

Response to Request for Further Information

*Appendix A9.2-M
Traffic and Transportation Assessment – St Stephen's Green Station*

(Omitted from original application for a railway order)



MetroLink

Appendix A9.2-M

Traffic and Transportation Assessment – St Stephen's Green Station

ML1-JAI-TRA-MS15_XX-RP-Y-00001 | P03

2022/08/19



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1. Introduction

1.1 Background

JACOBS/IDOM has been commissioned to undertake the Environmental Impact Assessment Report (EIAR) in support of the proposed Dublin MetroLink project (hereafter referred to as the Project). The EIAR is being prepared to assess the environmental impacts of the Project, including in relation to traffic and transport.

This Traffic and Transportation Assessment (TTA) assesses the operational impacts associated with the St Stephen’s Green station on the Traffic and Transport network in the local area. TTA’s have been prepared for each individual station as well as an overall TTA for the Project.

JACOBS/IDOM has also been commissioned to undertake a Scheme Traffic Management Plan (STMP). The STMP is a standalone report within the EIAR. The STMP assesses the impact of the construction of the Project on all road users and proposes mitigation measures where appropriate.

A summary of the TTAs and STMP will be included within the Traffic and Transportation chapter of the EIAR.

1.2 Assessment Scenarios

In order to provide a rounded assessment of the Project, its impacts have been reviewed for a range of future years, and in the context of two alternative future scenarios. The forecast years are 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). As outlined in Table 1.1, Scenario A includes the Project and committed transport schemes only, while Scenario B also includes a range of further planned schemes depending on the forecast year.

Table 1.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

Committed transport schemes in the Do Minimum scenario and in Scenario A, that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget, include, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 1;
- BusConnects Dublin Area Bus Network Redesign; and,
- Bus Connects Fares and Ticketing.

Scenario B represents the likely future receiving environment and is based on the delivery of the schemes identified within the National Development Plan for 2035, and on the implementation of the NTA’s Greater Dublin Area (GDA) Transport Strategy for 2050 and 2065. As such, this scenario considers the cumulative impacts of interactions between other projects that are most likely to impact on transport movements in the area. Schemes included in this scenario are, but are not limited to:

- Luas Green Line Capacity Enhancement- Phase 2;
- Luas Finglas;
- Luas Lucan;
- BusConnects Core Bus Corridors (planned 16 corridors); and
- DART+.

More information on each modelled scenario is available in the Transport Modelling Plan (Appendix A9.3).

1.3 Project Overview

The Project will be a high-capacity, high frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, the Dublin Area Rapid Transit (DART), Dublin Bus and Luas services, improving integration across public transport network in the Greater Dublin Area (GDA).

As well as linking major transport hubs, the proposed Project will connect key destinations including Swords, Ballymun, the Mater Hospital, the Rotunda, Dublin City University and Trinity College with much of the 19-kilometre route running underground.

When operations commence, there will be a service every 3 minutes during peak periods. This can rise to a service every 90 seconds, with the system capable of carrying a peak line flow of 20,000 passengers per hour in each direction.

1.3.1 St Stephen’s Green Station

As shown in Figure 1.1, St Stephen’s Green Station will lie partly under the boundary of the St Stephen’s Green park and the footpath outside of the park, and will extend partly under the western side of St Stephen’s Green East roadway, to minimise the impact to both St Stephen’s Green East and the Park.

The station is in close proximity to St Stephen’s Green Park, Merrion Square, Grafton Street, the National Museum of Ireland, the National Gallery and the National Concert Hall.

The provision of surface features (lifts, ventilation etc.) associated with the station will require alterations to the current road layout and pavement locally. The road layout accommodates BusConnects proposals at this location.

Pedestrian and cyclist facilities are provided in the vicinity of the station, including the provision of 82 bicycle parking spaces, plus 40 Dublin Bike spaces.

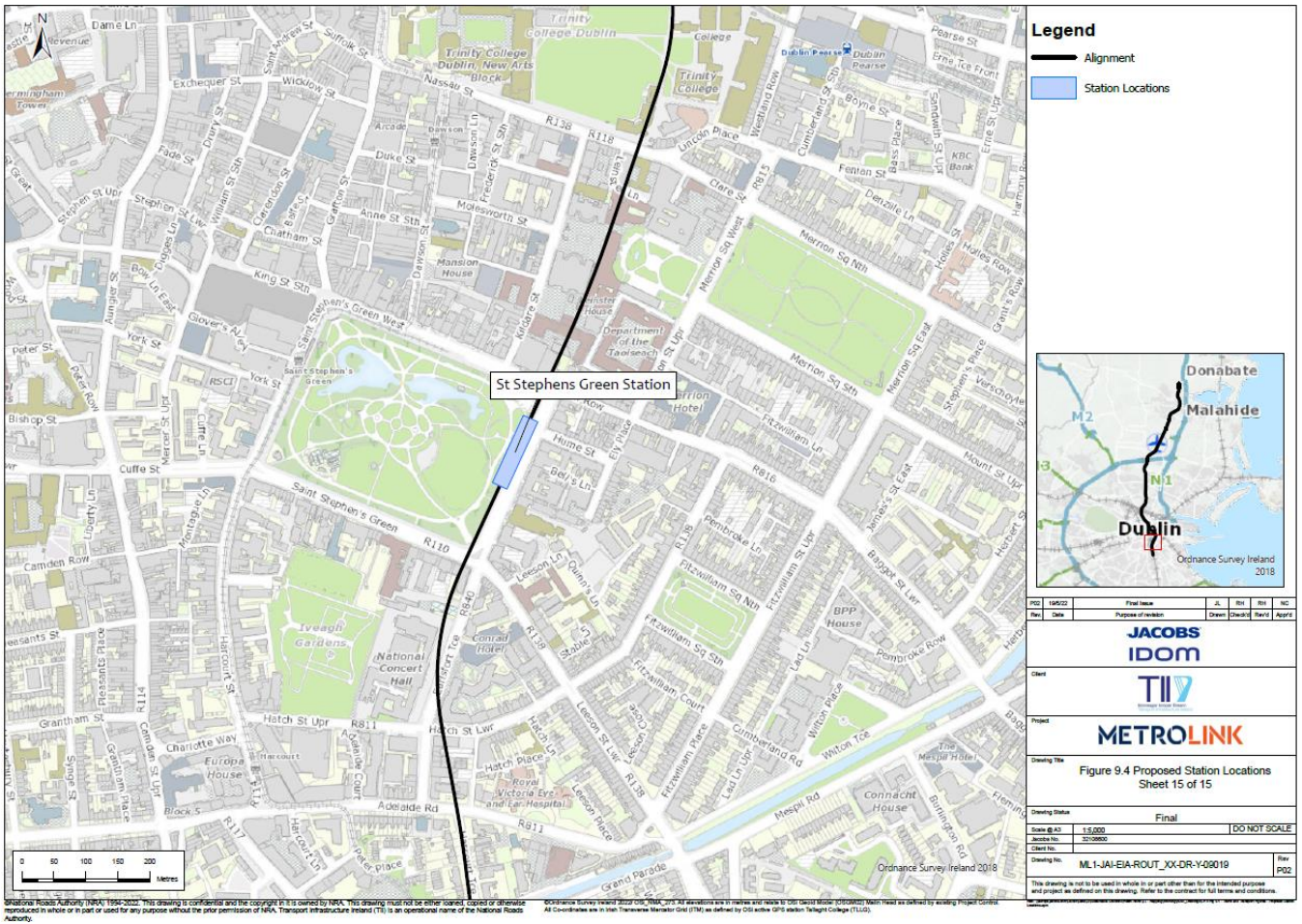


Figure 1.1: St Stephen's Green Station Location

2. Policy Context

Reference should be made to the Chapter 3 of the Overall Scheme TTA and Planning Policy Report ([ML1-JAI-PLD-ROUT_XX-RP-Y-00020](#)) for further detail on the overall project in relation to key national and regional policies.

The overarching theme of national planning policy is the consolidation and sustainable use of land in urban areas, particularly urban environments well served by public transport

The National Spatial Strategy states that in order to promote sustainable development, it is essential to consolidate the physical growth of Dublin City. This should be supported by effective land use policies for the urban area which underpin increased investment in high quality public transport infrastructure. It outlines a number of requirements that are key to creating a compact and economically vibrant city including;

- The effective integration of land use and transportation policy: and
- Facilitating the movement of people and goods through an effective public transport system.

The Regional Planning Guidelines promote the consolidation of development within the metropolitan area, and the achievement of sustainable densities in tandem with a much-enhanced multi-modal transport system.

The Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Planning Guidelines are required under legislation to be consistent with each other, and therefore the purpose of the Strategy is “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.” The Strategy sets out the necessary transport provision for the period up to 2035, to achieve this objective for the region, including the provision of the Metro.

2.1 Dublin City Council Development Plan (2016-2022)

The overarching theme of the local policy regarding movement is “helping to build an integrated transport network and encouraging the provision of greater choice of public transport and active travel.”¹

Based on review of the Dublin City Council Development Plan (2016 – 2022) it is the Policy of Dublin City Council (DCC):

SC19: To promote the development of a network of active, attractive and safe streets and public spaces which are memorable, and include, where appropriate, seating, and 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 places and meet the needs of the city’s diverse communities.

MT2: Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as walking, cycling and public transport, and to cooperate with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives. Initiatives contained in the government’s ‘Smarter Travel’ document and in the NTA’s draft transport strategy are key elements of this approach.

¹ Dublin City council - Dublin City Development Plan 2016–2022: Written Statement; Section 1.2 (e)

MT3: To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.

MT4: To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.

MT5: To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.

MT6: (i) To work with Iarnród Eireann, the NTA, Transport Infrastructure Ireland (TII) and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity.

(ii) To facilitate the needs of freight transport in accordance with the National Transport Authority’s Transport Strategy for the Greater Dublin Area 2016 – 2035.

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 routes, including the provision of foot and cycle bridges. Routes within the network will be planned in conjunction with green infrastructure objectives and on foot of (inter alia) the NTA’s Cycle Network Plan for the Greater Dublin Area, and the National Cycle Manual, having regard to policy GI5 and objective GIO18.

MT8: To work with, and actively promote, initiatives by relevant agencies and stakeholders such as An Taisce’s ‘Green Schools’ initiative and the NTA’s Smarter Travel Unit, to promote active travel in schools and communities, recognising the health and social benefits of walking and cycling as well as the environmental benefits.

MT9: To promote Bike and Ride at public transport hubs by providing secure, dry, bike parking facilities.

MT10: To provide 30kph speed limits and traffic calmed areas at appropriate locations throughout the city and subject to stakeholder consultation.

MT11: To continue to promote improved permeability for both cyclists and pedestrians in existing urban areas in line with the National Transport Authority’s document ‘Permeability – a best practice guide’. Also, to carry out a permeability and accessibility study of appropriate areas in the vicinity of all Luas, rail and BRT routes and stations, in co-operation with Transport Infrastructure Ireland and the National Transport Authority.

The Dublin City Development Plan and Dublin City Centre Transport Study outline strategic pedestrian routes within Dublin City Centre. These routes, which include all four sides of St Stephen’s Green, are envisaged to become streets where pedestrian movement and activity are prioritised.

The Heavy Good Vehicles (HGV) Management Strategy created restrictions on the movement of HGV’s with 5 or more axles within Dublin City Centre. During the hours of 07:00 – 19:00, seven days a week, HGV’s with 5 or more axles are not allowed to enter the restricted zone without having a permit. HGV’s with 4 axles or less can enter the restricted zone at any time, but must follow specific designated routes, St Stephen’s Green East, St Stephen’s Green North and Dawson Street all form part of these designated routes.

The Dublin City Centre cycle parking strategy recommends the development of of new and the expansion of existing on-street sites in order of ranking and targeting specific locations based on “real time” demand. It further recommends the expansion of sites with latent capacity as demand increases.

The Development Plan also identifies Strategic Pedestrian Routes within Dublin City Centre. All footways immediately around St Stephen’s Green are identified as Secondary routes, with Grafton Street identified as a Primary street, and Leeson Street is considered to be an Historic Approach, as shown in Figure 2.1.

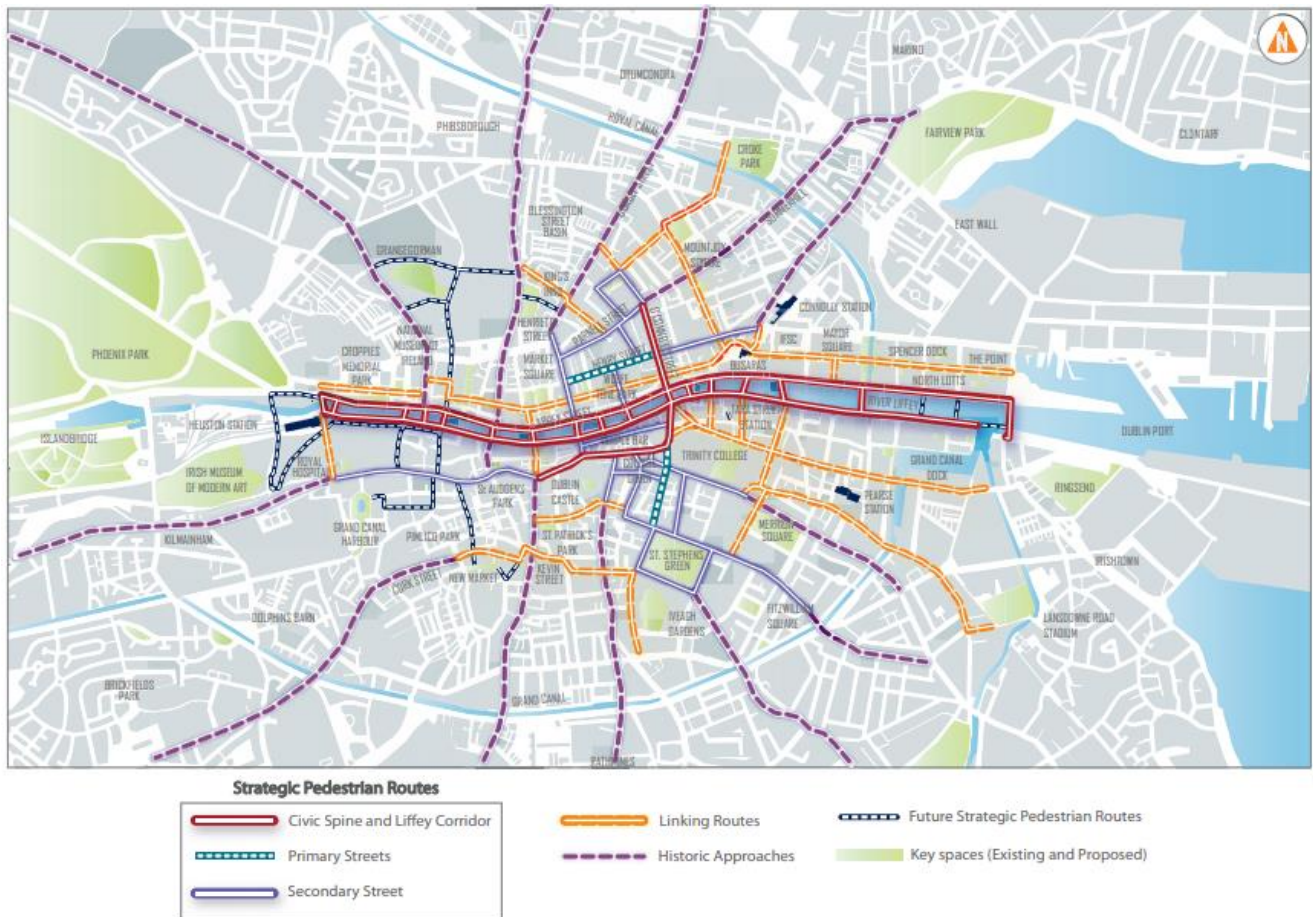


Figure 2.1: DCC Pedestrian Street Hierarchy (Source: DCC Development Plan 2016-2022)

2.2 Draft Dublin City Council Development Plan (2022-2028)

Building on the objectives of the Dublin City Council Development Plan 2016-2022, the Draft Dublin City Council Development Plan 2022-2028 recognises the opportunities presented by MetroLink to achieve effective integration of land-use and transportation in the area.

SMT20: Key Sustainable Transport Projects:

- To support the expeditious delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and Luas Expansion Programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.

In addition, the Draft Plan highlights the role the Project will play in delivering opportunities for developing the public realm around proposed stations.

2.3 St Stephen’s Green Park Conservation Management Plan 2015-2020

Although the station is not in a location subject to a local area plan or master plan, the area falls within the St Stephen’s Green Park Conservation Management Plan 2015-2020. The purpose of the Conservation

Management Plan is 'to provide guidelines, together with a set of specific actions, for the management of St Stephen's Green for future generations while addressing the needs of the current generation within the context of a National Historic Park'. It aims to balance the responsibility to protect, conserve and enhance the unique landscape, environment, ecology, wildlife, built heritage and views of St Stephen's Green with active and creative policies to facilitate wider access and increased enjoyment, information, education and recreation for now and into the future.

