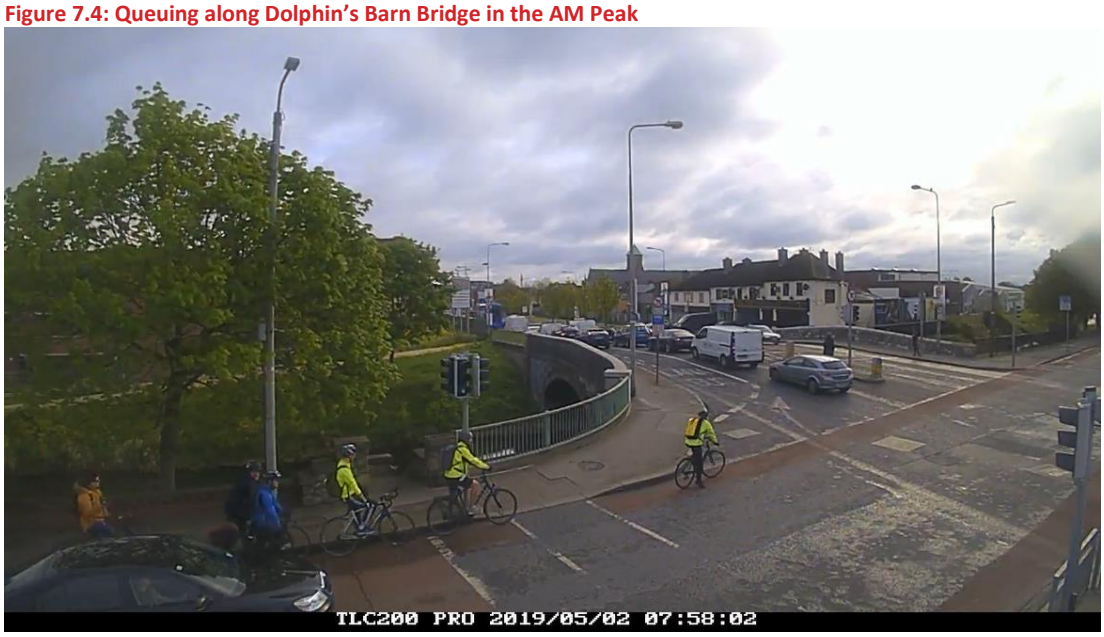


Figure 7.3: PM Peak Queue Comparison



7.2.4 In addition to the comparison of queue lengths video footage from the surveys of each of the junction 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
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**

7.3.3 Based on the above the average household size for the development is 1.91 with a total population of 1272. From further census data (stat bank table E1002) the average household size for a 'flat or apartment in a purpose-built block' was also found to be 2.11 which,considering the higher proportion of shared accommodation and 1-bed units, would indicate the population estimated is reasonably accurate.

7.3.4 The estimated population was then inputted 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	400	64	94	254

7.3.5 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 384 departures and 82 arrivals in the AM peak and 288 arrivals and 132 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. The TRICS trip rates along with details of the sites used are provided in Appendix B of this report.

Retail Development

7.3.6 The retail/food and beverage element of the development, consisting of 1837 sqm, is expected to predominantly be used by residents and local residents within the walking catchment of the site. There is no extra traffic expected to be generated by this element of the development particularly during the AM peak hour when food & beverage elements of the development would not be open. However, to ensure a robust assessment of the impact of the development some vehicular trips have been estimated. For the AM peak a number of vehicular trips have been assumed for deliveries and servicing. For the PM peak the trips have

been estimated using TRICS and mode share data for the development extracted from the NTA's ERM. 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	4	4	13	14

Creche

7.3.7 TRICS, the trip rate database, was used again to estimate the likely trip generation for the proposed creche. 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. Full details of the TRICS trip rates and sites included are provided in Appendix B.

Table 7.6 Estimated Peak Hour Creche Vehicular Trips Generated by the Development

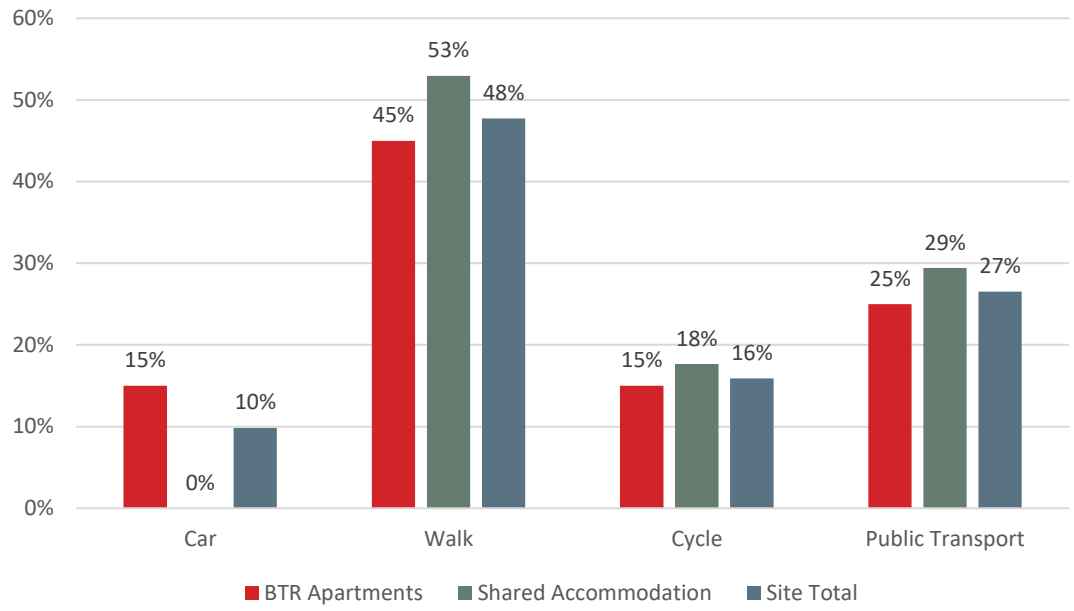
Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Total Person Trips	3	2	1	1

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 mode shares have been estimated separately for the BTR apartments and shared accommodation as well as site wide. The car mode share for the BTR apartments 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 6.4.

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 7.4 to obtain the person trips by mode generated by the residential units as outlined below.

Table 7.7 Estimated Peak Hour Residential Person Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Car	43	7	11	29
Walk	225	44	54	120
Cycle	41	3	8	27
PT	90	10	20	77
Total	**400**	**64**	**94**	**254**

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 7.8.

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

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Car	35	6	9	24

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 7.9. In total, there will be just one vehicle leaving the site every 90 seconds on average during the AM peak and one returning every 90 seconds during the PM peak.

Table 7.9 Combined Peak Hour Vehicular Trips Generated by the Development

Mode	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Residential	35	6	9	24
Crèche	4	4	13	14
Retail/Food & Beverage	3	2	1	1
Total	**42**	**12**	**23**	**39**

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 *'PAG 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 2.6.2, 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 In addition to the background growth, the cumulative development of the full SDRA masterplan area and additional potential future development on lands adjacent to the church has also been assessed.The residential vehicular traffic demand for the Bailey Gibson,

potential future development on lands adjacent to the church & DCC Lands has been estimated using the same method described in Section 7.3 for the Bailey Gibson Site. Tables 7.9 & 7.10 outline the forecast population of each site based on an assumed unit mix estimated for the masterplan.

Table 7.10 Estimated Bailey Gibson Resident Population by Unit Type

Unit Type	No. Units	Estimated Household Size	Estimated Population
Studio (1 rooms)	19	1.53	29
1 bed (2 rooms)	251	1.98	497
2 bed (4 rooms)	136	2.32	316
3 bed (5 rooms)	6	2.74	16
4 bed (6 rooms)	4	2.8	11
TOTAL	**416**	**2.09**	**869**

Table 7.11 Estimated Balance of the masterplan lands Resident Population by Unit Type

Unit Type	No. Units	Estimated Household Size	Estimated Population
1 bed (2 rooms)	293	1.98	580
2 bed (4 rooms)	537	2.32	1245
3 bed (5 rooms)	146	2.74	401
TOTAL	**976**	**2.13**	**2226**

Table 7.12 Estimated Potential future development on lands adjacent to church Population by Unit Type

Unit Type	No. Units	Estimated Household Size	Estimated Population
1 bed (2 rooms)	36	1.98	71
2 bed (4 rooms)	66	2.32	153
3 bed (5 rooms)	18	2.74	49
TOTAL	**120**	**2.13**	**274**

7.7.2 Based on estimated populations the quantum of vehicle traffic generated by Bailey Gibson, the estimated balance of the masterplan lands & potential future development on lands adjacent to church has been estimated using the same trip rates generated for the Player Wills BTR apartments from the ERM as both sites are proposed to have similar parking ratios. Based on pre-planning meetings with DCC it is likely a lower parking ratio will apply to their lands. Approximately 100 spaces are provided at podium level which would result in a parking ratio of 0.12 spaces per unit. Based on this it has been conservatively 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.

7.7.3 Based in the masterplan a high proportion of the retail and community space proposed is located on the Player Wills site within PW1. There are some smaller units on the other sites which located off the external road network and are intended primarily to serve the local

walking catchment. It is therefore assumed that these will not generate vehicular trips but an allowance has been made for delivery and service vehicles. 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 7.13.

Table 7.13 Combined Peak Hour Vehicular Trips for SDRA 12 & lands adjacent church

Site	08:00-09:00		17:00-18:00	
	Departures	Arrivals	Departures	Arrivals
Player Wills	42	12	23	39
Bailey Gibson	33	9	11	23
Balance of Masterplan	60	17	20	43
Lands adjacent Church	7	2	3	5
Total	**142**	**40**	**57**	**110**

7.8 Assessment Scenarios

7.8.1 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 masterplan and potential development lands adjacent the church. The modelled scenarios are as follows:

- Do-Nothing: Background growth in Traffic only
- Scenario 1 (DS1): Background Traffic growth & Proposed Development
- Scenario 2 (DS2): Background Traffic growth, Player Wills, Bailey Gibson & potential development lands adjacent to the church.
- Scenario 3 (DS3): Background Traffic growth, Player Wills, Bailey Gibson, potential development lands adjacent the church & DCC Developments with the full masterplan road network in place.

7.8.2 As there is no planning application submission planned for the full development of the DCC lands in the immediate future it was assumed Scenario 3 would not be in place for the opening year of 2024. Table 7.14 putlines the operational timeline of each of the parcels of development land with respect to the traffic impact assessment years.

Table 7.14 Summary of Scenarios Assessed

Development Area	2024	2029	2039
Bailey Gibson	✓	✓	✓
Proposed Development (Player Wills)	✓	✓	✓
Potential Development Lands Adjacent to the Church	✓	✓	✓
DCC Lands (Balance of the Masterplan lands and development of other lands contiguous to the Masterplan Area)		✓	✓

7.8.3 There have been no upgrades to the network included. However, the signal timings have been reviewed for each Do-Nothing 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 7.14. As shown, for Scenario 1 the contribution is less than 2.5% for any junction modelled. In Scenario 2 the maximum contribution is 5.0% at Dolphin's Barn Cross in 2024. With the full SDRA masterplan in place traffic generated by the three sites combined 5.6% of total traffic in 2029.

Table 7.15 Development Junction Contribution – AM Peak

Junction	2024		2029			2039		
	DS1	DS2	DS1	DS2	DS3	DS1	DS2	DS3
Crumlin Rd/Dolphin's Barn Bridge/Canal	0.8%	1.9%	0.7%	1.7%	2.1%	0.7%	1.6%	1.9%
Dolphin's Barn Cross	2.4%	5.0%	2.2%	4.6%	5.6%	2.1%	4.2%	5.2%
Cork St/Donore Ave.	0.8%	1.4%	0.7%	1.3%	1.6%	0.7%	1.2%	1.5%
Donore Ave./South Circular Rd	2.0%	4.3%	1.9%	4.0%	4.9%	1.7%	3.7%	4.5%
Donore Avenue/Canal	1.3%	2.5%	1.2%	2.3%	2.9%	1.1%	2.1%	2.7%

7.9.2 In the evening peak, the contribution of the development(s) is less than the AM peak as outlined in Table 7.15. The maximum contribution of any scenario is 10% which occurs in 2029 Scenario 3 at the Donore Avenue & South Circular Road junction.

Table 7.16 Development Junction Contribution – PM Peak

Junction	2024		2029			2039		
	DS1	DS2	DS1	DS2	DS3	DS1	DS2	DS3
Crumlin Rd/Dolphin's Barn Bridge/Canal	0.8%	1.5%	0.8%	1.4%	1.9%	0.7%	1.3%	1.8%
Dolphin's Barn Cross	1.8%	3.5%	1.6%	3.2%	4.4%	1.5%	3.0%	4.1%
Cork St/Donore Ave.	0.8%	1.5%	0.7%	1.4%	1.9%	0.6%	1.3%	1.7%
Donore Ave./South Circular Rd	4.3%	7.0%	4.0%	6.5%	9.4%	3.7%	6.0%	8.7%
Donore Avenue/Canal	1.5%	2.6%	1.3%	2.4%	3.3%	1.2%	2.2%	3.1%

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) has been prepared as is provided under sepreate cover within the application submission. 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 As presented in the CTMP the most onerous construction period with regards to traffic generation is expected to be HGVs during the basement excavation. This work will generate 87 one-way HGV trips to the site. However, once excavation is complete this traffic will significantly reduce with an average of 41 HGV travelling to site each working day. The construction of the proposed development at Bailey Gibson will result in a further 35 heavy vehicles on average per day.

7.10.3 There will be up to 700 staff on site with 150 car parking spaces provided and 180 bicycle spaces for both staff and visitors. Staff will be instructed to carpool, use public transport or, where possible, walk or cycle to site. The parking provided is not to prevent overspill of parking in the surrounding street network and not to encourage staff to travel by car. The provision of staff parking and modal choice of construction staff will be monitored on an ongoing based as part of the Construction Traffic Mobility Management Plan. This is discussed further in the CTMP.

7.10.4 Based on the parking availability is is estimated that there will be 150 vehicular trips to site. Work on site will be from 08:00-19:00 weekdays and 08:00-13:00 Saturday. The majority of staff will therefore arrive before the morning peak period and depart after 6pm.

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);
- Average speed across the network (kph);
- Latent Demand (vehicles);
- Average Queue Length (m); and
- Journey Times (secs).

8.1.2 The above is presented for each year and scenario outlined in Table 7.13 in the following section of the report. This is for the operational phases of the development further detail on the impact during the construction phases can be found in the CTMP.

8.2 Do-Nothing

Network Statistics

8.2.1 The network statistics for AM Peak Do-Nothing (DN) 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 7.5.2 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-Nothing Network Statistics

Network Stats	2020	2024	2020-2024	2029	2020-2029	2039	2020-2039
Average Delay	82.5	86.2	4.5%	95.0	15.1%	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.

