Appendix M: Traffic Modelling Report

JACOBS IDOM

MetroLink

Transport Modelling Report – Business Case

ML1-JAI-TRA-ROUT_XX-RP-Y-00009 | P04.2

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MetroLink

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Contents

Executive Summary

The Transport Modelling Report details the model development, data inputs, model calibration and validation, and development of future year models.

The purpose of this report is to describe the work that has been undertaken, to make the case for using the transport model as the basis for the appraisal of the scheme, to detail the way in which the model has been built and to provide evidence that the model is sufficiently capable of reflecting observed conditions relating to transport and traffic flows. It also makes clear the basis for any projections produced by the model and provides a clear view of the impact of the scheme that is being assessed on the direct vicinity of the project and its greater surrounding area.

The following scenario years have been used for the MetroLink scheme assessment:

- Opening Year: 2030;
- Design Year: 2045 (opening year + 15); and
- Forecast Year: 2060 (opening year + 30).

The Business Case (referred to as 'Core') runs utilise a Do Committed Schemes scenario. The Core run has been modelled for each of the scenario years, as well as sensitivity tests, including Slow Growth, Low Frequency, Alternative Demand, Enhanced Transport Networks, and Enhanced Transport Networks in conjunction with the Alternative Demand scenario. All years (2030, 2045 and 2060) have been modelled and are presented in this report.

A summary comparing all Core runs, both northbound and southbound, is presented below. In the 12hr period, the total number of boarding passengers increases by 22% from 2030 to 2045, from 128,182 passengers to 156,091 passengers respectively. This further increases to 209,815 boarding passengers in 2060, representing an increase of 34% from 2045 to 2060.

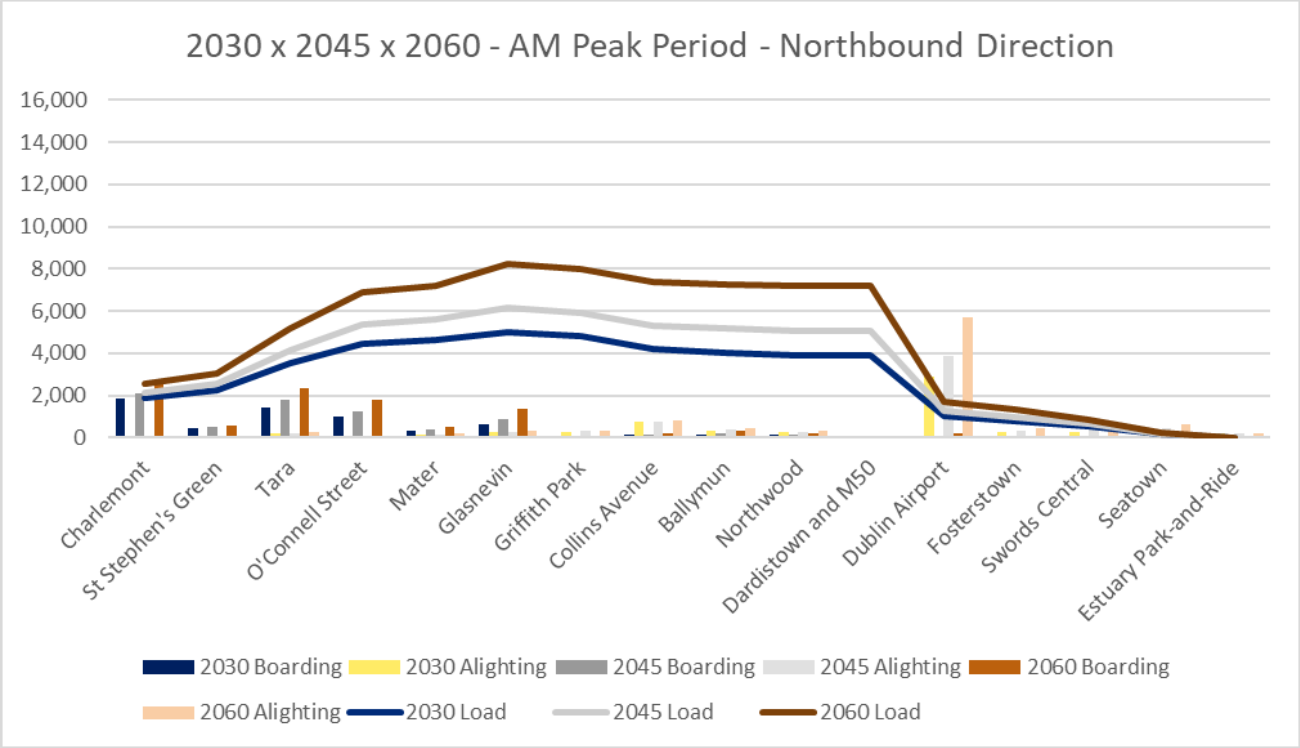

Figure 1: Core Run Comparisons – AM Peak Period Northbound

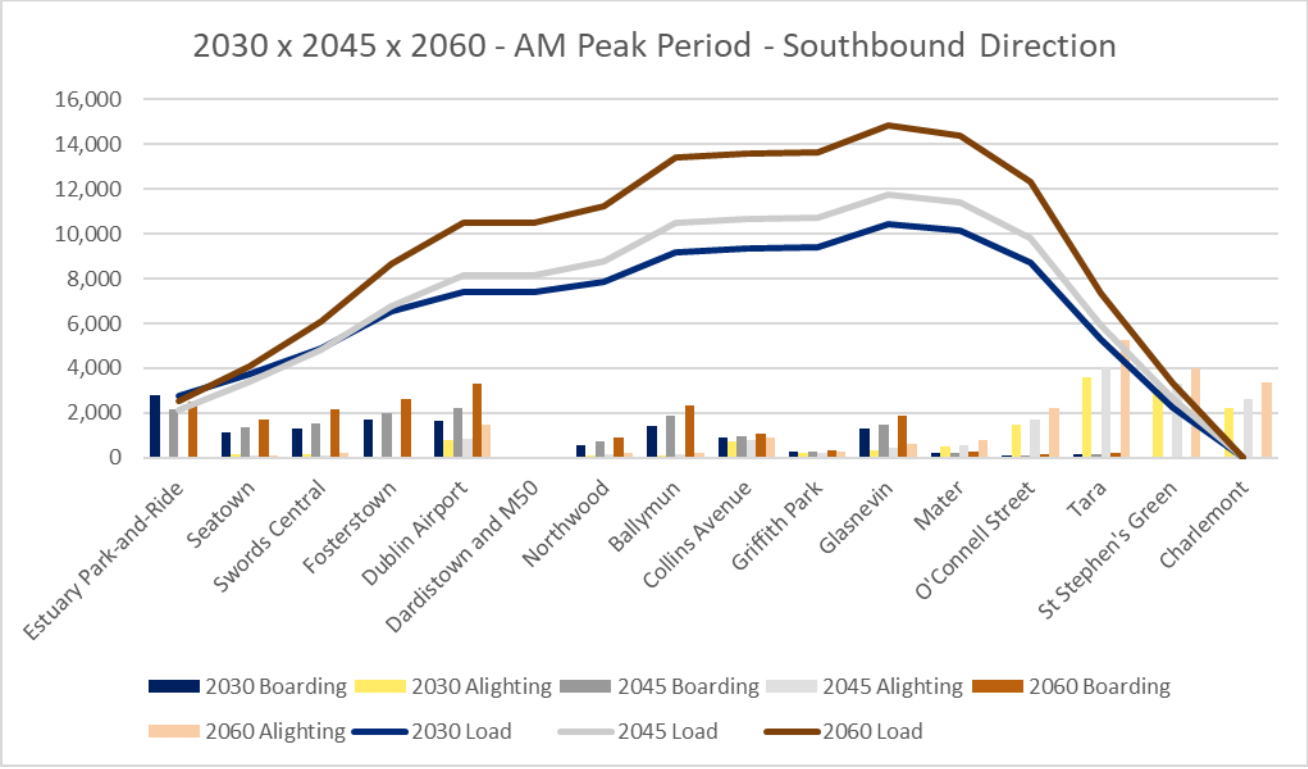

Figure 2: Core Runs Comparison – AM Peak Period Southbound

1. Introduction

1.1 Purpose of the Transport Modelling Report

The Transport Modelling Report (TMR) details the model development, data inputs, model calibration and validation, development of future year models, modelling results and results of appraisal tools for the proposed MetroLink scheme.

The report describes the work that has been undertaken and makes the case for using the transport model as the basis for the appraisal of the MetroLink scheme. It details the way in which the model has been built and provides evidence that it is sufficiently capable of reflecting observed conditions relating to public transport and traffic flows. It also makes clear the basis for any projections produced by the model and provides a clear view of the impact of the scheme that is being assessed on the direct vicinity of the proposed scheme and its wider surrounding area.

1.2 Methodology / Structure of the MetroLink Transport Model

As described in the Transport Modelling Plan (TMP, ML1-JAI-TRA-ROUT_XX-PL-Y-00001), the following chart outlines the assessment methodology including the high-level inputs, the strategic multi-modal modelling assessment, the interaction with local / micro modelling, and the outputs and deliverables. The strategic multi-modal modelling will underpin the assessment and comprise the main assessment of benefits and impacts as part of the Business Case, feeding into local / micro models where potentially significant impacts are identified and assessed as part of the EIAR/TIA.

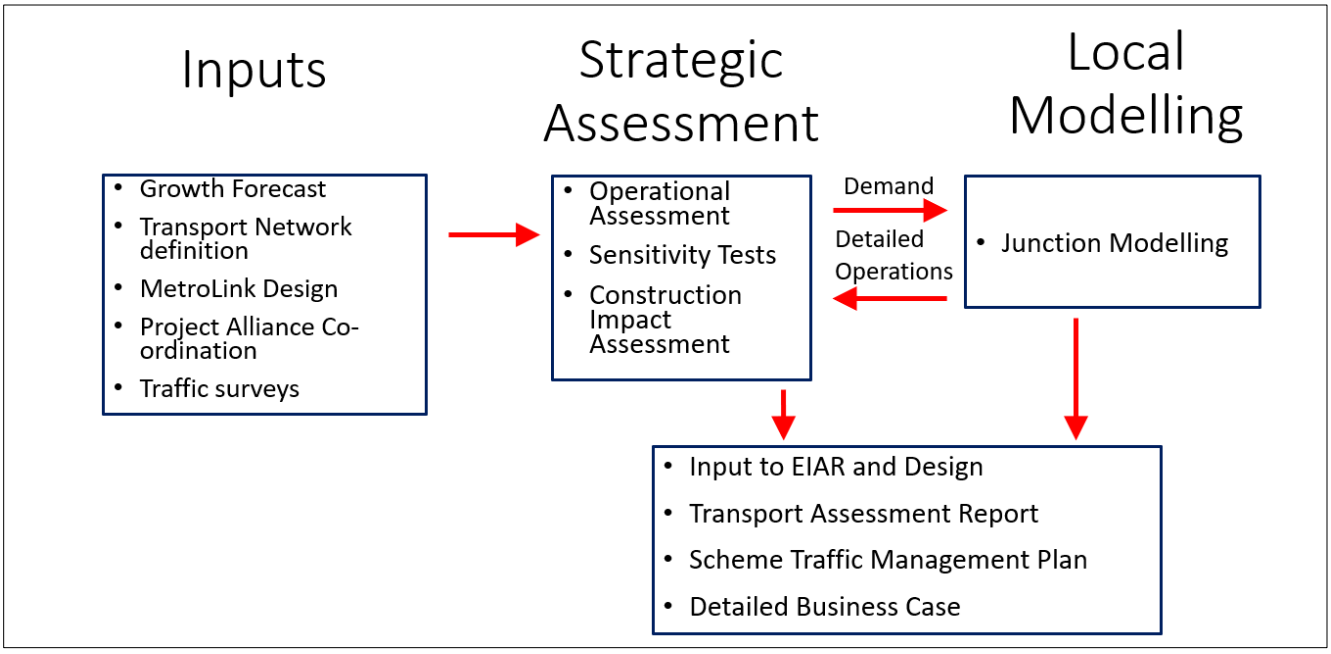

Figure 1-1: Transport Assessment Approach

1.3 NTA East Regional Model

The National Transport Authority (NTA) has developed a Regional Modelling System (RMS) for Ireland that allows for the appraisal of a wide range of potential future transport and land use alternatives.

The RMS comprises the National Demand Forecasting Model (NDFM); five large-scale, detailed, multi-modal regional transport models; and a suite of Appraisal Modules. The five regional models comprising the RMS are focused on the travel to-work areas for Dublin (represented by the East Regional Model (ERM)), for Cork (represented by the South West Regional Model (SWRM)), for Limerick (represented by the Mid-West Regional Model (MWRM)), for Galway (represented by the West Regional Model (WRM)) and for Waterford (represented by the South East Regional Model (SERM)). The key attributes of the five regional models include; full geographic coverage of each region, detailed representations of all major surface transport modes including active modes, road and public transport networks and services, and of travel demand for five time periods (AM, 2 Inter-Peaks, PM and Off-Peak). The RMS encompasses behavioural models calibrated to 2016 Household Survey data that predict changes in trip destination and mode choice in response to changing traffic conditions, transport provision and/or policies which influence the cost of travel.

The RMS has been developed to provide the NTA with the means to undertake comparative appraisals of a wide range of potential future transport and land use options, and to provide evidence to assist in the decision-making process.

The RMS captures all day travel demand, thus enabling more accurate modelling of mode choice behaviour and increasingly complex travel patterns, especially in urban areas where traditional nine-to-five working is decreasing. Best practice, innovative approaches were applied to the RMS demand modelling modules including car ownership; parking constraint; demand pricing; and mode and destination choice. The RMS is therefore significantly more responsive to future changes in demographics, economic activity and planning interventions than traditional models.

The strategic model used for the MetroLink Scheme Appraisal is the ERM developed by the NTA. The ERM is a multi-modal, network based transport model that includes all main surface modes of travel, including: Full Geographic Coverage of the Eastern Region, a detailed representation of the road network, a detailed representation of the public transport network & services, a detailed representation of all major transport modes including active modes, accurate mode choice modelling of residents, a detailed representation of travel demand of four time periods (AM, Inter-Peak, PM and Off-Peak) and a prediction of changes in trip destination in response to changing traffic conditions, transport provision and/or policy.

This ERM has a base year of 2016 and is calibrated to 2016 Census, 2017 National Household Travel Survey and localised multi-modal surveys.

Further detail and background to the development of the ERM can be found in the NTA's report 'Model Development Report – Eastern Regional Model'.

2. Data Collection

The latest version of ERM was calibrated to a base year of 2016, full details on the data collection used in the development of the model and in the validation and calibration of the model is contained within the NTA's report 'Model Development Report – Eastern Regional Model'.

In May 2018 traffic surveys were undertaken on 108 sites along the proposed MetroLink corridor. Vehicle and pedestrian movement surveys were undertaken for all 108 locations over three separate days and for 24-hour sessions at each. The surveys were undertaken on neutral weekdays, defined as Tuesday, Wednesday or Thursday, and were undertaken out with any school or public holidays.

3. Forecast Years

3.1 Forecast Years

The following forecast years have been used in the MetroLink scheme assessment.

- Opening Year: 2030.
- Design Year: 2045 (opening year + 15).
- Forecast Year: 2060 (opening year + 30).

The Business Case runs will utilise a Do Committed Schemes. Details of the schemes that form part of these different scheme scenarios are contained within the Traffic Modelling Plan.

The Central Case is referred to as Business Case Core Run within this report. This report presents the results of this Core Run and the associated sensitivity tests that were undertaken as part of the development of the Preliminary Business Case.

3.2 Future Growth Rates

In order to ensure that the MetroLink Project can operate efficiently and deliver benefits into the future, forecasts are required to determine the likely future levels of demand on Dublin's transport system. The TII PAG states that *"Unbiased future demand projections are a critical input in ensuring that capacity for transport infrastructure is neither too large nor too small to meet the future demand. Furthermore, travel demand projections inform the economic and environmental appraisal of transport schemes and therefore play a fundamental role in deciding whether a scheme is to progress".*

The NTA has prepared a set of future planning variables which form a key input into the National Trip End Model (NTEM) and is referred to as the planning sheet reference case.

As part of the process the NTA has determined forecasts for key trip generation and destination variables listed below.

- Population;
- Population by age cohorts;
- Population by school level (Primary, Secondary, Third level);
- Principal Economic Status;
- Employment places at destination;
- Employment places at destination by type (Health, Retail, Food Retail); and
- Education places at destination by level (Primary, Secondary, Third level).

The foundation of this planning sheet is heavily based on published policy documents. The National Planning Framework (NPF) was launched in February 2018, following which the Department of Housing, Planning and Local Government issued an Implementation Roadmap. This document set out the target population figures for each county for 2026 and 2031. In addition, the Department of Housing supplied employment figures for each county up to 2040. There are figures provided for the 'At-Work' population as well as the number of employment places per county.

The NTA have worked with the Regional Assemblies and the Local Authorities to incorporate their housing and growth priorities in the planning sheet. While the planning sheet is controlled at the regional and county level by published policy documents (NPF & RSES), the distribution of growth within counties is discussed and agreed with Local Authorities. Where agreement has not been made the NTA has based the distribution on existing patterns and zoning within the development plans.

These planning sheets are the principal land use scenario for all plans and schemes. Interim year planning sheets for years between 2016 and 2040, are straight line interpolation between 2016 and 2040. For years after 2040, these planning datasheets are created by extending this straight-line interpolation onwards to the forecast year, such as 2045 or 2060.

Figure 3-3 illustrates the increase in population and jobs within the Greater Dublin Area (GDA), and Figure 3-4 illustrates the increase in the population and number of jobs within a 1km catchment distance of stations along the MetroLink, using data from the NTA planning sheets. A 1km catchment buffer has been selected as it takes 15minutes to walk approximately 1.6km.