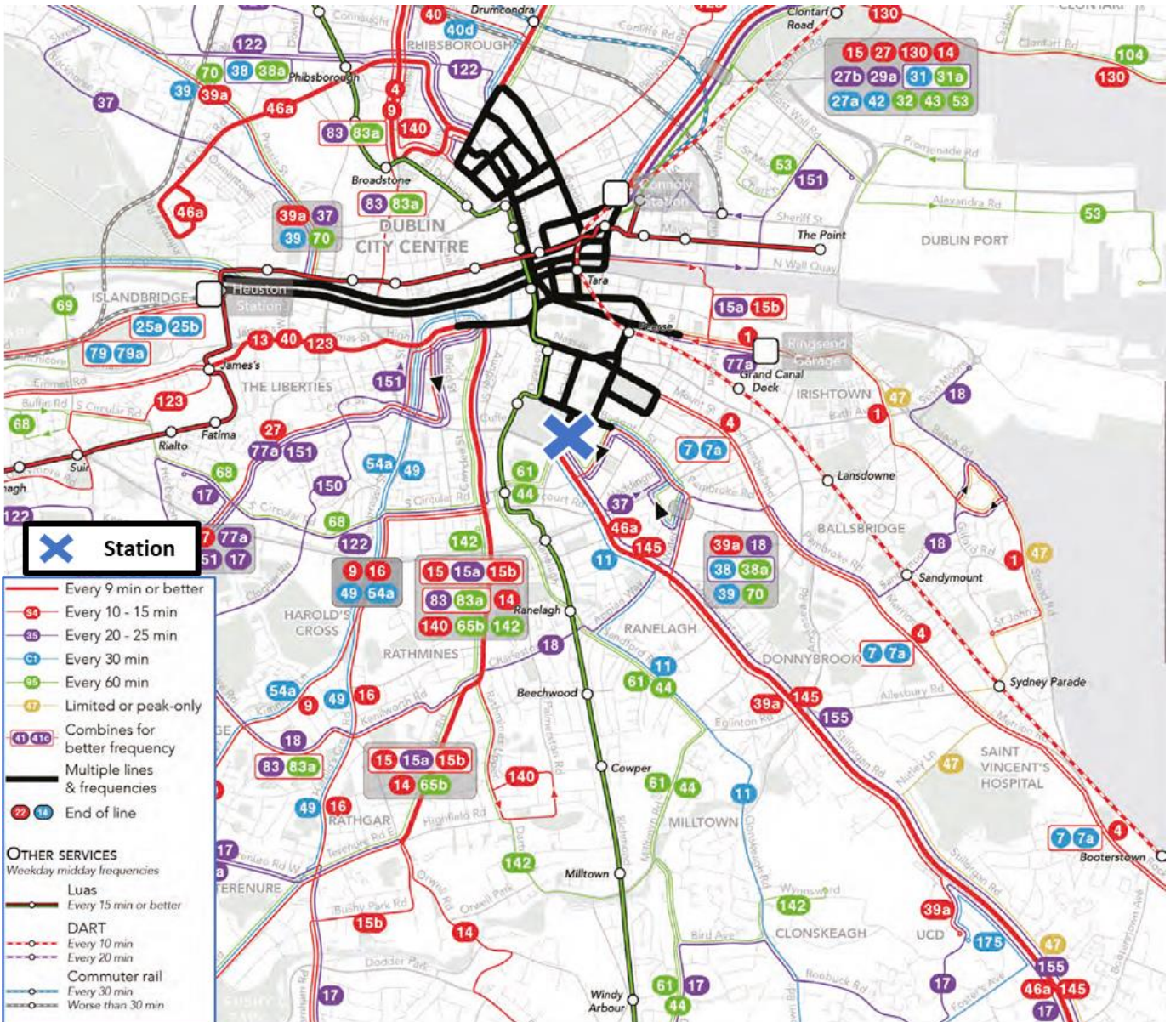
3. Baseline Conditions

This section describes the existing receiving environment within the vicinity of the St Stephen’s Green Station and the wider environs, and identifies the future receiving environment for all modes of transport if conditions are planned to change in advance of the construction of the Project, such as the delivery of other proposed infrastructure projects.

3.1 Existing Public Transport Network

As shown in Figure 3.1, the area surrounding the St Stephen’s Green Station is served by several bus services with less than 15min frequencies, many of which have stops in close proximity to the station. Within a 600m buffer zone from the station there are more than 30 bus stops located along St Stephen’s Green, Leeson Street Lower and R118/R138, as shown in Figure 3.2. The nearest bus stop is east of the station with routes 37 (from Baggot St./Wilton Terrace towards Blanchardstown Centre), 44 (from DCU towards Enniskerry), 84x (from Hawkins Street towards Newcastle/Kilcoole) and 133 (from Dublin Airport to Wicklow) serving that specific location. Other relevant bus routes with stops within this buffer include route 46a (from Phoenix Park towards Dún Laoghaire), 145 (from Heuston Rail Station towards Ballywaltrim) and 155 (from Ikea towards Bray Rail Station).

The Luas Green Line runs along the western side of St Stephen’s Green, with a stop on Dawson Street also within 600m of the station. This line runs in a north-south (and vice versa) direction through Dublin City Centre, serving Broombridge and Brides Glen.



(Base Source: www.busconnects.ie)

Figure 3.1: Existing bus network around St Stephen’s Green Station

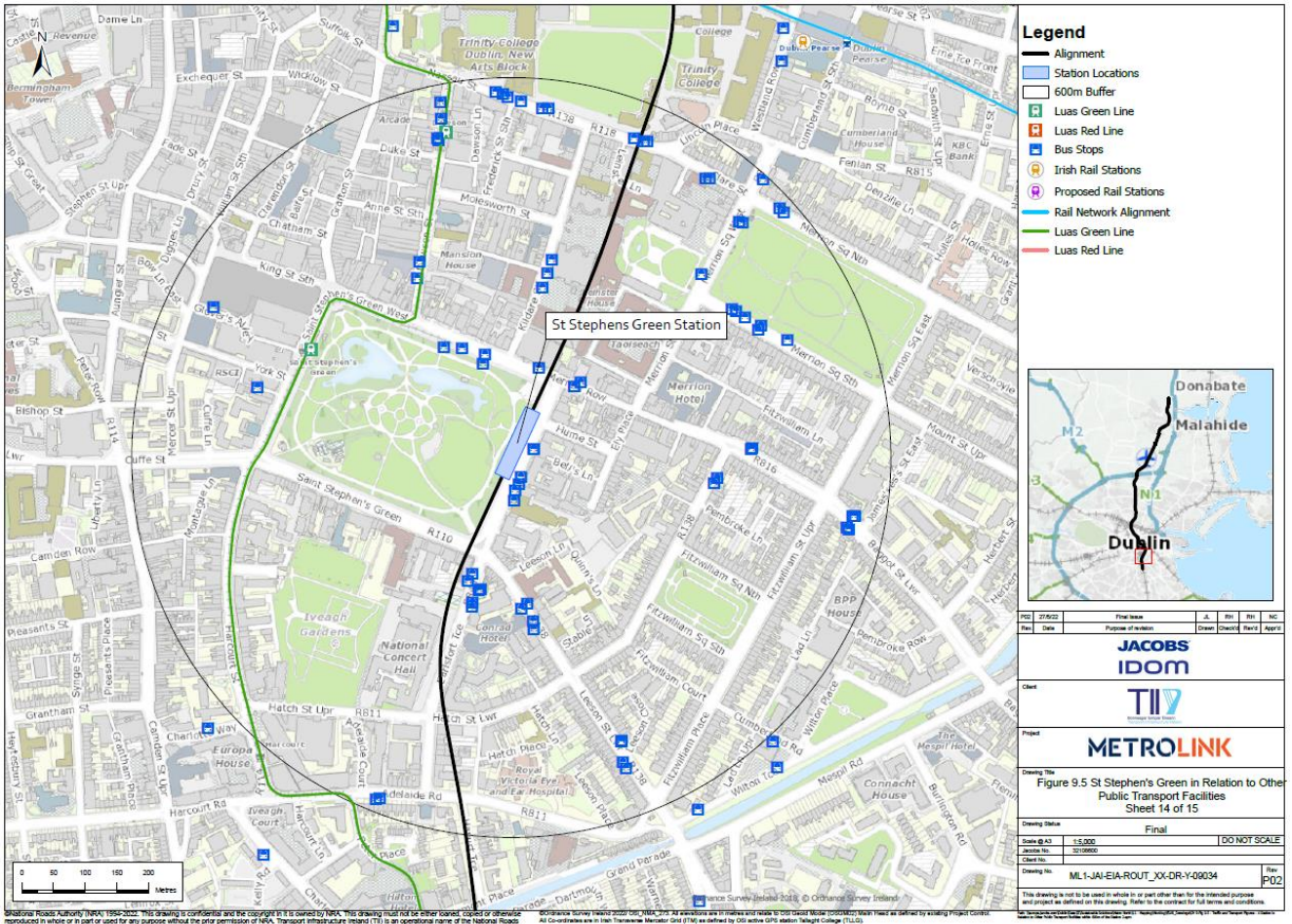


Figure 3.2: Transport facilities within 600m buffer

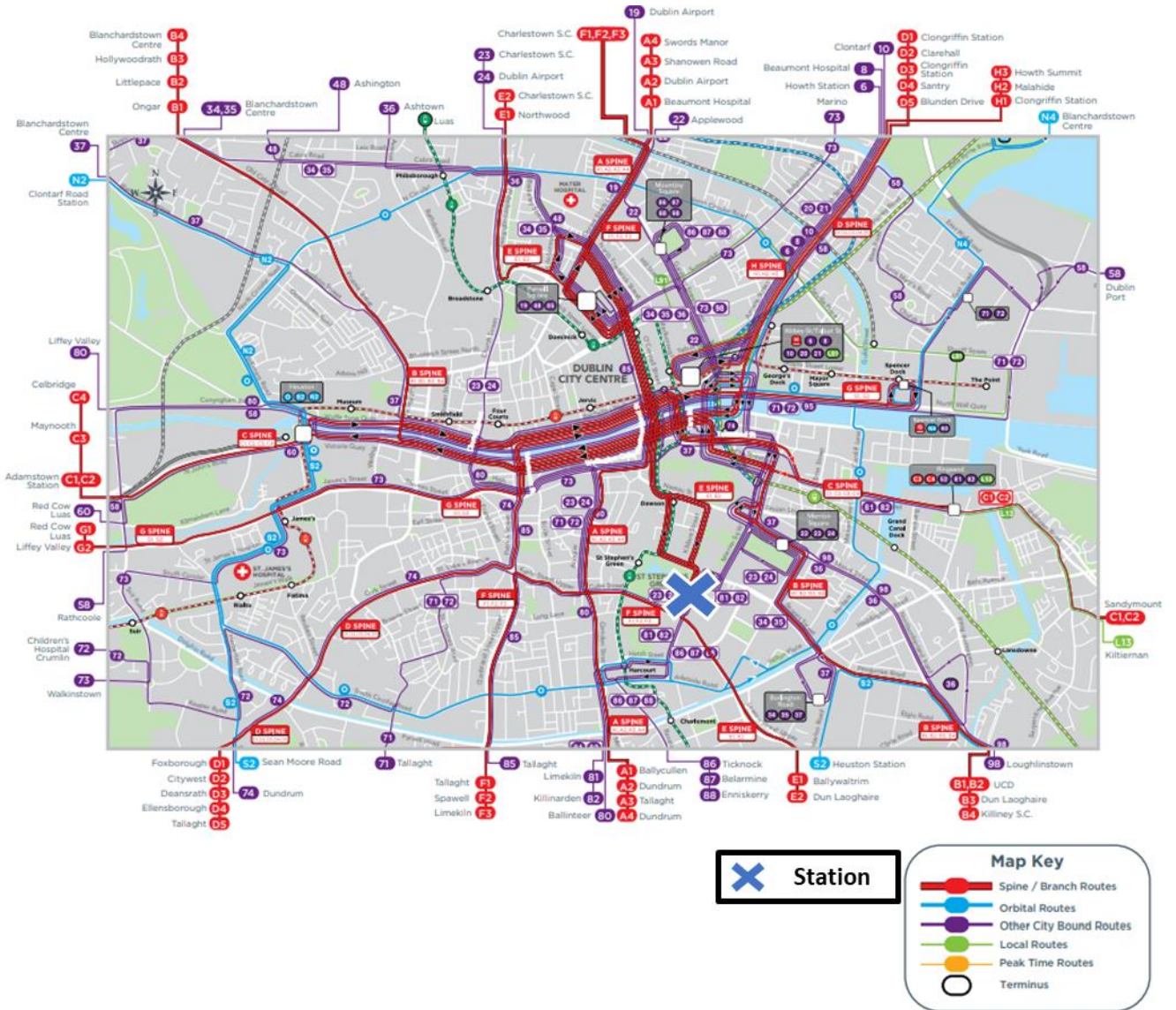
3.2 Future Receiving Environment – Public Transport

Figure 3.3 below shows the location of the proposed St Stephen’s Green Station in the context of the proposed Bus Network Redesign. With reference to the Figure 3.3, the Spine Routes E and F pass along St Stephen’s Green East.

Spine E will run every 5 minutes all day from Charlestown/Ballymun in the north to Dún Laoghaire/Bray in the south, and Spine F will run every 8 minutes all day from Charlestown/Finglas in the north to Kimmage/Greenhills in the south.

St Stephen’s Green Station is located within close proximity to orbital route ‘O’. The orbital route will have a frequency of 8-15 minutes during the week, 10-15 minutes on Saturdays and 15 minutes on Sundays.

There are also ‘other city bound routes’, the 23, 24, 81 and 82 that also run past St Stephen’s Green .



(Base Source: www.busconnects.ie)

Figure 3.3: Proposed Bus Network Redesign around St Stephen’s Green Station

3.3 Existing Road Network

The road network in the vicinity of St Stephen’s Green Station comprises of the R110 (St Stephen’s Green South) and R811 (Hatch Street Upper) running in a west-easterly direction, and the R114 (Camden Street), R138 (St Stephen’s Green), R816 (Baggot Street). St Stephen’s Green is within much of the regional road network, as shown in Figure 3.4.

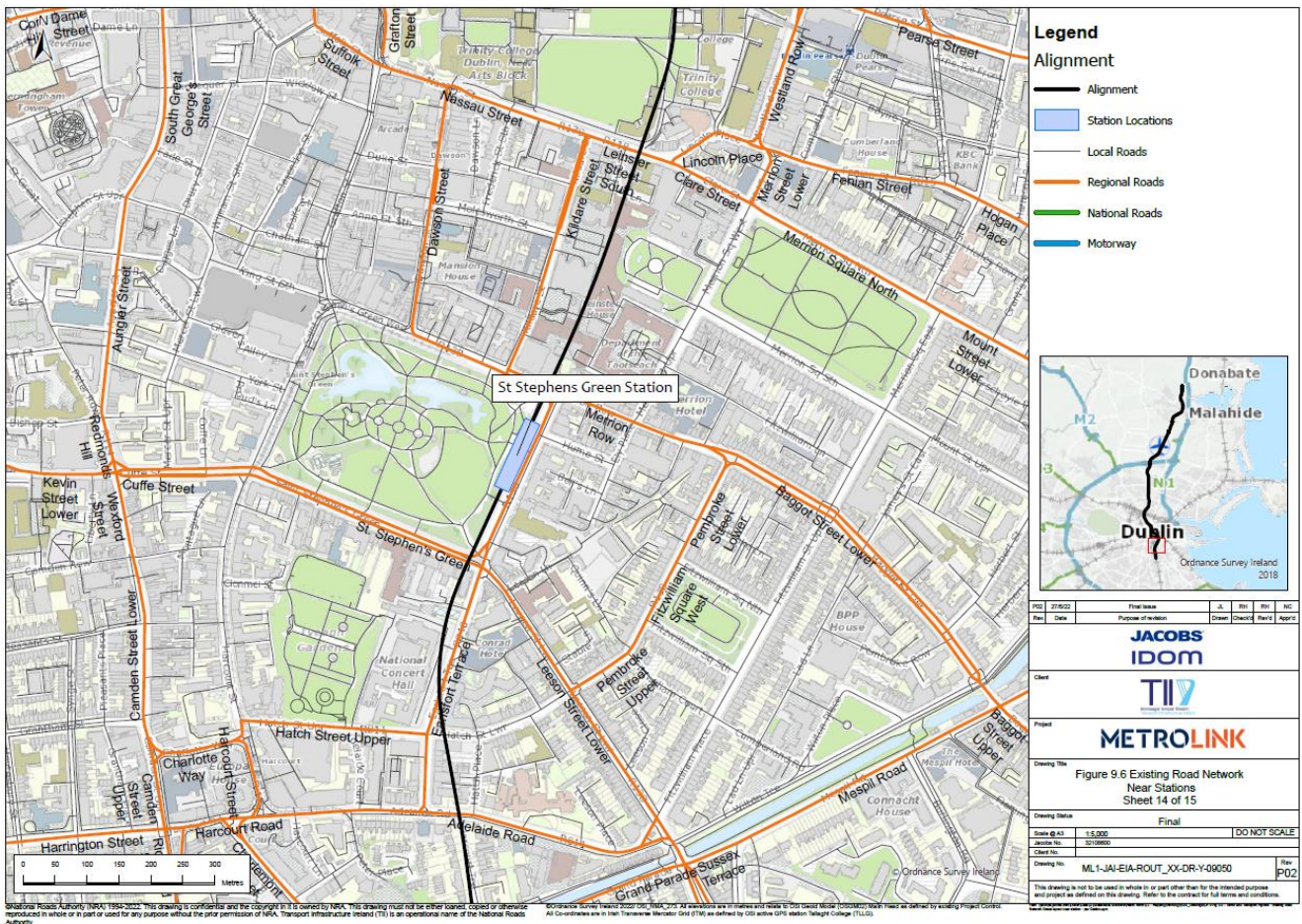


Figure 3.4: Street layout near St Stephen’s Green Station

The local roads are mainly single carriageways with parking on one/both sides of the carriageway and footways on either side of the road.

In its most proximate section to the proposed St Stephen’s Green Station, the R110 (St Stephen’s Green South) is a two-way three-lane carriageway of approximately 20m in width, comprising of two westbound lanes, and one eastbound lane. A dedicated cycle lane is present eastbound, and an advisory cycle lane is present westbound. No bus lanes are present in either direction.

The R138 (St Stephen’s Green East and North) along the eastern side of St Stephen’s Green is approximately 20m in width, comprising of three northbound traffic lanes, with a southbound bus lane. A dedicated cycle lane is present in both directions. Car parking and a DublinBike hub are also present along the northbound side of the carriageway. One bus stop is located in the southbound bus lane.

The R138 St Stephen’s Green along the northern side of St Stephen’s Green is a two-way dual carriageway, of approximately 13m in width, between St Stephen’s Green East and Kildare Street. A temporary parking/drop-off bay is available in front of the Shelbourne Hotel. A mandatory cycle lane is present westbound. After Kildare Street, the R138 is a one way carriageway westbound, with two traffic lanes and one bus lane. A bus bay and car parking is also present.