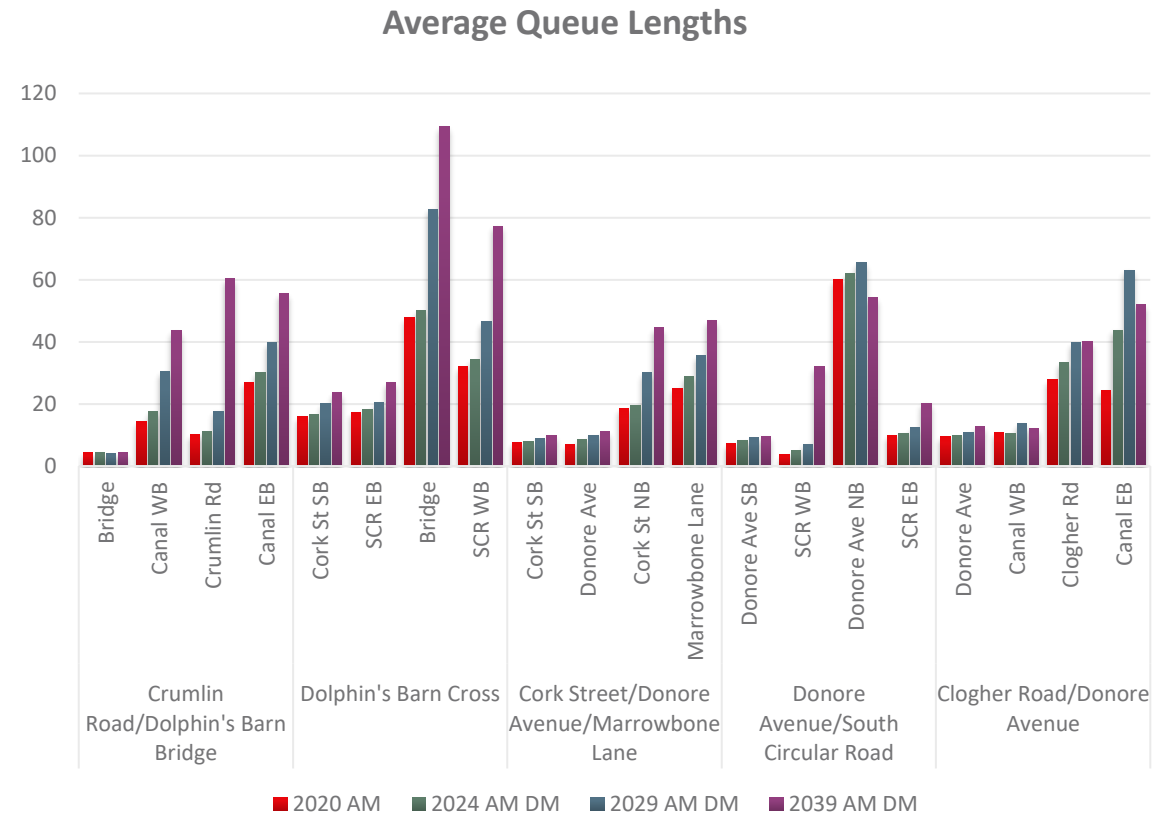
Table 8.2 PM Peak Do-Nothing Network Statistics

Network Stats	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

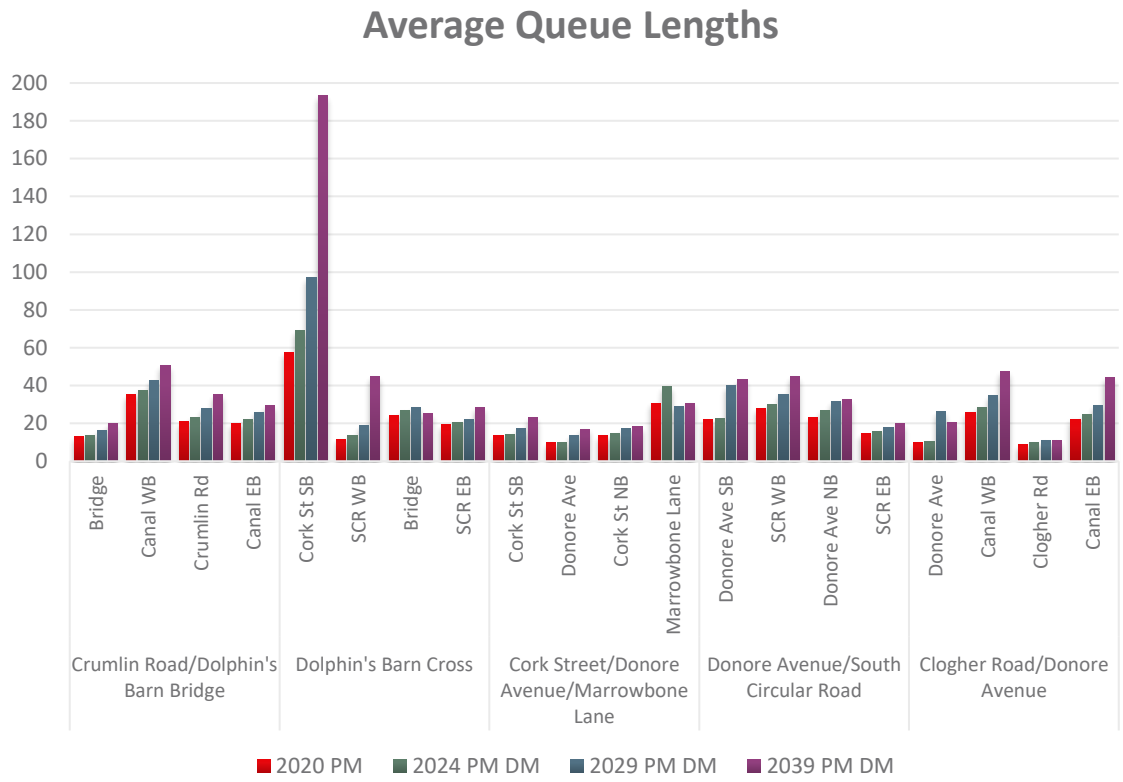
8.2.3 The average queue lengths for the morning and evening peak are presented in Figure 8.1 & 8.2 respectively. Queue lengths at the Crumlin Road junction & at Dolphin's Barn Cross increase for traffic travelling north and eastbound into the city particularly at the Dolphin's Barn Bridge. As discussed in section 7.7.3, 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-Nothing 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-Nothing 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 (Player Wills Site)

Network Statistics

8.3.1 Table 8.5 outlines the AM peak network statistics for the Do-Nothing and Do-Something Scenario 1 which includes the proposed development. As shown, there are modest increases of 3.8-5.4% in the average delay experienced in the network with corresponding reductions in speed. In absolute terms, this represents a marginal increase in delay of 3.3-6.1 seconds per vehicle. There is no notable change in latent demand compared to the Do-Nothing.

Table 8.5 AM Peak Network Statistics – Do-Nothing vs Scenario 1

Network Stats	2024			2029			2039		
	DN	DS1	Diff	DN	DS1	Diff	DN	DS1	Diff
Average Delay (s)	86.2	89.5	3.8%	95.0	99.8	5.1%	111.4	117.4	5.4%
Average Speed (kph)	25.6	25.4	-0.9%	24.7	24.0	-2.7%	22.3	21.7	-2.7%
Latent Demand (vehs)	0.0	0.0	0.00	0.0	0.2	0.20	19.2	23.4	4.20

8.3.2 In the evening peak the impact of the development is marginal with increases in average of delay 0.7%-2.3% between the Do-Nothing and Do-Something Scenario 1. This is just 0.6-2.6 seconds per vehicle. Again, there is no notable increases in latent demand.

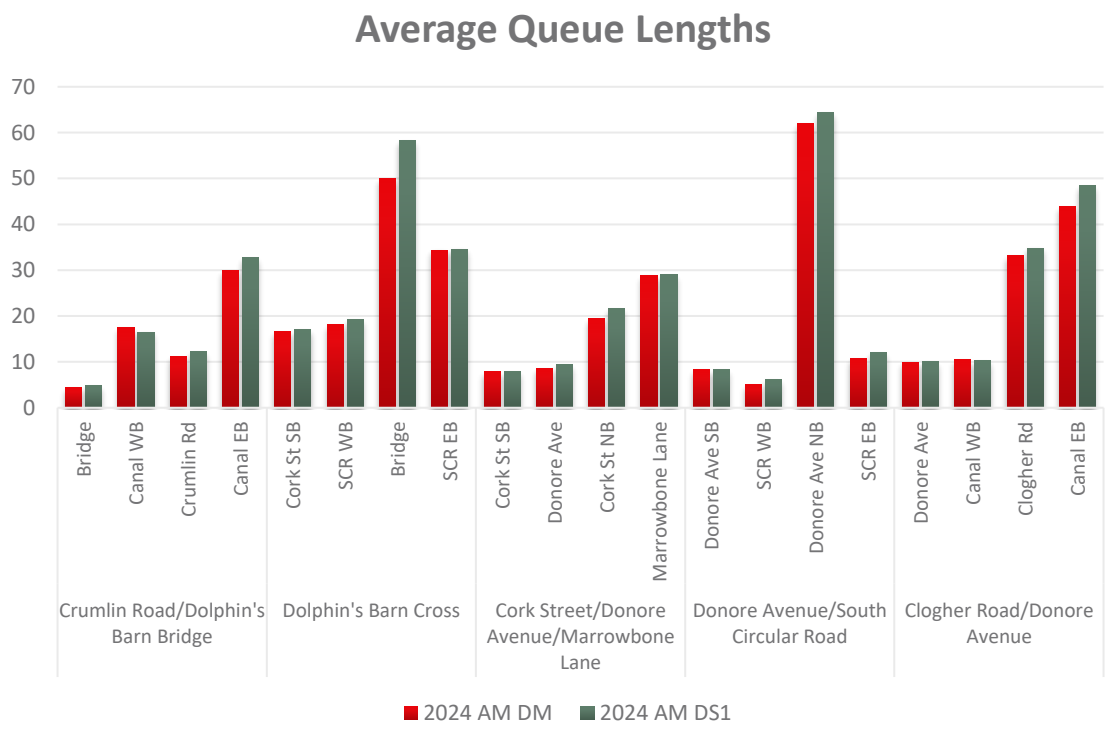
Table 8.6 PM Peak Network Statistics – Do-Nothing vs Scenario 1

Network Stats	2024			2029			2039		
	DN	DS1	Diff	DN	DS1	Diff	DN	DS1	Diff
Average Delay (s)	91.4	92.0	0.7%	98.6	99.6	1.1%	110.8	113.4	2.3%
Average Speed (kph)	24.5	24.4	-0.6%	23.5	23.4	-0.4%	22.0	21.8	-1.0%
Latent Demand (vehs)	0.6	0.6	0.0	0.0	0.0	0.0	8.0	8.6	0.6

Queue Lengths

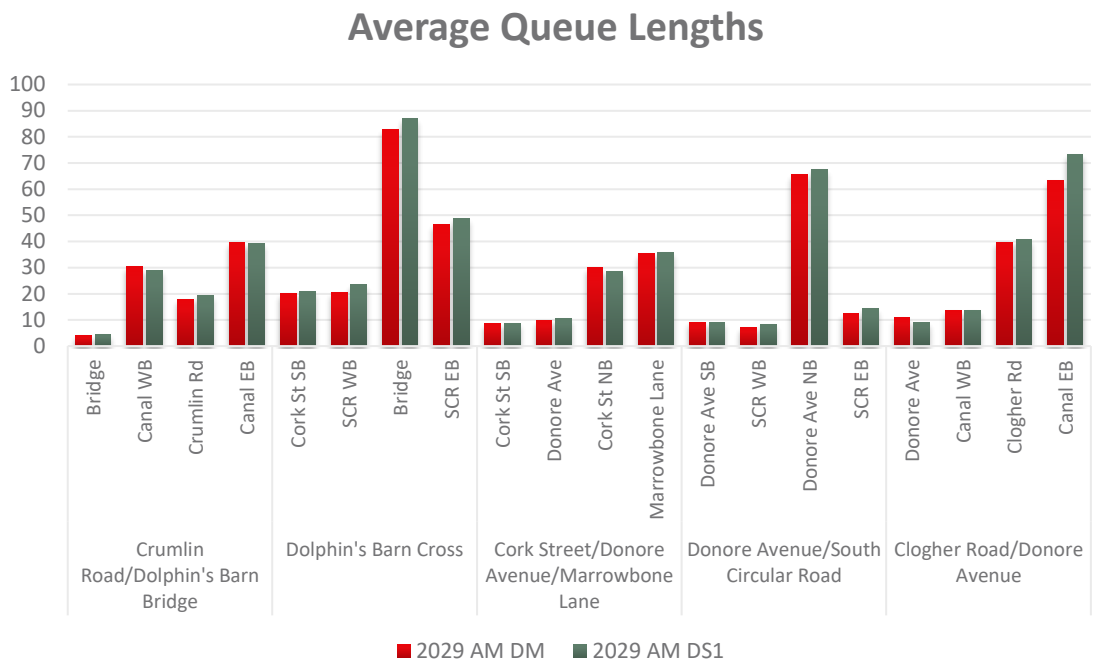
8.3.3 The average queue lengths in the morning peak for each scenario and modelled year are presented in Figures 8.4-8.6. As illustrated by the graphs, there is little change in the queue lengths with the development in place. In the development opening year, there are some minor increases at Dolphin's 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 1.4m.

Figure 8.4: 2024 Do-Nothing vs Scenario 1 AM Peak – Average Queue Lengths



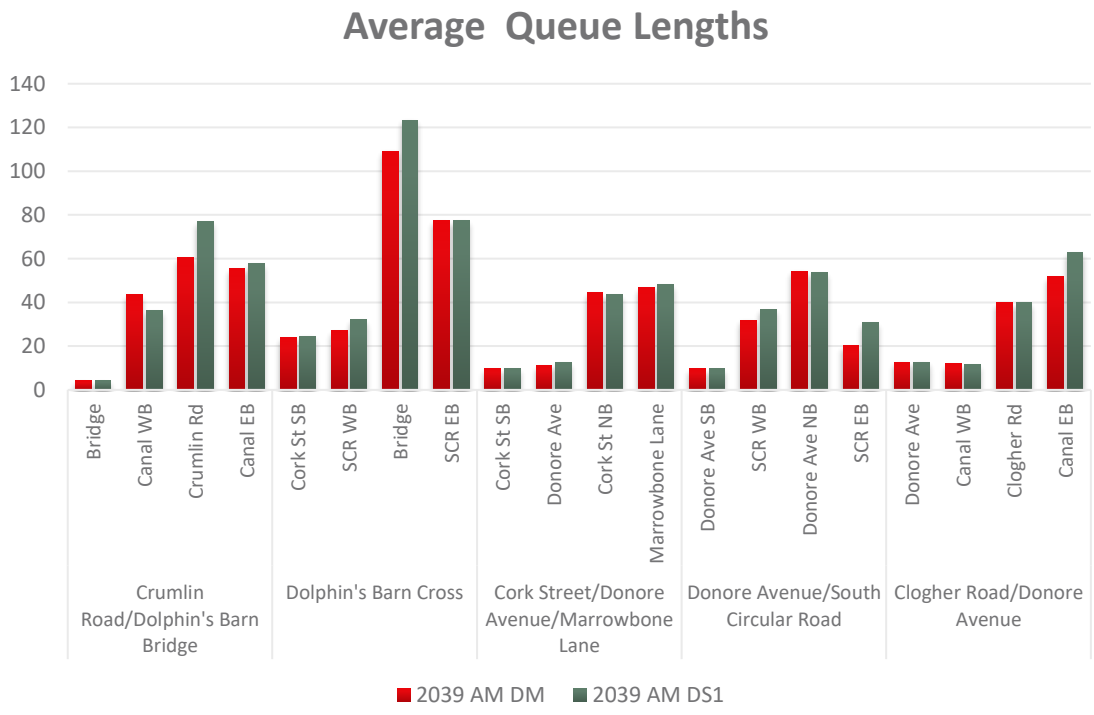
8.3.4 In 2029, queue lengths again remain relatively unchanged with only some minor increases in a few locations. The increases are again at Dolphin's Barn bridge northbound , +4m, and canal eastbound, +10m. However, on average the increases across all arms are just 1.6m.

Figure 8.5: 2029 Do-Nothing vs Scenario 1 AM Peak– Average Queue Lengths



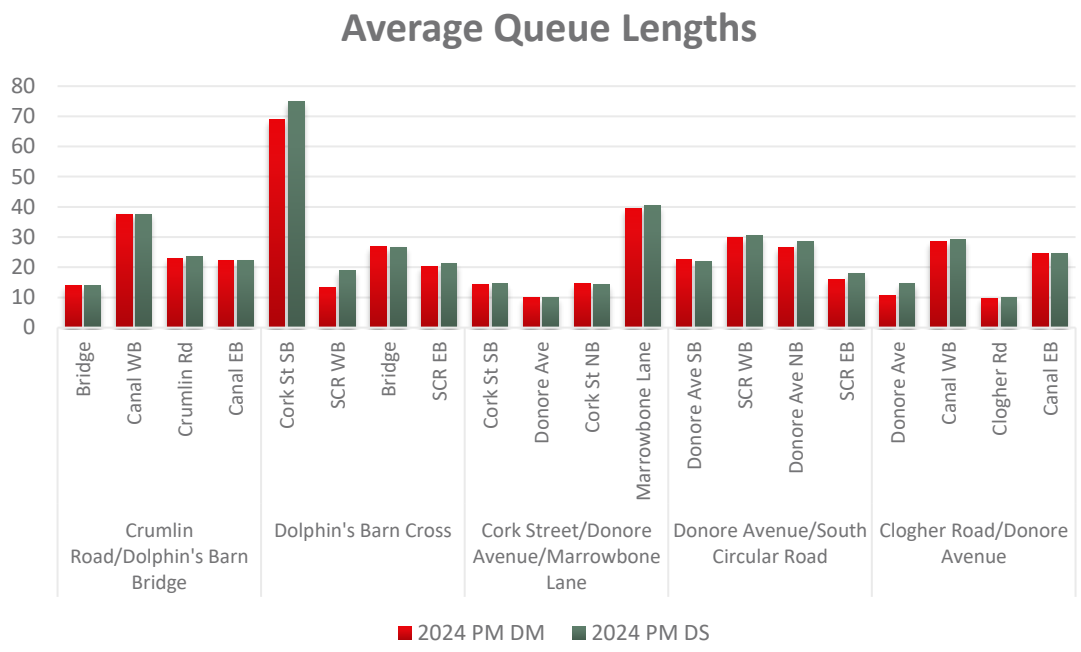
8.3.5 In 2039, the main increases are along the Crumlin Road & Dolphin's Barn Bridge northbound & South Circular Road eastbound at Donore Avenue and the canal eastbound at Clogher Road junction. These increases however, are small and represent approximately 3-4 vehicles. The average increase across all arms is 3.0m.