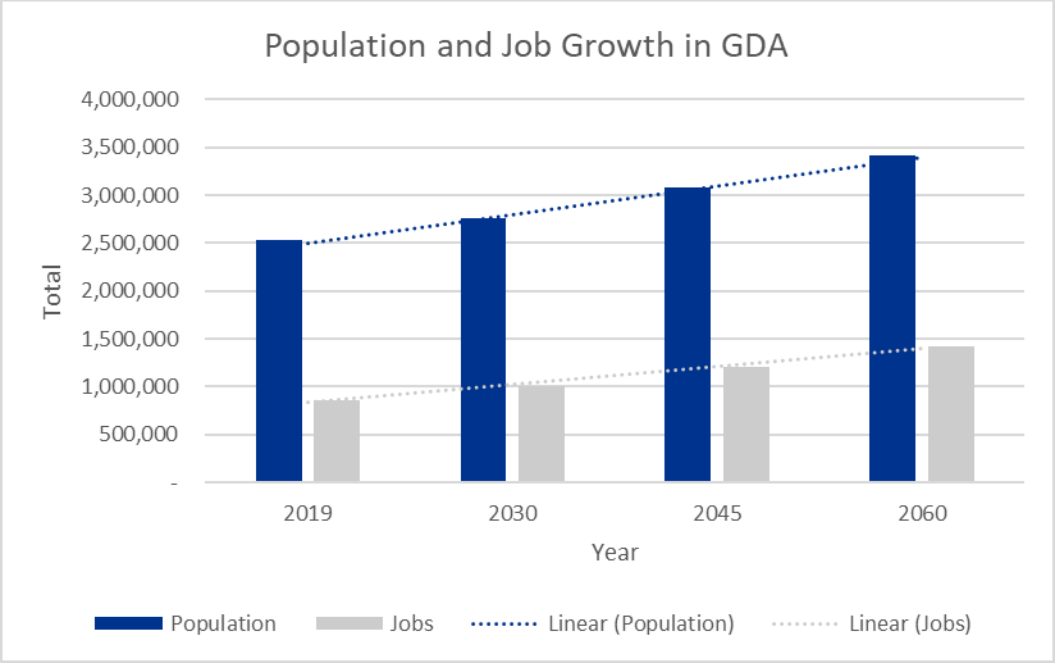

Figure 3-1: Population and Job Growth in Greater Dublin Area 2019 -2060

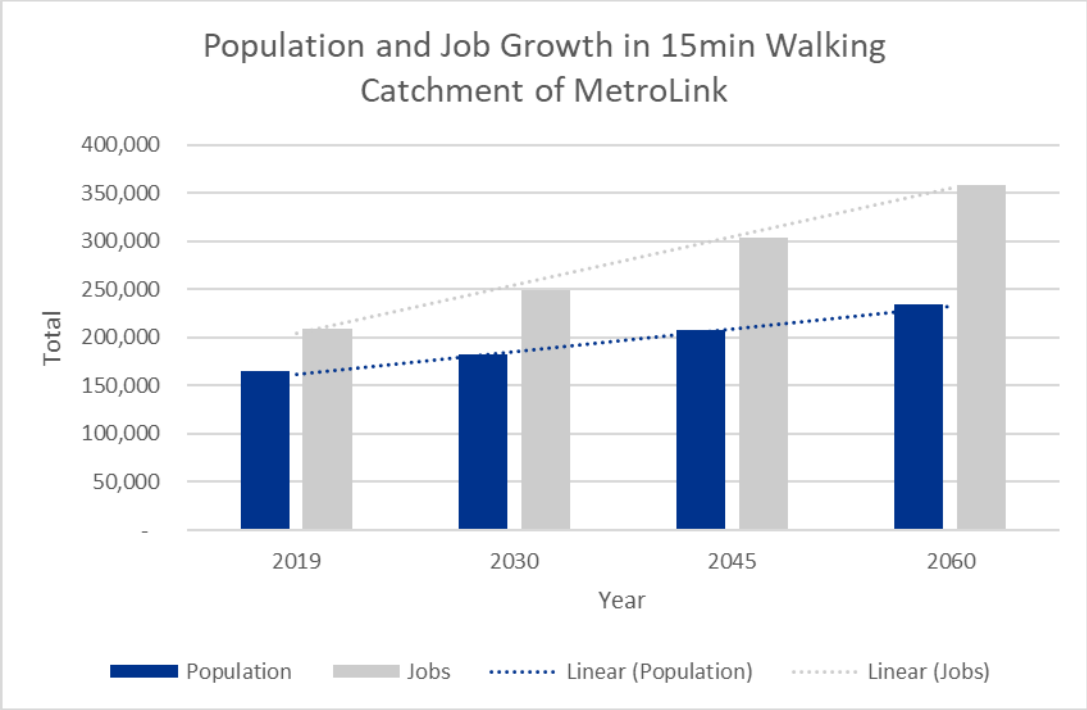

Figure 3-2: Population and Job Growth within 15min Walking Catchment of MetroLink

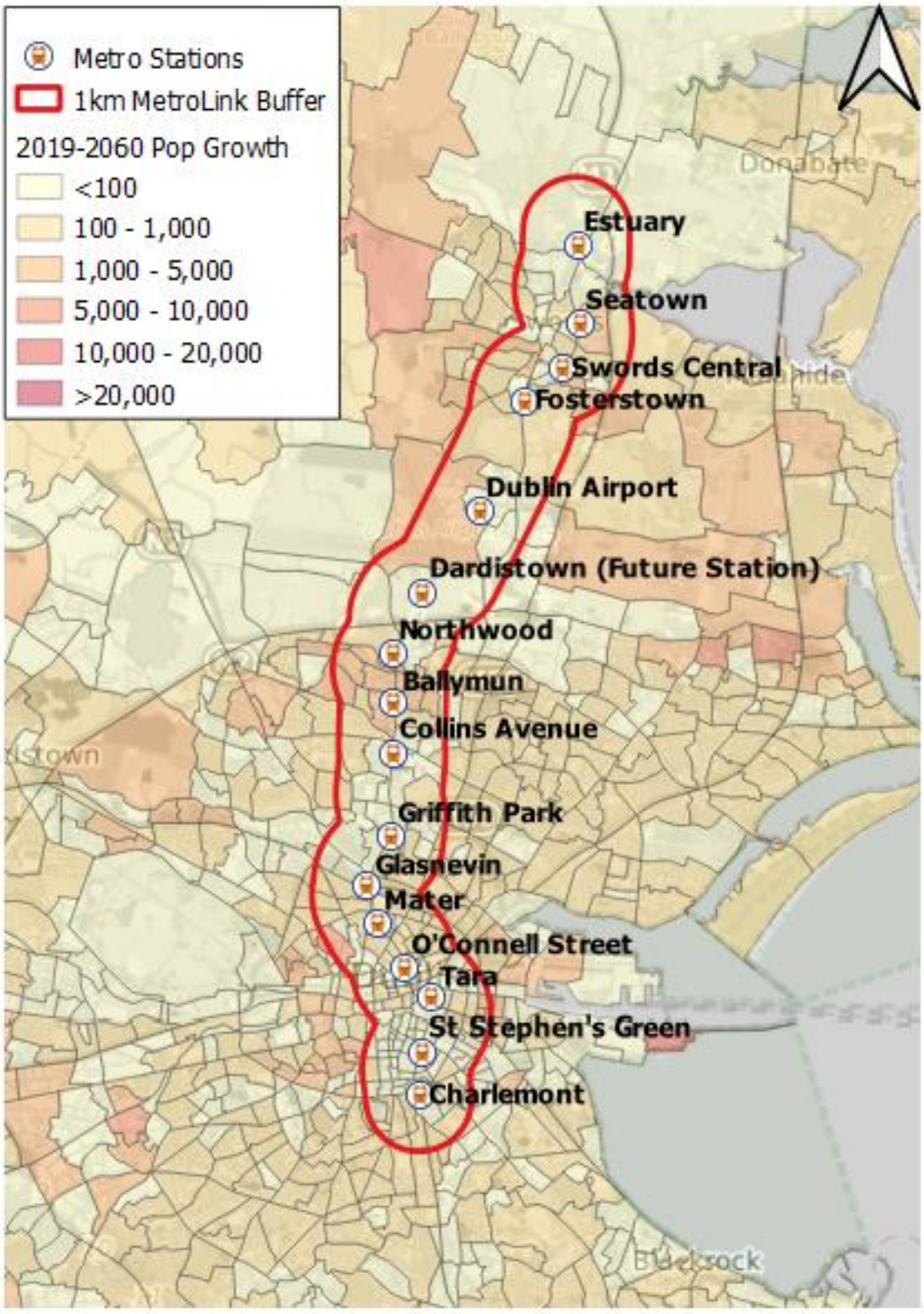

Figure 3-3: Population Growth from 2019 to 2060

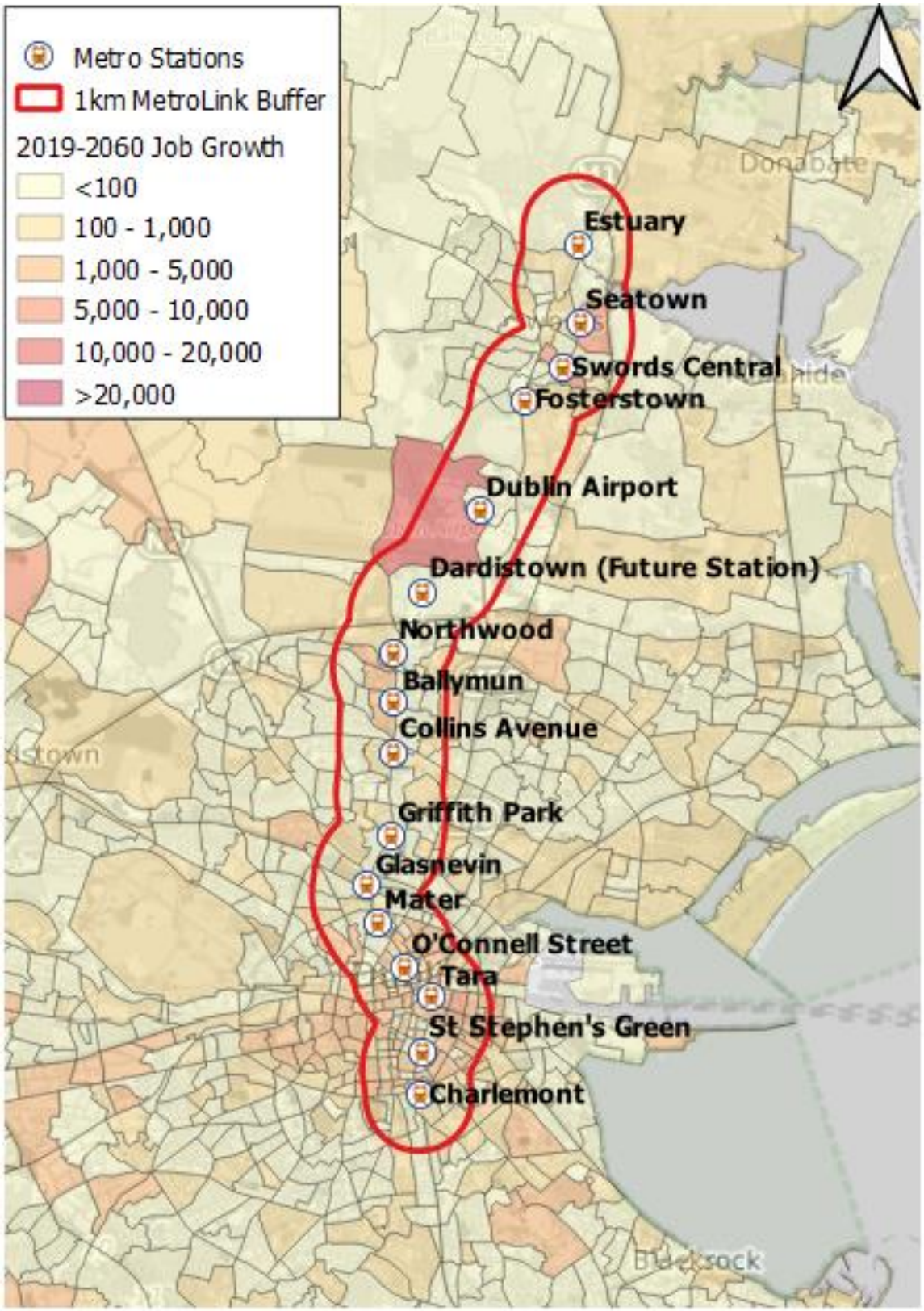

Figure 3-4: Job Growth from 2019 to 2060

3.3 Specific developments

In addition to the forecast growth associated with the typical land use patterns, Dublin Airport is a key growth driver in the corridor and has a different growth associated with flight travel demand. Within the ERM, growth in landside demand is determined for passengers, staff and freight, applied to the Dublin Airport Special Zone. Freight and staff numbers are forecasted on a scaling factor, which are aligned with passenger growth forecasts.

The passenger growth forecasts are based on the central growth forecast from the DTTAS report "Review of Capacity Needs at Ireland's State Airports - August 2018", and the Central Statistics Office (CSO) 2016-2019 Aviation Stats' TAM05. The CSO stats are used to calculate the growth rate up to 2019 and the growth rate from 2020 to 2050 is determine by interpolation from the 2019 passenger forecast to the 2050 passenger forecast contained within the DTTAS report.

4. Network Development

This section describes the development of the models and scenarios used to assess the MetroLink scheme Business Case. This included identifying the area of influence, as well as coding appropriate schemes in the Do Minimum and Do Something scenario networks. 29 different model runs have been undertaken, which are detailed in Section 4.5.

4.1 Area of Influence

To determine the main area of influence, two baseline model runs have been carried out; one without the MetroLink scheme, and one with the MetroLink scheme. The public transport and highway outputs from these two runs have been compared to identify the area of influence of the MetroLink scheme, and the results are provided in the 'Area of Influence' Technical Note.

- 2018 Do Nothing - 2018 present day model, without the MetroLink alignment and stations; and
- 2018 Do Scheme - 2018 present day model with the MetroLink alignment and stations.

The area of influence for the MetroLink scheme can be seen in Figure 4-1. As expected, the main area of influence is in North Dublin directly adjacent to the MetroLink scheme, due to the walking catchment, the proximity of the MetroLink Scheme to the counties in the North of Leinster, and the easy access to the proposed park and ride for car users and interchange for passengers on public transport from these areas. The area of influence also extends to the West and South of Dublin along major radial corridors, and the M50 due to opportunities to combine Luas Green Line trips with MetroLink, and to access the Park and Ride Stations.

The impacts of the MetroLink scheme can and do extend beyond this area of influence, however this area of influence has been used to identify an area where any future network schemes would be included within the future forecast models.

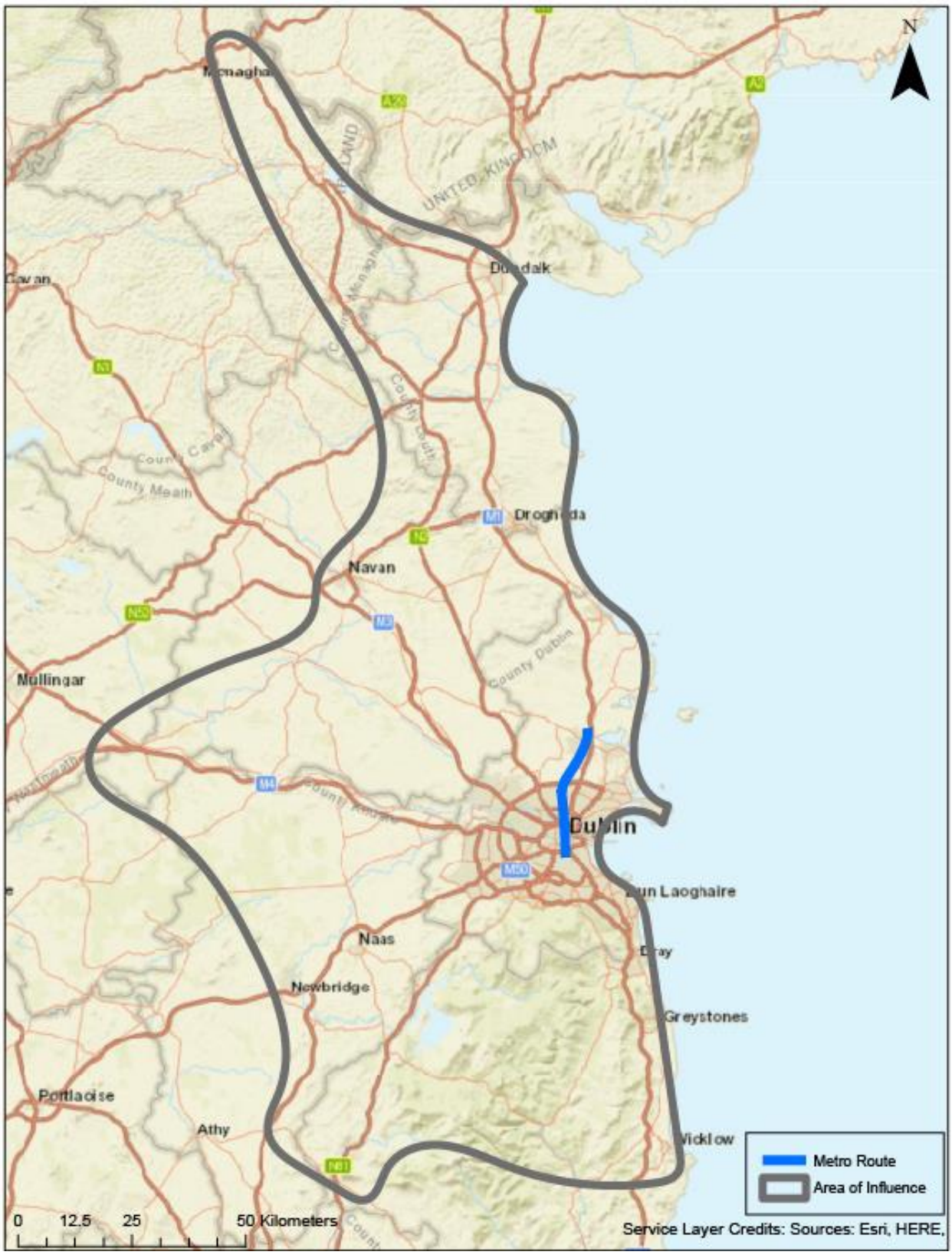

Figure 4-1 Area of Influence for the MetroLink

4.2 Do Committed Minimum Scenario

The Do Committed Minimum Scenarios includes additional transport schemes that are under construction or committed to be implemented post the base-year of the ERM base (2016), and the respective forecast transport demand. The network defined for the future years (2030, 2045 and 2060) are similar, with slight differences on the Public Transport services.