3.3.1 Junction Turning Count Locations

The Data Collection Report ([ML1-JAI-TRA-ROUT_XX-RP-Y-00023](#)) details the methodology and specification of traffic surveys undertaken for the Project. The survey locations relevant to St Stephen’s Green Station are shown

in Table 3.1. Vehicle classifications used for the survey were Car, LGV, OGV1, OGV2, PSV, Motorcycle and Pedal Cycle. PCUs values were also reported using appropriate conversion factors for each vehicle classification. The resulting PCU values from the survey results have been used for the LinSig modelling.

Table 3.1: Survey Locations Around St Stephen’s Green

Junction	Type of Survey
St Stephen’s Green/Merrion Row	Classified junction turning counts (CJTC)
St Stephen’s Green / Leeson Street	CJTC
St Stephen’s Green / Hume Street	CJTC

3.3.2 Base Traffic Flows

Base traffic flows collected from the survey data have been used to input traffic demand to VISSIM pedestrian modelling assessment.

3.3.2.1 St Stephen’s Green / Merrion Row Junction

Table 3.2 below summarises the 2018 AM and PM peak results for the St Stephen’s Green / Merrion Row junction.

Table 3.2: LinSig Model Result Summary_2018 Base Traffic Flows– St Stephen’s Green / Merrion Row Signalised Junction

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
St Stephen’s Green	Left	45.4%	6.6	51.1%	8.0
St Stephen’s Green	Right	35.8%	5.1	32.5%	4.8
St Stephen’s Green	Right	36.2%	5.0	33.0%	4.8
Kildare Street West	Ahead	50.3%	6.1	41.0%	6.4
Kildare Street West	Right	58.9%	2.8	29.7%	2.7
PRC (%)		52.8%		76.2%	
Total Delay (pcuHr)		7.48		7.29	

The analysis indicates that this junction operates within capacity during the base scenarios, with minimal levels of queuing and delay.

3.3.2.2 St Stephen’s Green / Leeson Street

Table 3.3 below summarises the 2018 AM and PM peak results for the St Stephen’s Green / Leeson Street junction.

Table 3.3: LinSig Model Result Summary_2018 Base Traffic Flows– St Stephen’s Green / Lesson Street Signalised Junction

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
R110 West	Ahead Left	51.9%	8.7	35.6%	4.9
R138 Leeson Street Lower	Ahead Left	61.1%	14.9	79.9%	25.0
R138 Leeson Street Lower	Right	44.2%	9.9	41.2%	8.9
Earlsfort Terrace	Left Ahead	24.3%	1.1	20.4%	0.9
R138 St Stephen’s Green	Right / Left / Ahead	19.9%	1.0	33.1%	1.6
PRC (%)		47.3%		12.6%	
Total Delay (pcuHr)		8.19		10.57	

The analysis indicates that this junction operates within capacity during the base scenarios, with minimal levels of queuing and delay.

3.3.2.3 St Stephen’s Green / Hume Street Junction

Table 3.4 below summarises the 2018 AM and PM peak results for the St Stephen’s Green / Hume Street junction.

Table 3.4: LinSig Model Result Summary_2018 Base Traffic Flows– St Stephen’s Green / Hume Street Signalised Junction

Arm	Lane	AM Peak		PM Peak	
		Degree of Saturation (%)	Mean Maximum Queue	Degree of Saturation (%)	Mean Maximum Queue
St Stephen’s Green Southbound	Ahead	17.4%	2.2	14.2%	2.4
Hume Street	Left	3.4%	0.5	7.0%	1.0
Hume Street	Right	36.9%	4.9	63.3%	10.3
R138 St Stephen’s Green	Ahead	48.8%	9.9	49.4%	7.0
R138 St Stephen’s Green	Ahead	46.3%	5.6	32.2%	2.2
PRC (%)		84.2%		42.2%	
Total Delay (pcuHr)		6.96		7.57	

The analysis indicates that this junction operates within capacity during the base scenarios, with minimal levels of queuing and delay.

3.3.3 Forecast Traffic Growth

Forecast traffic growth rates have been extracted from the Eastern Regional Model (ERM) for the future years 2035, 2050 and 2065, for the appropriate scenario.

3.4 Future Receiving Environment – Road Network

In the immediate vicinity of St Stephen’s Green Station, the road network will remain unchanged. However, the BusConnects Core Bus Corridor proposals will commence at the junction of Leeson Street Lower and St Stephen’s Green. The corridor runs along Leeson Street Lower and Upper with continuous bus priority and segregated cycle tracks in each direction. Traffic between Hatch Street Lower/Pembroke Street Upper and St Stephen’s Green is proposed to be restricted to bus and local access only. Local vehicular access will be maintained to Leeson Street Lower from the Hatch Street Lower/Pembroke Street Upper junction/ Inbound general traffic will be diverted along Hatch Street Lower and Earlsfort Terrace (source www.busconnects.ie).

3.5 Existing Pedestrian Network

Footways along all sides of St Stephen’s Green, Merrion Row and Dawson Street are considered ‘Secondary Streets’ under DCC’s pedestrian hierarchy. Merrion Street Upper is considered a ‘Linking Route’, with Earlsfort Terrace considered an ‘Historic Approach’ to Dublin City Centre. Grafton Street is designated as a ‘Primary Street’ as a key retail area in Dublin City Centre (DCC Development Plan 2016-2022).

Footways along St Stephen’s Green are approximately 5.5m wide with crossings at key points reflecting desire lines. However, the eastern side footway on St Stephen’s Green East is approximately 3m wide.

Total footway width at Baggot Street Lower (towards Fitzwilliam Street Lower) is approximately 3.6m wide. However, further eastbound there are obstructions from retail unit signage resulting in a total clear width of 2.5m.

Although the road width of Hume Street is over 10m wide the width of Hume Street is approximately 2m, with clear width on certain sections of the footway at just 1.1m wide.

3.5.1 Pedestrian Link Counts

The Data Collection Report ([ML1-JAI-TRA-ROUT_XX-RP-Y-00023](#)) details the locations around St Stephen’s Green Station where pedestrian surveys were undertaken.

3.5.2 Baseline Pedestrian Accessibility Review

A baseline accessibility assessment was undertaken to establish the existing walking provisions relevant to the proposed St Stephens Green Station. Catchment maps prepared for the accessibility analysis for walking are based on two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

Figure 3.5 illustrates the 5 minutes, 10 minutes and 15 minutes pedestrian walking isochrones for the proposed St Stephen’s Green station. Table 3.5 below lists local amenities within the 5min walking, 10min walking and 15min walking from the St Stephen’s Green Station.

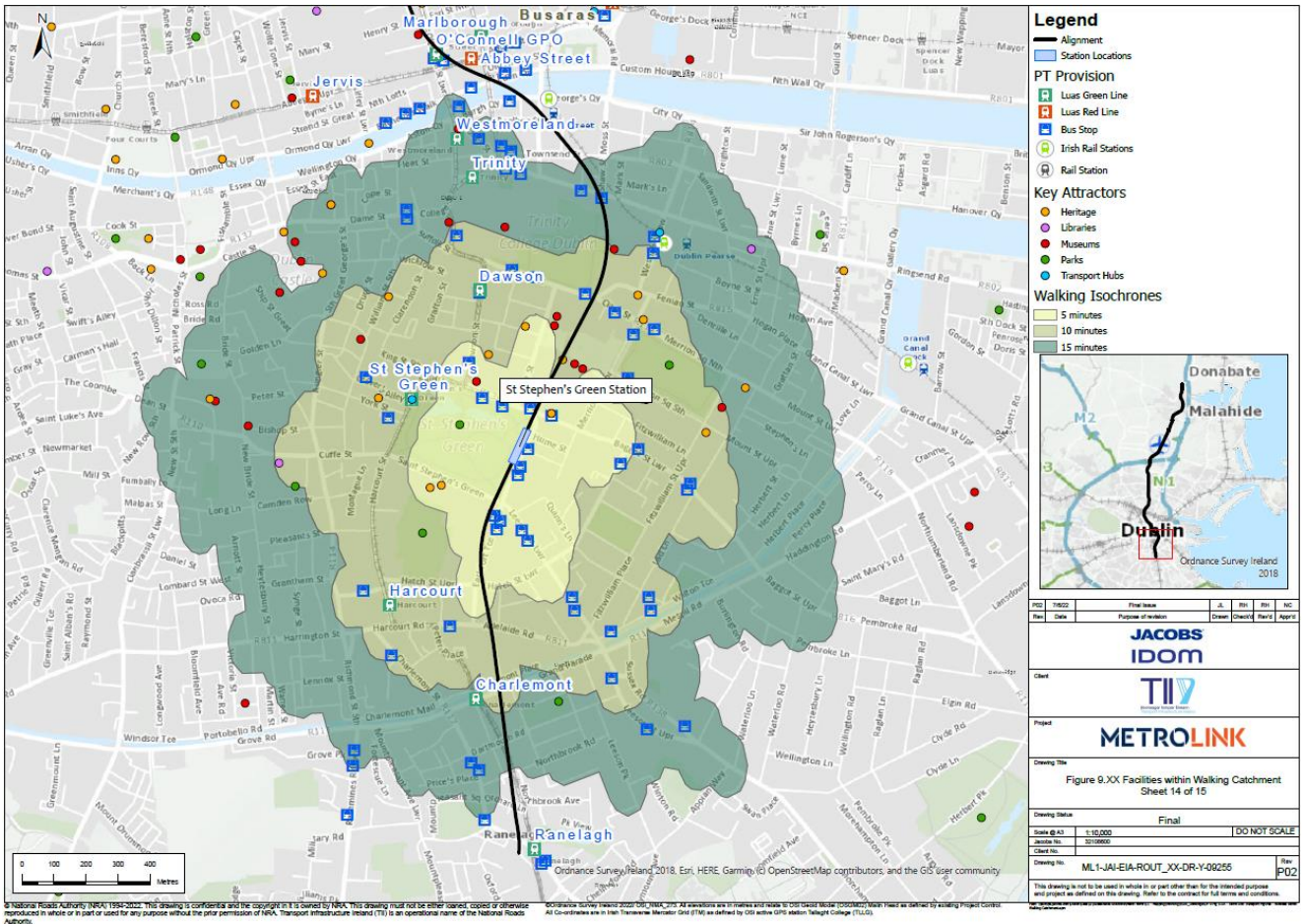


Figure 3.5: St Stephen’s Green Walking Catchment Area

Table 3.5: Local facilities and amenities within walking catchment area

Facilities within 5min walking	Facilities within 10min walking	Facilities within 15min walking
National Concert Hall	National Museum of Ireland	The National Maternity Hospital
Department of the Taoiseach	St Stephen’s Green Shopping Centre	Trinity College Dublin
The Shelbourne Hotel	Harcourt Street Luas stop	Temple Bar
St Stephen’s Green Park	Dawson Street Luas stop	Technological University Dublin
Baggot Street commercial area	Grafton Street shopping area	St. Patrick’s Cathedral
	The Gaiety Theatre	Pearse Station
	Merrion Square	
	Royal Victoria Eye and Ear Hospital	

A pedestrian comfort assessment has been undertaken to assess the impact of the volume of pedestrians on the network surrounding the proposed St Stephen’s Green station, as shown in Figure 3.6. Links were assessed against DCC guidance in the first instance, and then against the TfL Pedestrian Comfort Calculator to determine the level of comfort for the available width. The full methodology adopted is detailed in the Overall Project TTA .

The pedestrian comfort assessment shows that Kildare Street Upper, Merrion Row, Merrion Street Upper, Baggot Street Lower, Hume Street and Leeson Street Lower currently do not meet DCC guidance, however they are all

deemed to have an ‘Acceptable’ pedestrian comfort level for the current volumes of pedestrians obtained from the surveys undertaken.

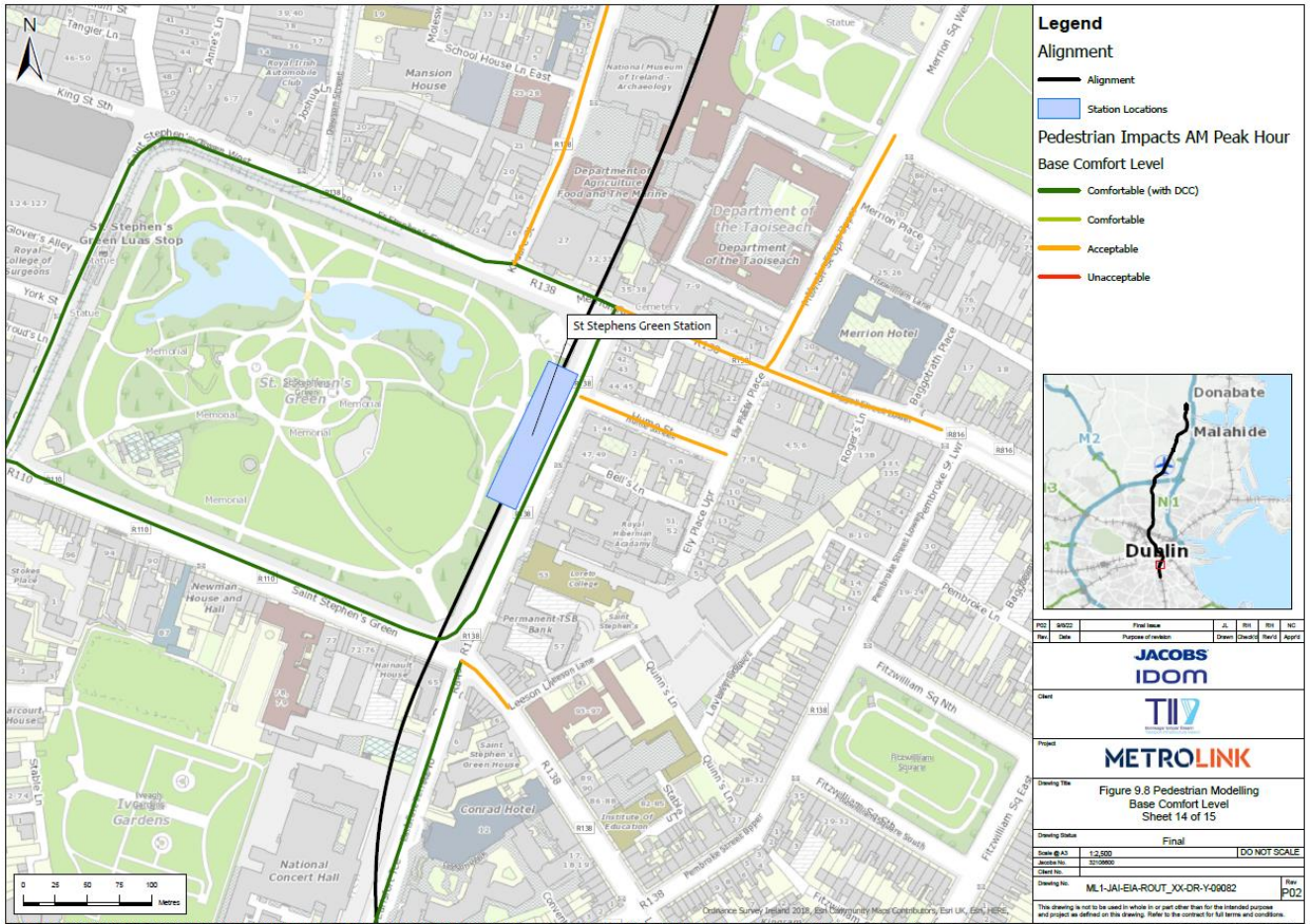


Figure 3.6: Pedestrian Comfort Assessment at St Stephen’s Green Station - Baseline

3.6 Future Receiving Environment – Pedestrian Network

No changes to the receiving environment were identified.

3.7 Existing Cycle Network

Cycle facilities in the section include a mix of mandatory cycle lanes, advisory cycle lanes, shared bus and cycle lanes. Dublin Bikes Hubs are also present within Dublin City Centre.

Figure 3.7 illustrates St Stephen’s Green station within the GDA Cycle Network. St Stephen’s Green East, South and West are part of the primary route network, as well as Hume Street, Leeson Street and Merrion Street Upper. Earlsfort Terrace is part of the secondary network, with St Stephen’s Green North and Dawson Street as part of the Feeder network. The Grand Canal Greenway is also present to the south of the station.

A cycle lane and/or a bus lane is provided on Merrion Square North. There is no cycle lane on Merrion Square East, Fitzwilliam Street Lower and Fitzwilliam Street Upper.