Figure 8.6: 2039 Do-Nothing vs Scenario 1 AM Peak– Average Queue Lengths



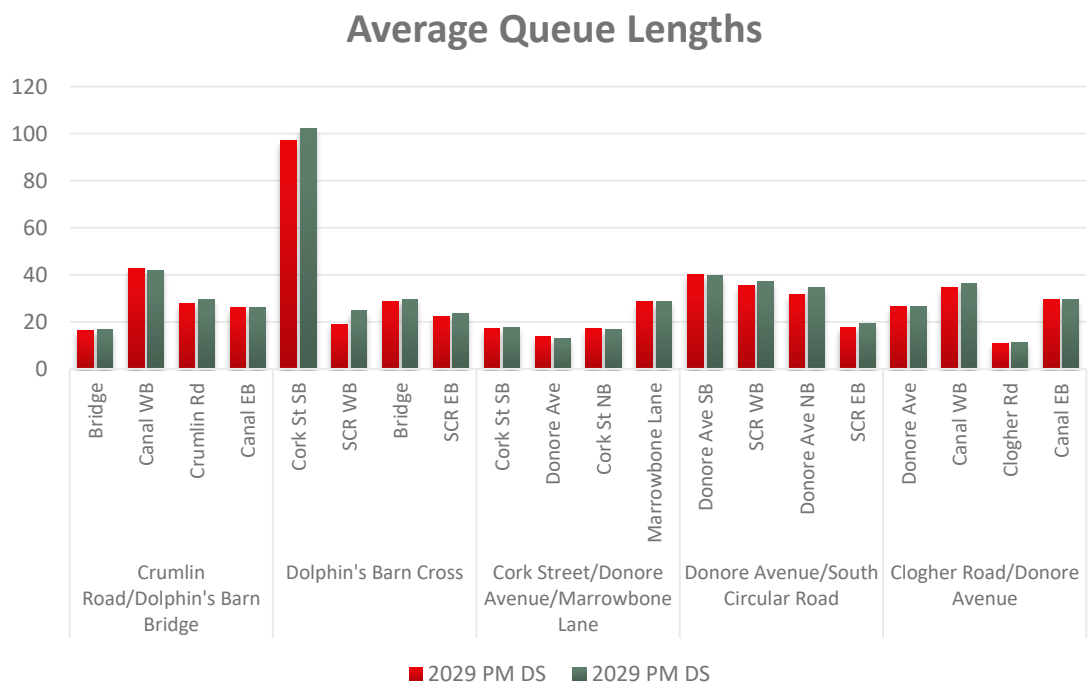
8.3.6 The average maximum queue lengths in the evening peak for each scenario and modelled year are presented in Figures 8.7-8.9. As shown, there are only minor increase in 2024 with a slight increase in traffic queueing along Cork Street/Dolphin's Barn Street travelling southbound and on South Circular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

Figure 8.7: 2024 Do-Nothing vs Scenario 1 PM Peak – Average Queue Lengths



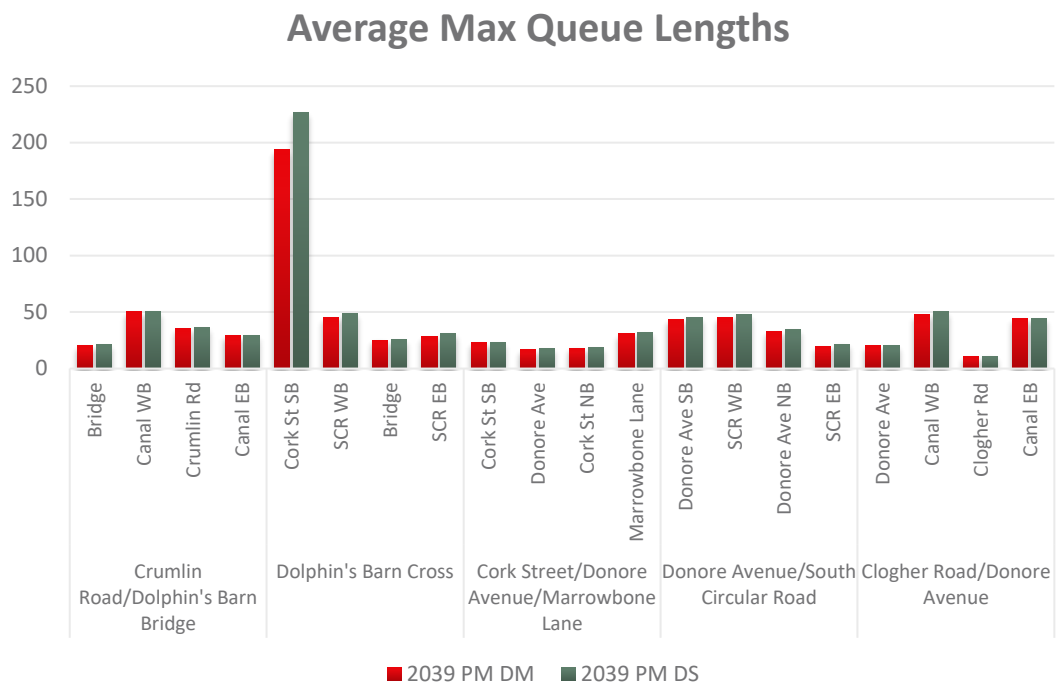
8.3.7 In 2029, there is again a minor increase in the level of queuing experienced by traffic travelling southbound along Cork Street as illustrated in Figure 8.8. The queuing on the majority of other junctions' arms modelled are slight and on average the increase across all arms is just 1.7m.

Figure 8.8: 2029 Do-Nothing vs Scenario 1 PM Peak – Average 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 still represent an increase of 4 vehciles compared to Do-Nothing 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 2.9m.

Figure 8.9: 2039 Do-Nothing vs Scenario 1 PM Peak – Average Queue Lengths



Journey Times

8.3.9 The difference between journey times along the routes shown in Figure 8.3 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 5-12 seconds travelling northbound along Cork Street/Dolphin's Barn Street. There are also some increased delays along the South Circular Road and travelling eastbound along the canal. However, changes along the remaining routes are marginal.

Table 8.7 AM Peak Journey Times – Do-Nothing vs Scenario 1

Route	2024			2029			2039		
	DN	DS1	Diff	DN	DS1	Diff	DN	DS1	Diff
SCR EB	134	135	1.0%	140	146	4.2%	176	187	6.4%
SCR WB	122	127	3.8%	127	131	3.5%	163	172	5.2%
Canal WB	115	114	-0.2%	118	120	1.7%	137	139	1.8%
Canal EB	164	168	2.6%	172	181	5.6%	182	190	4.6%
Cork Street NB	190	195	2.7%	198	207	4.7%	232	244	5.2%
Cork Street SB	126	126	0.0%	129	131	1.5%	137	137	-0.2%
Donore Ave.NB	183	183	-0.3%	182	183	0.4%	171	171	-0.1%
Donore Ave. SB	125	123	-1.6%	129	127	-2.1%	128	130	2.0%

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 6 seconds.

Table 8.8 PM Peak Journey Times – Do-Nothing vs Scenario 1

Route	2024			2029			2039		
	DN	DS1	Diff	DN	DS1	Diff	DN	DS1	Diff
SCR EB	138	139	0.8%	138	139	0.5%	145	146	0.2%
SCR WB	122	128	4.9%	125	129	3.4%	151	156	3.1%
Canal WB	169	169	0.2%	172	172	0.2%	181	182	0.7%
Canal EB	148	148	0.0%	154	154	-0.2%	173	173	0.0%
Cork Street NB	219	218	-0.1%	225	226	0.3%	230	230	0.3%
Cork Street SB	134	135	1.1%	143	149	4.2%	161	166	3.3%
Donore Ave.NB	175	176	0.7%	185	185	0.0%	189	190	0.8%
Donore Ave. SB	129	128	-0.5%	160	160	0.1%	160	165	3.0%

8.4 Scenario 2 Results – Proposed Development, Bailey Gibson Development & development of potential lands adjacent to the Church

Network Statistics

8.4.1 With the Player Wills, Bailey Gibson and potential development lands adjacent ot the church in place, the morning peak average delay increases from the figures outlined in Table 8.5 for Scenario 1. However, the increases are still modest relatively to the do-nothing given the quantum of development with the absolute increase in average delay per vehicle just 8 seconds by 2039. The level of latent demand is relatively unchanged.

Table 8.9 AM Peak Network Statistics – Do-Nothing vs Scenario 2

Network Stats	2024			2029			2039		
	DN	DS2	Diff	DN	DS2	Diff	DN	DS2	Diff
Average Delay (s)	86.2	88.9	3.1%	95.0	100.2	5.5%	111.4	119.4	7.3%
Average Speed (kph)	25.6	25.1	-1.8%	24.7	23.6	-4.3%	22.3	21.3	-4.3%
Latent Demand (vehs)	0.0	0.0	0.0	0.0	0.4	0.4	19.2	21.8	2.6

8.4.2 In the evening peak the impact of the two developments combined is less again with a maximum increase of just 5.3% or 6 second change in average delay per vehicle by 2039.

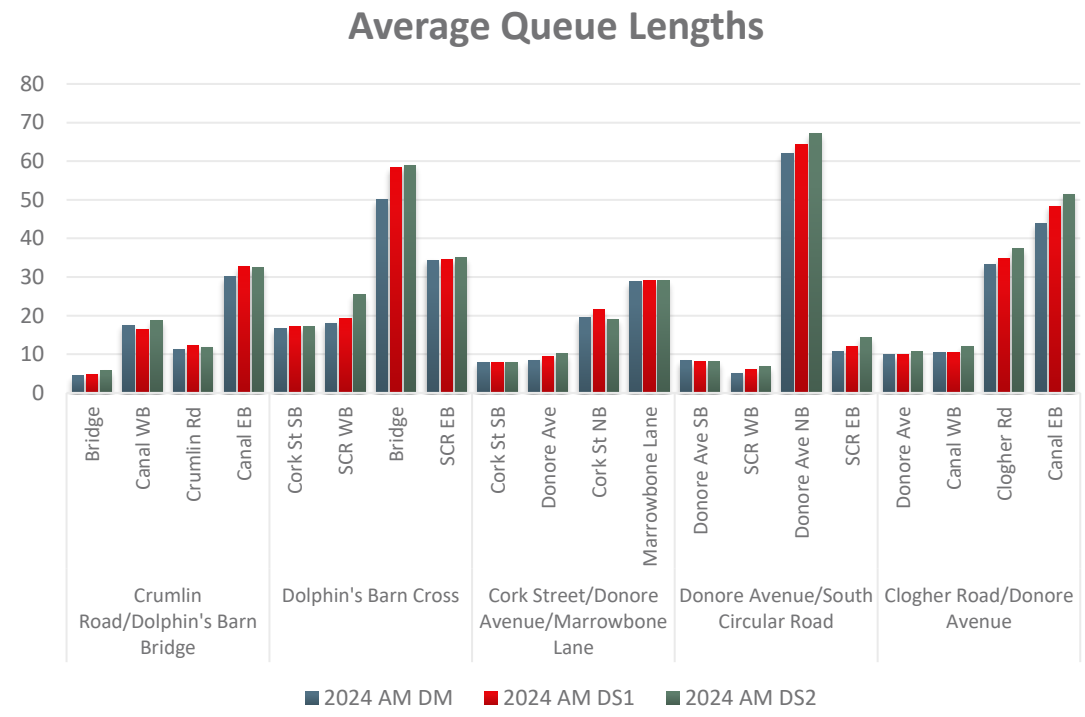
Table 8.10 PM Peak Network Statistics – Do-Nothing vs Scenario 2

Network Stats	2024			2029			2039		
	DN	DS2	Diff	DN	DS2	Diff	DN	DS2	Diff
Average Delay (s)	91.4	92.5	1.2%	98.6	100.2	1.7%	110.8	116.7	5.3%
Average Speed (kph)	24.5	24.3	-0.8%	23.5	23.3	-1.1%	22.0	21.3	-3.3%
Latent Demand (vehs)	0.6	0.8	0.2	0.0	1.0	1.0	8.0	10.0	2.0

Queue Lengths

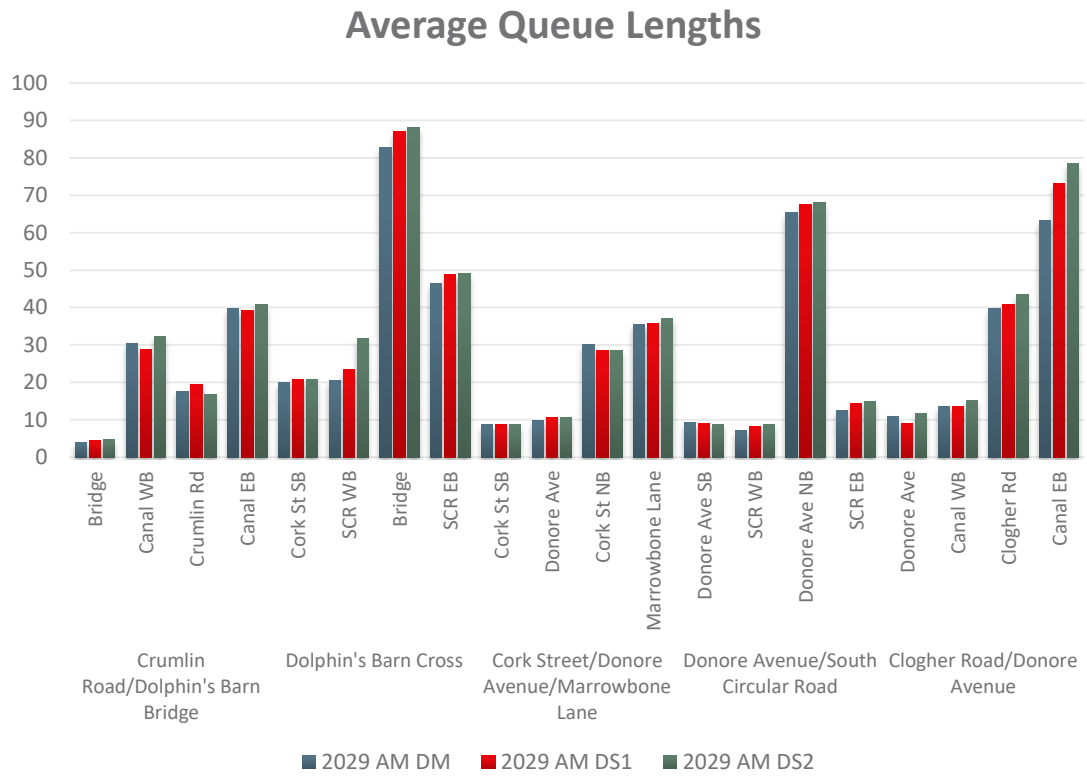
8.4.3 The average queue length in the morning peak is outlined for each year in Figures 8.10-8.12 for the Do-Nothing, Scenario 1 & Scenario 2. In 2024, the differences in queue lengths are slight between Scenarios 1 & 2. There are some slight increases along the canal west and eastbound, particularly 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 1.1m compared to Scenario 1 and by 2.5m compared to the Do-Nothing.