The definitions for Do Minimum scenario and committed schemes are based on the Project Appraisal Guidelines, which outlines that *"the Do-Minimum option should include those transportation facilities and services that are committed within the appraisal period"*. For committed schemes, the document identifies as *"improvements that have been progressed through planning and are either under construction or are programmed into the capital expenditure budget."*

Schemes coded under the Do Minimum Scenario includes:

- Committed road and traffic management schemes within the MetroLink's area of influence; and
- Committed Public Transport Schemes within the MetroLink's area of influence.

Further details on the schemes that have been included within the Do Committed Minimum scenario are contained within the TMP (ML1-JAI-TRA-ROUT_XX-PL-Y-00001).

4.3 Do Scheme Scenario

The Do Scheme scenarios for 2030, 2045 and 2060 contains the schemes coded for the respective years Do Minimum Scenarios plus the MetroLink scheme. The assumptions made for the MetroLink scheme for each forecast year is detailed in Table 4-1.

The MetroLink stations have been coded into the model in detail with walking links included within, which allow for modelling the impacts of the time taken to travel from the entrance to the station platforms.

Table 4-1 MetroLink - Modelling Assumptions

Attribute	2030/2045	2060
Service Pattern	Estuary P&R – Charlemont Charlemont – Estuary P&R	
Headways	All periods: 2mins	All periods: 90 secs
Fares	Integrated Ticketing	
Capacity (per vehicle)	Crush capacity: 500 Seat capacity: 125	
Crowding curve	ERM standard crowding curve for Luas/Metro used	
Waiting curve	Standard NTA wait curve	

Boarding penalties	10 min all modes
Transfer penalties	15 min to/from rail, also Dublin Bus to Dublin Bus 15min; all other 5mins

The current proposed alignment of the MetroLink is shown in Figure 4-2. The Dardistown station will only service the depot and not all services will stop at the station, accordingly the Dardistown station was coded as a “non-stopping” station within the model runs.

Figure 4-2 Preferred Metrolink Route

4.4 Sensitivity Scenarios

The following sensitivity tests have been undertaken for the MetroLink appraisal.

- Slow Growth;
- Low Frequency;
- Alternative Demand;
- Enhanced Transport Network: National Development Plan (NDP);
- Enhanced Transport Network: National Development Plan (NDP) + Alternative Demand; and
- Enhanced Transport Network: NTA Greater Dublin Area Strategy (GDA).

These scenarios show how sensitive the performance of the MetroLink is to slower growth, to operating a lower frequency service, to a change in travel behaviour (such as higher percentages of work from home), and finally how it performs where other proposed infrastructure and demand management measures are delivered over the lifetime of MetroLink.

Details of these sensitivity tests and their results are provided in Section 7 of this report.

4.5 Modelled Scenario Summary

35 model runs have been undertaken for the assessment of the MetroLink scheme Business Case. The scenarios cover the base year, opening year and forecasted years and a range of different sensitivity tests, as summarised in Table 4-2.

Full model results are contained within the Appendices of this report.

Table 4-2: MetroLink Modelled Scenarios

Model Year		Run Code	Description
2030	Business Case (Core)	ADC	2030 Do Minimum (DM)
	Business Case (Core)	ADD	2030 Do Scheme (DS)
	Slow Growth	ACN	2030 DM
	Slow Growth	ACO	2030 DS
	Low Frequency	ACT	2030 DS
	Alternative Demand	ADI	2030 DM
	Alternative Demand	ADJ	2030 DS
	Enhanced Network Do NDP	ACA	2030 DoNDP DM
	Enhanced Network Do NDP	ACB	2030 DoNDP DS
	Enhanced Network Do NDP + Alternative Demand	AFA	2030 Do NDP+AD DM
	Enhanced Network Do NDP + Alternative Demand	AFB	2030 Do NDP+AD DS
2045	Business Case (Core)	ADE	2045 Do Minimum (DM)
	Business Case (Core)	ADF	2045 Do Scheme (DS)
	Slow Growth	ACP	2045 DM
	Slow Growth	ACQ	2045 DS
	Low Frequency	ACU	2045 DS
	Alternative Demand	ADK	2045 DM
	Alternative Demand	ADL	2045 DS
	Enhanced Network Do NDP	ADS	2045 DoNDP DM
	Enhanced Network Do NDP	ADT	2045 DoNDP DS
	Enhanced Network Do GDA	ACC	2045 DoGDA DM
	Enhanced Network Do GDA	ACD	2045 DoGDA DS
	Enhanced Network Do NDP + Alternative Demand	AFC	2045 Do NDP+AD DM
	Enhanced Network Do NDP + Alternative Demand	AFD	2045 Do NDP+AD DS
2060	Business Case (Core)	ADG	2060 Do Minimum (DM)
	Business Case (Core)	ADH	2060 Do Scheme (DS)
	Slow Growth	ACR	2060 DM
	Slow Growth	ACS	2060 DS
	Low Frequency	ACV	2060 DS

	Alternative Demand	ADM	2060 DM
	Alternative Demand	ADN	2060 DS
	Enhanced Network Do GDA	ACE	2060 DoGDA DM
	Enhanced Network Do GDA	JAAF	2060 DoGDA DS
	Enhanced Network Do NDP + Alternative Demand	AFE	2060 Do NDP+AD DM
	Enhanced Network Do NDP + Alternative Demand	AFF	2060 Do NDP+AD DS

5. Model Validation/Calibration

This section provides an overview of the NTA ERM model validation along with the convergence statistics for the modelling undertaken for the MetroLink project.

5.1 NTA Model

Details on calibration and validation of the NTA's ERM model is contained with the model development report (Regional Modelling System Model Development Report – East Regional Model (Model Version 3), with reference to section 13 of that report, the following is noted:

"The model was developed, calibrated and validated in line with current transport modelling guidance, primarily from United Kingdom Department for Transport's Transport Analysis Guidance, building on the work undertaken to deliver Version 2 of the RMS in 2016/2017. Each component was developed using the best available data, such as the 2016 Census, National Household Travel Survey, recent traffic and passenger volume data, standard PT timetable data formats such as Google(sic)[1] Transit Feed Specification and GPS-based journey time data."

It further notes the following,

"The ERM was calibrated and validated against the recommended criteria set out in the UK TAG. The level of calibration and validation achieved across each of the model components is of a high standard when considering the model scale and type."

5.2 MetroLink Model

ERM incorporates a variable demand model which is run for a fixed number of iterations. Overall and by-mode convergence statistics have been calculated using standard processes which reported convergence measures (GAP) for each of the iterations. The size of GAP values typically increase as forecasts are made over longer periods, so 2045 values are typically larger than those for 2030 results. A separate analysis was undertaken for the MetroLink to identify if there were significant variations in flows between the penultimate and final iterations of the demand model, refer to Section 8.4 of this report.

For the Business Case Core runs the difference in total 12-hour MetroLink trips is small (2.4% in 2030 and 3.7% in 2045). For NDP runs lower percentage differences are obtained (0.2% in 2030 and 2.1% in 2045). The largest flow differences typically occur on the Estuary-Airport section of MetroLink. This is because the congestion in the M1 and R132 area contributes to changes in choices between road and PT modes (and also between use of MetroLink and DART routes into city centre) between the iterations of the demand model.

As the capacity constraint mechanism does not strongly constrain the use of the Estuary Park and Ride facility in line with its available capacity this also contributes to changes between iterations. This is seen as oscillations between the Park and Ride site being underloaded and overloaded on consecutive iterations. The effect of overloading of the Estuary Park and Ride facility is considered further in Section 8.2.

The values obtained for convergence are typical for a model of this size and complexity operating over a medium length forecast period in urban congested conditions. The error range in forecast MetroLink usage

[1] GTFS – General Transit Feed Specification.

arising due to model convergence, at below 4%, is small when compared with the uncertainties of demographic and economic growth over that period. The same would still be the case if the percentage of excess MetroLink trips were added into the convergence percentage error.

Table 5-1: MetroLink Model Convergence Summary - Core Scenarios

Run	Overall GAP					
	AM	LT	SR	PM	OP	Overall
2030 Core Do Minimum	0.62	1.15	0.71	0.65	1.64	**0.78**
2030 Core Do Scheme	0.98	2.32	1.00	1.25	1.75	**1.31**
2045 Core Do Minimum	0.99	1.26	1.37	1.02	1.88	**1.16**
2045 Core Do Scheme	1.27	3.40	1.68	1.77	1.87	**1.87**
2060 Core Do Minimum	1.72	3.21	4.52	1.58	1.86	**2.51**
2060 Core Do Scheme	2.99	2.02	4.67	2.78	1.96	**3.06**

6. MetroLink Modelling Results: Core Run Analysis

6.1 Introduction

The Core runs have been modelled for the years 2030, 2045 and 2060. This section will present details of the following:

- Loading Profiles;
- Overall Network Statistics (Road and Public Transport Networks);
- Boarding and Alighting Numbers;
- Mode Share (including percentage change per zone);
- Public Transport Network Analysis (including Link Flows, Journey Time analysis, Transfers to and from MetroLink and Passenger Profiles); and,
- Road Network Analysis (including Link Flows, Volume Capacity Ratio and Delay Impacts).

Model outputs for all time periods can be found in Appendix A.

6.2 Loading Profile

Figure 6-1 and Figure 6-2 show the AM peak period load passengers in each direction for all three forecast years. Figure 6-3 and Figure 6-4 illustrate the PM peak load passengers in each direction. LT and SR results are contained in Appendix A and the accompanying spreadsheet.

The loading profile for each year follows a similar trend, increasing in volume each year respectively as a result of the increase in population and jobs in the surrounding area, as noted in Section 3.2.

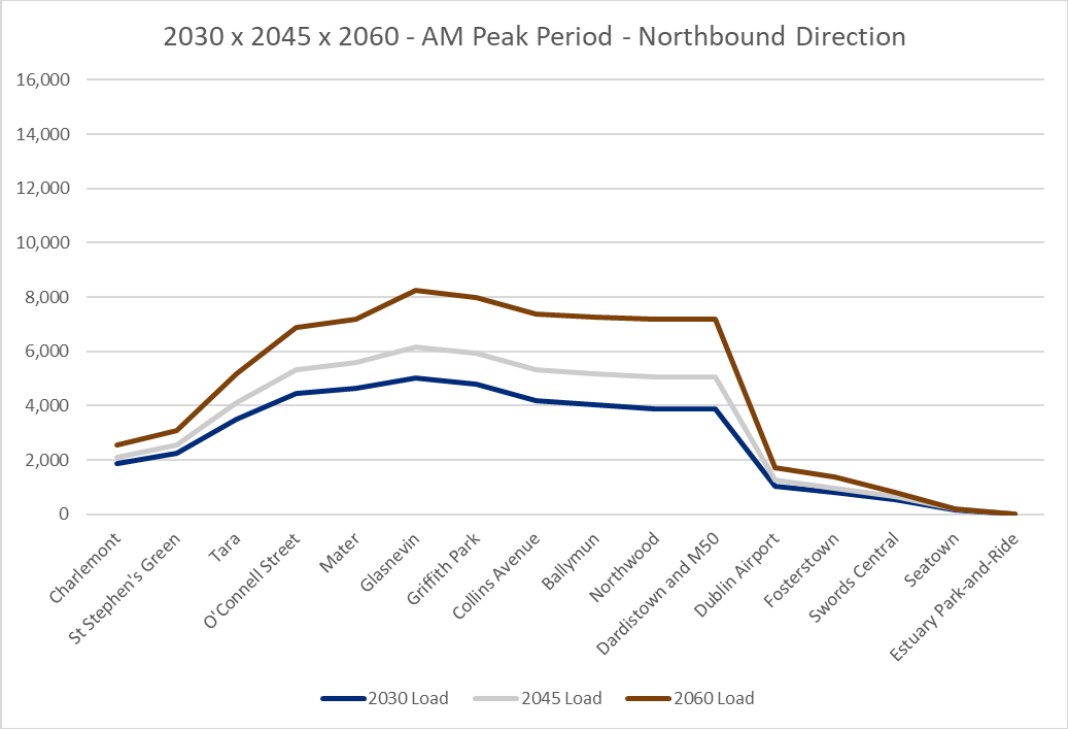

Figure 6-1: AM Peak Period - Northbound MetroLink Forecast Line Flows

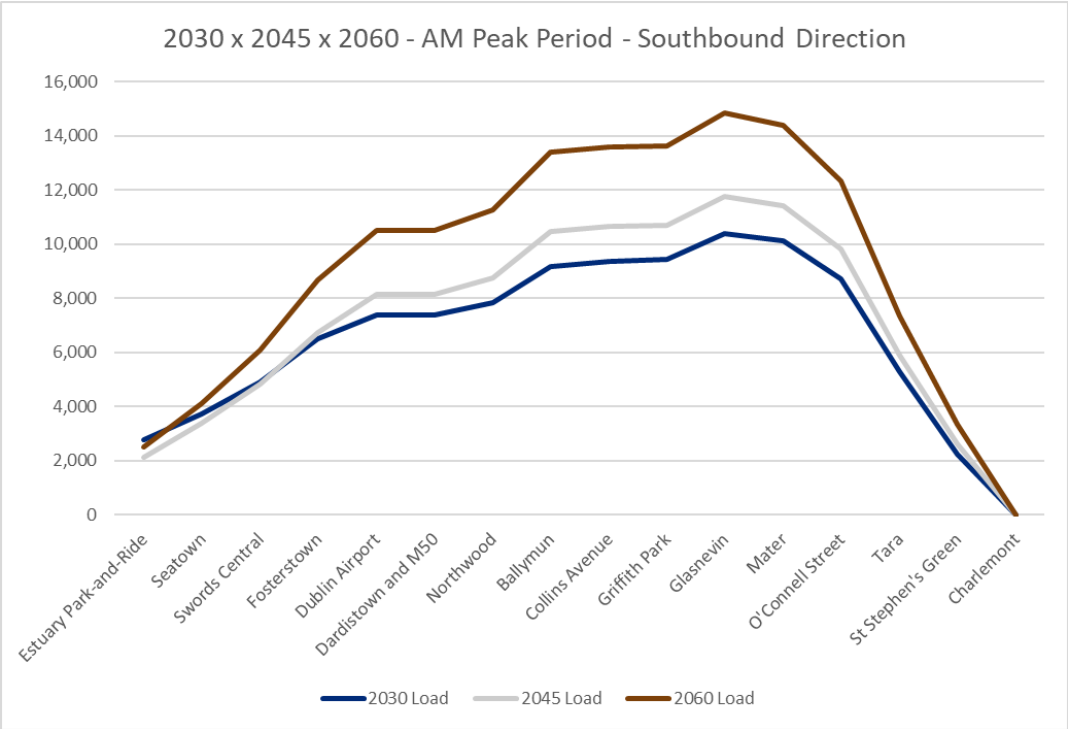

Figure 6-2: AM Peak Period – Southbound MetroLink Forecast Line Flows

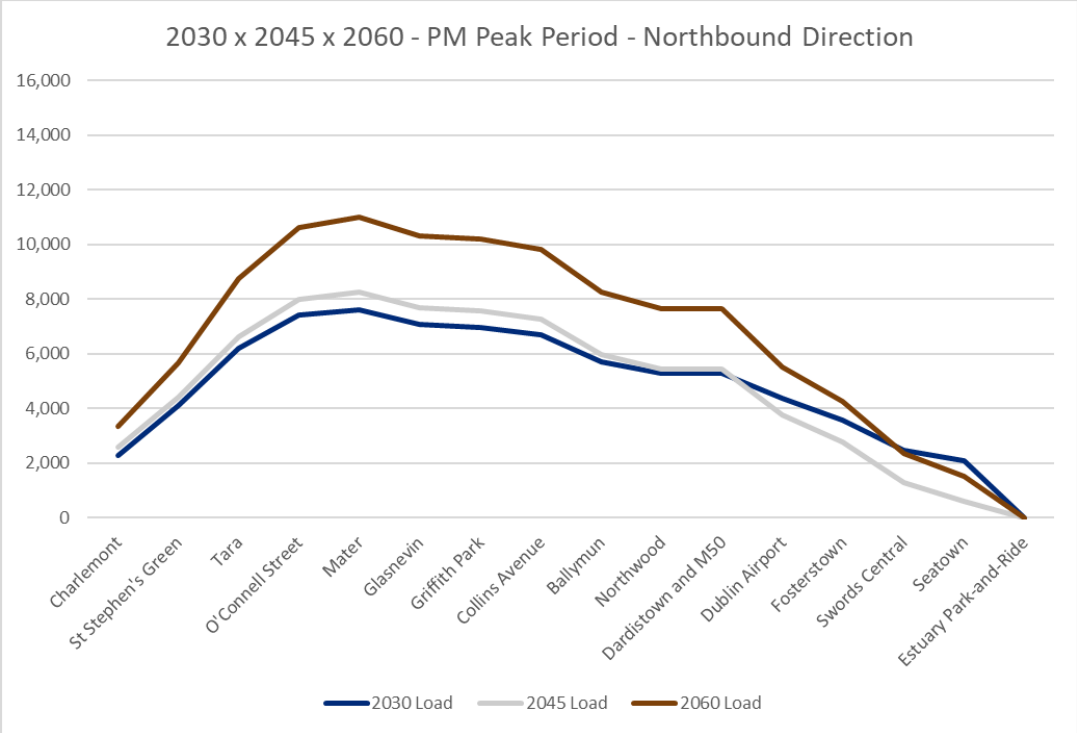

Figure 6-3: PM Peak Period MetroLink Forecast Line Flows

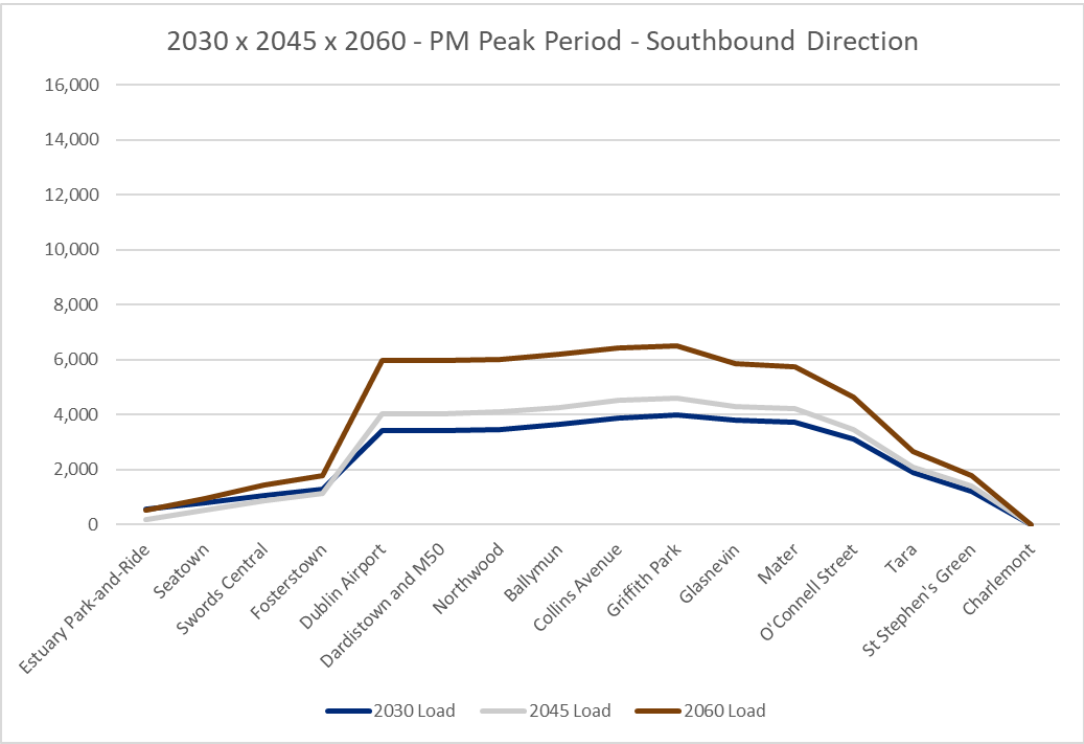

Figure 6-4: PM Peak Period MetroLink Forecast Line Flows

6.3 Boarding and Alighting Numbers

The 12-hour boarding and alighting totals on the MetroLink are shown in Figure 6-5. The boardings and alightings at each station generally increase across the modelled years. Total 12-hour boardings go from 128,182 in 2030 to 156,091 in 2045 (an increase of 21.8% between these years), then to 208,815 in 2060 (an increase of 33.8% between 2045 and 2060).