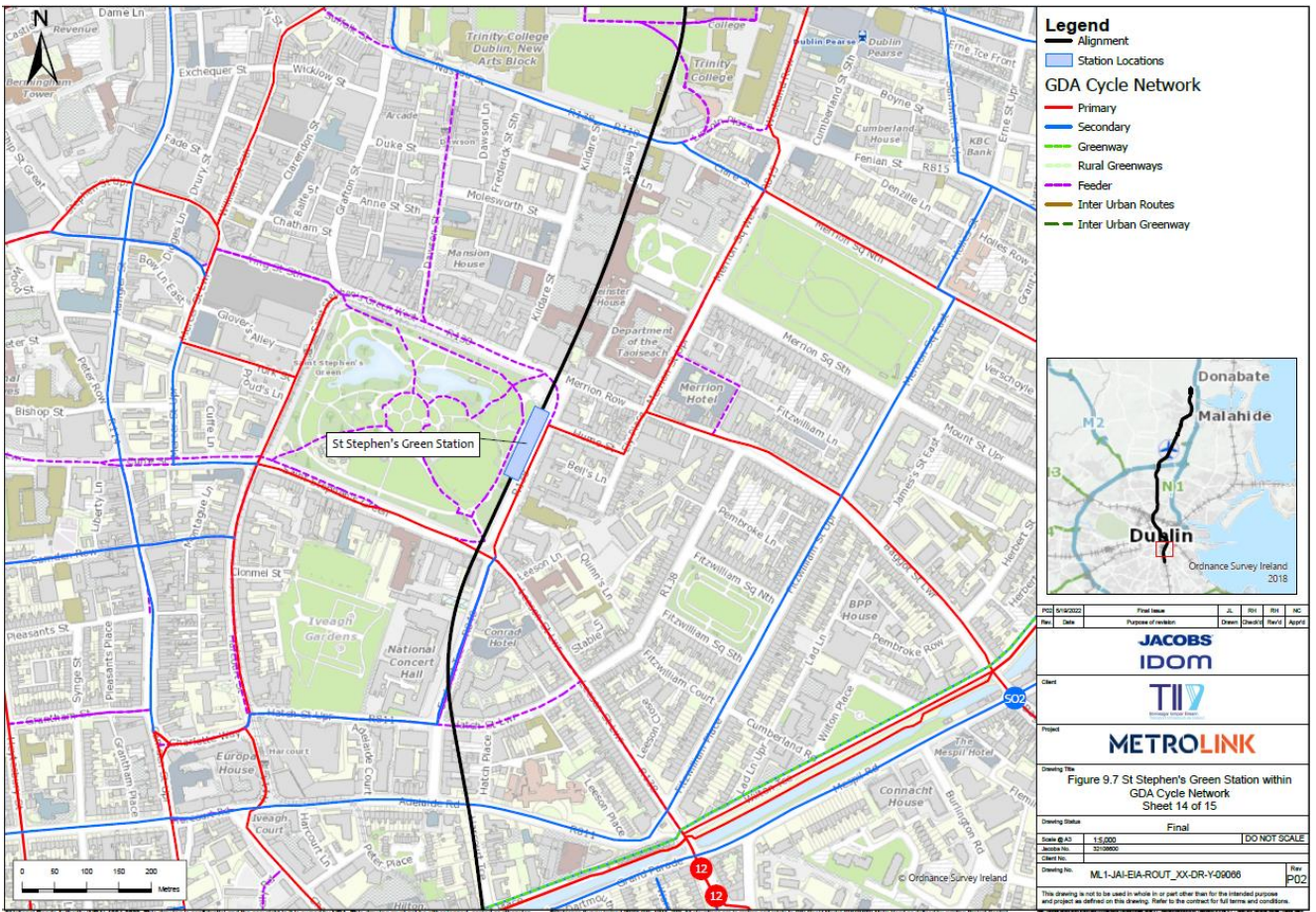


Figure 3.7: Proposed Station Location Within GDA Cycle Network

3.7.1 Baseline Cycle Accessibility Review

A baseline accessibility assessment has been undertaken to establish existing cycling provision relevant to the proposed St Stephens Green Station. Catchment maps prepared for the accessibility analysis for cycling are based in two criteria, the average speed for each mode and the existing road network. Therefore, maps do not reflect existing access restrictions for private roads and motorised roads.

There are 16 Dublinbikes bike stations in the area with an offering of 529 docking spaces. DCC also has a total of 312 Sheffield bike stands within the area and 29 cycle hoops. Figure 3.8 Illustrates the 5 minutes, 10 minutes and 15 minutes cycling isochrones for the proposed St Stephen’s Green station.

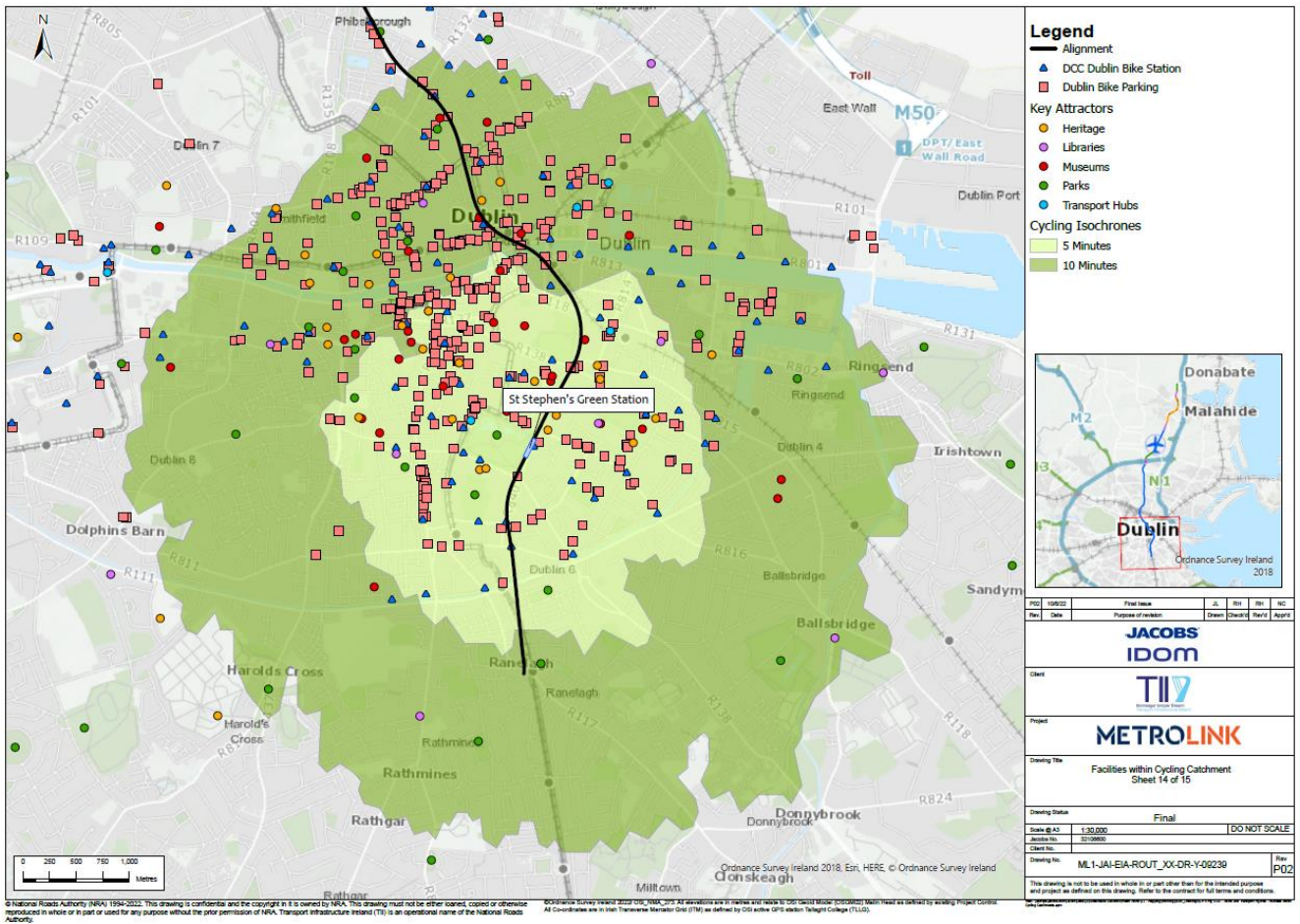


Figure 3.8: St Stephen’s Green Cycling Catchment Area

Table 3.6 details the local facilities and amenities to be found within 5 and 10 minutes cycling from the station.

Table 3.6: Local facilities and amenities within cycling catchment area

Facilities within 5min cycling	Facilities within 10min cycling
National Museum of Ireland	O’Connell Street
St Stephen’s Green Shopping Centre	Connolly Station
Harcourt Street Luas stop	Rotunda Hospital
Dawson Street Luas stop	CHI at Temple Street
Grafton Street shopping area	Busáras Central Station
The Gaiety Theatre	The Royal Hospital Donnybrook
Merrion Square	Pembroke Road commercial area
Royal Victoria Eye and Ear Hospital	
The National Maternity Hospital	
Trinity College Dublin	
Temple Bar	

Facilities within 5min cycling	Facilities within 10min cycling
Technological University Dublin	
St. Patrick’s Cathedral	
Pearse Station	

3.8 Future Receiving Environment – Cycle Network

As part of the BusConnects Core Bus Corridor proposals on Leeson Street Lower, segregated cycle lanes will be provided in each direction, otherwise there are no identified changes to the cycle network.

4. The Proposed Project – St Stephen’s Green Station

4.1 Site Location and Development Context

The proposed St Stephen’s Green Station will be located under the street on the eastern side of St Stephen’s Green with access provided in a widened public space adjacent to the park. The station is to be located on the east side of St Stephen’s Green and occupies a strip of the park, the adjacent footpath and one traffic lane on the East of the Green. The proposed station location is shown in Figure 4.1.

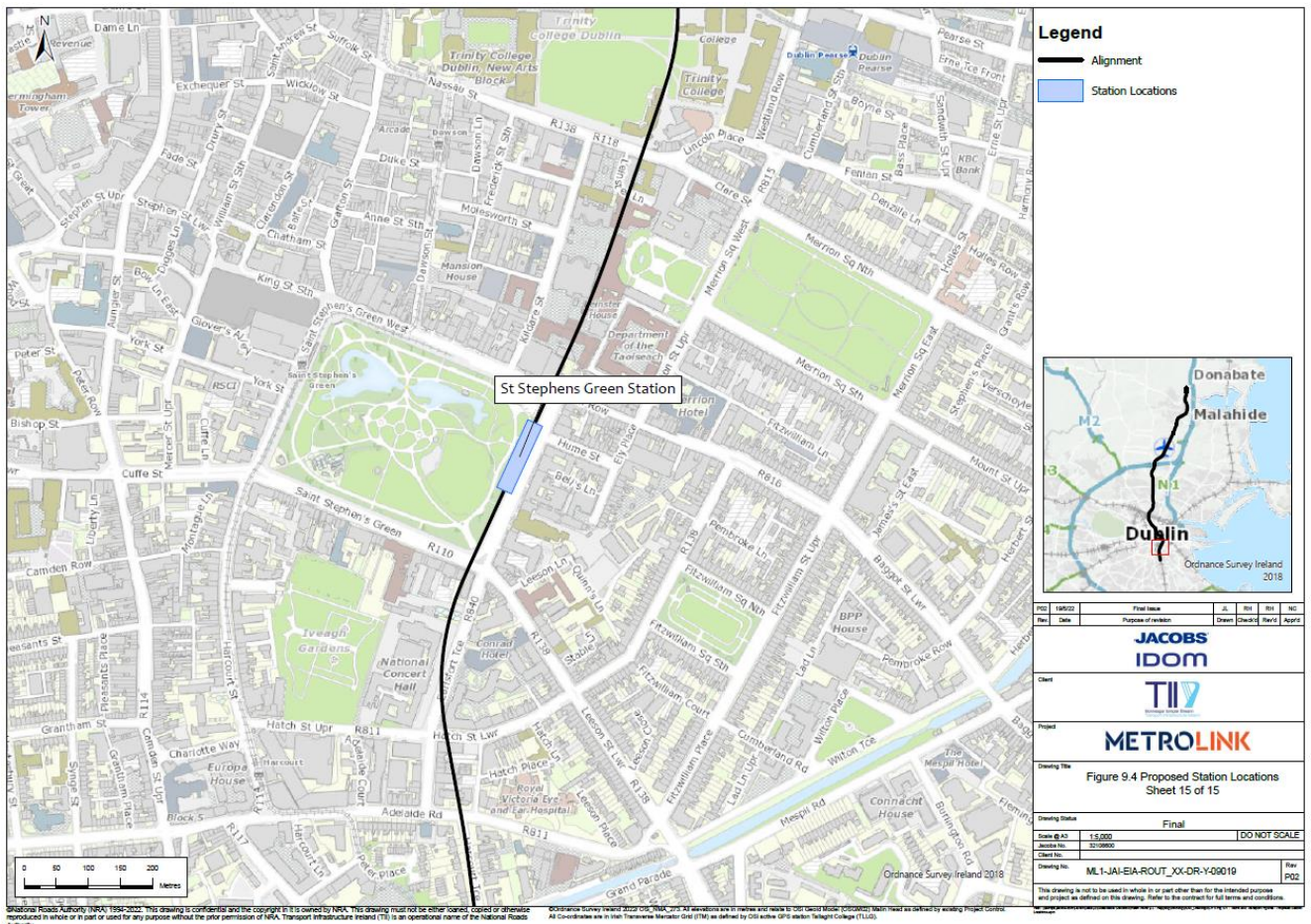


Figure 4.1: Proposed Station Location

Figure 4.2 illustrates the proposed layout for St Stephen’s Green station including the location of entrances and exits and bike parking areas. Passenger access is from north east corner of St Stephen’s Green , with emergency exits and Dublin Fire Brigade access also provided on St Stephens Green East (R138). It also illustrates the proposed alteration to the road layout in the vicinity of the proposed station.

Furthermore 40 Dublin Bike stands will be provided on the western side of the R138 St Stephen’s Green, south of the proposed station, with further bicycle parking provided east of the station entrance, at the pedestrian crossing to Hume Street. Two bus stops will be provided opposite the station on the east side of the R138 and a proposed inset bus stop is proposed on the westbound side of the road, immediately adjacent to the station.

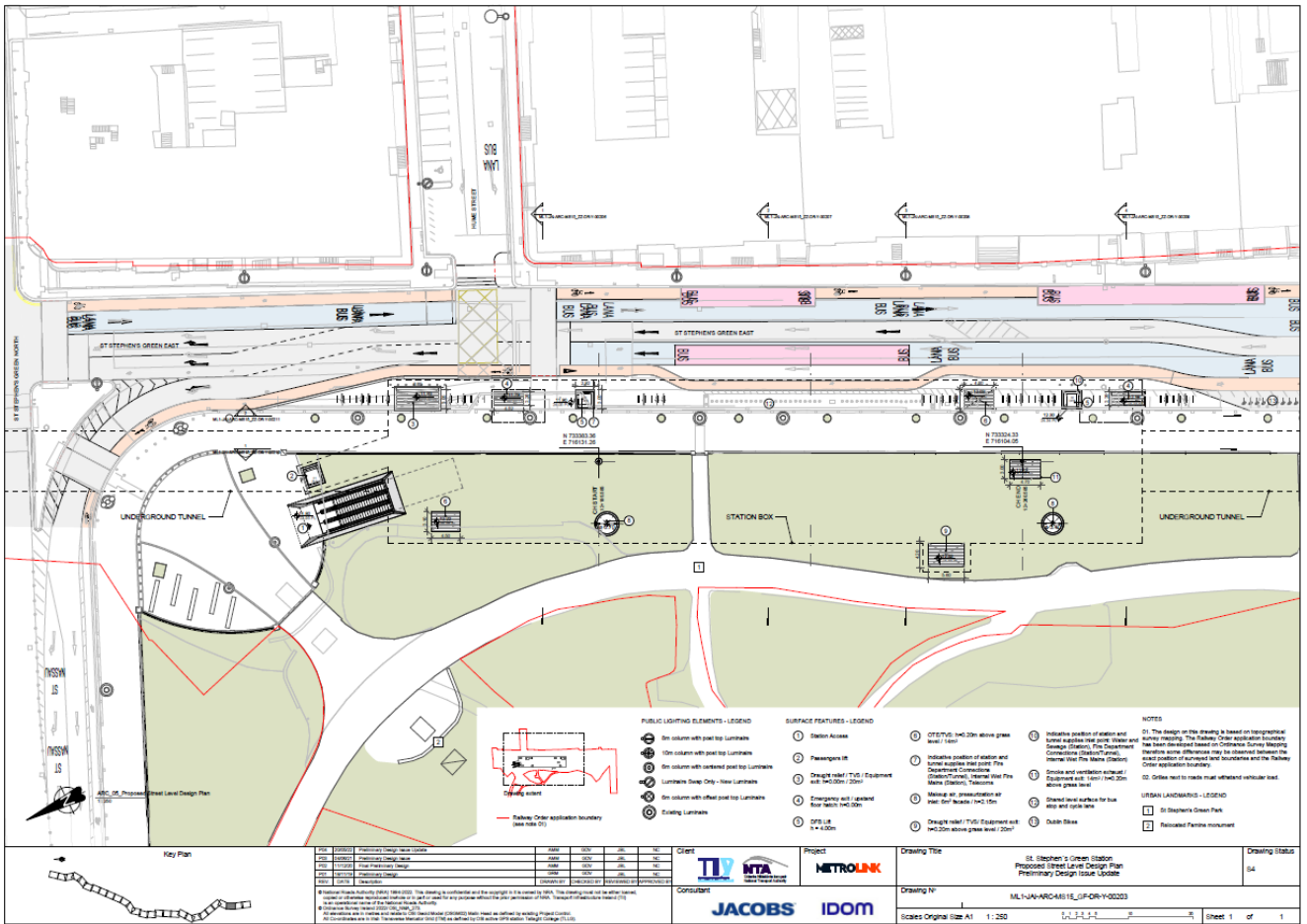


Figure 4.2: St Stephen's Green Station Layout

5. Trip Generation / Trip Attraction

5.1 Operational Phase

Traffic estimates associated with the St Stephen’s Green Station operational phase will be established by utilising the National Transport Authority’s (NTA) East Regional Model (ERM). The ERM provides a comprehensive representation of multi-modal travel patterns across the GDA and is a tool for the testing and appraisal of the Project.

5.1.1 Passenger Boarding and Alighting

Passenger demand modelling has been used to predict the numbers of passengers boarding and alighting at each station, and the resulting passenger load on MetroLink vehicles, for the years 2035 (Opening Year), 2050 (Design Year) and 2065 (Forecast Year). The scenarios considered for assessment for each of the years 2035, 2050 and 2065 are outlines in Table 5.1.

Table 5.1: Modelled Transport Scenarios

Scenario	Description
Do Nothing Scenario	The existing transport network in the absence of the Project
Do Minimum Scenario	Committed transport schemes in the absence of the Project
Do Something - Scenario A	Scenario with the Project and committed transport schemes only.
Do Something - Scenario B	Scenario with the Project with planned schemes under the NDP for Opening year (2035) and planned schemes under the Transport Strategy for the GDA for the Design Year (2050) and the Forecast Year (2065)

5.1.1.1 Boarding and Alighting Volumes

This section reviews the boarding, alighting and public transport interchange numbers for the St Stephen’s Green Station at during the peak hours, along with the destination and origins of passengers in the AM peak hour. All data has been retrieved from the ERM developed by the NTA. Data in this section is reported for the busiest hour within each of the following peak periods:

- AM: busiest hour between 07:00 – 10:00;
- LT (lunch time): busiest hour between 10:00 – 13:00;
- SR (school run): busiest hour between 13:00 – 16:00; and
- PM: busiest hour between 16:00 – 19:00.