Figure 8.10: 2024 Do-Nothing, Scenario 1 vs Scenario 2 AM Peak – Average Queue Lengths



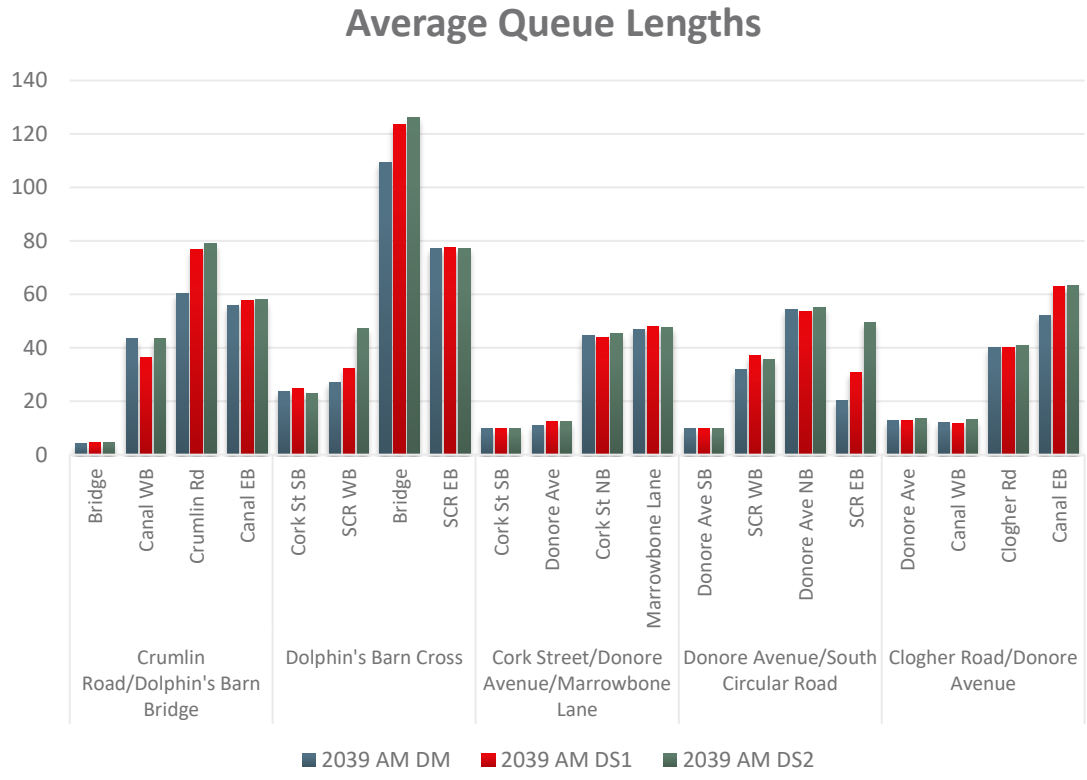
8.4.4 By 2029, they are slightly more notable increases in queuing as a result of the additional traffic from the combined developments. These increases are along the canal eastbound. Clogher Road northbound and westbound along the South Circular Road at Dolphin's Barn Cross. The increases are generally slight and less than one vehicle in length compared to Scenario 1. Across all arms the average increase is 1.3m & 3.6m compared to Scenario 1 and the Do-Nothing respectively.

Figure 8.11: 2029 Do-Nothing, Scenario 1 vs Scenario 2 AM Peak – Average Queue Lengths



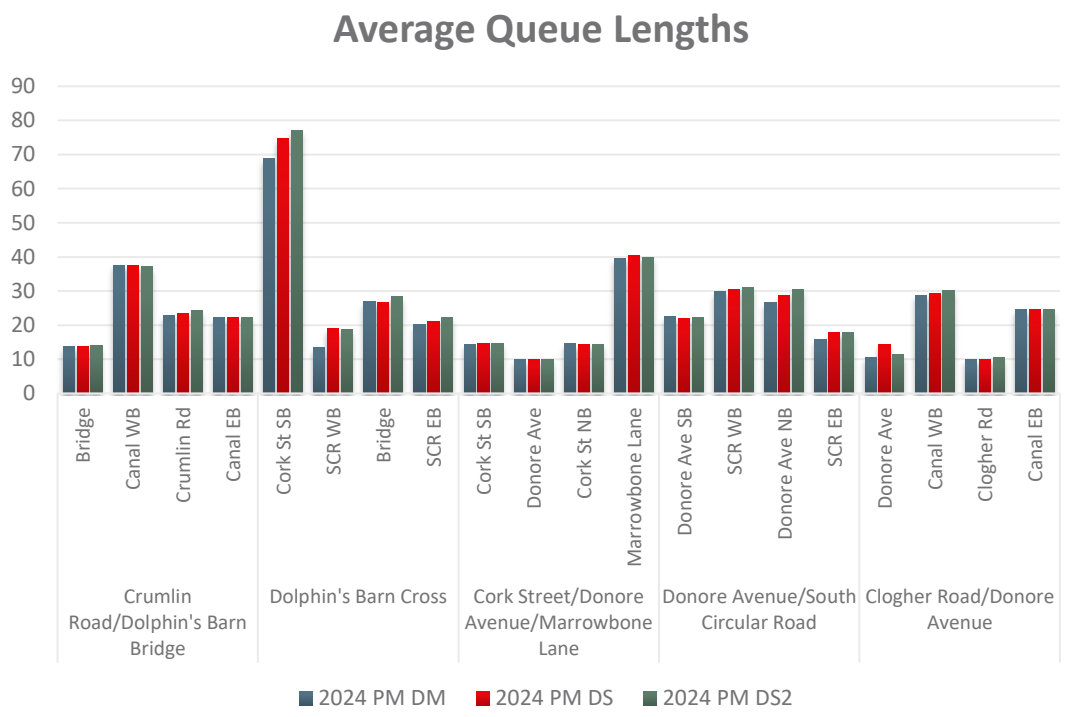
8.4.5 In 2039, the main increases are along the South Circular Road eastbound towards Donore Avenue and westbound towards Dolphin's Barn Cross. However, the level of queuing is still comparable to the Do-Nothing and other arms of the junctions remain relatively unchanged.

Figure 8.12: 2039 Do-Nothing, Scenario 1 vs Scenario 2 AM Peak – Average Queue Lengths



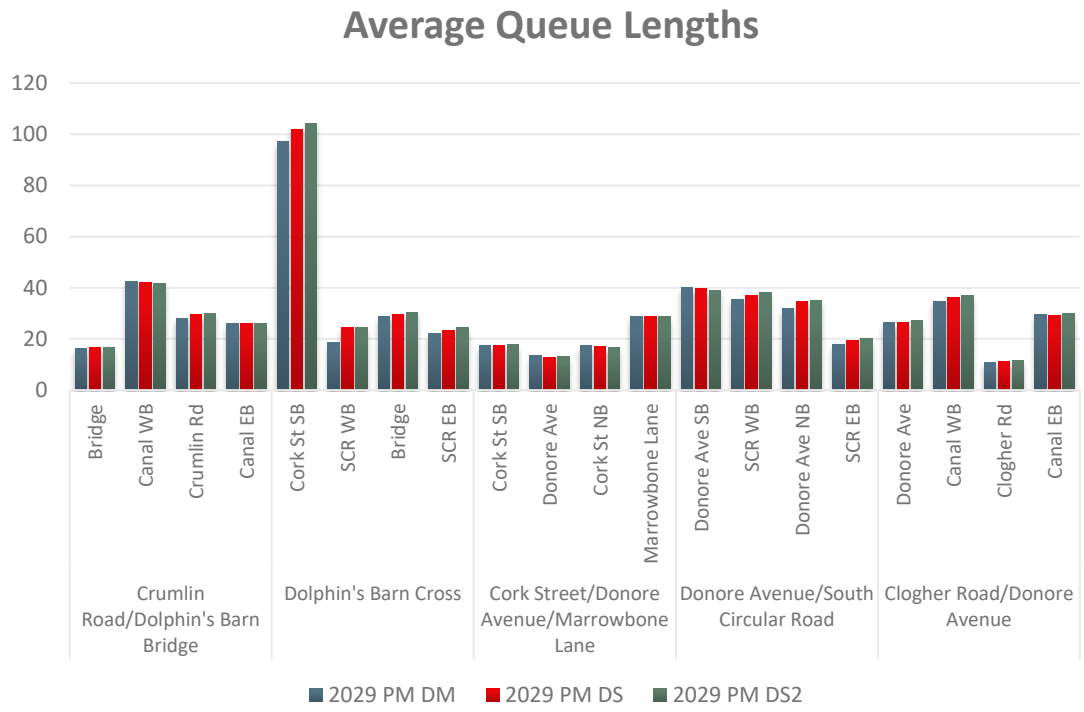
8.4.6 The average queue lengths for the PM peak hour are graphed in Figure 8.13-8.15 for each modelled year. In 2024, there are no significant changes in the levels of queuing across the network with marginal increases modelled along Cork Street southbound, the South Circular Road and northbound on Donore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

Figure 8.13: 2024 Do-Nothing, Scenario 1 vs Scenario 2 PM Peak – Average Queue Lengths



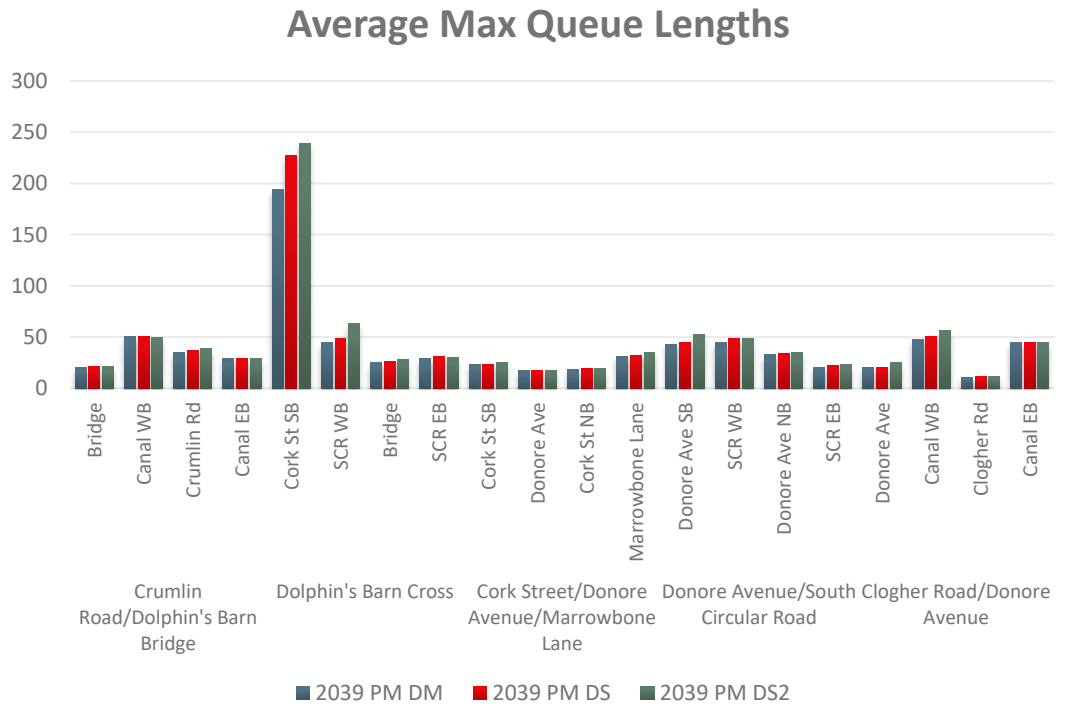
8.4.7 In 2029, the queue lengths again remain relatively unchanged from Scenario 1 with some increases southbound along Cork Street, both directions along South Circular Road and Donore Avenue northbound. All other increases as a result of the combined development traffic are slight with an average increase of just 0.9m across all arms compared to Scenario 1 & 1.8m compared to the Do-Nothing.

Figure 8.14: 2029 Do-Nothing, Scenario 1 vs Scenario 2 PM Peak – Average Queue Lengths



8.4.8 By 2039, there is a more notable increase in queuing travelling southbound along Cork Street with the extra developments in place. However, this is still the equivalent of less than 3 vehicles. There is also an increase of 15m 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 2.7m greater than Scenario 1.

Figure 8.15: 2039 Do-Nothing, Scenario 1 vs Scenario 2 PM Peak – Average Queue Lengths



Journey Times

8.4.9 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-Nothing vs Scenario 2

Route	2024			2029			2039		
	DN	DS2	Diff	DN	DS2	Diff	DN	DS2	Diff
SCR EB	134	136	1.3%	140	146	3.8%	176	196	11.4%
SCR WB	122	130	6.2%	127	137	8.4%	163	184	12.8%
Canal WB	115	118	3.0%	118	133	12.0%	137	148	8.3%
Canal EB	164	175	6.8%	172	182	6.0%	182	195	7.5%
Cork Street NB	190	195	2.3%	198	208	4.9%	232	244	5.3%
Cork Street SB	126	126	0.1%	129	131	1.5%	137	137	-0.4%
Donore Ave.NB	183	189	3.1%	182	185	2.0%	171	173	1.3%
Donore Ave. SB	125	125	-0.3%	129	126	-2.5%	128	129	1.3%

8.4.10 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-Nothing vs Scenario 2

Route	2024			2029			2039		
	DN	DS2	Diff	DN	DS2	Diff	DN	DS2	Diff
SCR EB	138	139	0.8%	138	140	1.4%	145	146	0.6%
SCR WB	122	128	5.6%	125	131	4.5%	151	166	9.3%
Canal WB	169	169	0.1%	172	172	0.0%	181	186	3.0%
Canal EB	148	149	0.1%	154	155	0.3%	173	173	0.0%
Cork Street NB	219	220	0.7%	225	229	1.8%	230	233	1.7%
Cork Street SB	134	135	0.8%	143	150	5.2%	161	172	7.1%
Donore Ave.NB	175	179	2.3%	185	185	0.0%	189	191	1.3%
Donore Ave. SB	129	129	-0.4%	160	159	-0.8%	160	174	8.2%

8.5 Scenario 3 Results – Full Build Out of the Masterplan Lands & Potential Development lands adjacent to the Church

Network Statistics

8.5.1 As discussed in Section 7.8, it has been assumed that the full development of the masterplan including DCC lands 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 masterplan build out, accommodating a population of over 4,000, the maximum increase in average delay per car in the local network is just 13.5 seconds.

Table 8.13 AM Peak Network Statistics – Do-Nothing vs Scenario 3

Network Stats	2029			2039		
	DN	DS3	Diff	DN	DS3	Diff
Average Delay (s)	95.0	102.6	8.0%	111.4	124.9	12.2%
Average Speed (kph)	24.7	23.3	-5.7%	22.3	20.7	-7.2%
Latent Demand (vehs)	0.0	0.2	0.2	19.2	23.6	4.4

8.5.2 In the evening peak, the impact is less again with just a 7 second increase in delay per car modelled by 2039. The latent demand in both peak hours also remains relatively unchanged.

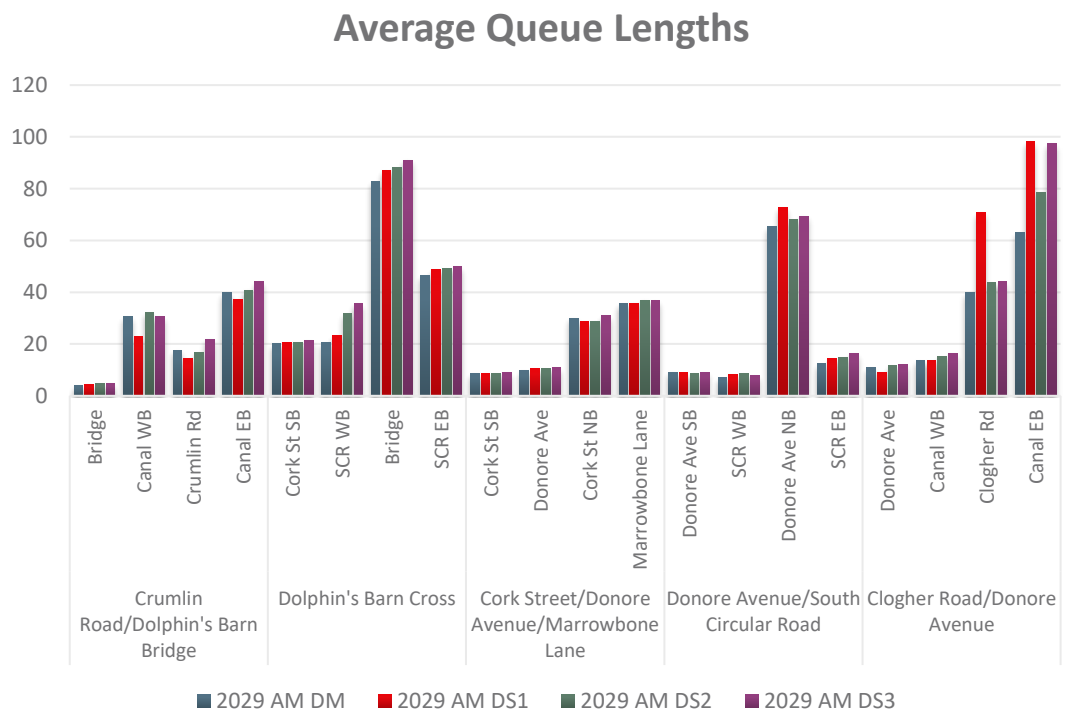
Table 8.14 AM Peak Network Statistics – Do-Nothing vs Scenario 3

Network Stats	2029			2039		
	DN	DS3	Diff	DN	DS3	Diff
Average Delay (s)	98.6	100.7	2.2%	110.8	117.7	6.2%
Average Speed (kph)	23.5	23.2	-1.4%	22.0	21.2	-3.7%
Latent Demand (vehs)	0.0	1.0	1.0	8.0	8.8	0.8