The busiest stations across the all the model periods are, Dublin Airport, Tara Street, Charlemont and O'Connell Street. The Dardistown station is currently only scheduled to operate as a stop for the depot and has been treated as a non-stopping station within the Business Case runs.

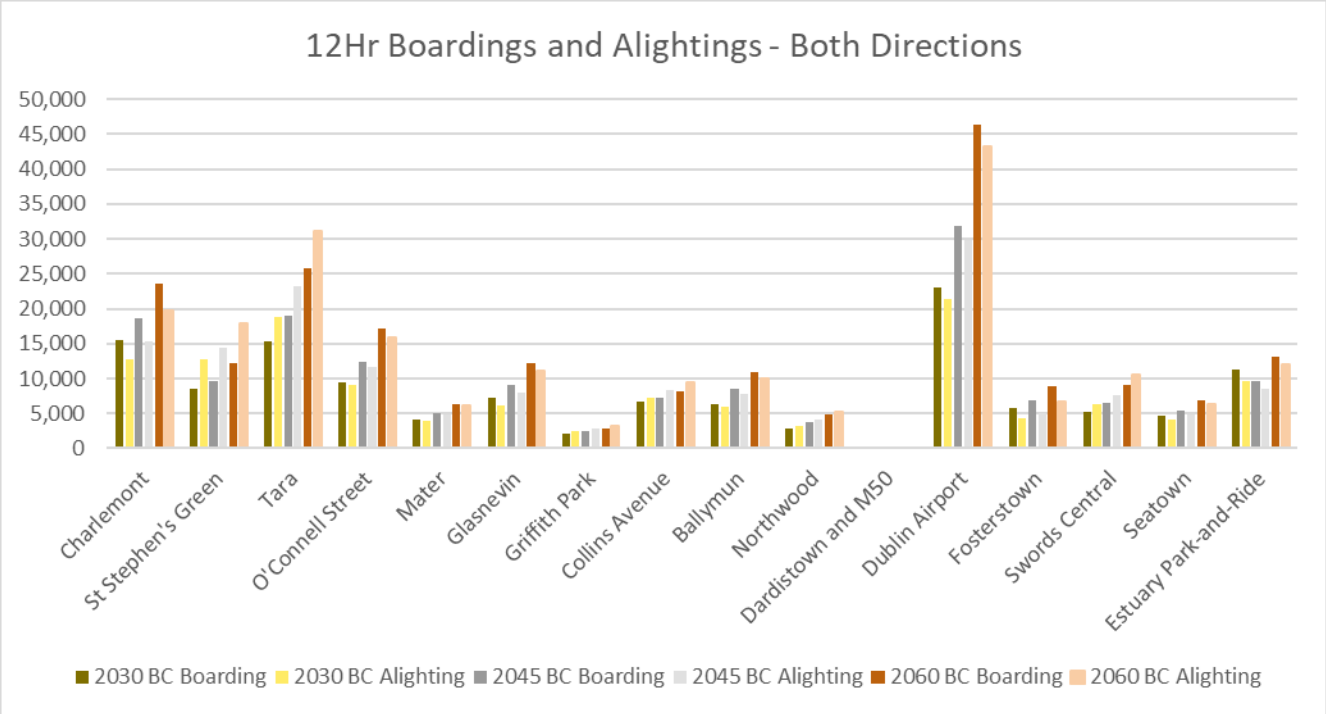

Figure 6-5: 12hr Boarding and Alighting

6.4 Overall Network Statistics

A high-level summary of network statistics for the model comparing the Do Minimum and Do Scheme scenarios for the AM and PM periods are presented in Table 6-1 and Table 6-2. A reduction can be seen in the road time travel and distance travelled in the AM and PM periods when comparing the Do Minimum and Do Scheme scenarios, which can be attributed to the reduction of congestion across areas of the network where people are switching to use the proposed scheme and Park and Ride facilities. The average road network speed increases as a result of the Do Scheme, which can also be related to congestion reduction across the network.

Table 6-1: AM Peak Period Summary Network Statistics

Network Statistics	2030		2045		2060	
	Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do Scheme
Total Road Travel Time (pcu.hrs)	159,726	158,880	190,863	186,057	222,682	214,052
Total Road Distance Travelled (pcu.km)	7,291,245	7,304,301	8,291,512	8,096,762	9,177,830	8,879,845
Average Road Network Speed (kph)	46	46	43	44	41	42

Table 6-2: PM Peak Period Summary Network Statistics

Network Statistics	2030		2045		2060	
	Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do scheme
Total Road Travel Time (pcu.hrs)	147,706	147,901	173,126	168,007	198,474	188,643
Total Road Distance Travelled (pcu.km)	6,979,879	6,999,539	7,834,600	7,628,528	8,598,786	8,260,824
Average Road Network Speed (kph)	47	47	45	45	43	44

Table 6-3 presents the public network statistics in the Do Minimum and Do Scheme scenarios in 2030, 2045 and 2060 during the AM 3h period, with Table 6-4 presenting the PM 3h period statistics. In all scenarios, the total passenger km is higher in the PM period. When comparing the two scenarios during the AM period, there is a reduction of approximately 232,000 passenger km by bus when MetroLink is in place in 2030. This increases to a reduction of almost 235,000 passenger km in 2045, and a reduction of over 228,000 passenger km by bus in 2060 when MetroLink is in place. In total, there is an increase of approximately 122,000 passenger km between the Do Minimum and Do Scheme scenarios in 2030 AM period. In 2045, the total passenger km travelled increases by approximately 266,000 when comparing the two scenarios. In 2060, the total passenger km travelled over the AM period increases by over 518,000 when MetroLink is in place, illustrating the positive shift towards public transport use in this scenario.

Table 6-3: AM 3h Period Public Transport Network Statistics

Network Statistics	Mode	2030		2045		2060	
		Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do Scheme
Passenger Km	**Bus**	1,838,414	1,606,171	2,036,484	1,802,215	2,294,383	2,066,119
	Rail	1,522,848	1,500,272	1,868,167	1,934,494	2,327,160	2,504,802
	Luas	355,837	344,336	416,153	410,426	491,839	489,818
	Metro	-	388,346	-	440,156	-	570,870
	Total	3,717,099	3,839,124	4,320,804	4,587,291	5,113,382	5,631,609

When comparing the two scenarios during the PM 3h period, there is a reduction of approximately 202,000 passenger km by bus when MetroLink is in place in 2030. There is a reduction of almost 175,000 passenger km in both 2045 and 2060 when MetroLink is in place. In total, there is an increase of approximately 129,000 passenger km between the Do Minimum and Do Scheme scenarios in 2030 PM peak period. In 2045, the total passenger km travelled increases by approximately 245,000 when comparing the two scenarios. In 2060, the total passenger km travelled over the PM period increases by almost 468,000 when MetroLink is in place, illustrating the positive shift towards public transport use in this scenario.

Table 6-4: PM 3hr Period Public Transport Network Statistics

Network Statistics	Mode	2030		2045		2060	
		Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do Scheme
Passenger Km	Bus	1,829,062	1,627,921	2,005,246	1,830,269	2,231,740	2,057,119
	Rail	1,795,866	1,786,709	2,205,257	2,272,131	2,690,532	2,832,831
	Luas	336,412	329,602	396,009	391,745	469,318	467,359
	Metro	-	345,863	-	357,112	-	502,228
	Total	3,961,340	4,090,094	4,606,512	4,851,257	5,391,591	5,859,537

6.5 Mode Share

Mode share comparisons between the Do Minimum and Do Scheme scenarios have been undertaken to understand the percentage change in modal split between the two scenarios. Similarly, comparisons have also been undertaken to understand the percentage change in modal split from 2030, to 2045 and 2060. Do Minimum and Do Scheme mode split over 12hrs is shown in Table 6-5.

Table 6-5: DM -DS Summary of Mode Split in Business Case Runs – 12hrs

	2030		2045		2060	
Do Minimum						
	12hr (No. of Trips)	% Mode Split	12hr (No. of Trips)	% Mode Split	12hr (No. of Trips)	% Mode Split
PT	780,914	12.15%	911,292	12,68%	1,066,792	13.41%
Road	4,189,107	65.16%	4,611,483	64.15%	4,990,056	62.71%
Cycle	142,195	2.21%	168,819	2.35%	201,028	2.53%
Walk	1,316,388	20.48%	1,497,306	20.83%	1,700,026	21.36%
Total	6,428,604		7,188,900		7,957,902	

Do Scheme						
PT (Incl Metro)	821,336	12.73%	958,484	13.32%	1,140,466	14.28%
Road	4,188,280	64.9%	4,584,785	63.68%	4,950,080	62%
Cycle	138,473	2.15%	164,487	2.28%	195,001	2.44%
Walk	1,305,039	20.22%	1,491,281	20.71%	1,698,695	21.28%
Total	6,453,128		7,199,037		7,984,242	

In 2030, the mode share of PT (including Metro) increases from 12.15% to 12.73% in the Do Scheme scenario. In 2030. In the 2045 scenario, PT (including Metro) increases its mode share by 0.6% between the Do Minimum and Do Scheme scenarios, whilst Road mode share decreases by 0.5%, indicating a modal shift from private vehicles to public transport when MetroLink is in place. In 2060, the PT (including Metro) increases its mode share from 13.41% in the Do Minimum scenario, to 14.28% in the Do Scheme scenario, whereas the Road mode share falls by 0.71%.

6.5.1 Percentage change

Figure 6-6 to Figure 6-8 illustrates the percentage change in road mode share per zone surrounding the scheme alignment, in the AM period.

Throughout the design years, road mode share reduces by up to 5% in a number of zones to the east of the alignment, in areas such as Malahide, and in zones to the south of the M50. At Dublin Airport, the road mode share decreases by up to 30% in 2060. Similarly, when Metro Link is in place, the road mode share falls by up to 10% around Swords.

Figure 6-9 to Figure 6-11 illustrates the public transport (including MetroLink) mode share change along the alignment. The largest increase in mode share can be seen at Estuary station, with an increase of 30%-40% in all years.

With the road mode share reductions seen at Swords and Dublin Airport, there is a corresponding increase in PT (including MetroLink) mode share. An increase of 5%-20% can be seen in zones in the Swords area, with Dublin Airport seeing an increase of between 10% and 30% in 2060

Figure 6-12 to Figure 6-17 illustrate the percentage mode share change between the Do Minimum and Do Scheme scenarios in the PM peak, with Figure 6-12 to Figure 6-14 presenting the change in Road mode share per zone, and Figure 6-15 to Figure 6-17 presenting the change in public transport (including MetroLink). As with the AM period, Road mode share decreases by up to 30% across all years in the zones at Estuary station as a result of the Park and Ride facility at this station. Similar decreases can be seen in the zones at Dublin Airport, where the largest number of MetroLink boarding and alighting passengers occur.

As with the AM period, the largest increases in mode share of public transport (including MetroLink) can be seen at stations along the R132 (in particular, Estuary station) and at Dublin Airport. The MetroLink corridor at Ballymun and Dublin City University also sees increases of between 5% and 20% as a result of MetroLink.

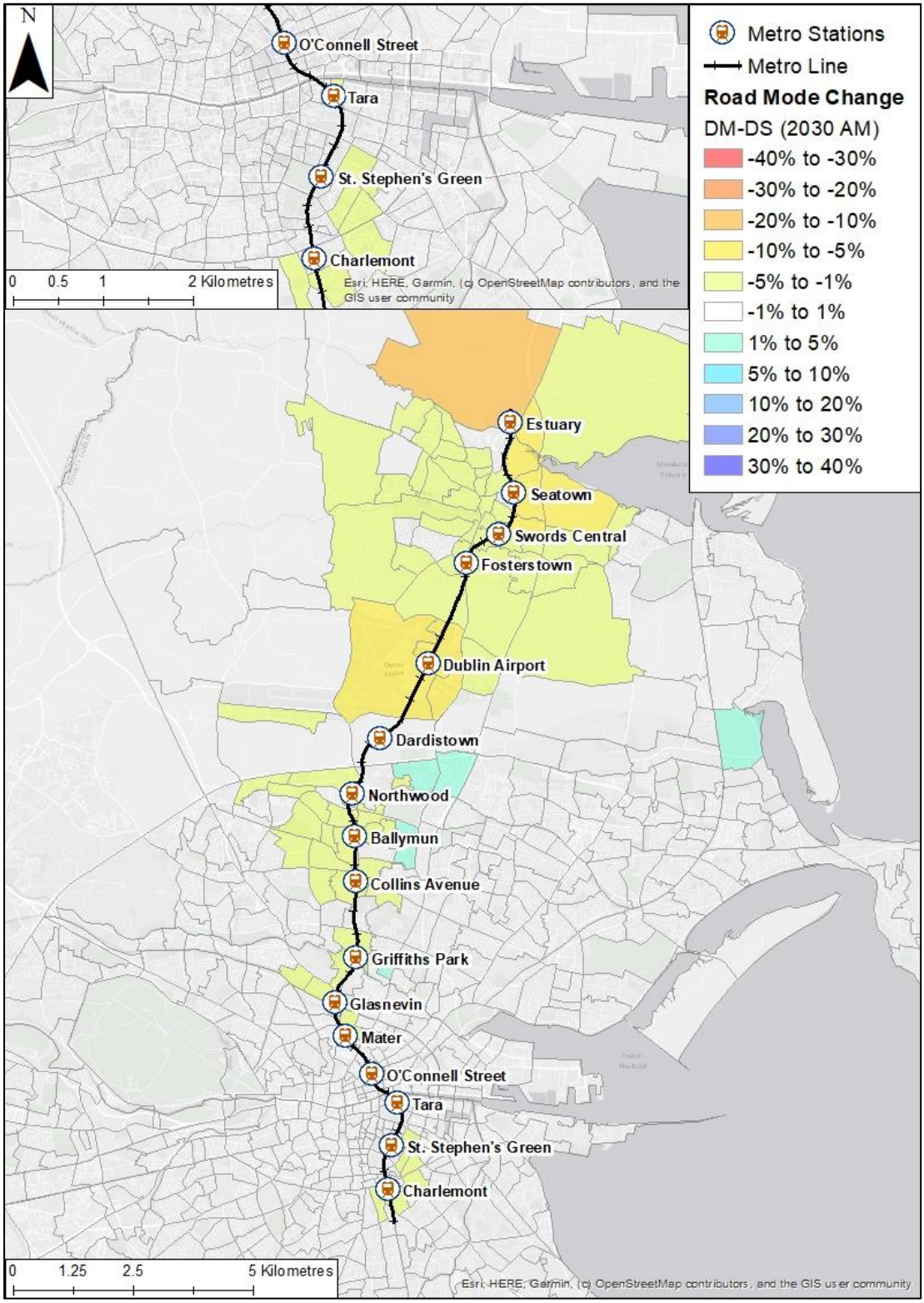

Figure 6-6: Road Mode Share Change between Do Minimum and Do Scheme scenarios – 2030 AM