Figure 5.1 presents the volume of passengers boarding and alighting at St Stephen’s Green station during the 12hr peak period (07:00-19:00) in Scenario A and Scenario B. Scenario A has a higher volume of boarding passengers, reaching over 15,600 passengers in 2065, compared to 13,800 boarding passengers in Scenario B

2065. Similarly, Scenario A has a higher volume of alighting passengers than Scenario B, reaching approximately 16,000 passengers in 2065, compared to under 13,000 passengers in Scenario B 2065.

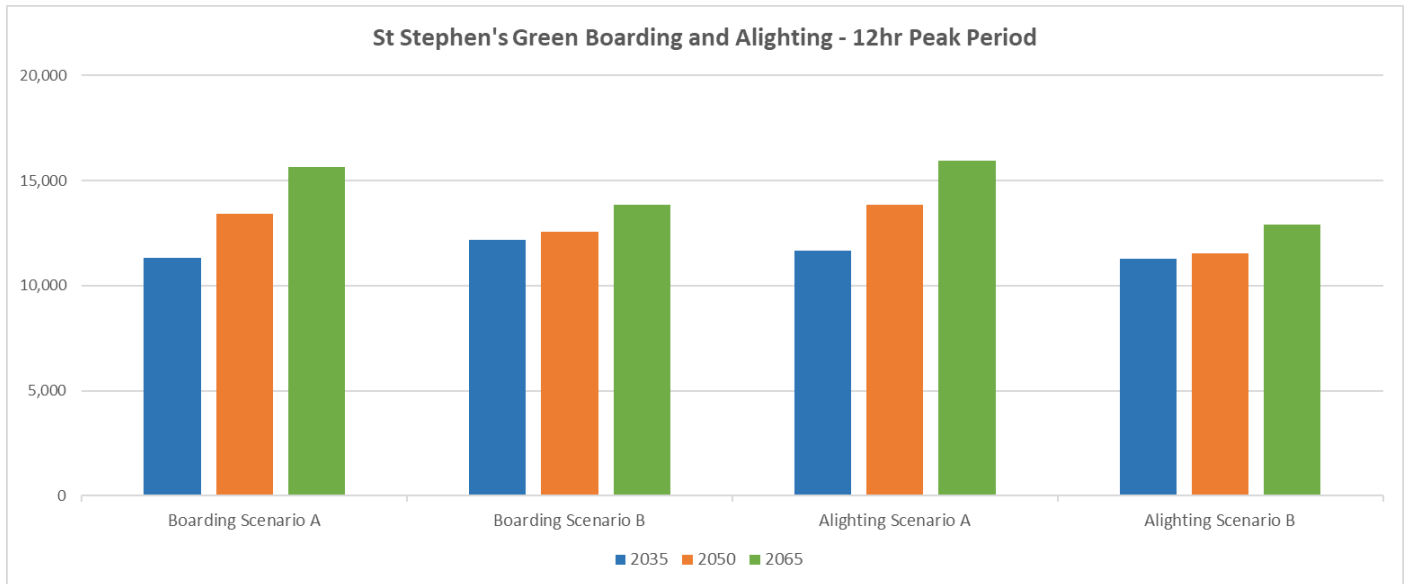


Figure 5.1: St Stephen’s Green 12hr Boarding and Alighting in Scenario A and Scenario B

5.1.1.2 Boarding and Alighting Volumes: Scenario A

Table 5.2 to Table 5.4 below highlight the boarding and alighting passenger numbers for St Stephen’s Green Station in Scenario A.

Table 5.2 shows the boarding and alighting passenger numbers during the Opening Year, 2035. It is expected that the highest number of passengers boarding at St Stephen’s Green Station will be 2,200 in the northbound direction during the PM peak hour. The highest number of passengers alighting at St Stephen’s Green station will be 2,900 in the southbound direction in the AM peak hour.

Table 5.2: Boarding and Alighting Numbers at St Stephen’s Green Station in 2035, Scenario A

Direction	AM			LT			SR			PM		
	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	647	11	2,378	666	4	1,564	916	2	1,940	2,201	1	4,494
Southbound	1	2,981	2,607	2	664	1,028	3	595	1,037	8	657	1,304

Source: East Regional Model (ERM)

Table 5.3 shows the boarding and alighting passenger numbers during the year 2050. It is expected that the highest number of passengers boarding at St Stephen’s Green Station will be 2,600 in the northbound direction during the PM peak hour. The highest number of passengers alighting at St Stephen’s Green station will be 3,300 in the southbound direction in the AM peak hour.

Table 5.3: Boarding and Alighting Numbers at St Stephen’s Green Station in 2050, Scenario A

Direction	AM			LT			SR			PM		
	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	737	13	2,744	874	4	2,059	1,030	2	2,313	2,607	1	5,381
Southbound	1	3,377	3,138	2	942	1,369	3	686	1,324	9	769	1,552

Source: East Regional Model (ERM)

Table 5.4 below shows the boarding and alighting passenger numbers during the year 2065. It is expected that the highest number of passengers boarding at St Stephen’s Green Station will be approximately 3,000 passengers in the northbound direction during the PM peak hour. The highest number of passengers alighting at St Stephen’s Green Station is expected to be almost 4,000 passengers travelling in a southbound direction during the AM peak hour.

Table 5.4: Boarding and Alighting Numbers at St Stephen’s Green Station in 2065, Scenario A

Direction	AM			LT			SR			PM		
	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	832	18	3,208	935	6	2,372	1,230	3	2,880	3,118	1	6,518
Southbound	1	3,987	3,803	3	921	1,626	5	828	1,610	12	932	1,884

Source: East Regional Model (ERM)

5.1.1.3 Boarding and Alighting Volumes: Scenario B

Table 5.5 to Table 5.7 below highlight the boarding and alighting passenger numbers for St Stephen’s Green Station in Scenario B.

For the year 2035, in Scenario B, it is expected that the highest number of passengers boarding St Stephen’s Green Station will be 2,200 passengers in the northbound direction during the PM peak hour. It is anticipated that the highest number of passengers alighting at St Stephen’s Green Station will be 2,700 southbound passengers during the AM peak hour.

Table 5.5: Boarding and Alighting Numbers at St Stephen’s Green Station in 2035, Scenario B

Direction	AM			LT			SR			PM		
	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	683	12	2,582	728	4	1,638	1,079	3	2,162	2,261	1	4,686
Southbound	1	2,758	2,799	2	737	1,088	5	626	1,137	13	579	1,377

Source: East Regional Model (ERM)

For the year 2050, in Scenario B, it is expected that the highest number of passengers boarding St Stephen’s Green Station will be 2,100 passengers in the northbound direction during the PM peak hour. It is anticipated that the highest number of passengers alighting at St Stephen’s Green Station will be 2,400 southbound passengers during the AM peak hour.

Table 5.6: Boarding and Alighting Numbers at St Stephen’s Green Station in 2050, Scenario B

Direction	AM			LT			SR			PM		
	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	855	11	2,869	916	4	2,150	999	2	2,309	2,142	1	4,400
Southbound	2	2,491	2,795	2	904	1,409	4	735	1,438	11	606	1,673

Source: East Regional Model (ERM)

Table 5.7 below shows the boarding and alighting numbers for the year 2065. It is expected that the highest number of boarding passengers will be 2,200 passengers travelling in the northbound direction during the PM peak hour. The highest number of alighting passengers is expected to be during the AM peak where 2,900 passengers are expected to alight at St Stephen’s Green Station.

Table 5.7: Boarding and Alighting Numbers at St Stephen’s Green Station in 2065, Scenario B

Direction	AM			LT			SR			PM		
	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow	Boarding	Alighting	Onward Flow
Northbound	816	12	3,087	1,060	4	2,474	1,270	3	2,856	2,227	1	4,773
Southbound	3	2,962	3,298	2	972	1,650	4	827	1,681	12	567	1,836

Source: East Regional Model (ERM)

5.1.1.4 Public Transport Interchange Volumes

Table 5.8 and Table 5.9 present the volumes of passengers interchanging with other public transport modes at St Stephens Green Station for the AM and PM peak hours in 2035, 2050 and 2065 for Scenario A and Scenario B respectively. As shown, onwards interchange is predominately to the local area (to and from Zone) but there is also significant interchange with the bus network. St Stephen’s Green Station is served by several bus services with less than 15min frequencies. As part of the Bus Network Redesign, Spine Routes E and F pass along St Stephen’s Green East. Figure 3.2 shows all PT facilities within 600m of the proposed station.

Table 5.8: Transfers To/From Other Public Transport Modes in Scenario A

Scenario A									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	334	314	-	-	2,236	756	-	-
	PM	1,728	480	-	-	366	292	-	-
2050	AM	392	345	-	-	2,528	862	-	-
	PM	2,024	591	-	-	448	322	-	-
2065	AM	456	377	-	-	2,967	1,038	-	-
	PM	2,432	698	-	-	572	362	-	-

Source: East Regional Model (ERM)

Table 5.9: Transfers To/From Other Public Transport Modes in Scenario B

Scenario B									
Year	Peak	Boarding				Alighting			
		First Boarding	From Bus	From Rail/DART	From Luas	Final Stop	To Bus	To Rail/DART	To Luas
2035	AM	339	345	-	-	2,112	657	-	-
	PM	1,708	566	-	-	314	266	-	-
2050	AM	358	365	134	-	1,822	664	15	-
	PM	1,528	567	58	-	411	175	22	-
2065	AM	416	355	48	-	2,248	706	20	-
	PM	1,560	606	73	-	353	185	30	-

Source: East Regional Model (ERM)

5.1.1.5 Distribution of Boarding and Alighting Passengers

Figure 5.2 below shows the origins of passengers arriving to board at the station and Figure 5.3 shows the destination of passengers alighting at St Stephen’s Green during the AM peak hour. The width of the lines is proportional to the number of commuters leaving/arriving at the station. The main origins of passengers in the AM peak are from areas to the east and west of the station. To the west this includes a mixture of residential and retail areas such as Liberty Market. To the east of the station, the main origins of passengers will be from bars and restaurants along Merrion Row (R138) and from the National Maternity Hospital.

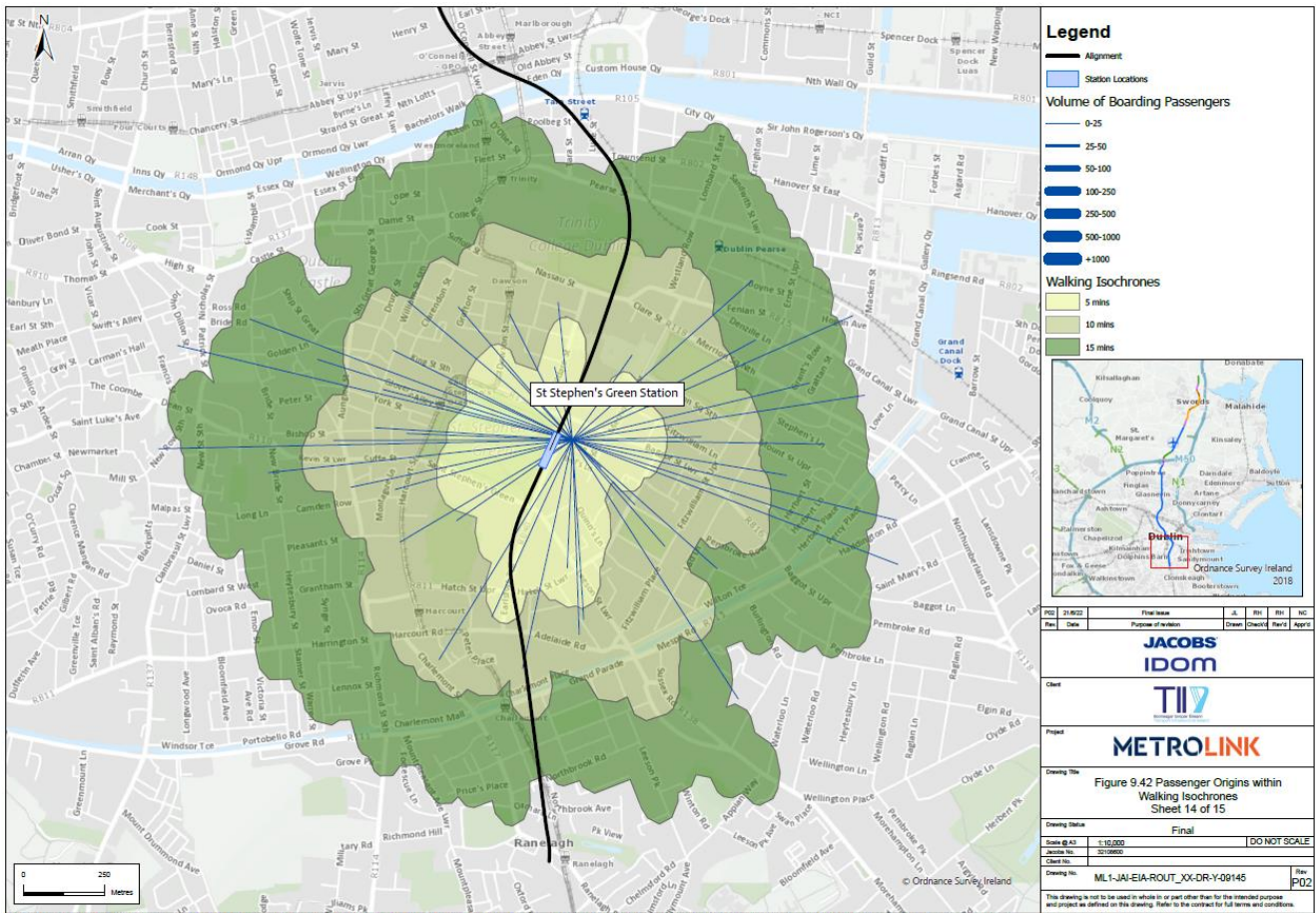


Figure 5.2: Origin of Boarding Passengers During AM peak hour and Walking Catchment Areas

Primary destinations for disembarking passengers in the AM peak include Trinity College Dublin to the north of the station. To the north west of the station, retail areas including Stephen’s Green Shopping Centre attract passengers as well as tourist attractions such as Dublin Castle.

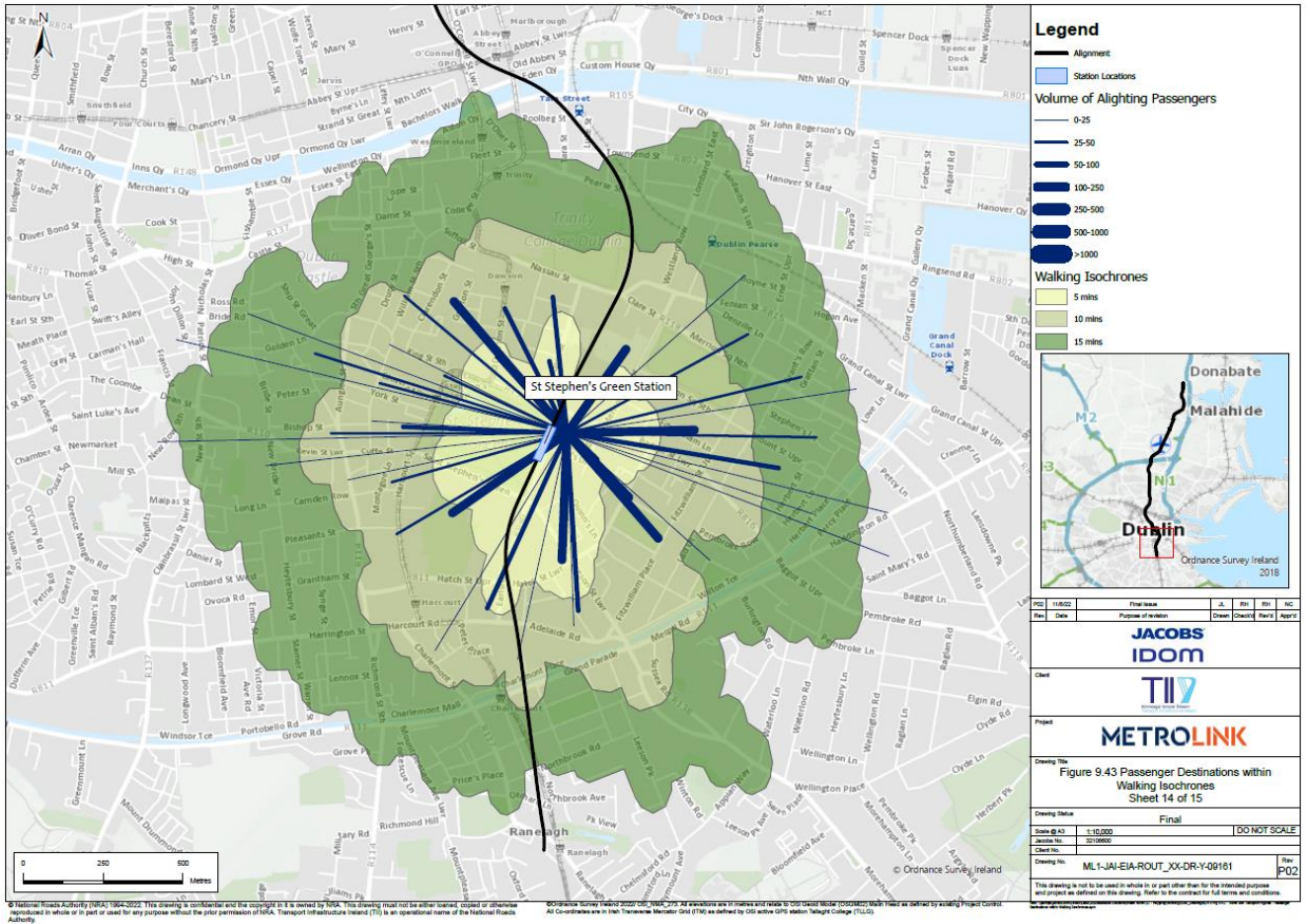


Figure 5.3: Destination for Alighting Passengers During AM peak hour and Walking Catchment Areas

6. Assessment of Impacts

6.1 Operational Phase

As part of the assessment of impacts associated with the Operational Phase of the project, the impact of the proposed St Stephen’s Green Station will be examined on all modes of transport – public transport (PT), general traffic, walking and cycling.