Queue Lengths

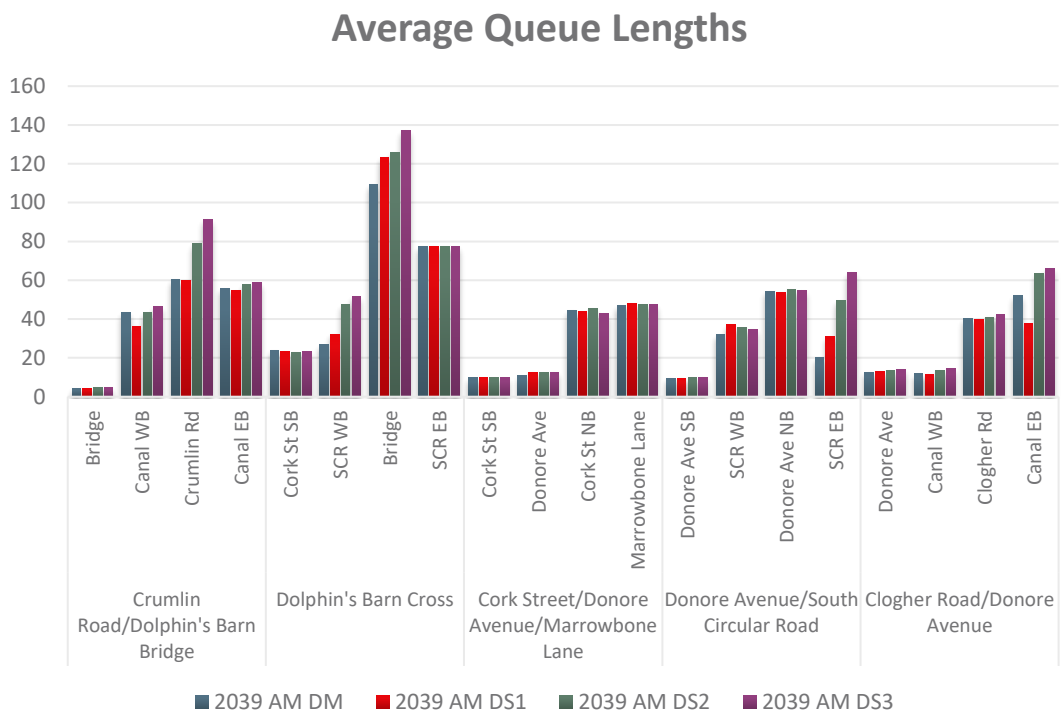
8.5.3 The average queue lengths in morning peak for all scenarios for 2029 & 2039 are presented in Figures 8.16 & 8.17. As shown, the increase on the vast majority of junction arms is slight and on average between 1-2m longer compared to Scenario 2. There is a greater increase along the canal eastbound 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-Nothing, Scenario 1, Scenario 2 vs Scenario 3 AM Peak – Average Queue Lengths



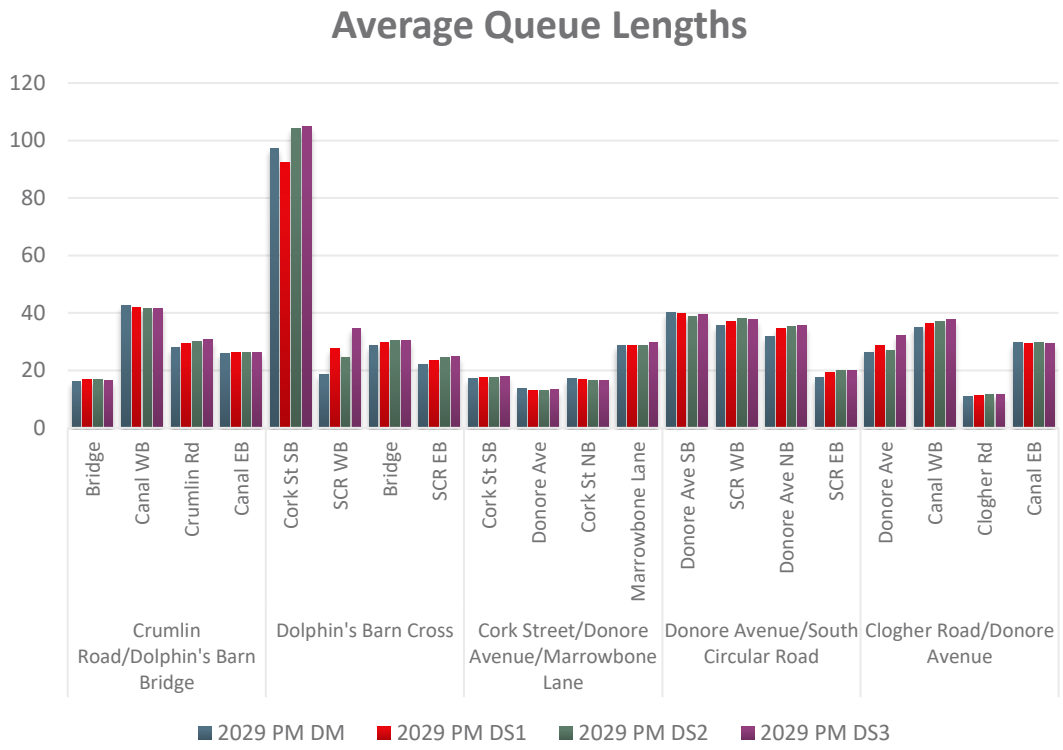
8.5.4 By 2039, there are slightly more notable impacts as a result of the additional traffic with increased queueing northbound along the Crumlin Road and Dolphin's Barn Bridge. Eastbound into the city there is also an increase of approximately 2-3 vehicles queuing along the South Circular Road at Donore 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-Nothing, Scenario 1, Scenario 2 vs Scenario 3 AM Peak – Average Queue Lengths



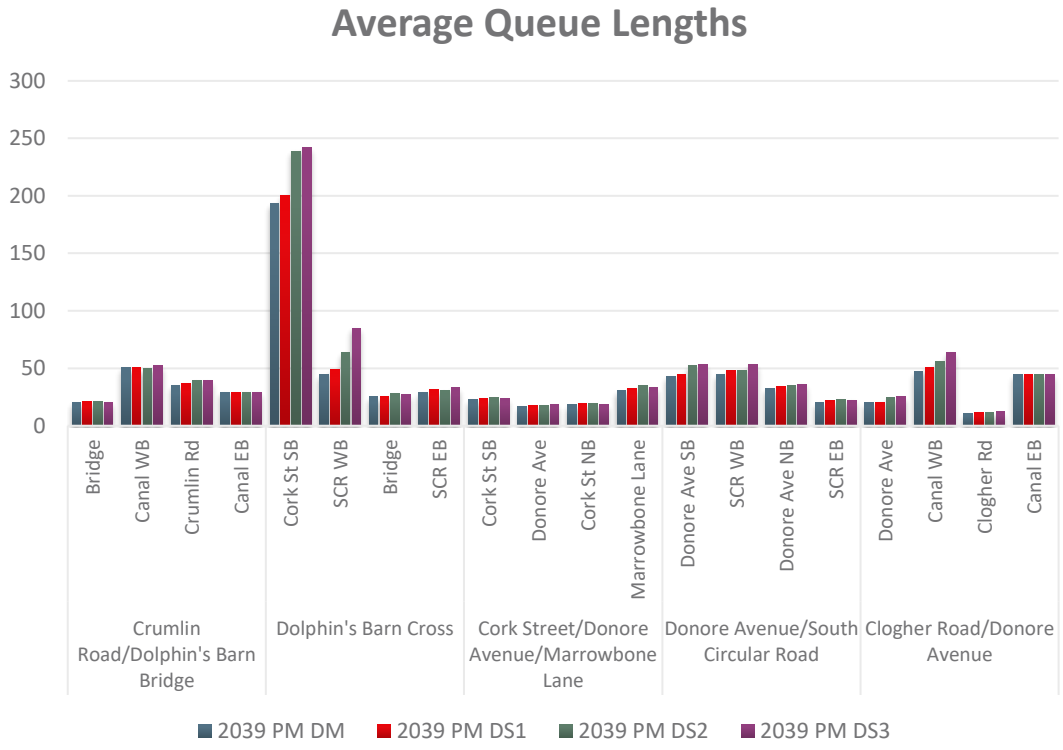
8.5.5 For the evening peak the average queue lengths are presented in Figures 8.18 and 8.19 for 2029 and 2039 respectively. In 2029, the main increases compared to Scenario 2 are along Cork Street southbound, the increase across other arms are marginal. On average across all arms the queue lengths increase by just 1m compared to Scenario 2.

Figure 8.18: 2029 Do-Nothing, 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-Nothing, 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 masterplan in place is outlined in Tables 8.15 and 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-Nothing.

Table 8.15 AM Peak Journey Times – Do-Nothing vs Scenario 3

Route	2029			2039		
	DN	DS3	Diff	DN	DS3	Diff
SCR EB	140	147	5.0%	176	222	26.2%
SCR WB	127	139	9.5%	163	188	15.0%
Canal WB	118	132	11.6%	137	143	4.6%
Canal EB	172	182	6.0%	182	192	5.5%
Cork Street NB	198	212	7.3%	232	258	11.1%
Cork Street SB	129	131	1.3%	137	136	-1.3%
Donore Ave.NB	182	183	0.4%	171	172	0.7%
Donore Ave. SB	129	128	-1.2%	128	130	2.3%

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-Nothing vs Scenario 3

Route	2029			2039		
	DN	DS2	Diff	DN	DS2	Diff
SCR EB	138	140	1.1%	145	148	2.0%
SCR WB	125	139	11.1%	151	187	23.5%
Canal WB	172	172	0.2%	181	191	5.6%
Canal EB	154	154	0.1%	173	174	0.2%
Cork Street NB	225	229	1.5%	230	232	1.0%
Cork Street SB	143	152	6.5%	161	178	10.6%
Donore Ave.NB	185	184	-0.3%	189	195	3.5%
Donore Ave. SB	160	162	1.6%	160	179	11.6%

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 measures have been identified as part of the Mobility Management Plan (MMP) to limit any adverse impacts. 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, 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) 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 20 on site cars exclusively for the use of residents of the development. Up to 50% of these cars will be electric vehicles. In addition, to the 20 cars provided for residents an additional 4 GoCars will be located on street and avilable for use by any GoCar members. A letter of commitment from Go Car is included in Appendix C.

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 strategic housing development comprising of 732 no. Build to Rent residential units, tenant amenities, retail space and crèche at the former Player Wills site located on the South Circular Road, Dublin 8.

10.1.2 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 alone and as part of the wider masterplan. The TTA has included an assessment of the Opening Year 2024 and future design years 2029 and 2039 as per TII guidelines.

10.1.3 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 conclusion 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, a dedicated QBC, and South Circular Road. In addition, the site is within a 12-minute walk 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% for the BTR apartment units in the peak hours with no vehicular traffic generated by the residents of the shared accommodation.
- It is proposed to provide a total of 148 long stay car parking spaces for residential component of the site. Based on the site accessibility, DHPLG guidelines and international best practice this is considered the optimal number of spaces for the site that will ensure the sustainability of the site but facilitate a level of car storage and accommodate essential parking requirements of residents. 20 Go-Cars will be provided on site to provide 'car-free' residents the option to travel by car for leisure trips. An additional 4 Go Cars will be provided on-street for use by the general public.
- Additional street parking will be provided for visitors, creche set down and loading. In total there will be 34 visitor spaces on street with 4 additional spaces for taxis and loadings bays, and 3 spaces for creche set down.
- Cycle parking will be provided at a rate of 1.3 spaces per unit for the BTR apartments, above the standards set out in the DCC development plan, and 1 per unit for the shared accommodation units. Cycle parking will be provided at ground level in secure locations. 110 cycle spaces will be provided on street for visitors.

- Additional cycle parking will be provided for staff of the commercial units within the development, including 20 at basement level for retail and management staff and 3 within the PW4 bike room for staff of the creche.
- 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 42 vehicular departures and 12 arrivals in the AM peak hour and a further 23 vehicular departures and 39 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 development traffic to the surrounding junctions is less than 2.5% 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 Chapter 8 the traffic has limited impact on the wider network with average delays increasing by a maximum of 6.1 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 Bailey Gibson site and the full SDRA 12 masterplan and additional development in the lands adjacent to the Church has also been assessed. Even with the combined traffic from all three sites the contribution to any junction across the local network is less than 10%. 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. These include car sharing, increased cycle parking, subsidised travel/sustainable travel incentives, personalised travel planning and appointment of an on-site mobility manager.

10.2.2 In conclusion, the TTA has demonstrated that the impact on the surrounding network as a result of the development at the Player Wills site will be limited. This is a result to 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.

10.2.3 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.

SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

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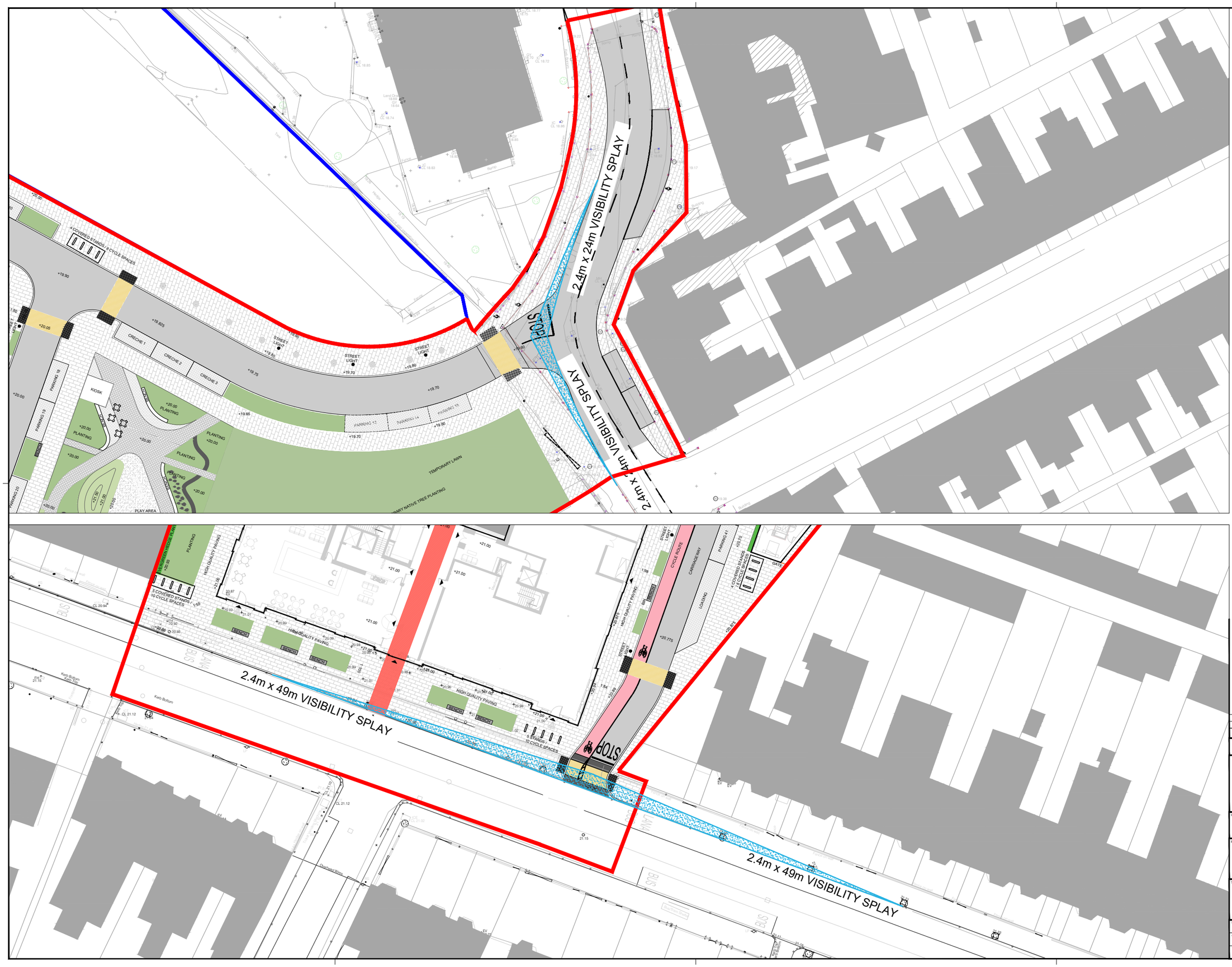
Appendix A

Drawings



Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

Limit of Work

Rev.	Date	Revision details	Drawn	Checked	Approved
C	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
B	14/09/2020	UPDATED TO DCC COMMENTS	AMP	AM	AA
A	27/03/2020	FIRST ISSUE	AMP	AM	AA