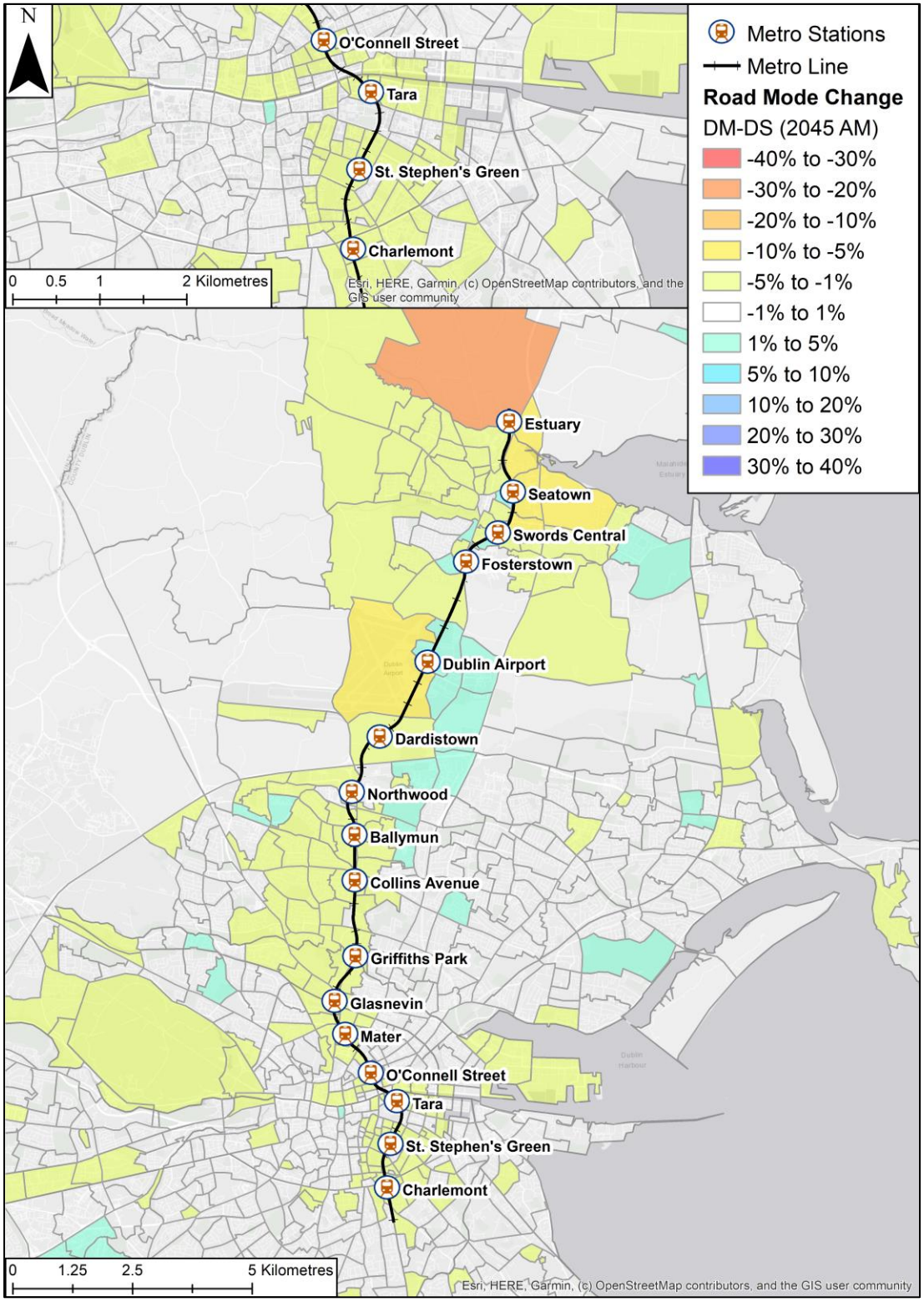

Figure 6-7: Road Mode Share Change between Do Minimum and Do Scheme scenarios – 2045 AM

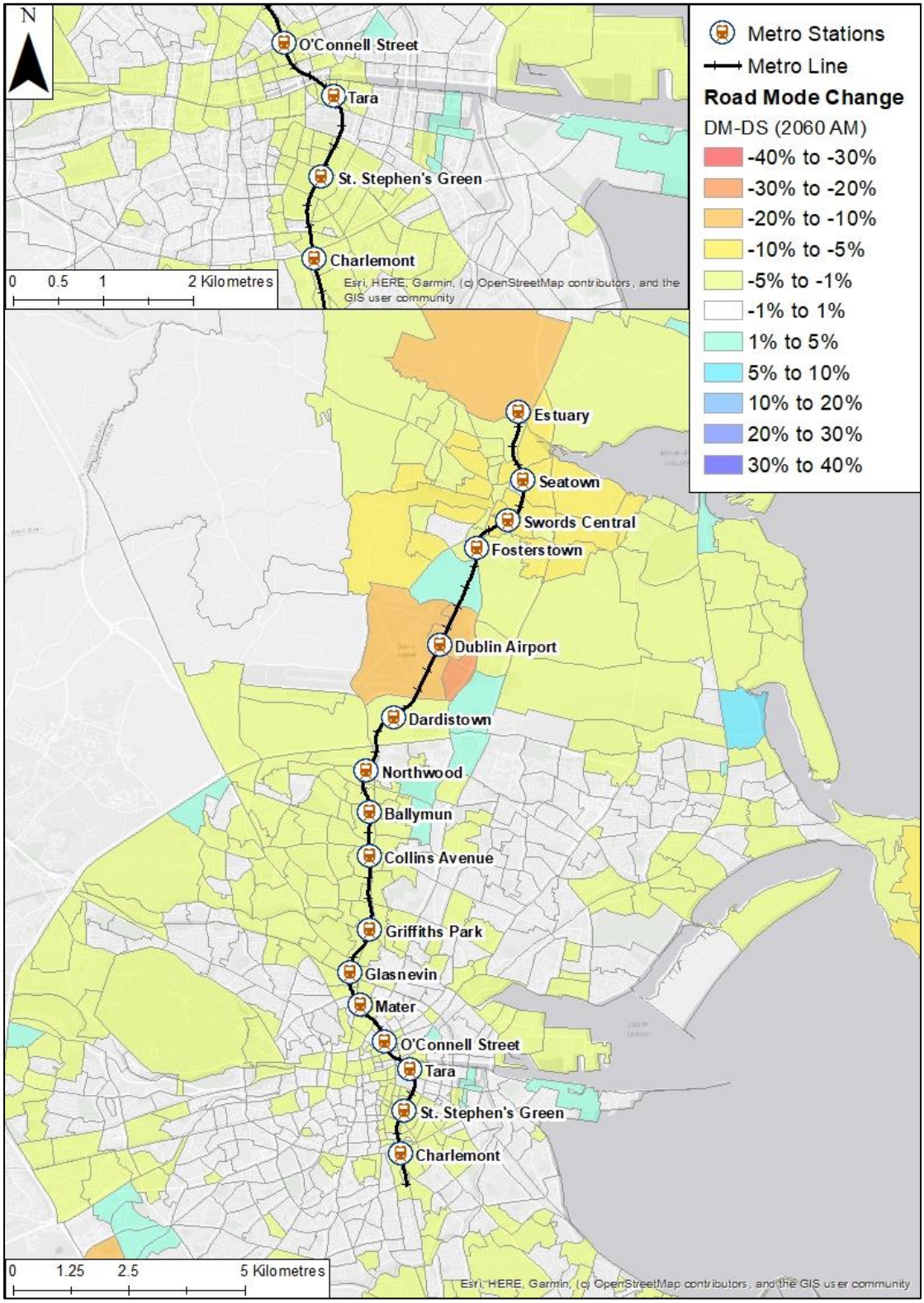

Figure 6-8: Road Mode Share Change between Do Minimum and Do Scheme scenarios – 2060 AM

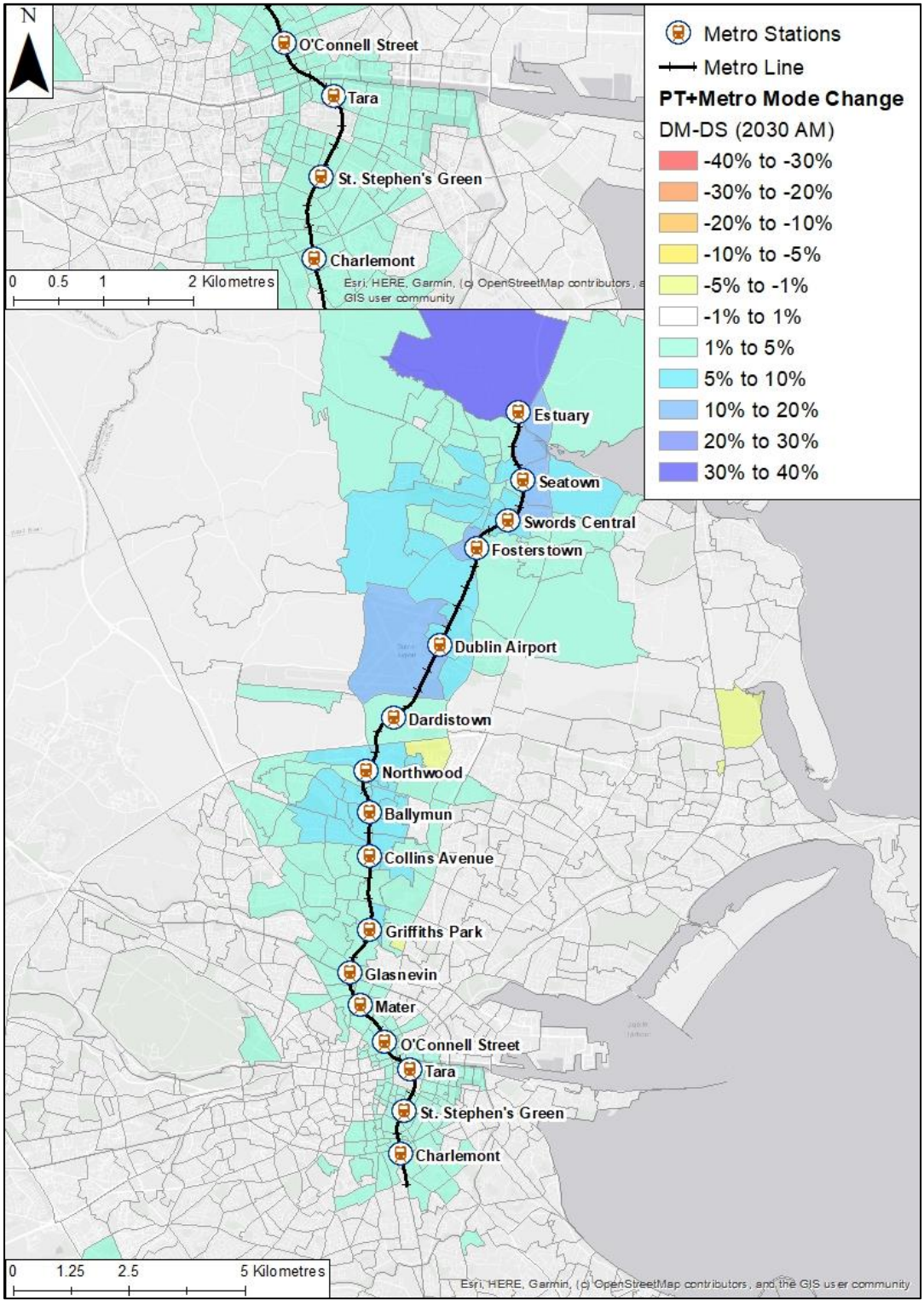

Figure 6-9: PT (Including MetroLink) Mode Share Change between Do Minimum and Do Scheme scenarios – 2030 AM

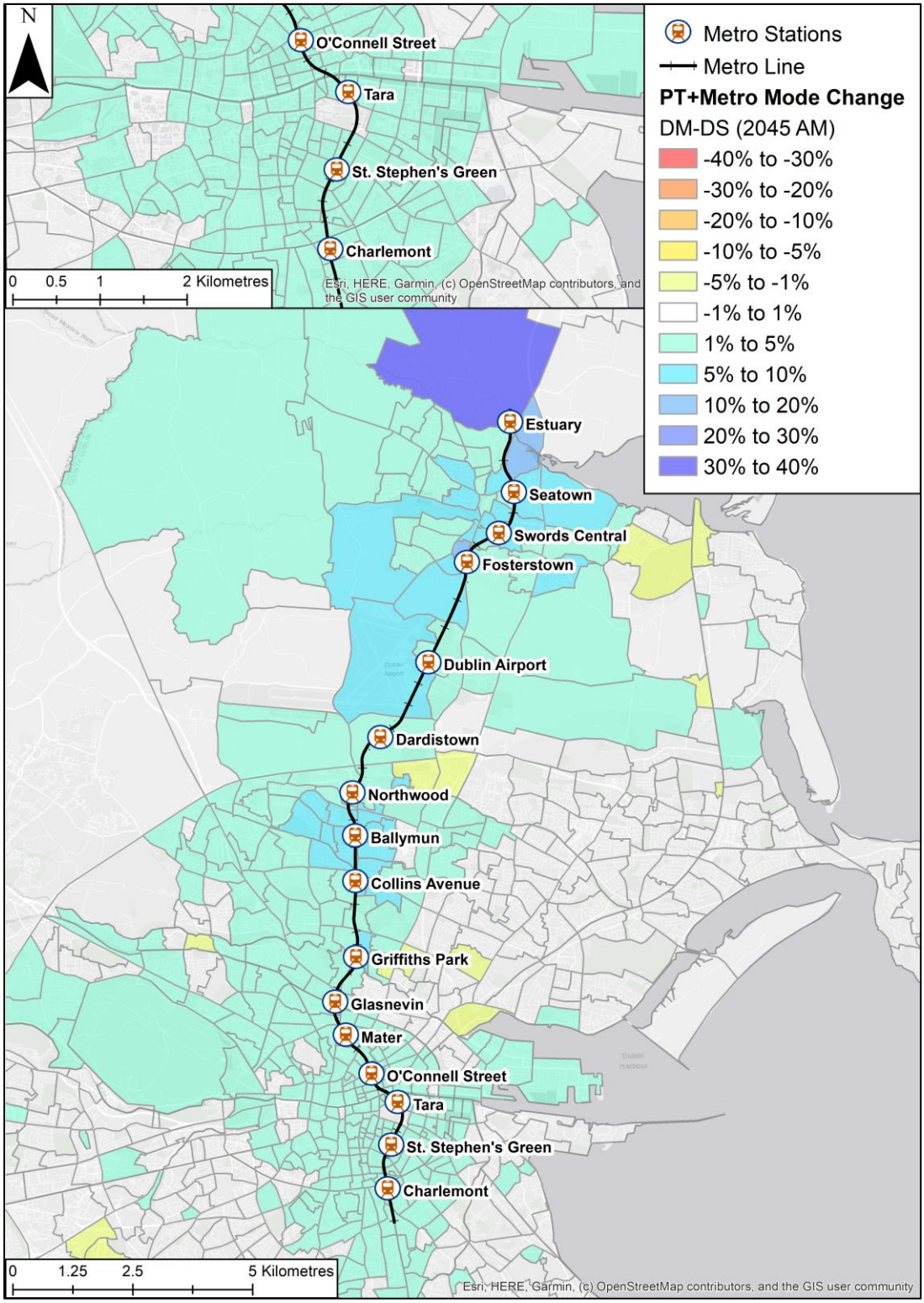

Figure 6-10: PT (Including MetroLink) Mode Share Change between Do Minimum and Do Scheme scenarios – 2045 AM

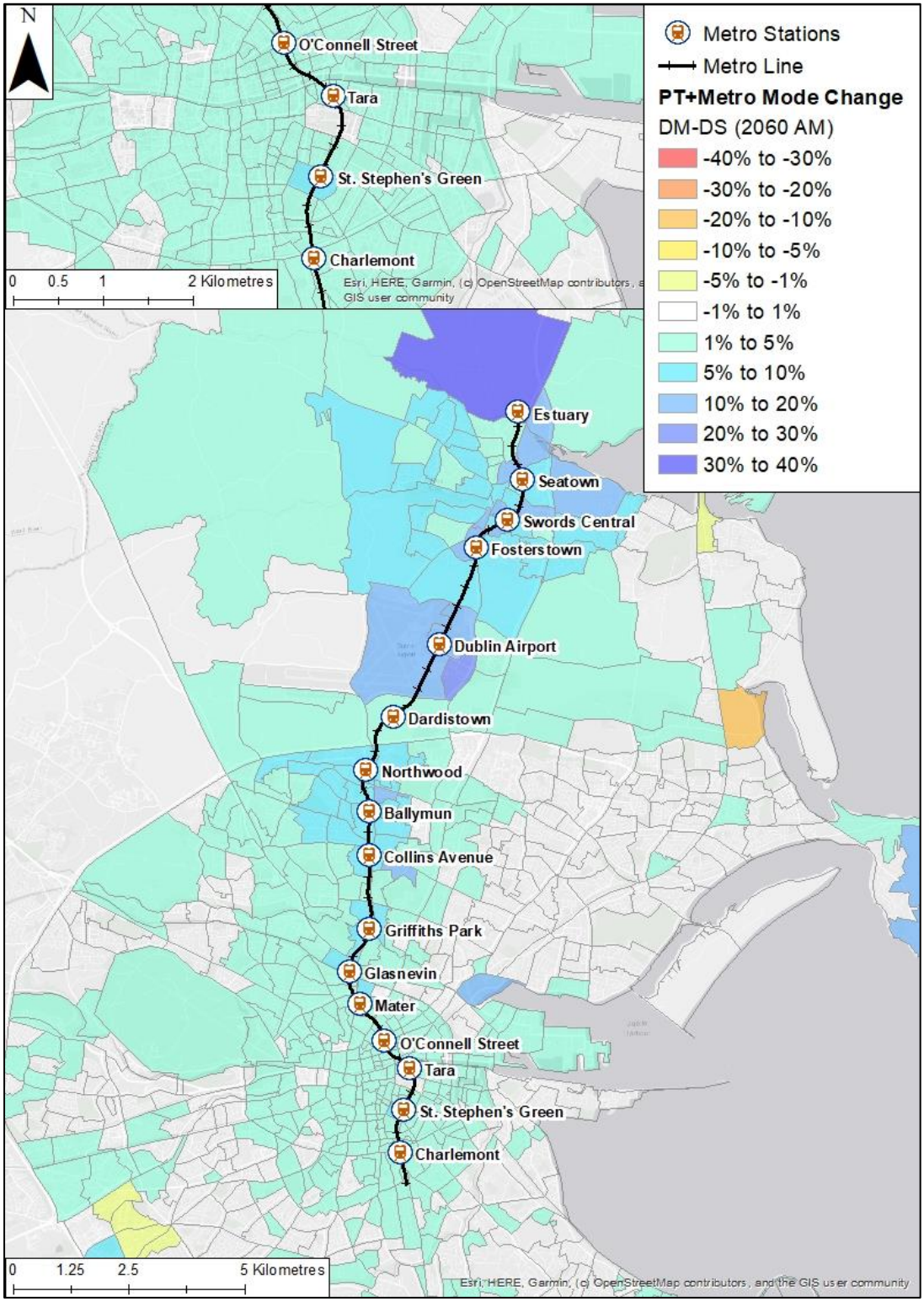

Figure 6-11: PT (Including MetroLink) Mode Share Change between Do Minimum and Do Scheme scenarios – 2060 AM