6.1.1 Public Transport Impact Assessment

The ERM model has been interrogated in order to estimate the reduction in private car travel associated with origin and destination trips in the zones around St Stephen’s Green Station. In Scenario A, there is a 13% increase in trip demand between 2035 and 2050, increasing from 203,796 trips in 2035 to 230,362 trips in 2050. There is a 13% increase in trip demand between 2050 and 2065, reaching a demand of 259,934 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 2 percentage point increase in PT mode share in 2035, from 39% in the Do Minimum scenario to 41% in the Do Something scenario. In both 2050 and 2065, there is an increase of 2 percentage points in PT mode share, increasing from 40% in the 2050 Do Minimum scenario, to 42% in the 2050 Do Something scenario, and from 41% in the 2065 Do Minimum scenario, to 43% in the Do Something.

Car mode share decreases by 1 percentage points in 2035, from 24% in the Do Minimum to 23% in the Do Something. In 2050, Car mode share decreases by 1 percentage point between the Do Minimum and Do Something scenarios, from 22% to 21%. In 2065, Car mode share has a 0 percentage point change, remaining at 20% in the Do Minimum scenario and in the Do Something scenario.

Active Modes mode share (which includes Walking and Cycling) reduces by 1-2 percentage point in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at St Stephen’s Green.

12hr Total Trip Demand - SSG Station

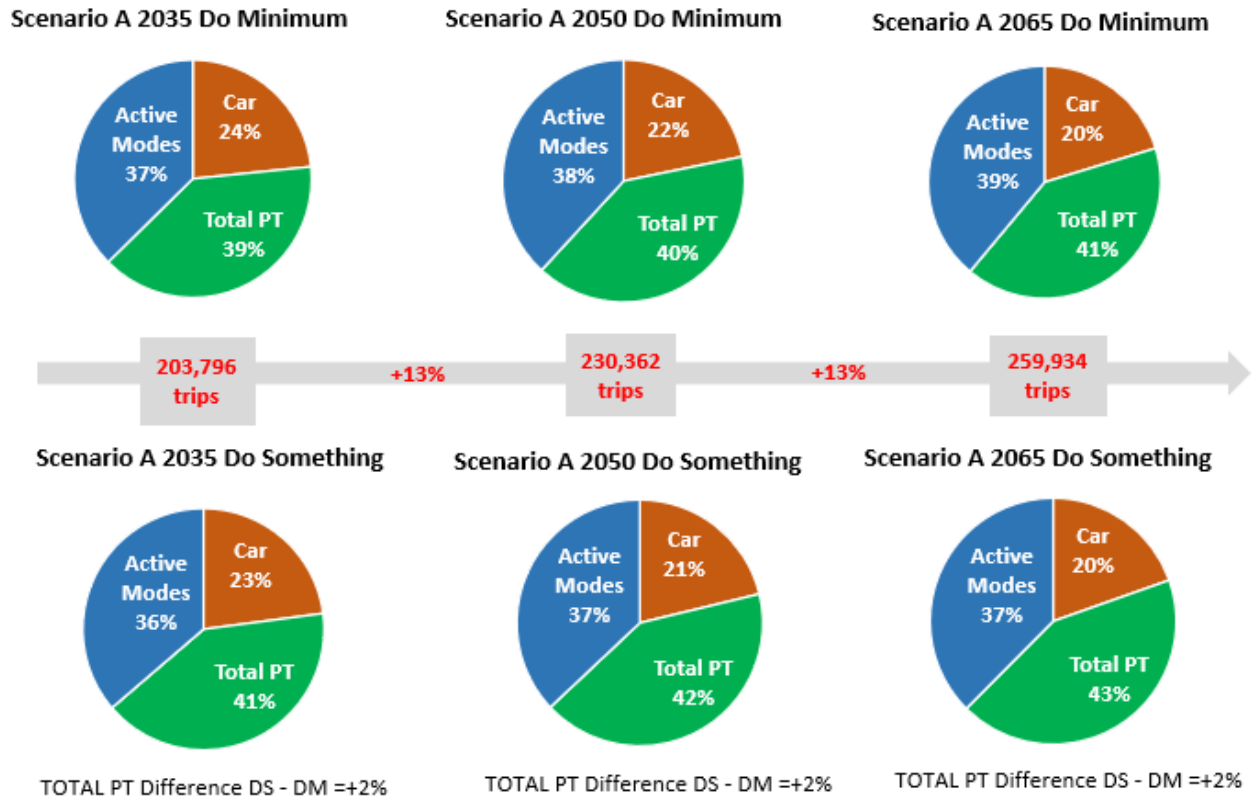


Figure 6.1: St Stephen’s Green Mode Share – Scenario A

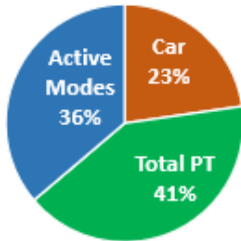
In Scenario B, there is a 14% increase in trip demand between 2035 and 2050, increasing from 205,245 trips in 2035 to 233,649 trips in 2050. There is a 12% increase in trip demand between 2050 and 2065, reaching a demand of 261,945 trips in 2065. Between the Do Minimum and Do Something scenarios, there is a 2 percentage point increase in PT mode share in 2035, from 41% in the Do Minimum scenario to 43% in the Do Something scenario. In 2050, there is an increase of 2 percentage points in PT mode share, increasing from 43% in the 2050 Do Minimum scenario, to 45% in the 2050 Do Something scenario. In 2065, there is a 2 percentage point increase in PT mode share from 44% in the 2065 Do Minimum scenario, to 46% in the Do Something.

Car mode share decreases by 1 percentage point in 2035, from 23% in the Do Minimum to 22% in the Do Something. In 2050 and 2065, Car mode share has a 1 percentage point change between the Do Minimum and Do Something scenarios, from 21% to 20% in 2050 and from 20% to 19% in 2065.

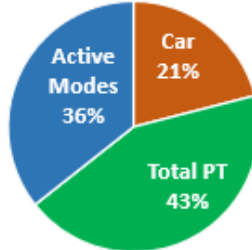
Active Modes mode share (which includes Walking and Cycling) reduces by 1 percentage points in all years. Whilst end-to-end Active Modes trips will reduce, there will be an increase in Active Modes trips to and from the station where passengers will interchange with the Project. Overall, there is a shift towards sustainable modes (Active Modes and PT combined), and a reduction in Car trip demand at St Stephen’s Green.

12hr Total Trip Demand - SSG Station

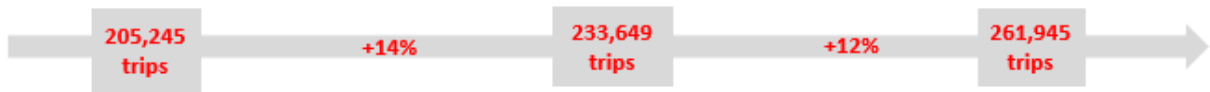
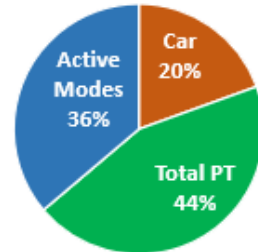
Scenario B 2035 Do Minimum



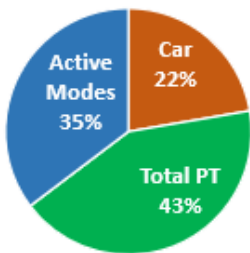
Scenario B 2050 Do Minimum



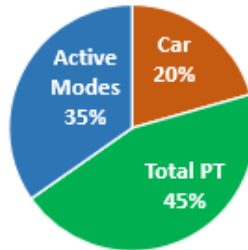
Scenario B 2065 Do Minimum



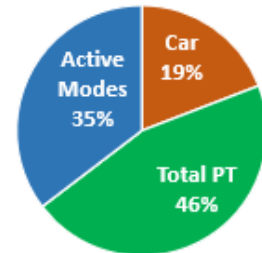
Scenario B 2035 Do Something



Scenario B 2050 Do Something



Scenario B 2065 Do Something



TOTAL PT Difference DS - DM =+2%

TOTAL PT Difference DS - DM =+2%

TOTAL PT Difference DS - DM =+2%

Figure 6.2: St Stephen’s Green Mode Share – Scenario B

In the 2035 AM peak hour, the zones surrounding St Stephen’s Green station see an increase of up to 5 percentage points in PT (including the Project) mode share. This increase extends to a number of zones beyond the alignment in the 2050 and 2065 scenarios. Similar results can be seen in Scenario B in all forecast years, and in the PM peak hour of both scenarios. Figure 6.3 presents the changes in public transport mode share in Scenario A 2065 AM peak hour, with Figure 6.4 presenting the same for Scenario B 2065.

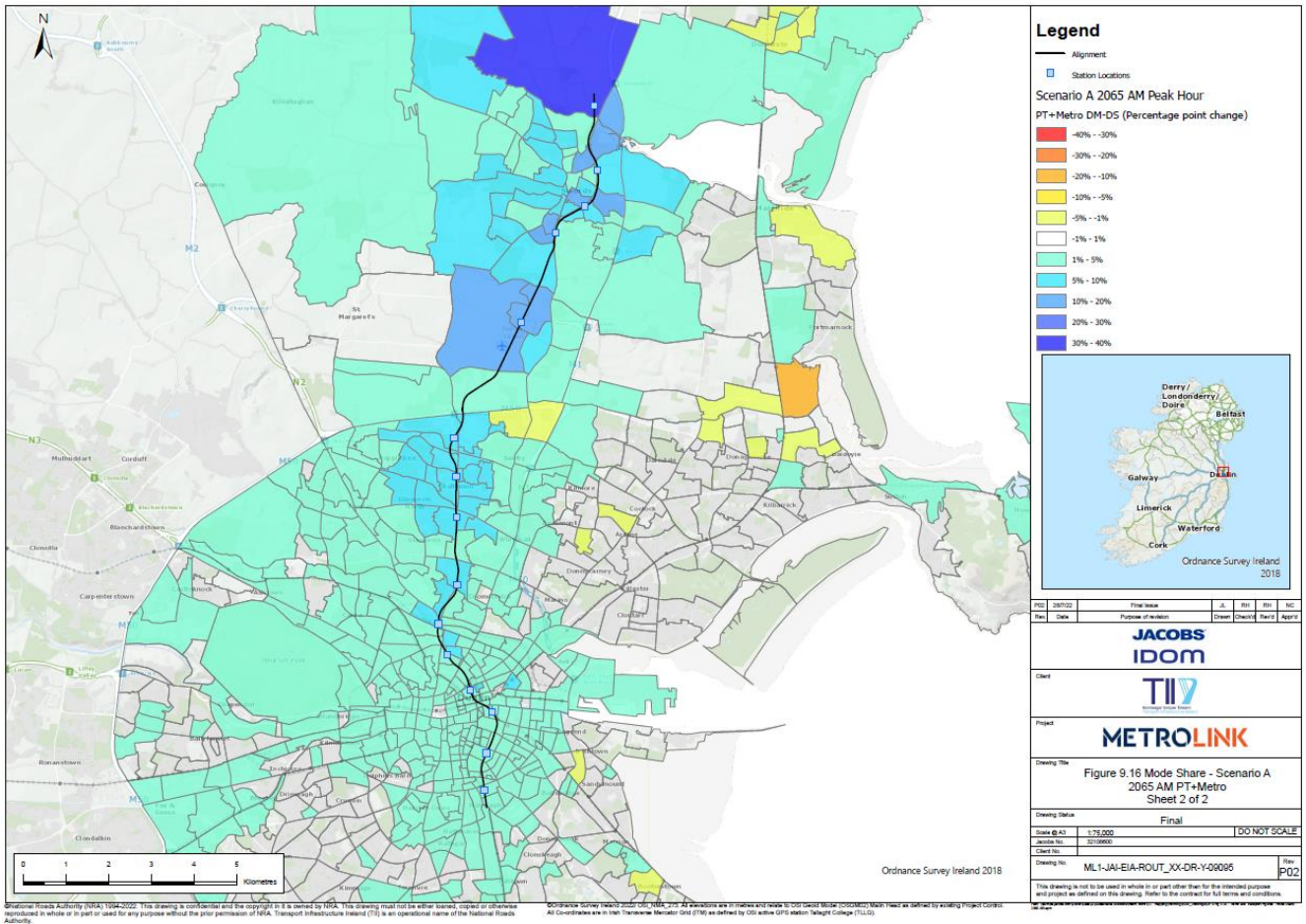


Figure 6.3: Changes in PT (Including the Project) Mode Share in Scenario A 2065 AM Peak Hour

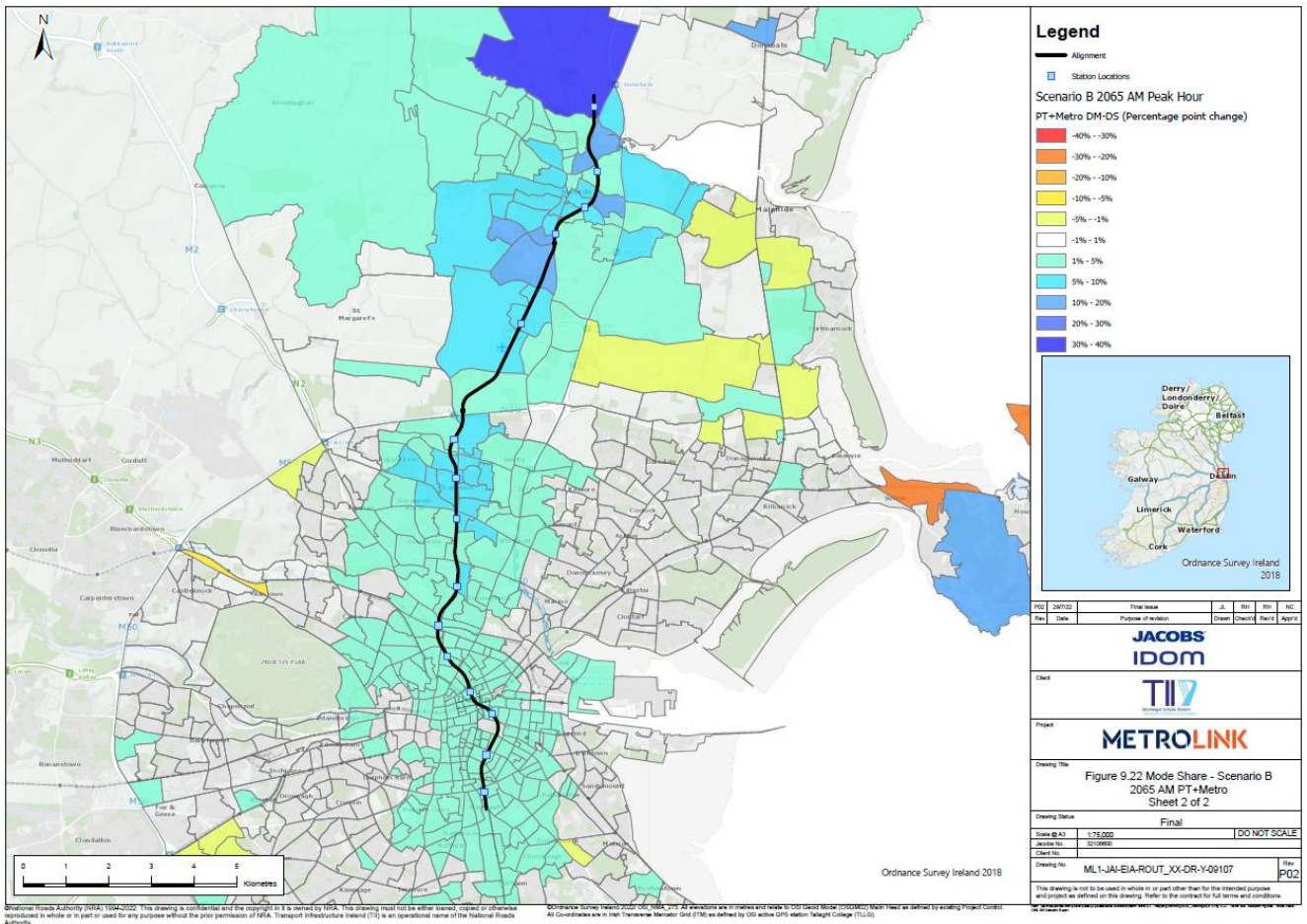


Figure 6.4: Changes in PT (Including the Project) Mode Share in Scenario B 2065 AM Peak Hour

In Scenario A the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from St Stephen’s Green, to Glasnevin and DCU, will see savings times of between 2 and 12 minutes when the proposed project is in place.
- Public transport journeys from St Stephen’s Green to areas in north Dublin, such as Swords Pavilion, will see savings of up to approximately 25 minutes in the 2035, 2050 and 2065 AM period; and to Dublin Airport, there will be a slight time saving of between 21 and 24 minutes in the 2035, 2050 and 2065 AM period.

In Scenario B the following changes to journey times are observed:

- In the 2035, 2050 and 2065 AM period, public transport journeys from St Stephen’s Green, to Glasnevin and DCU will see time savings of between 4 and 10 minutes when the proposed project is in place.
- Public transport journeys from St Stephen’s Green to areas in north Dublin, such as Swords Pavilion see savings of approximately 20 to 21 minutes in the 2035, 2050 and 2065 AM periods; and to Dublin Airport, savings of approximately 20 to 27 minutes in the 2035, 2050 and 2065 AM period.

6.1.2 Traffic Impact Assessment

Figure 6.5 presents the changes in Car mode share in Scenario A 2065 AM peak hour with Figure 6.6 presenting the same for Scenario B 2065. In all forecast years in Scenario A, the zones immediately surrounding St Stephen’s Green station see reductions in Car mode share of up to 5 percentage points. In Scenario B, there are reductions

of less than 1% in many of the zones around St Stephen’s Green in 2035 and 2050, increasing to reductions of up to 5 percentage points in 2065.

Over the 12hr period, the zones within a 2km radius of St Stephen’s Green Station see a reduction of over 390 car trips between the Scenario A 2035 Do Minimum and Do Something scenarios, reaching a reduction of over 780 trips in Scenario A 2050. In 2065, there is a reduction of 1,200 car trips between the Do Minimum and Do Something scenarios. In Scenario B, these zones see a reduction of over 380 car trips between the 2035 Do Minimum and Do Something scenarios, with a reduction of 350 car trips in 2050, however 2065 sees a reduction of 430 car trips between the Do Minimum and Do Something scenarios.