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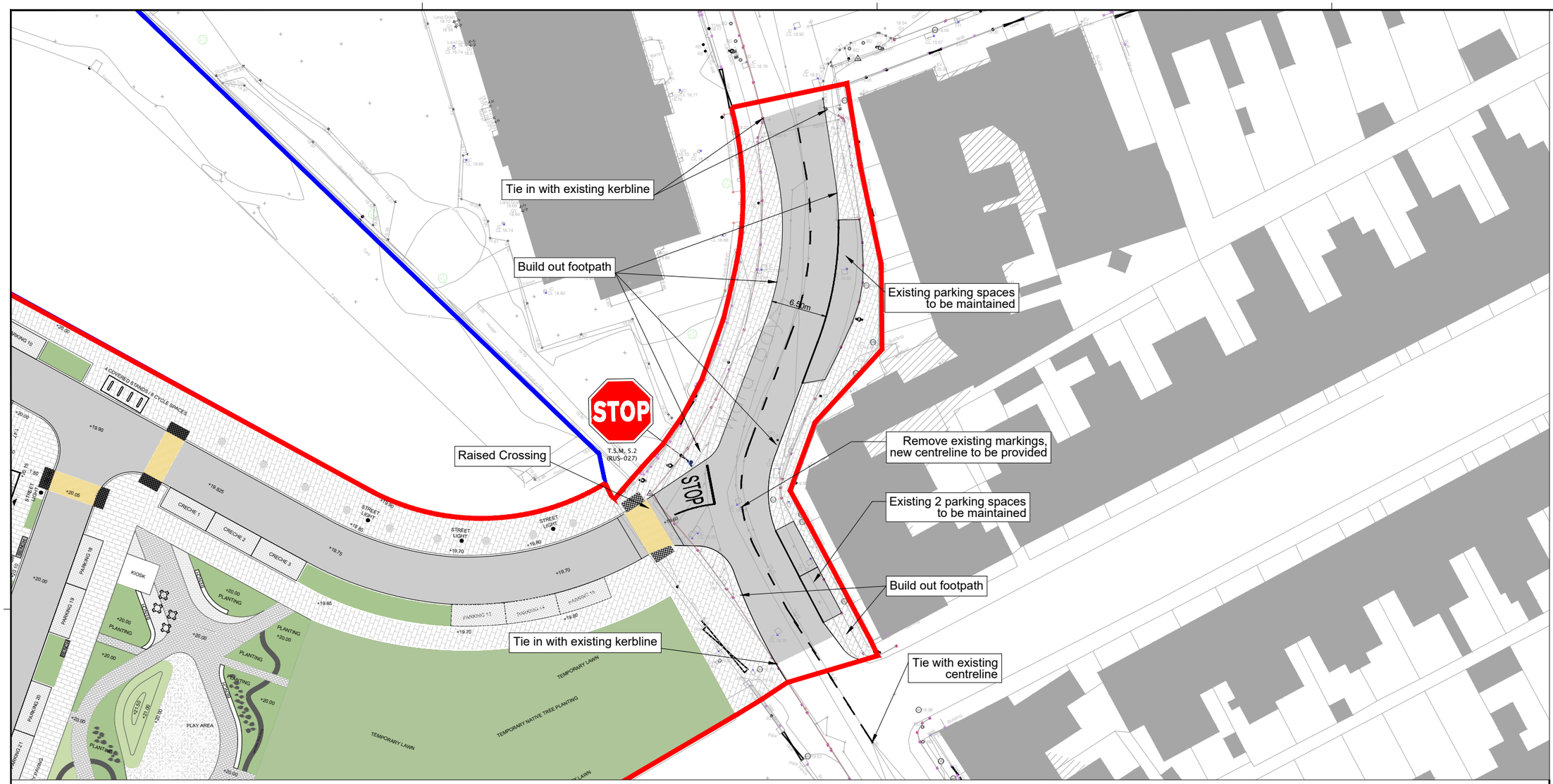
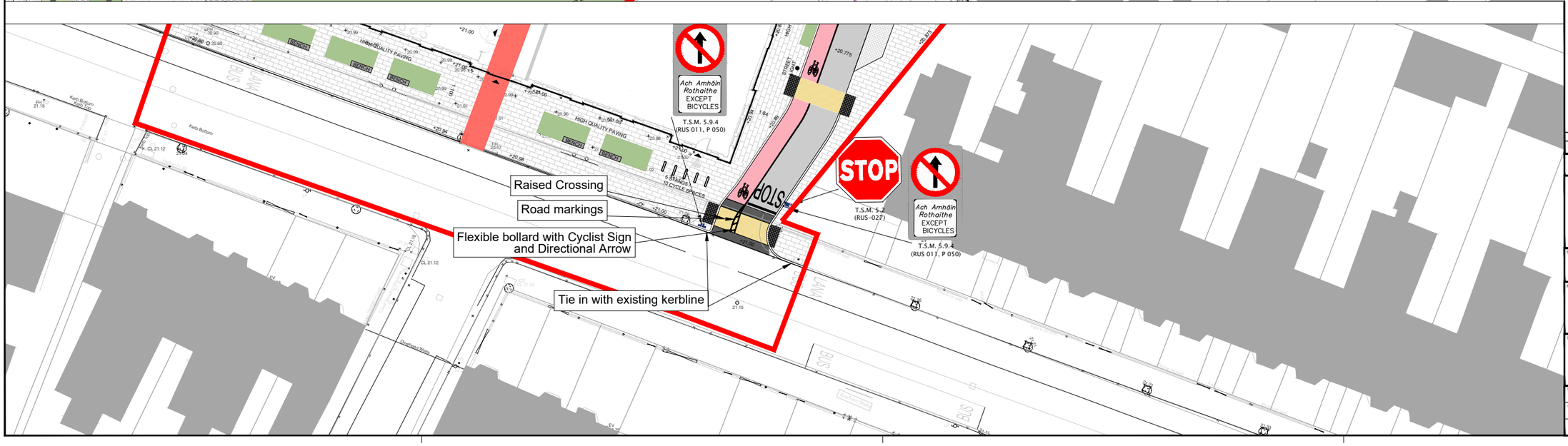
Title
SITE ACCESS VISIBILITY SPLAY

Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:250
Drawing Status: FINAL	Drawing Number: SYS-PW-01.1	Rev.: C





Notes:

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2. All dimensions in metres unless otherwise stated

Key:

Limit of Work

Rev.	Date	Revision details	Drawn	Checked	Approved
B	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
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Project: Proposed Strategic Housing Development on the former Player Wills site and undeveloped land owned by Dublin City Council at South Circular Road, Dublin 8.

Title: EXTERNAL JUNCTIONS

Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:250
Drawing Status: FINAL	Drawing Number: SYS-PW-01.2	Rev.: C

N

Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

- Limit of Work
- Kerbline
- Tactile paving (uncontrolled crossing)
- High quality street paving
- Car parking spaces
- Uncontrolled crossing paving (no raised)
- Cycle lane
- Corduroy paving
- Asphalt paving

Rev.	Date	Revision details	Drawn	Checked	Approved
C	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
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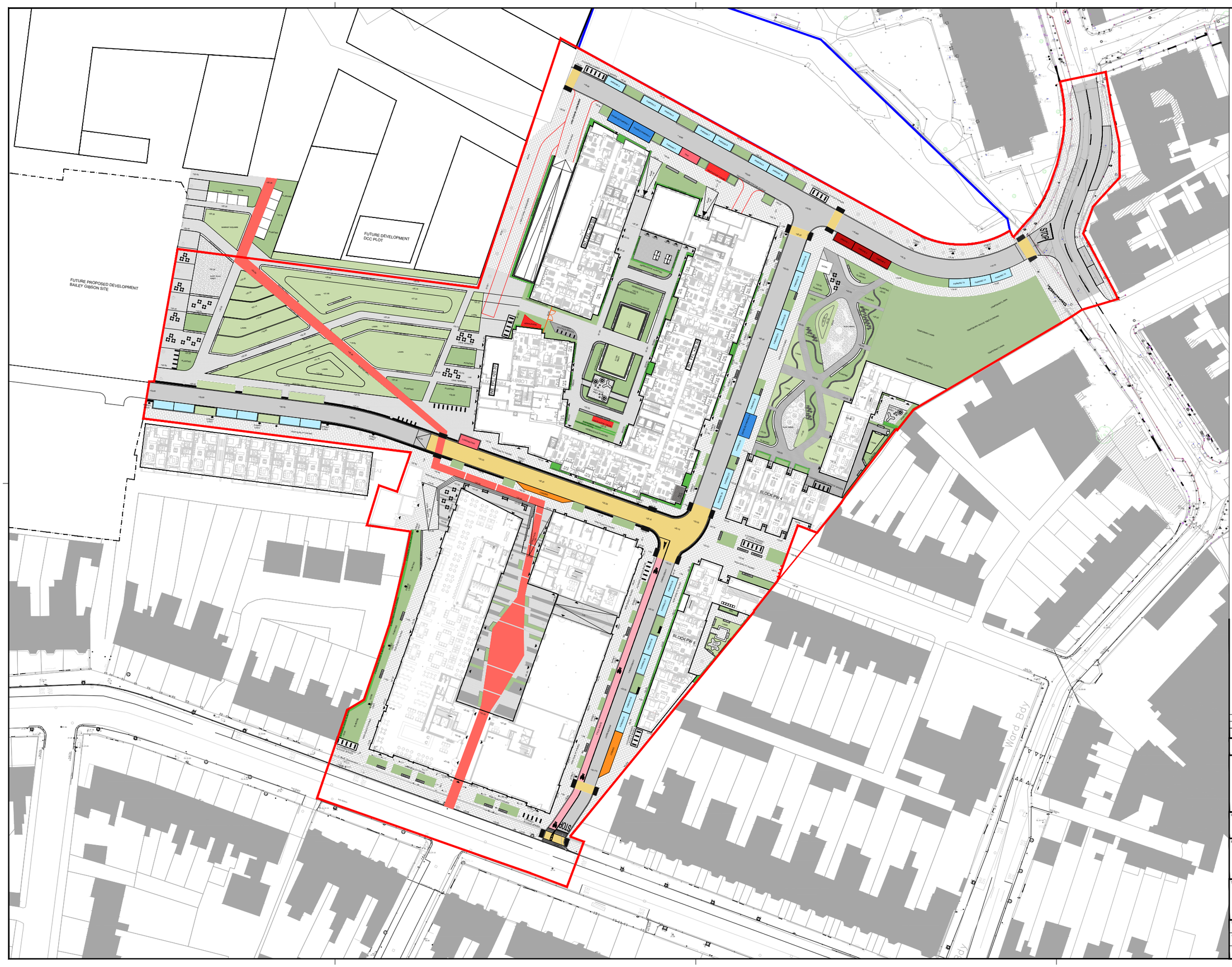
Title
ROAD LAYOUT

Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:500
Drawing Status: FINAL	Drawing Number: SYS-PW-02	Rev.: C



Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

- Limit of Work
- Disabled parking space
- Loading bay
- Creche
- Loading / Taxis
- Visitor parking
- Bike parking

Rev.	Date	Revision details	Drawn	Checked	Approved
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Title
ON- STREET PARKING

Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:500
Drawing Status: FINAL	Drawing Number: SYS-PW-03	Rev.: C

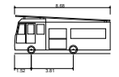
Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

Limit of Work

DB32 Fire Appliance



Overall Length	8.680m
Overall Width	2.180m
Overall Body Height	3.452m
Min Body Ground Clearance	0.337m
Max Track Width	2.121m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	7.910m

Forward

Reversing

Rev.	Date	Revision details	Drawn	Checked	Approved
C	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
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Project
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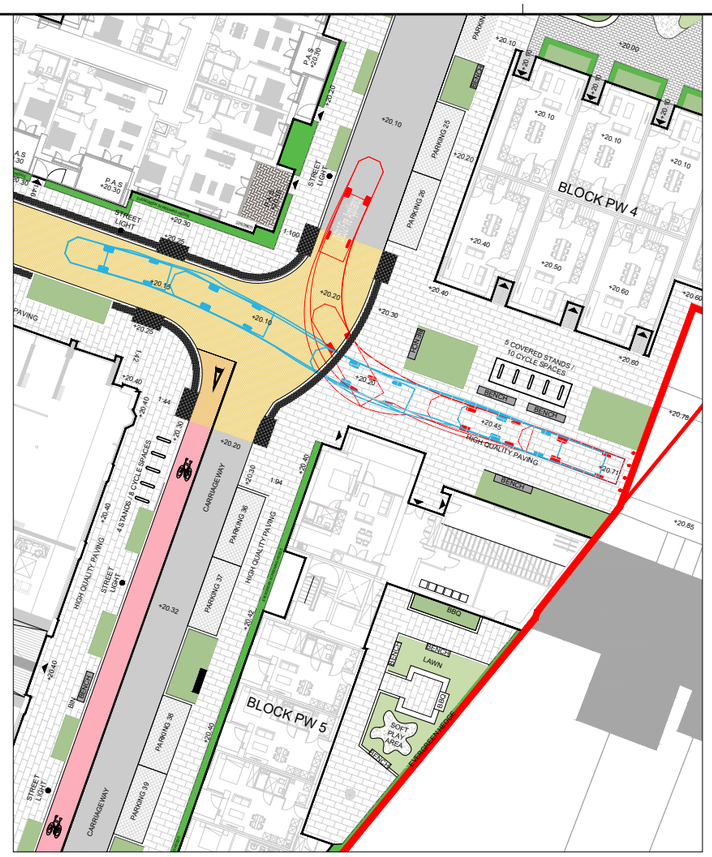
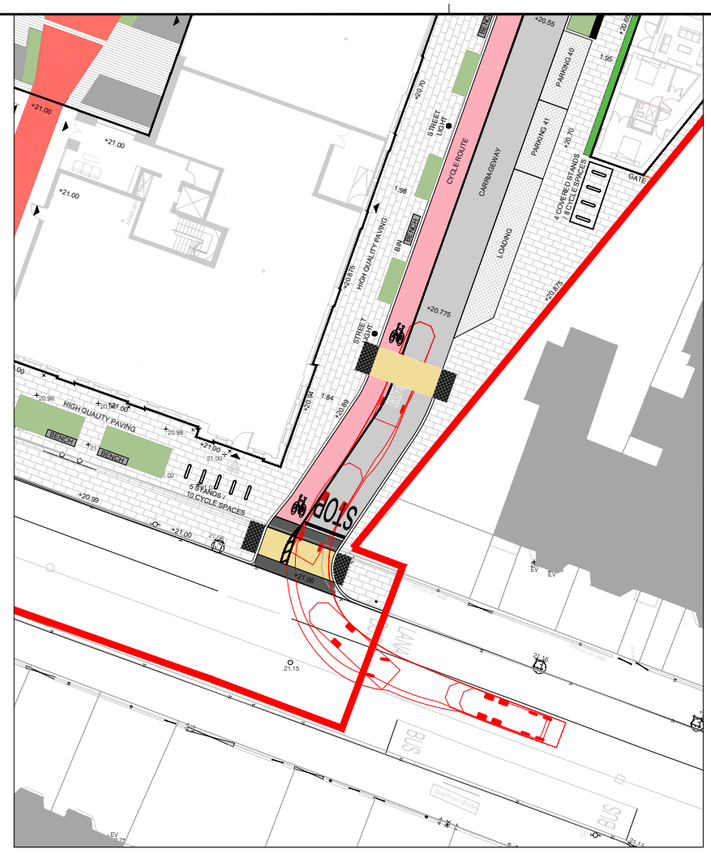
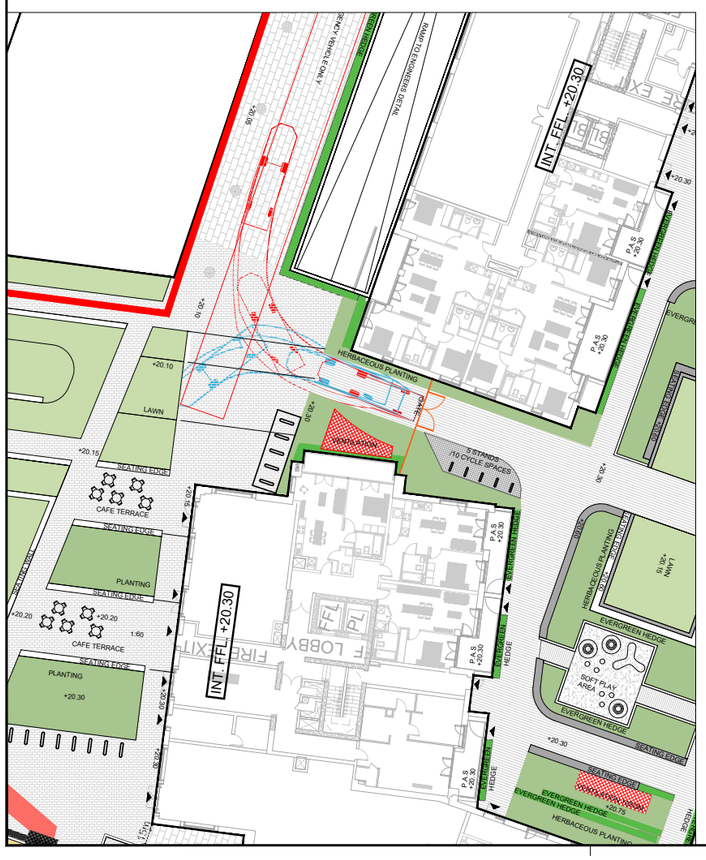
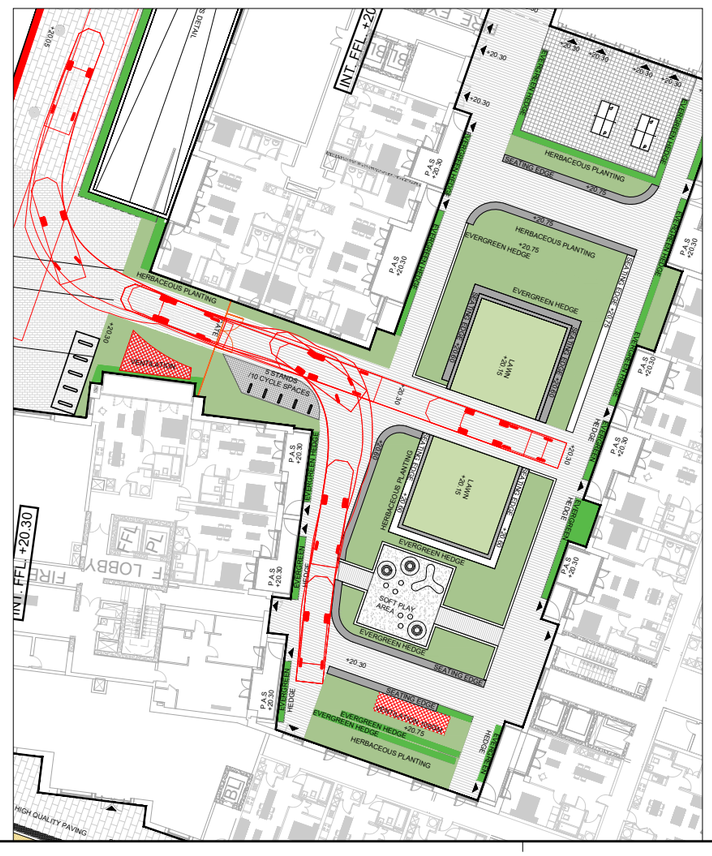
Title
VEHICLE TRACKING
FIRE TENDER
Sheet 1 of 2