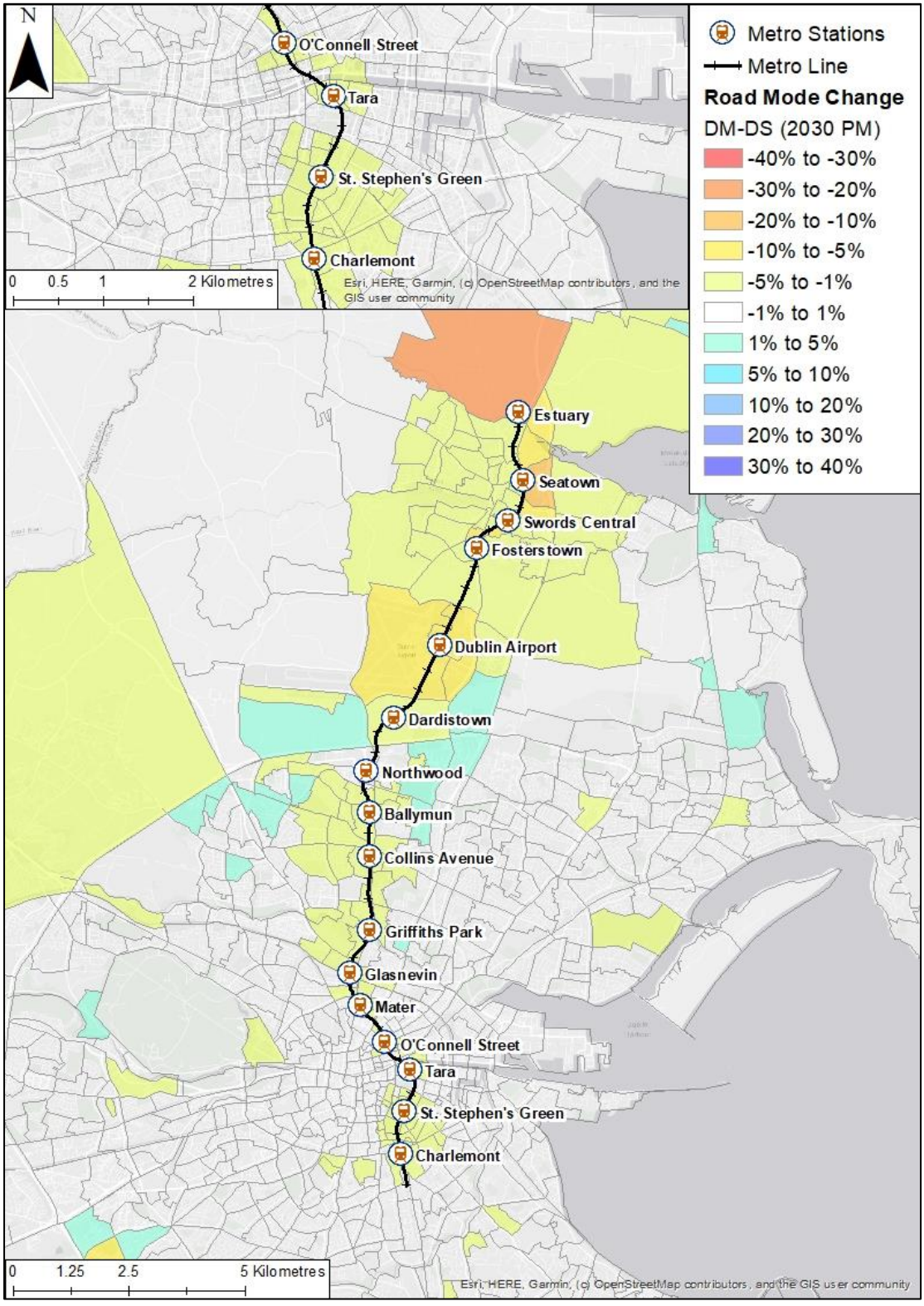

Figure 6-12: Road Mode Share Change between Do Minimum and Do Scheme scenarios – 2030 PM

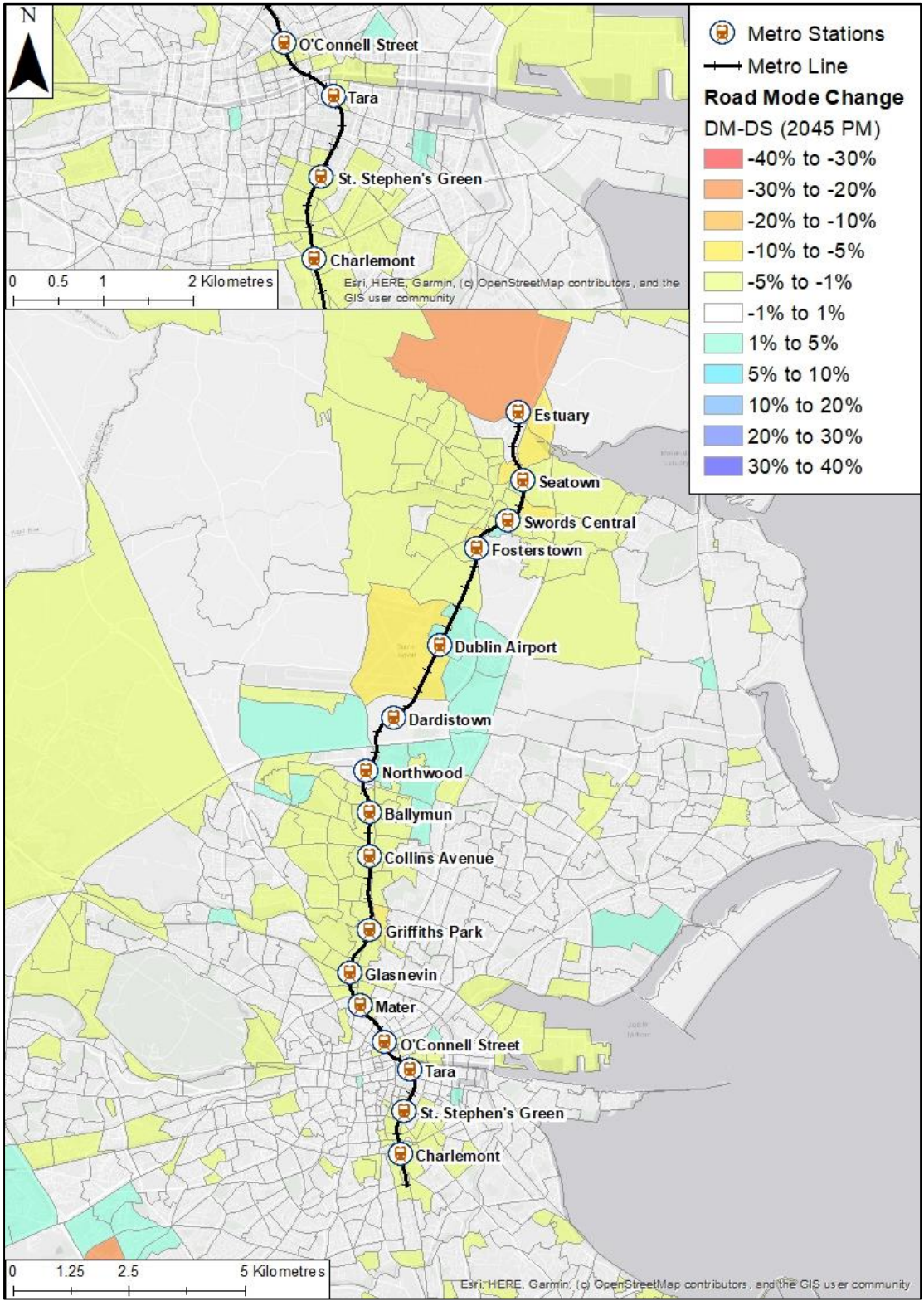

Figure 6-13: Road Mode Share Change between Do Minimum and Do Scheme scenarios – 2045 PM

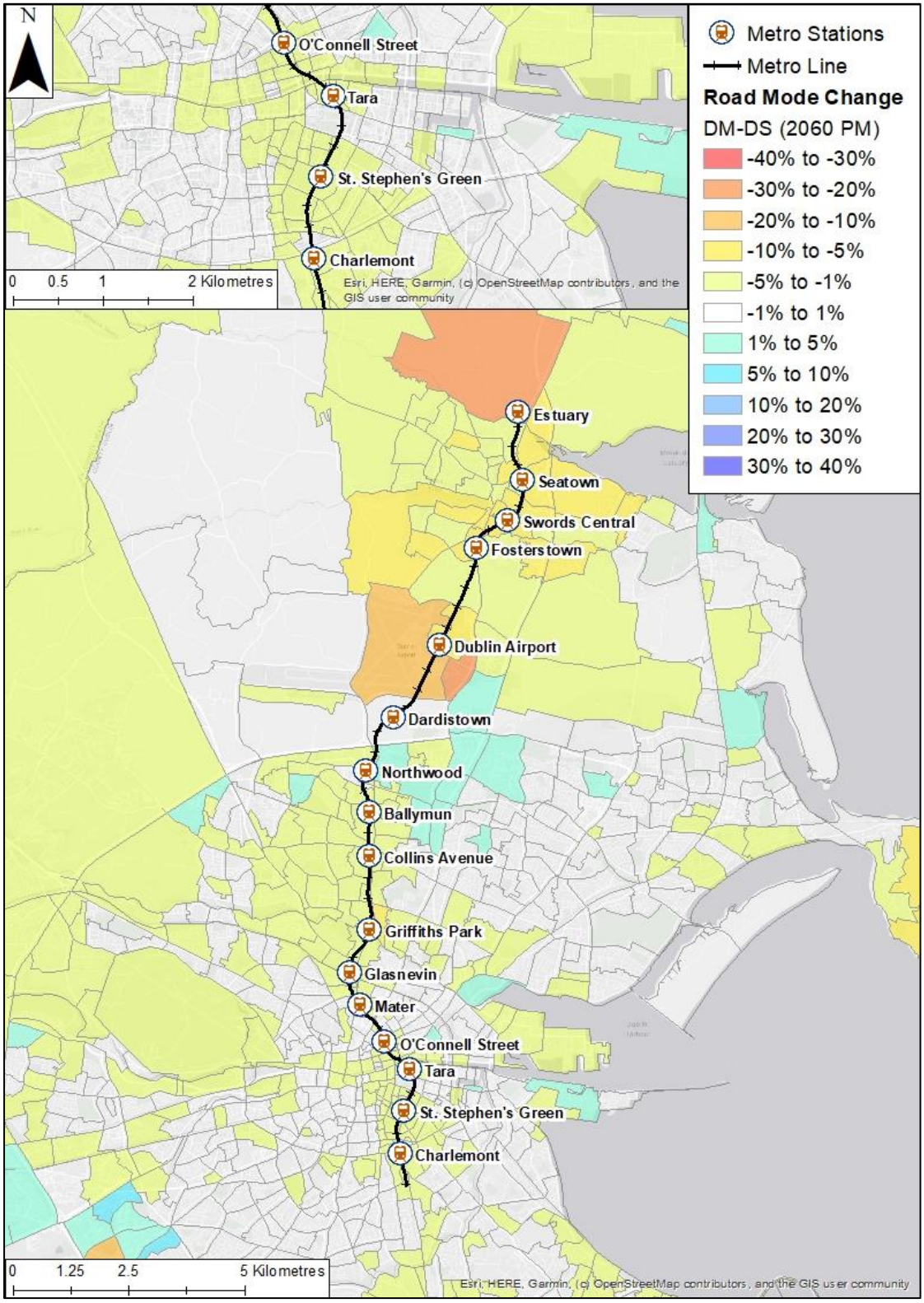

Figure 6-14: Road Mode Share Change between Do Minimum and Do Scheme scenarios – 2060 PM

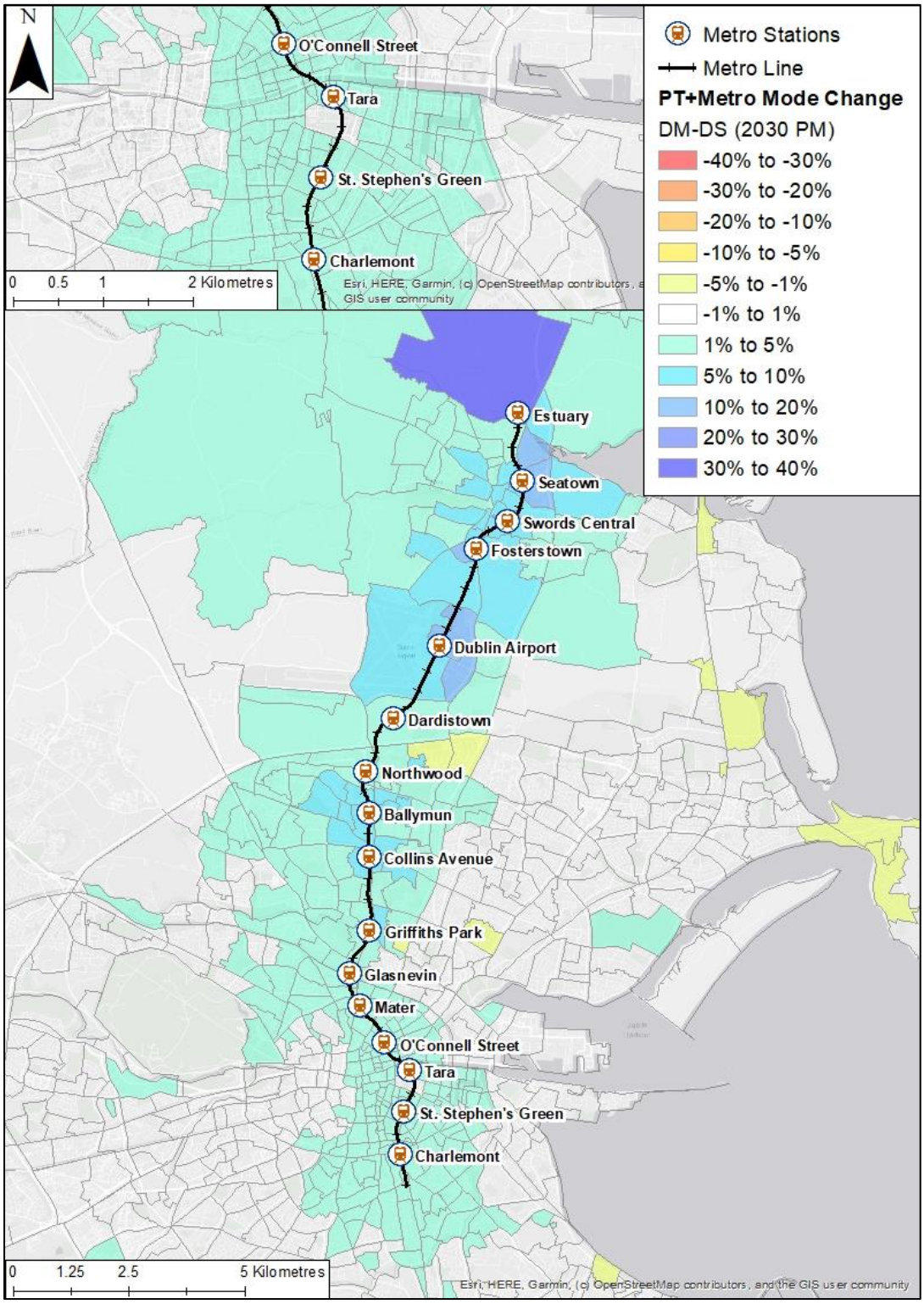
N
Metro Stations
Metro Line
PT+Metro Mode Change
DM-DS (2030 PM)
-40% to -30%
-30% to -20%
-20% to -10%
-10% to -5%
-5% to -1%
-1% to 1%
1% to 5%
5% to 10%
10% to 20%
20% to 30%
30% to 40%
O'Connell Street
Tara
St. Stephen's Green
Charlemont
0 0.5 1 2 Kilometres
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Estuary
Seatown
Swords Central
Fosterstown
Dublin Airport
Dardistown
Northwood
Ballymun
Collins Avenue
Griffiths Park
Glasnevin
Mater
O'Connell Street
Tara
St. Stephen's Green
Charlemont
0 1.25 2.5 5 Kilometres
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Figure 6-15: PT (including MetroLink) Mode Share Change between Do Minimum and Do Scheme scenarios – 2030 PM

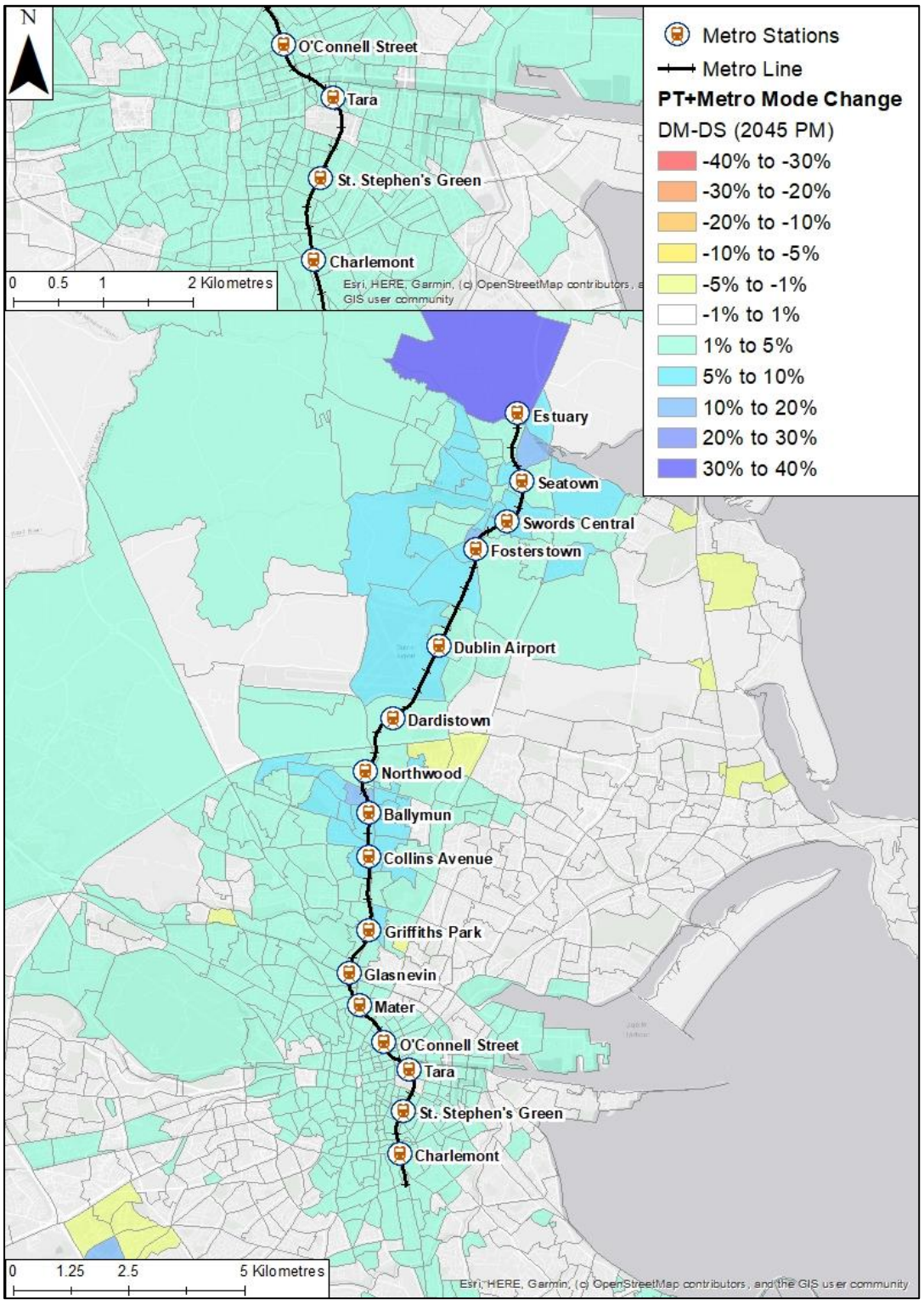

Figure 6-16: PT (including MetroLink) Mode Share Change between Do Minimum and Do Scheme scenarios – 2045 PM