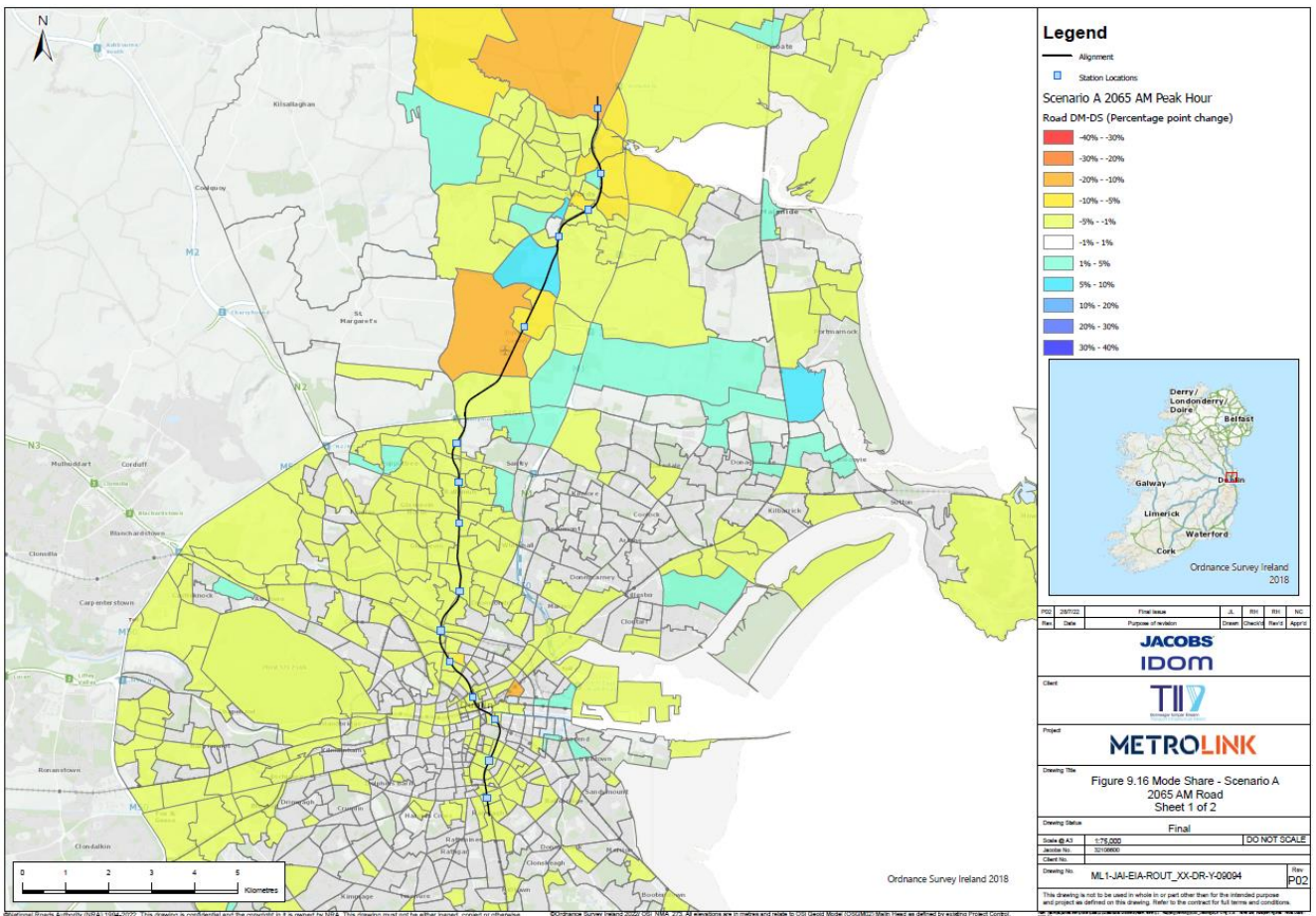


Figure 6.5: Changes in Car Mode Share in Scenario A 2065 AM Peak Hour

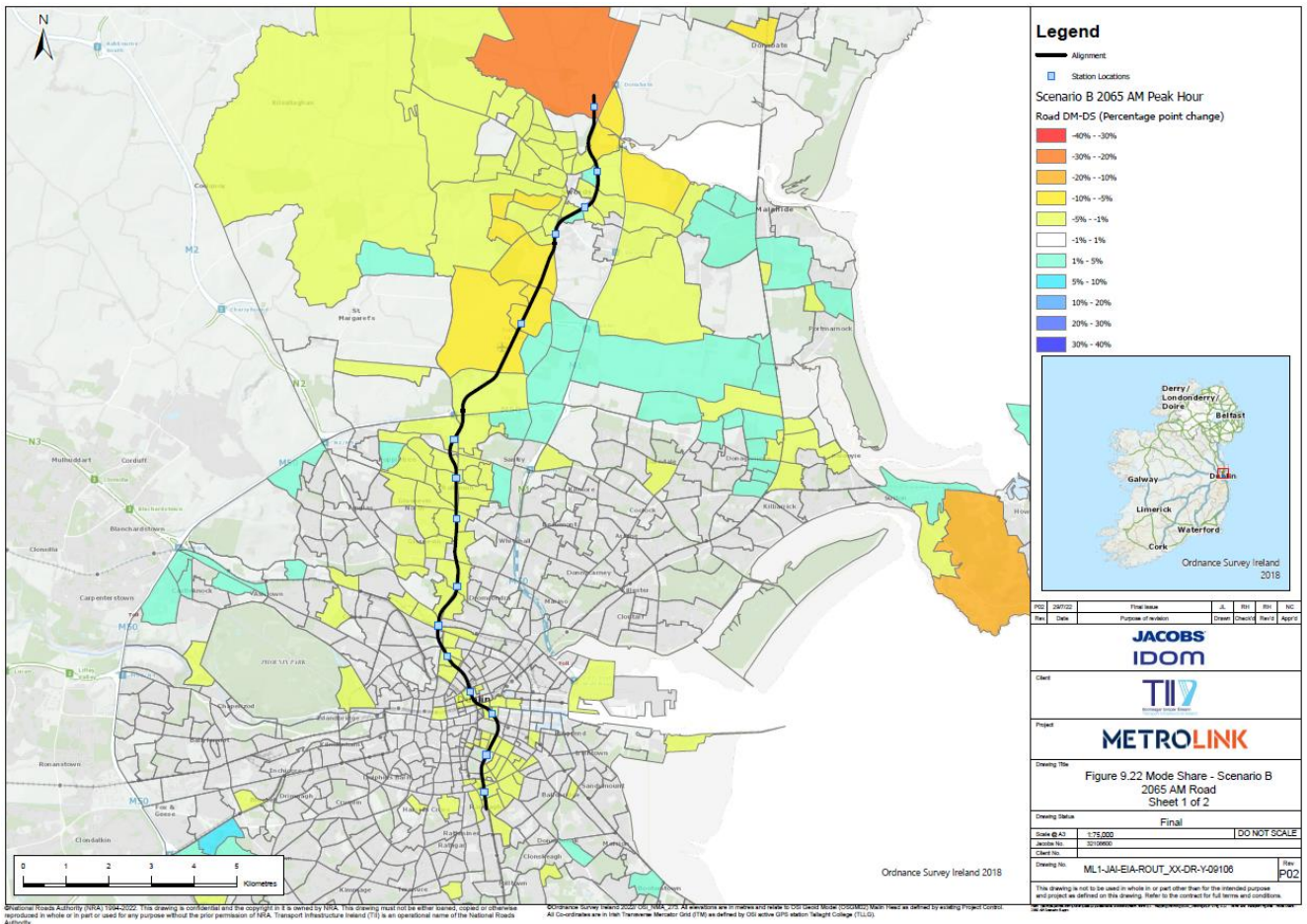


Figure 6.6: Changes in Car Mode Share in Scenario B 2065 AM Peak Hour

6.1.3 Pedestrian Impact Assessment

An assessment of the pedestrian provision around the station has been undertaken, in order to confirm its robustness in catering for the additional demand associated with the proposed Project. The assessment comprises of a ‘Footway Comfort Assessment’, which predicts the pedestrian comfort levels based on industry guidance, taking cognisance of factors including pedestrian demand and footway width. Furthermore, an additional assessment has been undertaken in order to determine the adequacy of pedestrian crossing provisions in catering for predicted station demand.

The Scenario A 2050 design year was assessed, with Scenario A 2065 also assessed as the ‘worst-case scenario’ for passenger numbers, as this scenario has the highest volume of total AM passenger demand in the future year between both Scenario A and Scenario B (almost 61,000 AM boarding passengers across the alignment in Scenario A, compared to almost 55,000 AM boarding passengers in Scenario B). At all stations, the passenger demand in the AM peak hour is lower in Scenario B than in Scenario A, with the exception of Fosterstown Station where there is a 12% increase in Scenario B. As such, Scenario B has not been assessed, with the exception of Fosterstown Station to ensure that all possible significant impacts are accounted for.

The results show that R138 Kildare Street Upper, R138 Merrion Row, Merrion Street Upper, R816 Baggot Street Lower and R138 Leeson Street Lower will be below DCC guidelines in 2050, however all will have an ‘Acceptable’ pedestrian comfort level. This is no change from the baseline scenario and therefore the proposed Project will have a long-term, Imperceptible, negative impact on pedestrians in 2050.

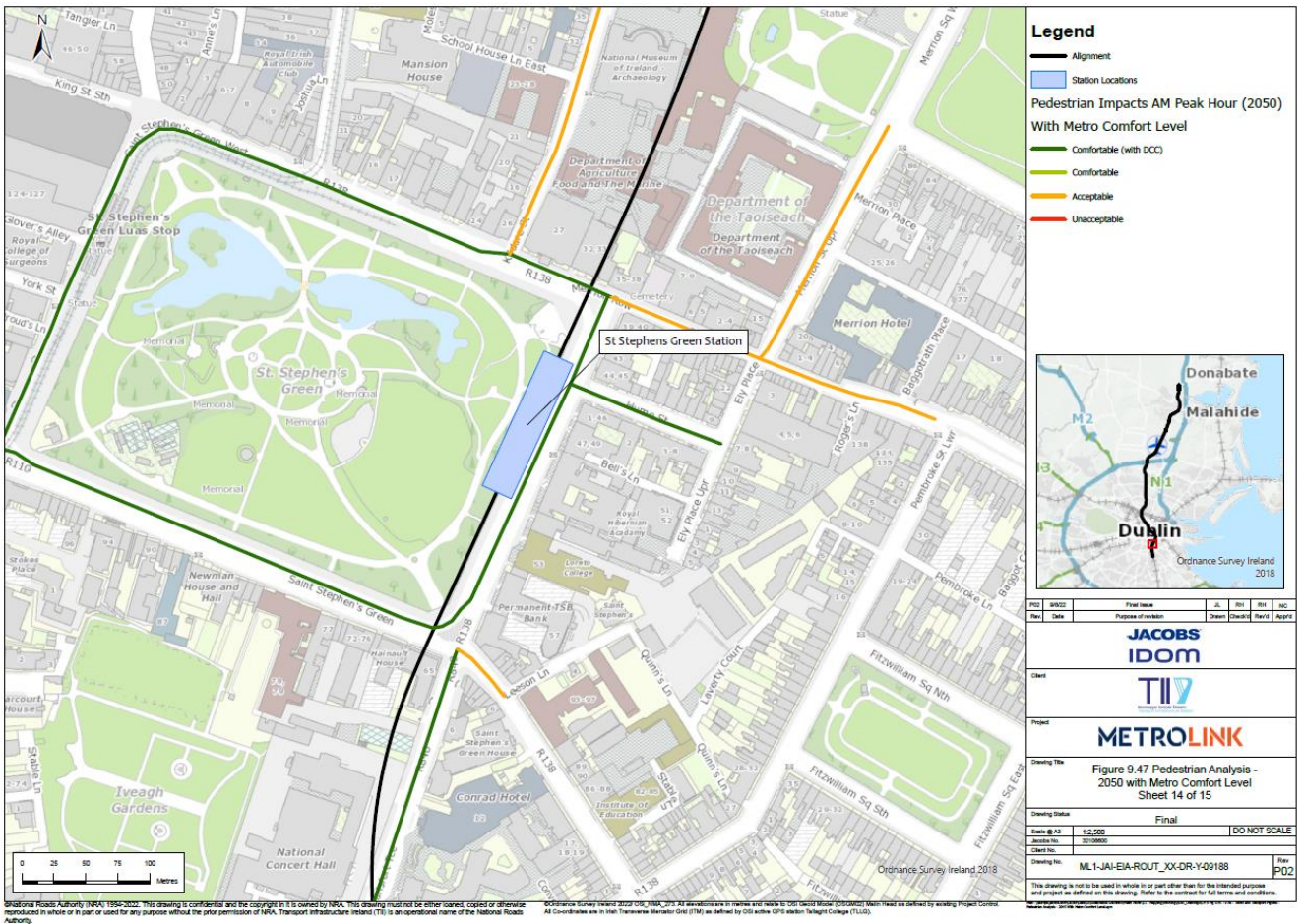


Figure 6.7: Pedestrian Comfort Assessment with the Project 2050 Scenario A AM Peak Hour

Figure 6.8 shows the results from the Scenario A 2065 worst-case scenario. This scenario shows largely similar results to 2050, however Hume Street falls below DCC guidance however retains an ‘Acceptable’ comfort level.

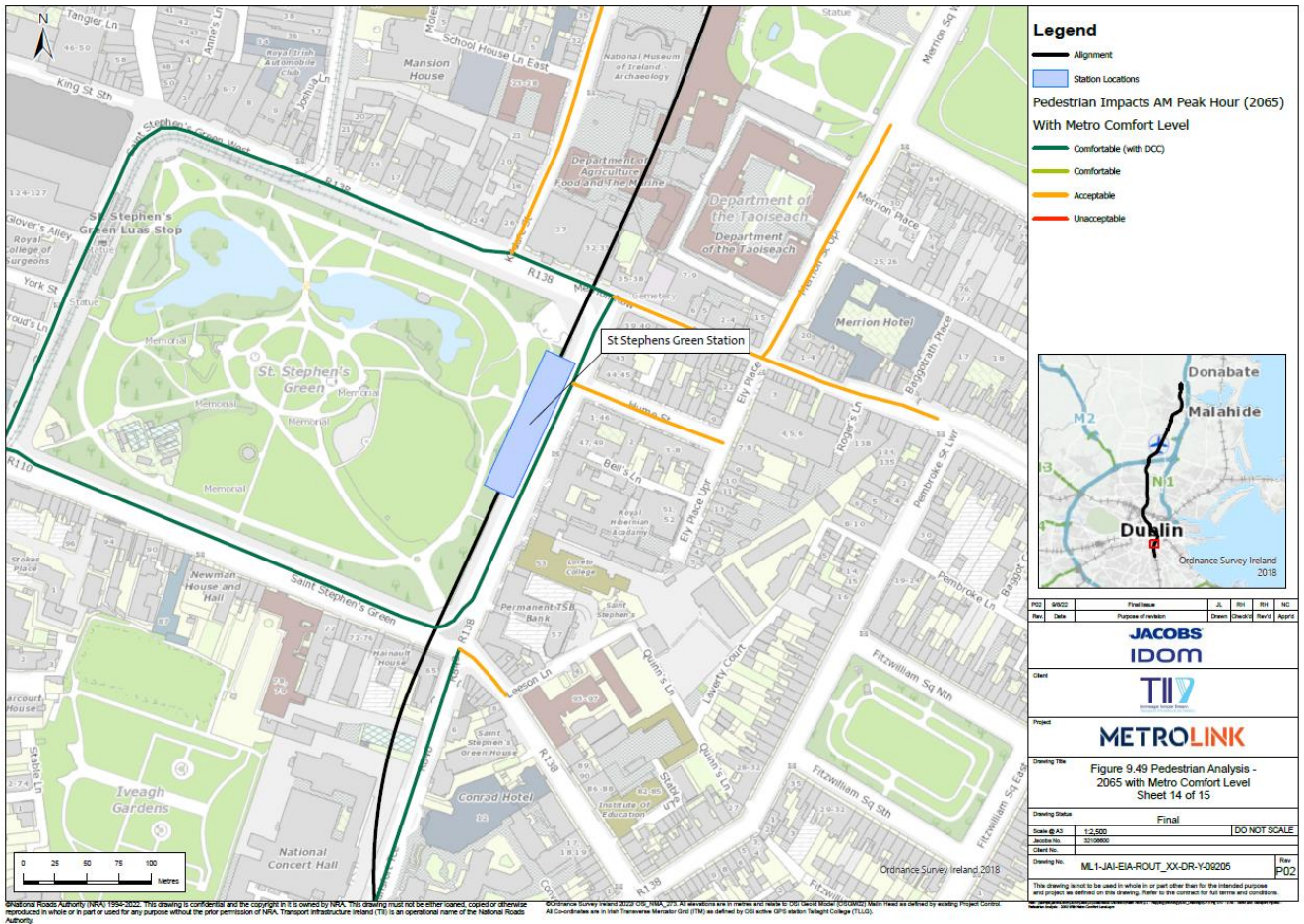


Figure 6.8: Pedestrian Comfort Assessment with the Project Scenario A 2065 AM Peak Hour

6.1.3.1 St Stephens Green – Microsimulation VISWALK Model

In recognition of the potentially complex routing and road crossing behaviour at this site, a VISWALK model was also produced for the area surrounding the station, the extent of this model is illustrated in Figure 6.9. The modelled layout includes the main roads and streets of St Stephen’s Green East and North, Merrion Row, Kildare Street and Hume Street, as well as the associated major signalised junctions and crossings. As well as these aspects, it also includes the large pedestrian areas neighbouring St Stephen’s Green park. The St Stephen’s Green MicroSim Report further details the modelled process, model demands and model development.