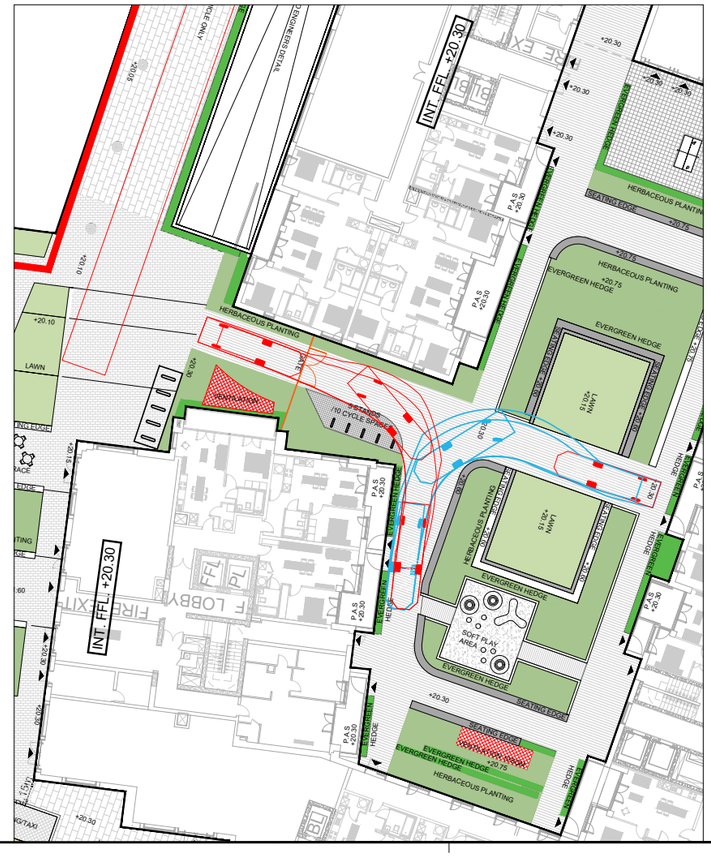
Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:500
Drawing Status: FINAL	Drawing Number: SYS-PW-04.1	Rev.: C











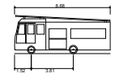
Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

Limit of Work

DB32 Fire Appliance



Overall Length	8.680m
Overall Width	2.180m
Overall Body Height	3.452m
Min Body Ground Clearance	0.337m
Max Track Width	2.121m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	7.910m

Forward

Reversing

Rev.	Date	Revision details	Drawn	Checked	Approved
C	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
B	14/09/2020	UPDATED TO DCC COMMENTS	AMP	AM	AA
A	21/03/2020	FIRST ISSUE	AMP	AM	AA

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Title
VEHICLE TRACKING
FIRE TENDER
Sheet 2 of 2

Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:250
Drawing Status: FINAL	Drawing Number: SYS-PW-04.2	Rev.: C

Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

Limit of Work

Phoenix 2 Duo (P2-12W with Elite 6x4 chassis)

Overall Length	10.200m
Overall Width	2.530m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	7.000
Kerb to Kerb Turning Radius	7.800m

Rev.	Date	Revision details	Drawn	Checked	Approved
C	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
B	14/09/2020	UPDATED TO DCC COMMENTS	AMP	AM	AA
A	27/03/2020	FIRST ISSUE	AMP	AM	AA

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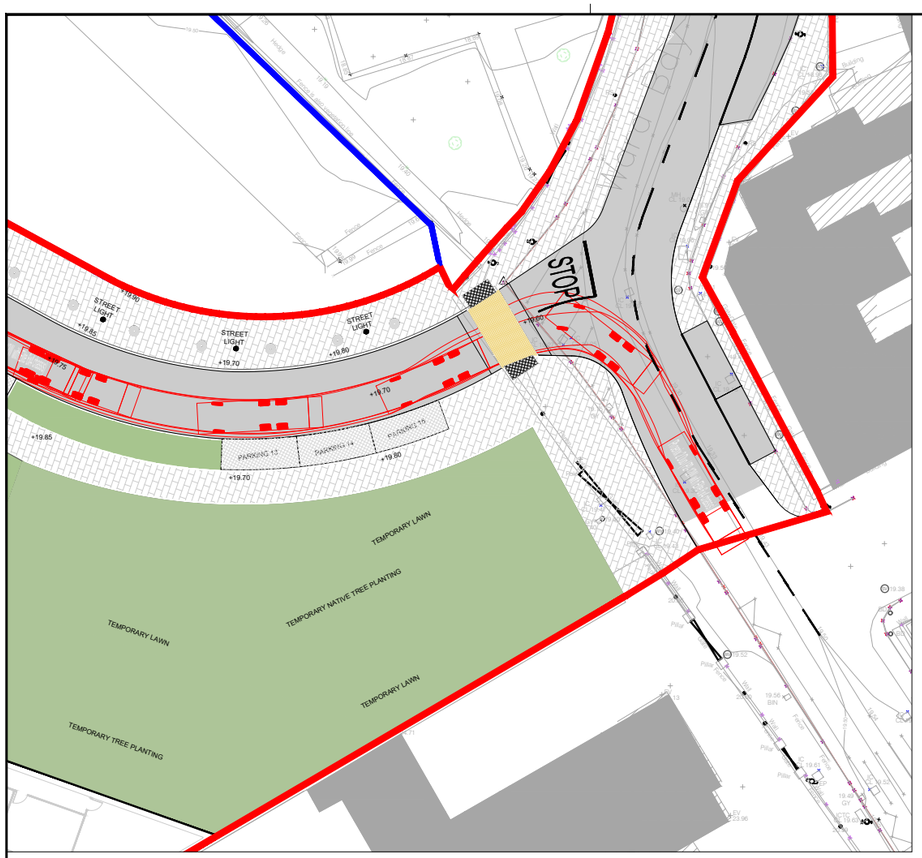
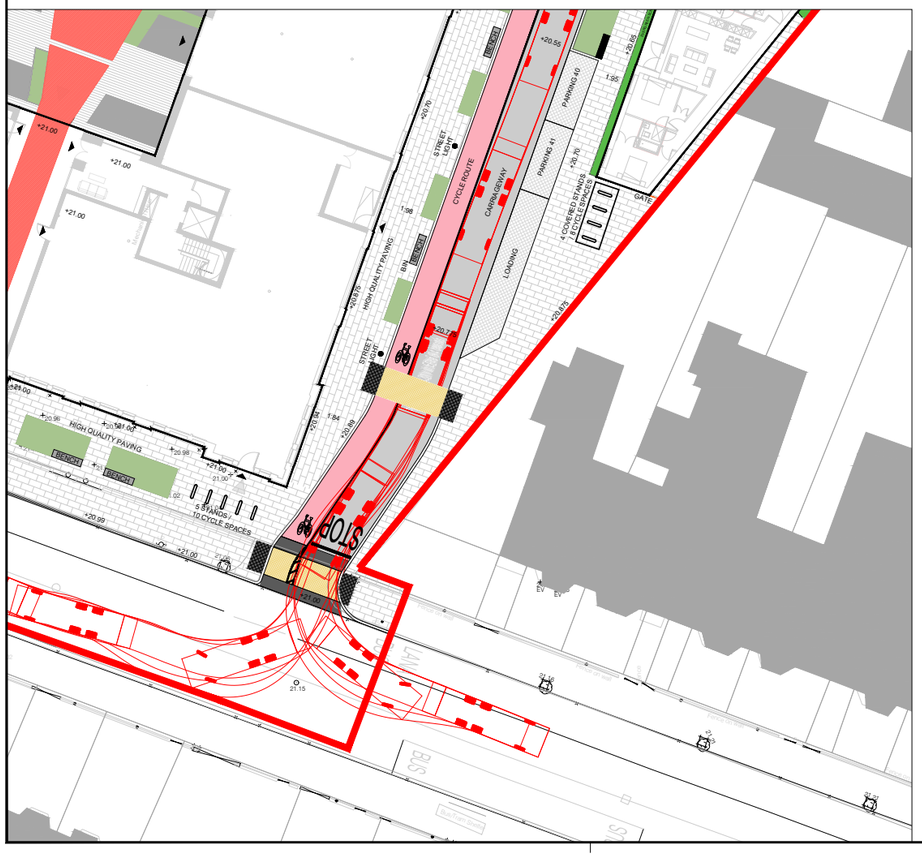
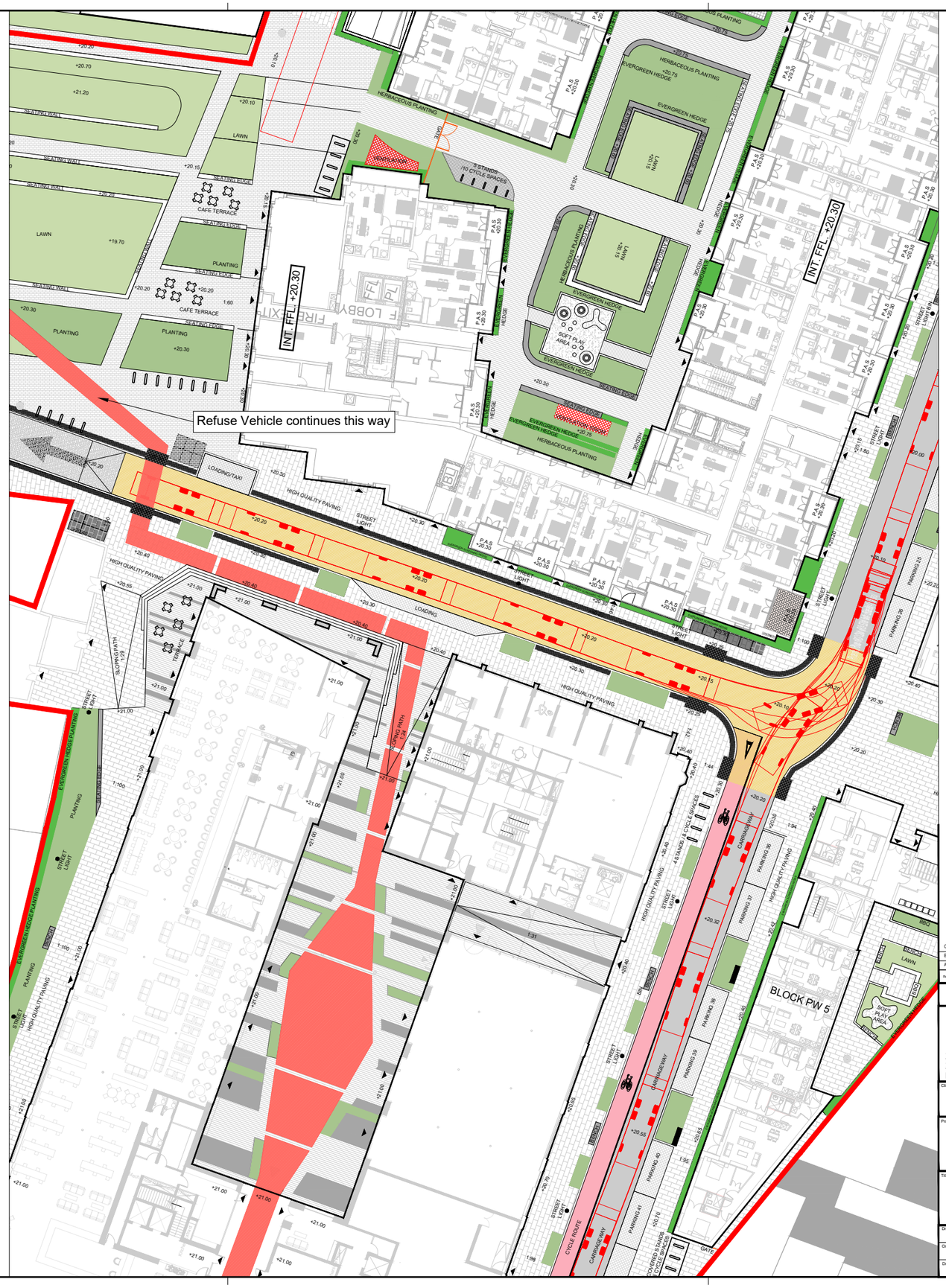
Proposed Strategic Housing Development on the former Player Wills site and undeveloped land owned by Dublin City Council at South Circular Road, Dublin 8.