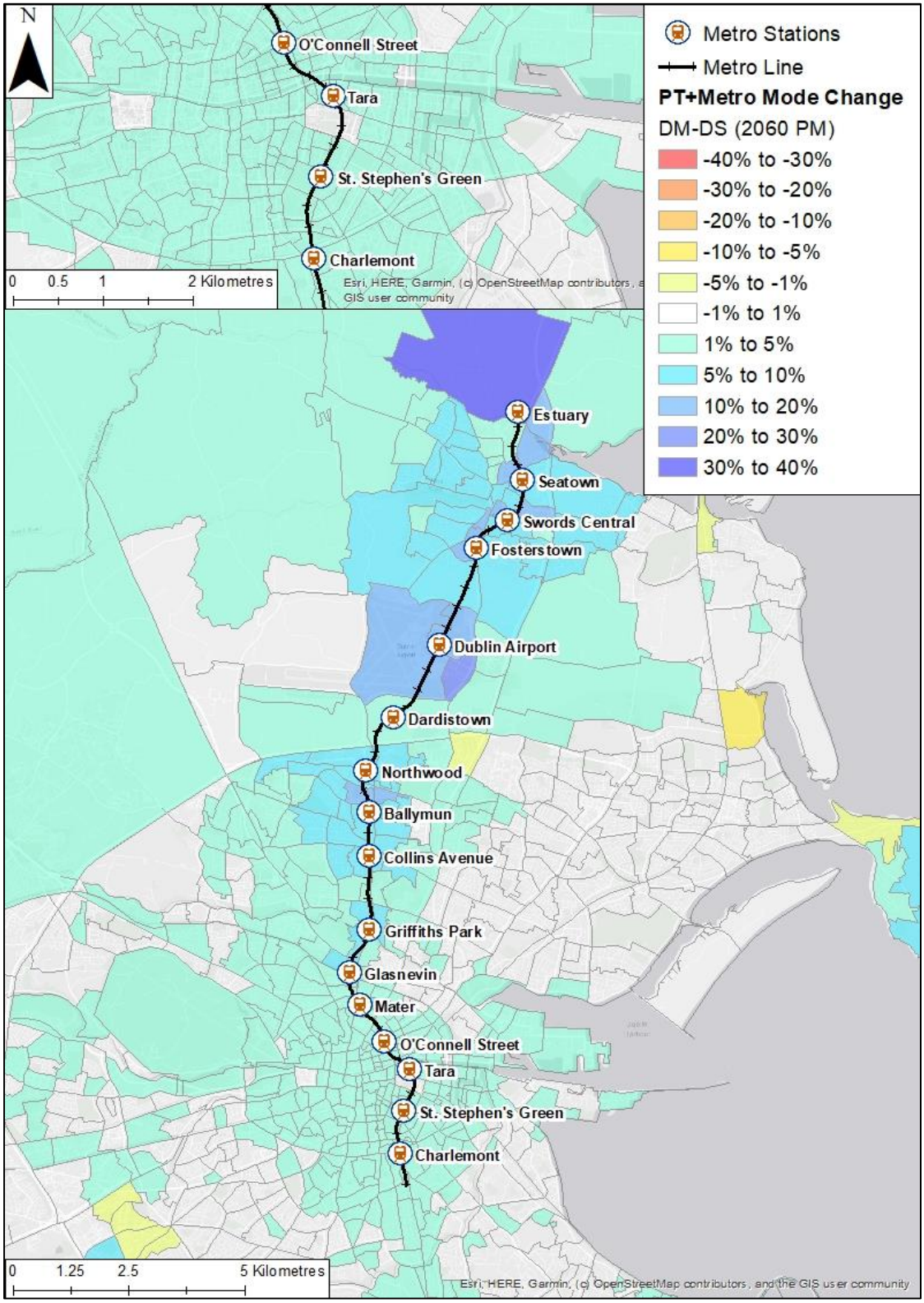

Figure 6-17: PT (including MetroLink) Mode Share Change between Do Minimum and Do Scheme scenarios – 2060 PM

6.6 Public Transport Network Analysis

6.6.1 Public Transport Link Flows

Figure 6-18 to Figure 6-19 illustrates the change in public transport flows in the AM and PM peaks when MetroLink is in place. Blue lines represent an increase in public transport flow, whereas green lines represent a reduction in flow. Figure 6-18 illustrates changes to the bus network only, whereas Figure 6-19 illustrates changes in flow with MetroLink included.

Large reductions on the bus network can be seen along the M50 Port Tunnel towards Dublin Airport, with a complementary large uptake in MetroLink use across all years. Reductions on the bus network can also be seen along the Ballymun corridor, where the MetroLink alignment is proposed to run. Increases in flows can also be seen to the north and south of the alignment, indicating areas of interchange with MetroLink.

Table 6-6 and Table 6-7 present the changes in public transport flows as result of MetroLink, during the AM and PM peak hours. The AM peak hour is defined as 08:00-09:00, and the PM peak hour is defined as 17:00-18:00. Large increases in flows can be seen on the Kildare and Maynooth lines as result of the interchange at Glasnevin station.

Table 6-6: Changes in Public Transport Flows due to MetroLink – AM Peak Hour

Public Transport Line	2018 AM Peak Hour	Change MetroLink 2030	% Change 2030	Change MetroLink 2045	% Change 2045	Change MetroLink 2060	% Change 2060
DART Coastal Northern Line	7,869	-746	-9%	-552	-7%	-295	-4%
DART Coastal South East Line	4,653	66	1%	333	7%	430	9%
Kildare Line	2,812	58	2%	320	11%	530	19%
Maynooth Line	4,682	199	4%	274	6%	540	12%
Luas redline	5,399	55	1%	50	1%	170	3%
Luas Green Line (South of Charlemont)	6,593	180	3%	358	5%	348	5%

Table 6-7: Changes in Public Transport Flows due to MetroLink – PM Peak Hour

Public Transport Line	2018 PM Peak Hour	Change MetroLink 2030	% Change 2030	Change MetroLink 2045	% Change 2045	Change MetroLink 2060	% Change 2060
DART Coastal Northern Line	6,320	-367	-6%	-466	-7%	-421	-7%
DART Coastal South East Line	3,064	50	2%	162	5%	231	8%
Kildare Line	2,919	80	3%	322	11%	406	14%
Maynooth Line	3,115	270	9%	328	11%	560	18%
Luas redline	5,999	71	1%	70	1%	125	2%

Luas Green Line (South of Charlemont)	6,044	172	3%	215	4%	421	7%

Source: National Heavy Rail Census 2018, Luas: www.cso.ie (2018)

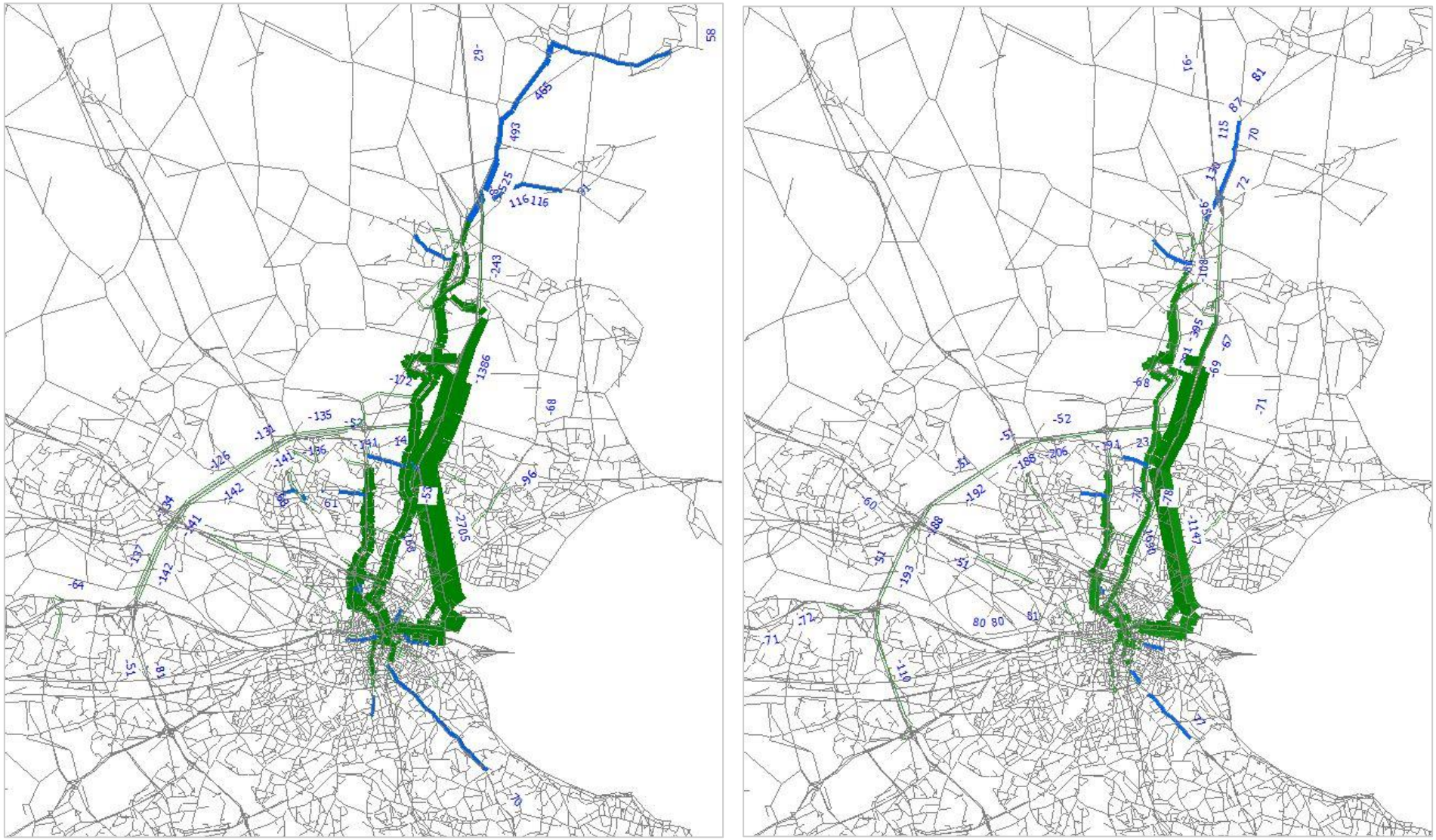

Figure 6-18: 2030 Do Scheme Bus Only (Left AM peak hour, Right PM peak hour)

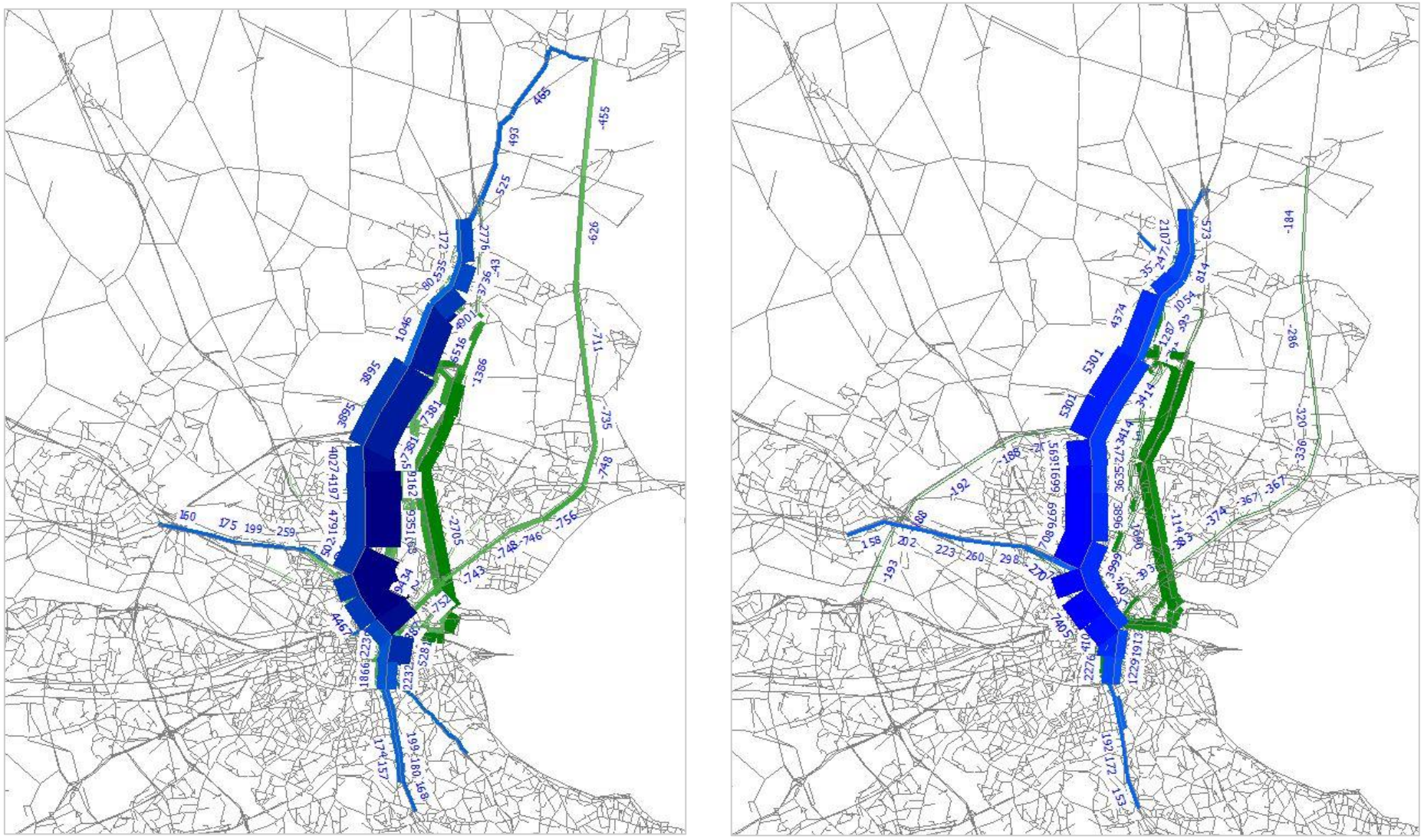

Figure 6-19: 2030 Do Scheme MetroLink (Left AM peak hour, Right PM peak hour)

6.6.2 Journey Time

Journey time comparisons between the Do Minimum and Do Scheme scenarios has been undertaken to investigate benefits to journey time with the MetroLink scheme in place. The assessment was carried out for zones located across the city as illustrated in Figure 6-20 and detailed within Table 6-8.

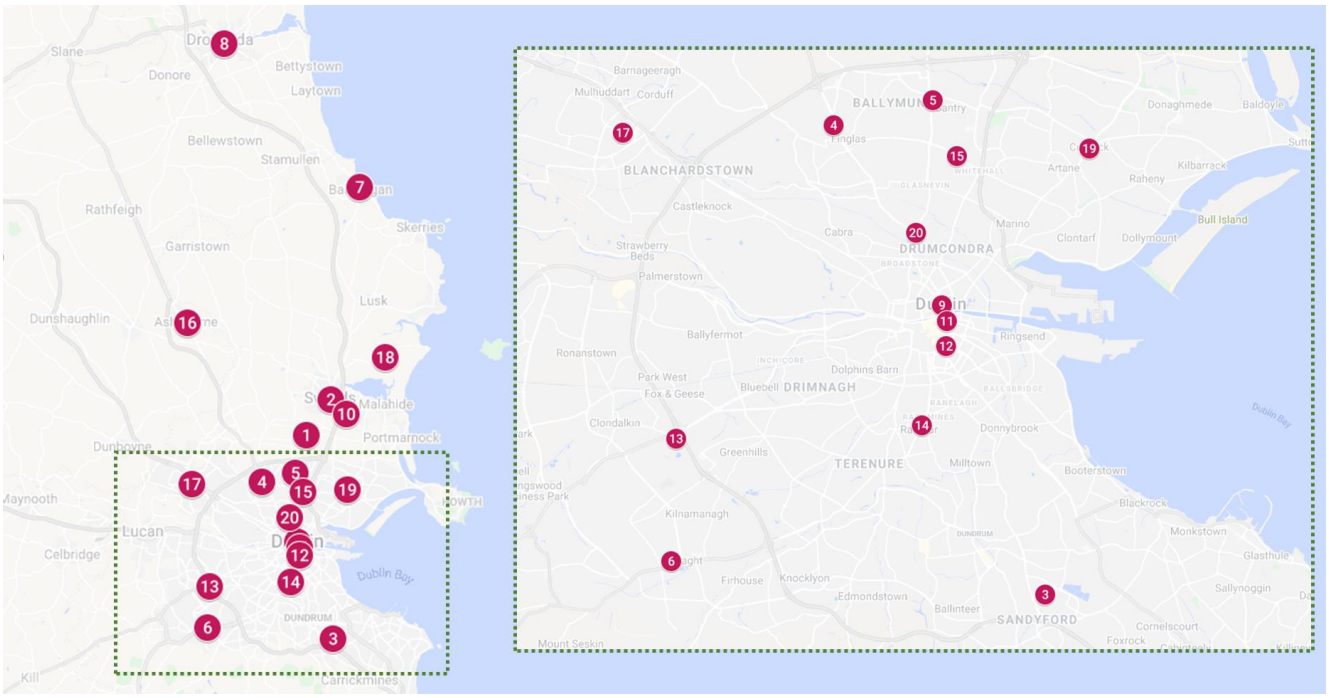

Figure 6-20: Zones assessed for journey time

Table 6-8: Zones assessed for journey time

Nb	Location	Nb	Location	Nb	Location	Nb	Location
1	Dublin Airport	**6**	Tallaght	**11**	College Street	**16**	Ashbourne
2	Swords Pavilion	**7**	Balbriggan	**12**	St. Stephen's Green	**17**	Blanchardstown
3	Sandyford	**8**	Drogheda	**13**	Red Cow	**18**	Donabate
4	Finglas	**9**	O'Connell Street	**14**	Rathgar Road	**19**	Coolock
5	Ballymun	**10**	Sword East	**15**	DCU	**20**	Glasnevin

Comparisons between Do Minimum and Do Scheme scenarios in both the AM and PM peak periods are presented in Table 6-9 to Table 6-14 for 2030, 2045 and 2060.