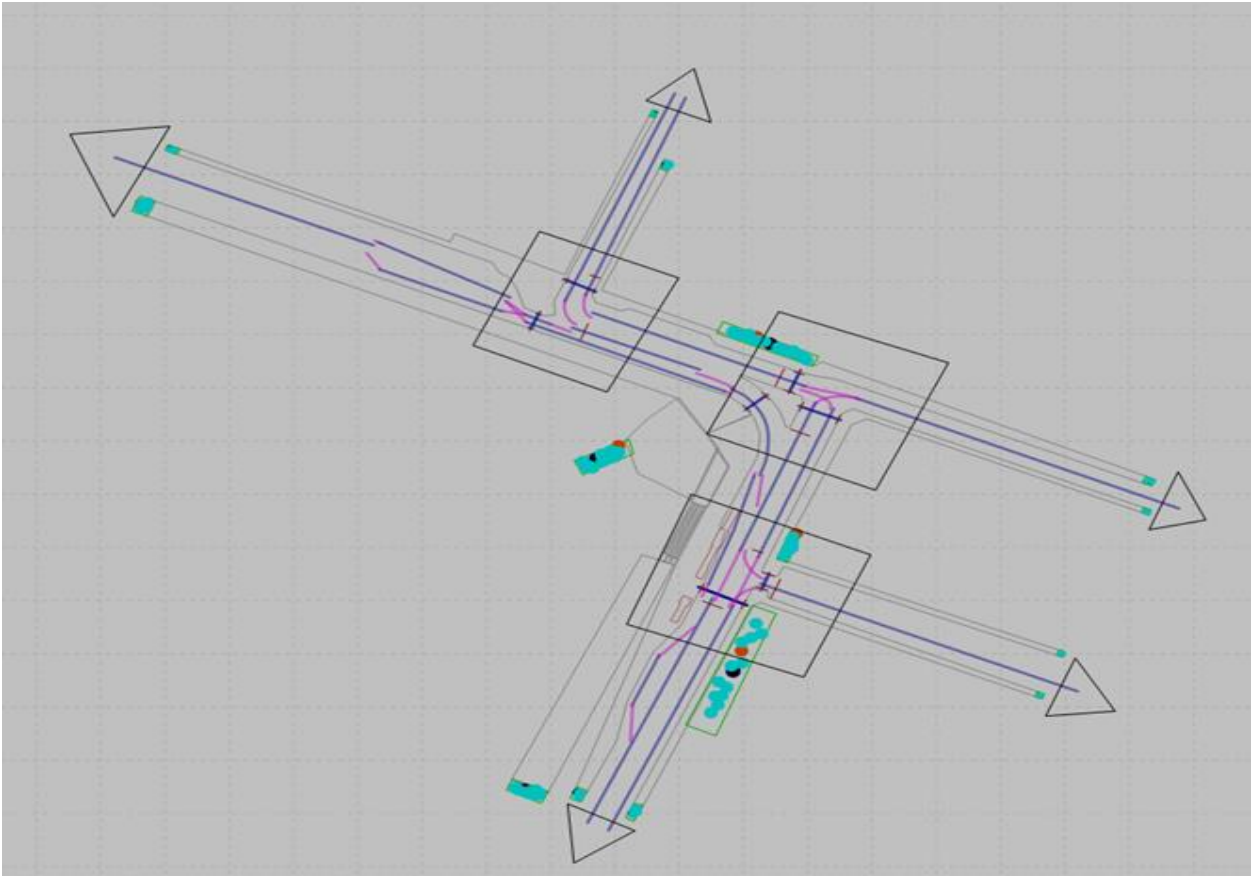


Figure 6.9: Extent of VISWALK Model

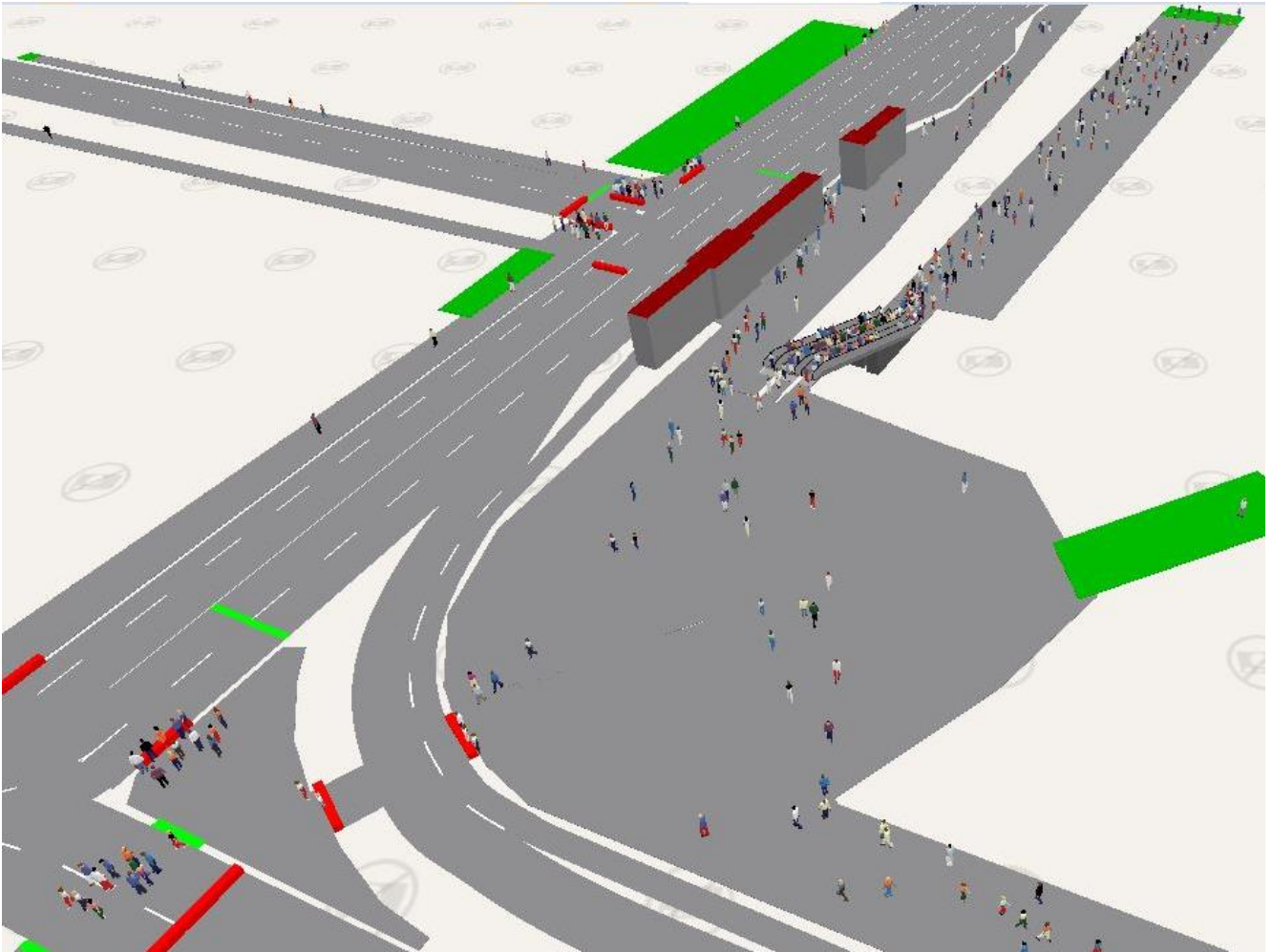


Figure 6.10: St Stephens Green –VISWALK Model Simulation

Level of service data has been recorded from the model in order to assess the performance of the network with the Project in place. The level of service criteria is shown in Figure 6.11 and categorises the performance of the network with regard to pedestrian density and delay.

The level of service for the 2050 AM peak is shown in Figure 6.12, whilst the 2050 PM peak is shown in Figure 6.13. The results demonstrate that the network operates with an acceptable level of service in the majority of locations. The level of service is lower at specific locations on the network (Level D and Level E), such as the waiting areas at signalised pedestrian crossings and at the entrances to the station escalators. Some delay at these locations is likely due to the high pedestrian demand, and it is considered that the overall level of service on the network is acceptable.

Fruin's Level of Service	Average area module		
	Walkway [m ² /ped]	Stairs [m ² /ped]	Queue [m ² /ped]
A	>3.24	>1.85	>1.21
B	3.24-2.32	1.85-1.39	1.21-0.93
C	2.32-1.39	1.39-0.93	0.93-0.65
D	1.39-0.93	0.93-0.65	0.65-0.28
E	0.93-0.46	0.65-0.37	0.28-0.19
F	<0.46	<0.37	<0.19

Figure 6.11: Fruin's Scale Level of Service key representing A as least congested and F as heavily congested

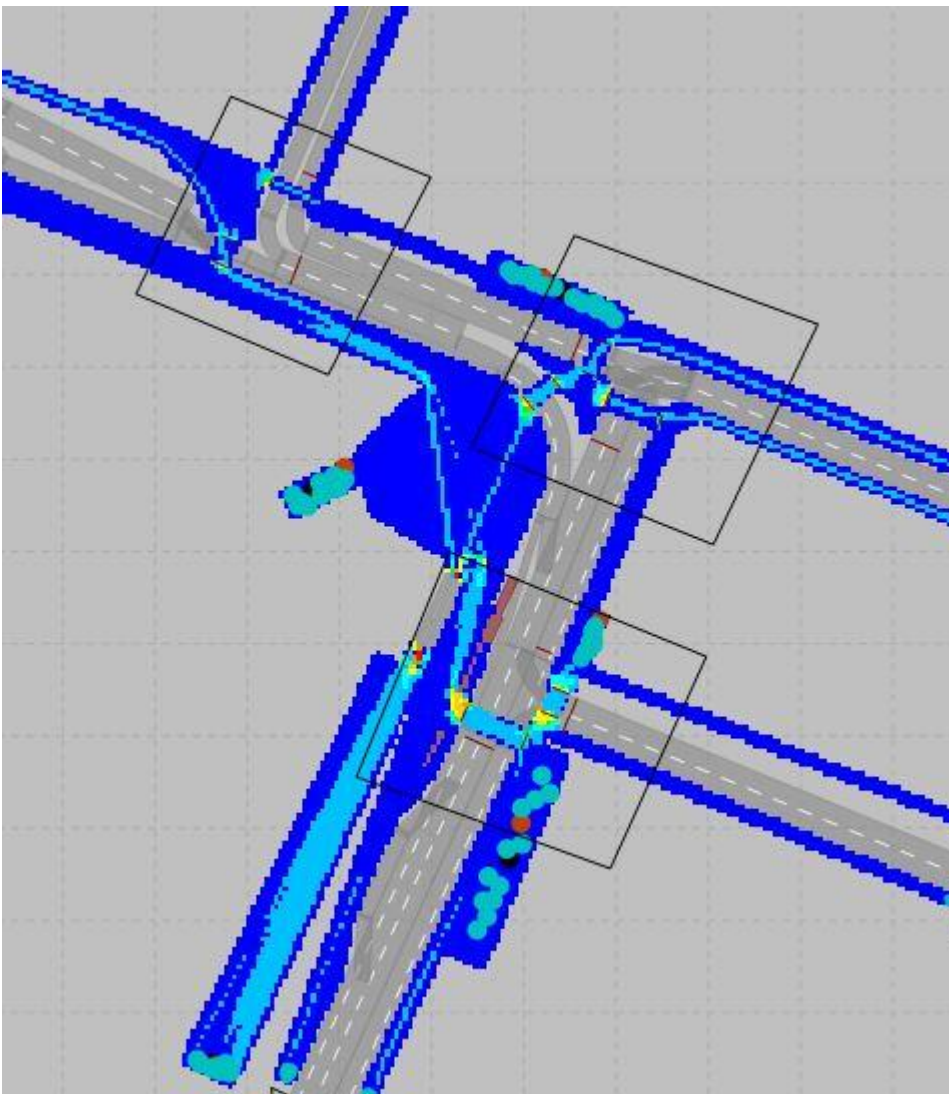


Figure 6.12: St Stephen's Green LOS Map for 2050 AM Peak

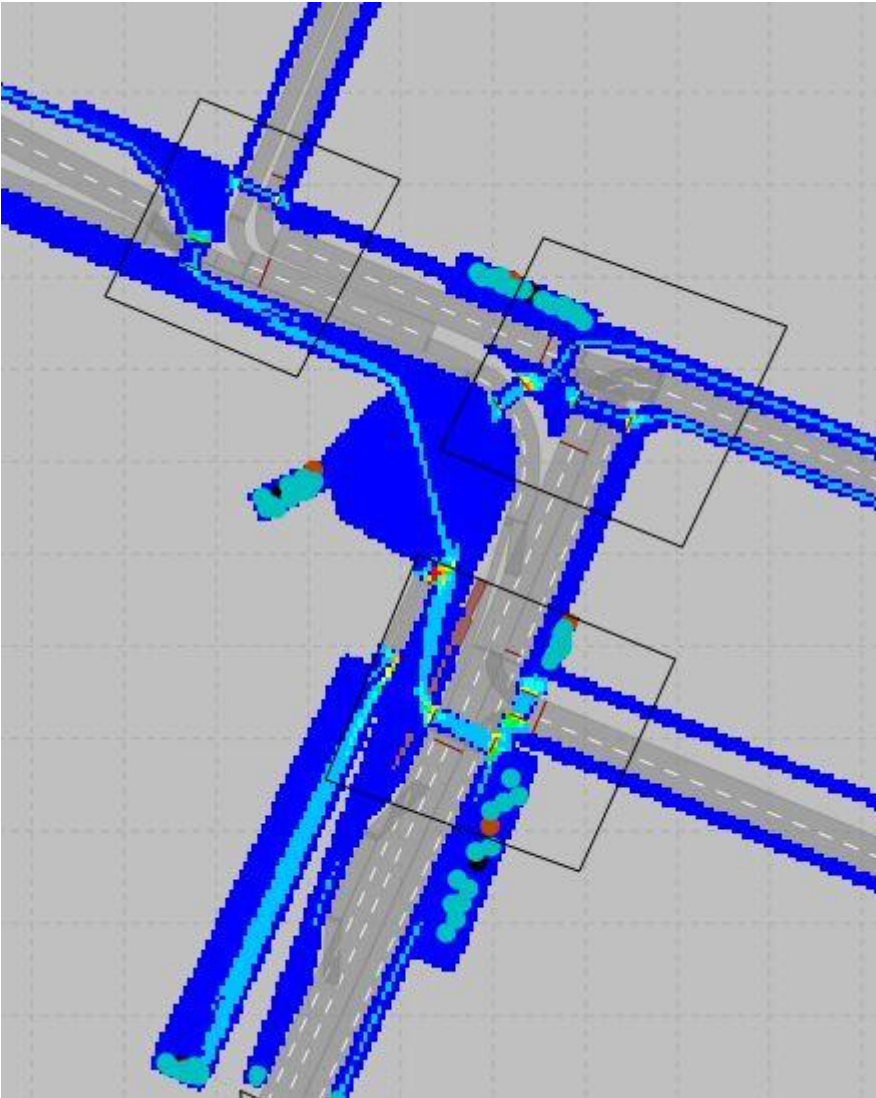


Figure 6.13: St Stephen's Green LOS map for the 2050 PM Peak

In summary, the microsimulation model for St Stephen's Green performs well with no areas of excessive congestion or bottlenecks for pedestrians.

6.1.4 Cyclist Impact Assessment

The current cycle lanes along the R138 will be realigned as part of the proposed street level layout, within the Project Boundary, however there will be no impact to the Quality of Service of cycling infrastructure around St Stephen's Green station when the Project is in place.

A methodology has been applied to determine the potential demand for cycle parking at each of the stations. This methodology utilises the number of boarding and alighting passengers, the distance of origin/destinations from the station, and the location of the station. The passenger demand from an earlier Opening Year has been utilised to determine the potential cycle demand in the Opening Year, and in the Opening Year +5 Years.

This approach has informed the design and the number of cycle parking spaces provided at each station. Other factors such as the availability of land, potential future land uses and parking supply and the location of the station have also been taken into consideration by the design team in determining the quantum of cycle parking spaces provided.

For the St Stephen’s Green Station, a total of 82 cycle spaces are proposed, plus 40 Dublin Bike spaces.

6.1.5 Road Safety

A Stage 1 Road Safety Audit has been undertaken for all of the proposed highway works for the Project. This is under a separate cover.

7. Summary

In Scenario A St Stephen’s Green station will facilitate approximately 23,000 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to over 27,200 in 2050 and over 31,500 in 2065. In Scenario B St Stephen’s Green station will facilitate approximately 23,400 passenger movements over the 12hr peak period (07:00-19:00) in 2035, rising to 24,100 in 2050 and 26,700 in 2065.

The main catchment origins and destinations of the people boarding and alighting at the St Stephen’s Green station will be

- Origins from residential and retail areas such as Liberty Market;
- Origins from the east of the station such as commerce on Merrion Row and the National Maternity Hospital;
- Destinations at Trinity College Dublin; and,
- Destinations at Grafton Street and St Stephen’s Green Shopping Centre.

The Project will result in increases in public transport mode share of up to 5 percentage points for zones surrounding the Project. There will be a reduction in road mode share of between 1 percentage points and 5 percentage points for the zones surrounding the station, which is a reduction of approximately 1,200 car trips to and from the zones surrounding St Stephen’s Green Station over the 12hr period in Scenario A 2065. In Scenario B, there is a reduction of approximately 430 car trips over the 12hr period between the Do Minimum and Do Something scenarios.

The Project will result in improvements to the public transport journey times for people in the area, such as from St Stephen’s Green to Swords Pavillion with savings of approximately 25 minutes. Savings of approximately 24 minutes can also be seen for public transport journeys from St Stephen’s Green to Dublin Airport, and approximately 17 minutes from Ballymun, a residential area, to St Stephen’s Green in the Dublin City Centre.

The station will provide for 82 cycle parking spaces, plus 40 Dublin Bike stands. The results demonstrate that the pedestrian network operates with an acceptable level of service in the majority of locations. The level of service is lower at specific locations on the network (Level D and Level E), such as the waiting areas at signalised pedestrian crossings and at the entrances to the station escalators.

In overall terms, the St Stephen’s Green station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usages and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area.