Title
VEHICLE TRACKING
REFUSE VEHICLE
Sheet 1 of 2

Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:500
Drawing Status: FINAL	Drawing Number: SYS-PW-05.1	Rev. C







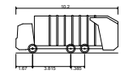
Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

Limit of Work

Phoenix 2 Duo (P2-12W with Elite 6x4 chassis)



Overall Length	10.200m
Overall Width	2.530m
Overall Body Height	3.731m
Min Body Ground Clearance	0.304m
Track Width	2.050m
Lock to lock time	7.900
Kerb to Kerb Turning Radius	7.800m

Rev.	Date	Revision details	Drawn	Checked	Approved
C	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
B	14/09/2020	UPDATED TO DCC COMMENTS	AMP	AM	AA
A	21/03/2020	FIRST ISSUE	AMP	AM	AA

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Project
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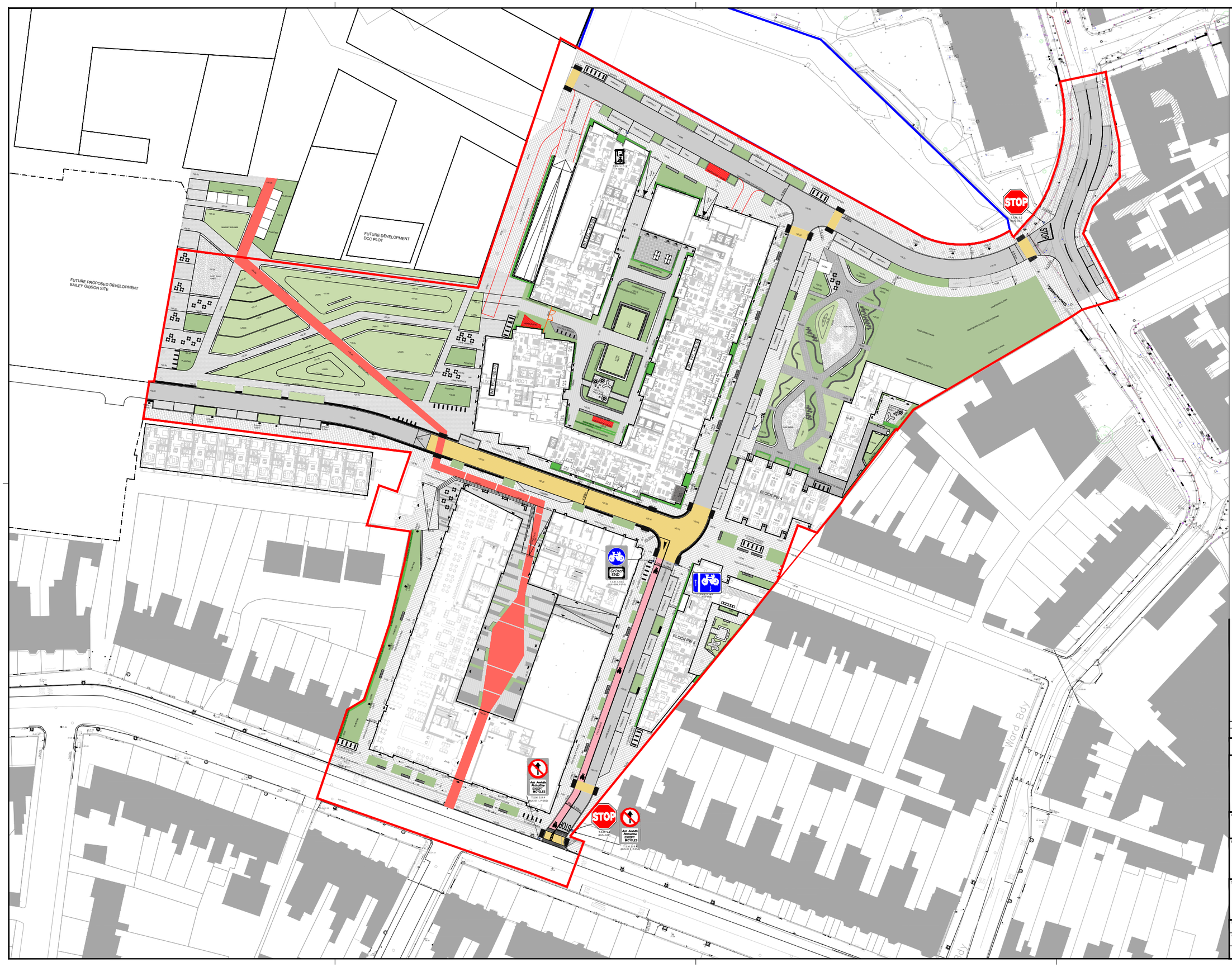
Title
VEHICLE TRACKING
REFUSE VEHICLE
Sheet 2 of 2

Drawn	Checked	Approved
AMP	AM	AA
Original drg. size: A1	Date: December 2020	Scale: 1:250
Drawing Status: FINAL	Drawing Number: SYS-PW-05.2	Rev.: C



Notes:

1. Do not scale from drawing
2. All dimensions in metres unless otherwise stated

Key:

- Limit of Work
- Kerbline
- Tactile paving (uncontrolled crossing)
- High quality street paving
- Car parking spaces
- Uncontrolled crossing paving (no raised)
- Cycle lane
- Corduroy paving
- Access ramp paving
- External paths paving

B	05/11/2020	UPDATED LAYOUTS	AMP	AM	AA
A	22/09/2020	FIRST ISSUE	AB	AMP	AA
Rev.	Date	Revision details	Drawn	Checked	Approved

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Proposed Strategic Housing Development on the former Player Wills site and undeveloped land owned by Dublin City Council at South Circular Road, Dublin 8.

Title
ROAD SIGNS

Drawn	Checked	Approved
AB	AMP	AA
Original drg. size: A1	Date: December 2020	Scale: 1:500
Drawing Status: FINAL	Drawing Number: SYS-PW-06	Rev.: B

Appendix B

TRICS Trip Rates

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

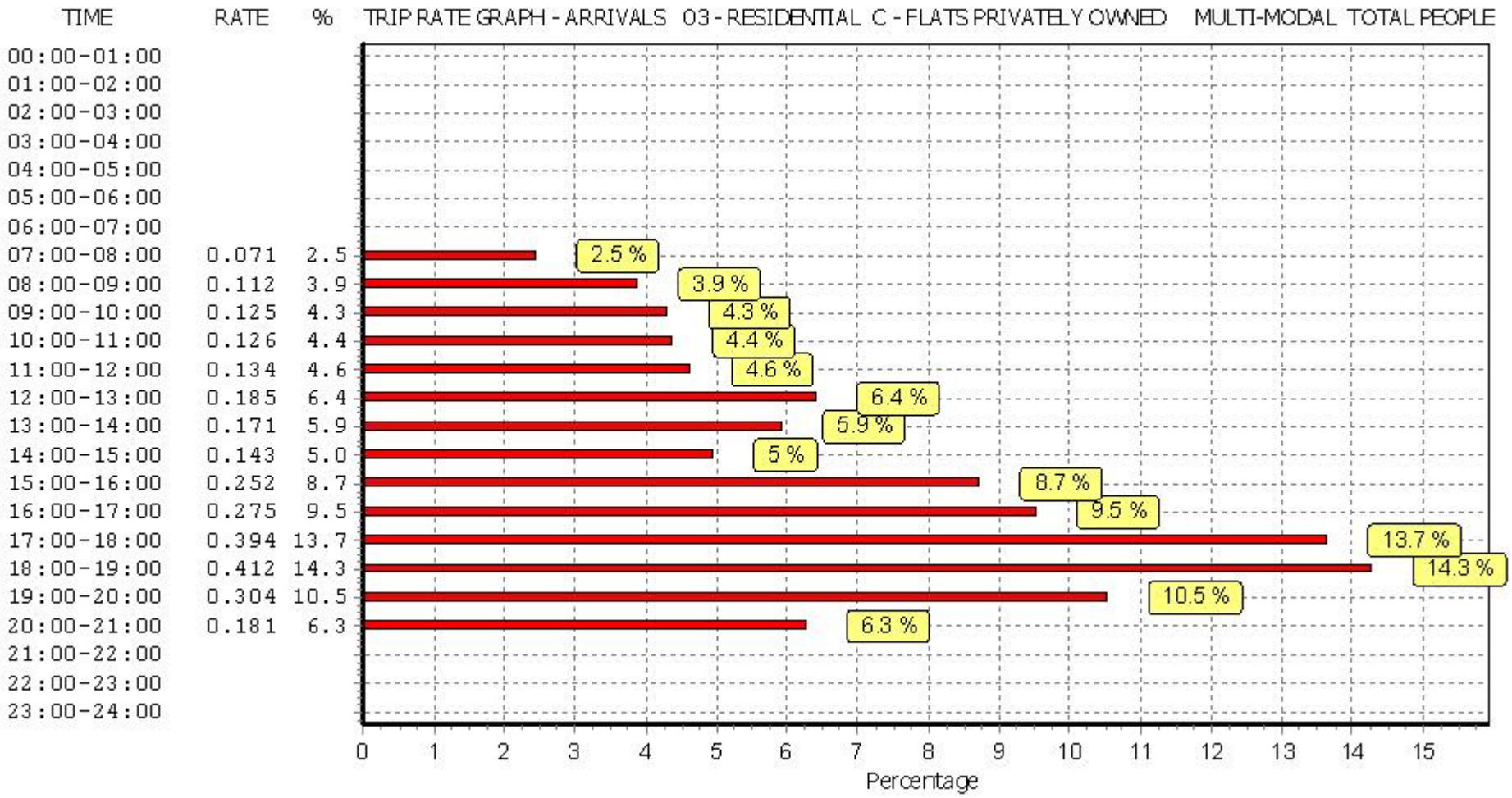
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected 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

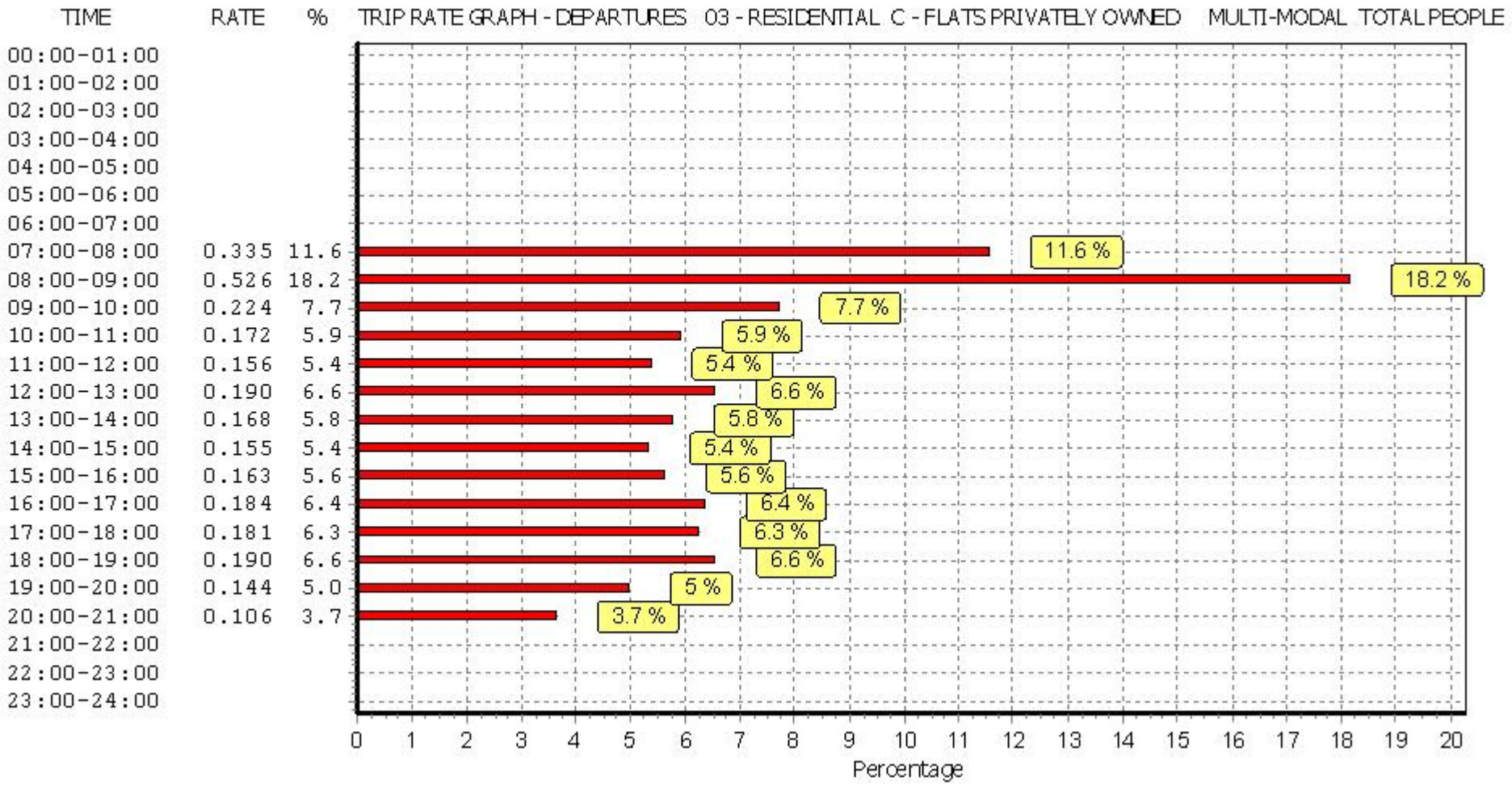
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 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.

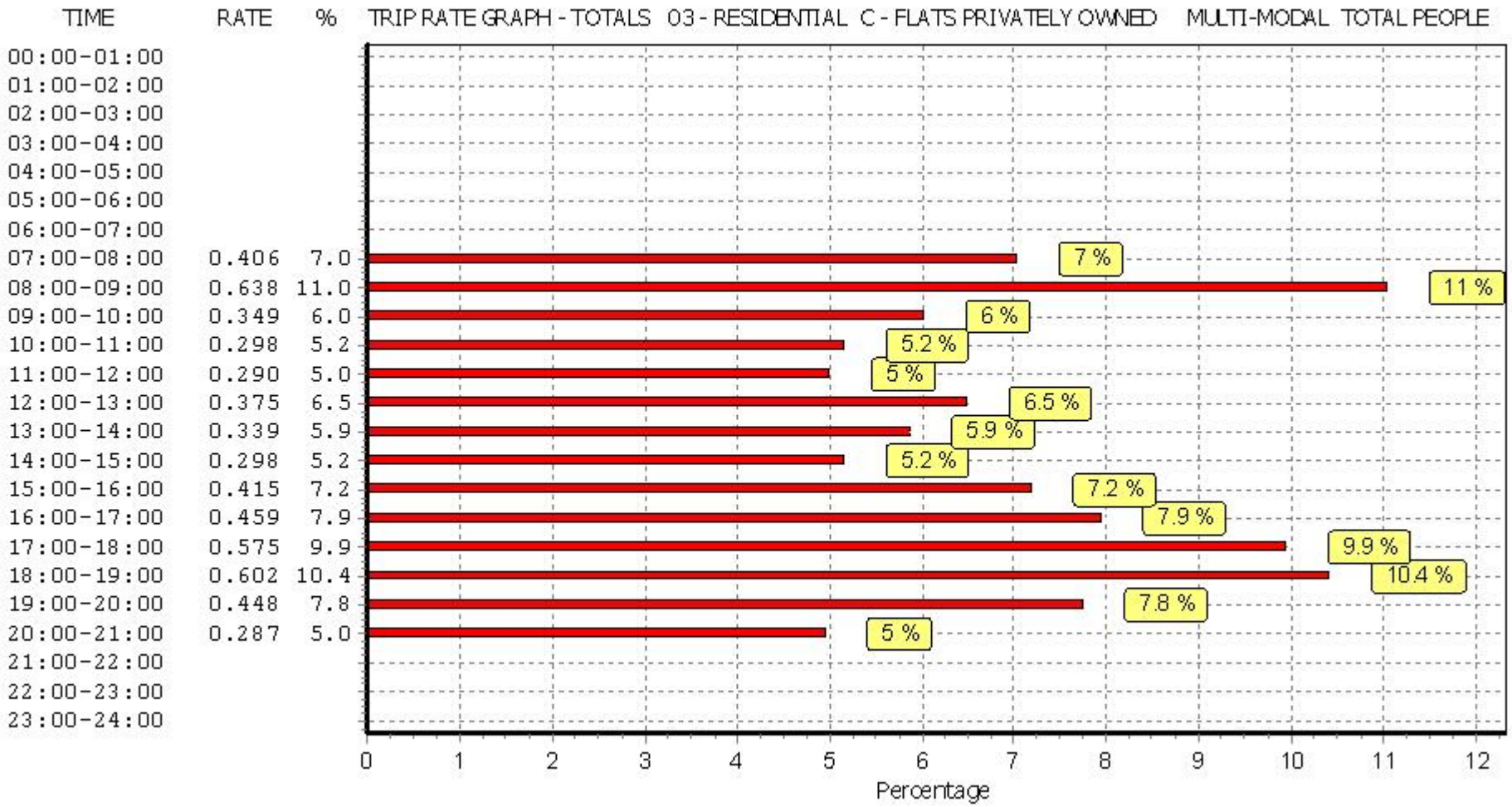
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected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

*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.*

Appendix C

Go Car Letter of Commitment

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

To Whom It May Concern,

This is a letter to confirm that GoCar intends to provide a service of 21 shared car club vehicles in the proposed residential development on lands at the former Player Wills Factory near Donore Avenue in Dublin 8. 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 20 of the vehicles situated at this development will be at basement level, and used exclusively by residents of the development. One vehicle will be provided at surface level and will be shared between the residents of this development and the surrounding area. GoCar intends to work with the management company to market and manage the service to ensure that there is a strong uptake. Given the scale of the development, options to expand the service further in the future will be considered.

GoCar is Ireland's leading car sharing service with over 60,000 members and over 800 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 2018 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 club vehicles in a residential development such as this, residents will have access to pay-as-you-go driving, in close proximity to their homes, which will increase usership of the service.

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

Rob Kearns
Head of Growth
GoCar Carsharing Limited
M: 083 822 3924
E: rob.kearns@gocar.ie