Table 6-9: 2030 AM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Scheme

Journey Time 2030 DS - 2030 DM Business Case AM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	-0.2	-7.4	0.1	0.0	-11.7	-0.4	0.2	0.0	0.0	-0.8	-1.1	0.0	0.0	0.0	-26.1	0.9	-13.7
St. Stephen's Green	0.1	0.0	0.1	-3.0	-10.9	0.0	-0.3	-14.1	-2.9	0.0	0.0	0.0	-2.2	-3.5	0.0	0.0	0.0	-33.0	-0.8	-13.1
College Street (Trinity)	0.0	0.0	0.0	0.1	-8.2	0.0	0.0	-10.7	-0.2	0.1	0.0	0.0	-0.1	-0.8	0.0	0.0	0.0	-27.0	5.4	-6.8
Glasnevin	-2.7	-9.0	-1.2	0.0	-0.1	-6.1	-9.0	2.2	-0.1	-16.6	0.5	0.5	-11.7	-0.8	-5.7	-6.5	-0.1	-29.2	-8.8	-24.0
DCU	-4.4	-9.7	-4.3	0.0	0.0	-10.0	0.0	0.0	0.0	-16.3	-3.5	-3.5	-13.2	-0.8	-22.8	-11.1	-0.1	-13.1	-12.4	-9.6
Rathgar Road	0.1	0.0	0.2	-5.7	-15.0	0.0	0.0	-18.6	-1.5	0.0	0.1	0.4	-6.3	-5.9	-0.8	-0.8	0.3	-34.8	-1.7	-20.8
Coolock	-0.1	-0.1	-0.2	-7.3	0.2	-0.3	0.0	0.0	-0.1	-1.2	0.1	-0.1	0.0	-0.8	0.0	0.0	-0.1	-0.8	0.1	0.1
Ballymun	-9.3	-14.7	-8.7	2.3	0.0	-15.6	-0.1	0.0	0.0	-20.6	-0.2	-0.2	-20.0	-0.8	-12.5	-15.7	-0.1	-10.9	-10.2	-7.9
Finglas	-0.2	-5.9	-0.4	0.9	-0.1	-0.8	-0.2	-0.1	0.0	-10.9	2.9	2.9	0.0	-0.7	1.4	0.3	0.4	-10.4	-10.8	-0.7
Sandyford	0.0	0.0	0.0	-8.6	-15.3	0.0	-1.2	-18.8	-2.7	0.0	0.0	0.0	-3.5	-6.7	-0.3	-0.3	0.2	-35.4	-2.4	-21.8
Tallaght	0.0	0.0	0.0	1.3	-6.6	0.0	0.0	-10.5	-1.1	0.1	0.0	0.0	0.0	1.0	0.0	0.0	0.0	-23.3	5.3	-15.3
Red Cow	0.0	0.0	0.0	1.2	-6.5	0.0	0.0	-10.5	0.4	0.2	0.0	0.0	0.0	1.0	0.0	0.0	0.0	-22.4	7.0	9.1
Blanchardstown	1.7	0.1	0.7	-12.1	-4.4	-1.2	0.0	-9.8	0.0	-1.6	0.0	0.1	0.0	-6.0	0.0	0.0	-0.1	-22.7	-1.9	-20.9
Ashbourne	-0.8	-0.8	-0.8	-0.8	-0.3	-0.8	-0.6	1.7	-0.8	-2.1	-0.1	-0.1	-9.0	0.0	-7.2	-9.0	5.1	-11.1	-13.0	4.1
Donabate	0.0	0.0	0.0	1.1	-14.1	0.9	0.0	-13.7	-16.7	-1.7	0.0	0.0	0.0	-17.8	0.0	0.0	0.0	1.0	0.4	-8.4
Balbriggan	-7.8	0.0	0.0	-15.5	-5.6	0.9	-7.8	-6.2	-6.3	-1.7	-7.8	-7.8	-7.8	0.2	0.0	0.0	-0.1	4.3	-9.6	2.2
Drogheda	0.0	0.0	0.0	-3.1	2.7	1.3	2.7	5.8	-11.3	-1.9	0.0	0.0	0.0	0.3	0.0	0.2	0.0	-8.9	0.0	1.6
Swords Pavilion	-16.3	-17.4	-7.3	-40.9	-17.1	-13.7	0.6	-17.0	-18.3	-19.6	-7.2	-7.1	-24.2	-31.8	0.4	6.5	-7.8	0.0	0.1	-8.5
Swords East	2.6	3.7	5.4	-14.4	-15.3	3.0	-1.4	-15.3	-16.6	-3.7	5.1	4.6	-7.2	-31.1	0.5	6.5	-5.5	-0.9	0.0	-5.0
Airport	-13.3	-11.5	-7.3	-25.3	-6.9	-20.7	0.1	-5.7	-7.0	-25.1	8.9	11.9	-19.7	-13.0	-2.0	5.9	-0.6	3.2	3.5	0.0

Table 6-10: 2030 PM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Scheme

Journey Time 2030 DS - 2030 DM Business Case PM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	-0.2	-9.2	0.1	-0.3	-13.4	-1.1	0.1	0.0	0.0	-0.9	0.9	0.0	9.4	0.0	-19.5	-2.3	-13.8
St. Stephen's Green	0.2	0.0	0.1	-2.1	-12.3	0.0	-0.2	-16.9	-6.0	0.0	0.0	0.0	-0.1	-0.4	0.0	0.0	0.0	-10.9	-2.0	-18.3
College Street (Trinity)	0.0	0.0	0.0	0.2	-9.2	0.1	-0.1	-13.8	-0.1	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	-12.9	4.8	-7.0
Glasnevin	-1.2	-7.4	-0.3	0.0	-0.2	-7.8	-23.4	1.5	-0.1	-14.8	0.2	0.2	-11.2	0.9	-6.4	0.6	-11.0	-35.0	-19.7	-21.3
DCU	-3.2	-7.1	-3.9	0.0	0.0	-9.3	0.0	0.0	-0.1	-13.7	5.8	5.8	-12.9	1.1	-11.1	-10.8	0.1	-18.0	-9.8	-9.3
Rathgar Road	0.2	0.0	0.1	-4.6	-17.5	0.0	-0.6	-20.9	-4.2	0.0	0.2	0.2	-7.4	1.6	-0.7	-0.4	-3.1	-21.2	3.0	-20.8
Coolock	0.0	0.0	0.0	-10.2	-0.3	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.8	0.0	9.4	0.0	0.2	0.2	-0.5
Ballymun	-8.5	-13.7	-7.9	2.5	0.0	-15.1	0.0	0.0	-0.1	-19.4	0.1	0.1	-11.4	1.1	-16.5	-14.9	-4.9	-14.2	-1.4	-7.4
Finglas	-0.8	-6.8	-0.5	0.0	-0.6	-6.7	-0.5	-0.6	0.0	-13.0	2.6	2.6	0.0	1.0	3.8	-8.4	18.0	-13.7	-11.7	-6.9
Sandyford	0.0	0.0	-0.2	-8.6	-17.2	-0.1	-2.5	-20.6	-6.4	0.0	0.0	0.0	-2.3	-3.6	-0.7	-0.7	-2.5	-17.4	-8.2	-21.5
Tallaght	0.0	0.0	0.0	3.5	-8.0	0.1	-0.1	-12.0	-0.2	0.3	0.0	0.0	0.0	2.9	0.0	9.4	0.0	-8.4	1.1	-10.8
Red Cow	0.0	0.0	0.0	3.2	-8.0	0.0	-0.4	-11.9	0.0	0.7	0.0	0.0	0.0	3.1	0.0	9.4	0.0	-8.4	1.4	7.4
Blanchardstown	1.6	0.0	0.7	-12.0	-3.6	-0.7	-0.1	-8.2	0.0	-1.8	-0.1	-0.1	0.0	0.0	0.0	9.4	0.0	-27.7	-6.6	-17.6
Ashbourne	0.1	0.1	0.0	0.1	0.3	0.0	0.8	2.9	0.1	-0.7	0.6	0.7	-7.0	0.0	-0.7	-0.6	0.2	9.2	12.4	-0.4
Donabate	0.0	0.0	0.0	-6.4	-8.1	1.0	-0.1	10.1	-4.3	-1.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.4	0.4	-24.5
Balbriggan	-0.7	0.1	0.0	-9.4	-14.2	0.3	-0.4	-21.1	-19.1	-8.1	1.9	1.7	0.1	0.4	0.0	0.0	0.0	0.3	6.4	0.4
Drogheda	-5.8	0.0	0.0	-13.6	21.7	-3.6	-9.2	-11.7	-21.9	-12.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-17.1	2.8	0.0
Swords Pavilion	-21.9	-21.5	-12.5	-39.8	-16.0	-21.7	1.4	-14.9	-12.1	-42.8	-12.4	14.1	-32.8	-2.1	1.1	3.7	-14.0	0.0	0.1	-2.9
Swords East	1.2	-1.9	3.2	-11.3	-0.6	-1.8	0.2	-0.3	2.6	-10.5	3.5	3.6	-1.8	-3.7	0.0	1.2	0.0	-0.1	0.0	0.7
Airport	-15.5	-14.0	-5.6	-21.4	-7.0	-23.2	2.0	-5.8	-3.0	-27.4	20.2	9.7	-21.5	10.9	-0.5	3.7	1.5	0.6	1.8	0.0

Table 6-11: 2045 AM Peak - Journey Time Comparisons (minutes) between Do Minimum and Do Scheme

Journey Time 2045 DS - 2045 DM Business Case AM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.0	-7.5	0.2	0.2	-12.1	0.3	0.2	0.0	0.0	-0.8	-1.1	0.0	0.0	0.0	-26.0	0.8	-23.0
St. Stephen's Green	0.0	0.0	0.1	-2.9	-11.3	0.1	0.2	-14.5	-2.0	0.0	0.0	0.0	-2.2	-3.4	0.0	0.0	0.0	-32.7	-0.9	-14.3
College Street (Trinity)	0.0	0.0	0.0	0.2	-8.3	0.2	0.2	-12.7	0.4	0.1	0.0	0.0	-0.2	-0.9	0.0	0.0	0.0	-27.3	5.3	-8.7
Glasnevin	-3.8	-9.3	-2.1	0.0	-0.1	-6.4	-8.5	2.1	0.2	-16.8	0.4	0.4	-11.7	-0.9	-5.5	-8.7	0.1	-28.7	-14.1	-24.5
DCU	-4.8	-9.9	-4.7	0.1	0.0	-9.9	0.0	0.0	0.3	-16.5	-3.2	-3.2	-12.5	-1.3	-23.0	-15.4	-0.8	-13.5	-12.8	-9.7
Rathgar Road	0.1	0.1	0.2	-4.6	-15.6	0.0	0.3	-18.9	-0.4	0.0	0.2	0.5	-6.6	-5.8	-0.8	-2.9	0.0	-34.3	-1.8	-22.4
Coolock	0.3	0.3	0.2	-7.0	0.2	0.3	0.0	-0.1	0.2	-0.8	0.5	0.3	0.3	-1.0	0.3	0.3	-3.9	0.0	0.3	0.3
Ballymun	-9.3	-14.7	-8.6	2.4	0.0	-15.6	-0.5	0.0	0.3	-20.5	-0.2	-0.2	-21.5	-1.2	-12.4	-18.0	-0.8	-11.1	-10.4	-8.1
Finglas	0.2	-6.2	0.1	-1.0	0.0	-0.7	-0.6	0.0	0.0	-11.7	2.3	2.3	0.0	-1.1	-0.9	-15.5	7.9	-10.3	-11.2	-7.3
Sandyford	0.0	0.0	0.0	-8.2	-15.8	-0.1	-1.2	-18.7	-1.7	0.0	0.0	0.0	-4.1	-6.4	-0.4	-0.3	-0.1	-35.0	-2.3	-23.7
Tallaght	0.0	0.0	0.0	1.7	-6.3	-0.1	0.2	-10.4	1.9	0.1	0.0	0.0	0.2	1.2	0.0	0.0	0.0	-23.6	5.4	-18.5
Red Cow	0.0	0.0	0.0	1.6	-6.2	-0.1	0.2	-10.4	1.4	0.2	0.0	0.0	0.2	1.2	0.0	0.0	0.0	-22.5	7.1	1.8
Blanchardstown	1.6	0.0	0.7	-12.1	-3.5	-1.0	0.1	-8.4	0.0	-1.6	0.2	0.2	0.0	-2.1	0.0	0.0	0.0	-22.3	-2.0	-21.3
Ashbourne	-0.5	-0.5	-0.5	-0.5	-0.2	-0.5	0.0	1.7	-0.7	-2.0	0.3	0.3	-9.3	0.0	-6.9	-14.3	1.2	-18.4	-16.7	3.7
Donabate	5.5	0.0	0.0	7.3	-13.9	1.0	5.6	-14.1	-8.2	-1.8	5.5	5.5	5.5	-17.2	0.0	0.0	0.0	1.0	0.2	-9.1
Balbriggan	0.0	7.8	7.8	-7.7	6.8	8.8	0.2	-16.2	3.6	6.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.2	3.4	-0.3	2.0
Drogheda	0.0	0.0	0.0	-5.2	0.8	1.0	0.8	4.8	-12.9	-1.7	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	4.1	-0.3	1.1
Swords Pavilion	-15.4	-17.9	-7.7	-40.6	-17.4	-14.1	2.1	-17.3	-18.3	-20.0	-7.6	-7.5	-24.3	-33.3	0.7	0.3	-8.4	0.0	0.0	-9.3
Swords East	2.4	3.5	4.4	-14.6	-15.9	2.7	-0.4	-15.9	-16.9	-4.0	4.2	3.6	-7.4	-25.0	0.8	0.3	0.2	-0.3	0.0	-5.9
Airport	-13.7	-11.8	-7.8	-24.8	-6.9	-21.0	-0.3	-5.7	-6.7	-25.6	-3.6	13.0	-20.4	-14.0	-2.3	0.3	-0.2	3.1	3.5	0.0

Table 6-12: 2045 PM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Scheme

Journey Time 2045 DS - 2045 DM Business Case PM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.0	-9.0	0.0	-0.2	-13.3	-0.5	0.2	0.0	0.0	-0.9	0.5	0.0	0.0	0.0	-18.7	-4.5	-18.3
St. Stephen's Green	0.1	0.0	0.1	-1.9	-12.2	0.0	0.1	-16.9	-5.3	0.0	0.0	0.0	-0.1	-1.1	0.0	0.0	0.0	-14.8	-6.4	-22.9
College Street (Trinity)	0.0	0.0	0.0	0.4	-9.2	0.1	0.1	-13.7	0.4	0.1	0.0	0.0	0.2	1.2	0.0	0.0	0.0	-12.1	0.5	-8.2
Glasnevin	-1.4	-7.2	-0.1	0.0	-0.1	-7.5	-24.4	1.5	0.2	-15.0	0.3	0.3	-11.2	0.6	-6.5	-4.8	-9.1	-36.6	-20.7	-24.6
DCU	-3.2	-7.2	-4.0	0.1	0.0	-9.5	-0.1	0.0	0.5	-13.9	5.8	5.8	-13.0	-0.1	-10.8	-17.2	-1.5	-20.4	-12.6	-10.7
Rathgar Road	0.2	0.0	0.2	-4.4	-17.3	0.0	-0.7	-20.9	-3.4	0.0	-6.2	-6.7	-7.6	0.6	0.3	0.3	-0.8	-26.0	-1.4	-25.7
Coolock	0.3	0.4	0.4	-10.1	-0.3	0.5	0.0	0.0	0.5	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3	-0.1	0.0	-1.6
Ballymun	-8.6	-13.8	-8.5	2.6	0.0	-15.2	-0.4	0.0	0.5	-19.5	0.1	0.1	-11.2	-0.1	-16.5	-21.1	-8.3	-16.2	-3.7	-8.9
Finglas	-0.5	-6.5	-0.2	0.2	-0.1	-6.7	-0.3	-0.1	0.0	-13.1	2.9	2.8	0.0	0.3	3.9	-7.8	17.1	-15.9	-13.7	-8.6
Sandyford	-0.1	0.0	-0.2	-8.3	-17.0	-0.1	-2.2	-20.5	-5.5	0.0	-0.1	-0.1	-2.5	-5.5	-0.7	-0.7	-1.4	-21.8	-12.2	-25.9
Tallaght	0.0	0.0	0.0	7.2	-8.0	-3.0	0.2	-12.2	0.1	0.8	0.0	0.0	7.9	2.8	0.0	0.0	0.0	-11.9	-0.2	-15.3
Red Cow	0.0	0.0	0.0	3.4	-8.1	-0.2	-0.1	-12.1	0.3	1.2	0.0	0.0	-1.3	2.8	0.0	0.0	0.0	-11.9	1.2	10.8
Blanchardstown	1.6	0.0	0.7	-12.0	-3.5	-0.7	-0.1	-7.7	0.0	-1.9	0.1	0.1	0.0	1.1	0.0	0.0	0.0	-30.1	-7.3	-20.7
Ashbourne	0.3	0.3	0.3	0.2	1.0	0.2	1.2	3.3	0.0	-0.6	0.9	0.9	-6.8	0.0	-0.5	0.2	-0.2	4.1	7.2	14.1
Donabate	0.0	0.0	0.0	-6.3	-8.1	0.6	0.1	9.1	-3.2	-2.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2	0.2	-24.9
Balbriggan	-0.4	0.1	0.0	-9.0	-12.0	0.2	-0.2	-23.7	-17.4	-7.7	1.7	1.5	0.3	0.5	0.0	0.0	0.0	0.0	6.8	0.0
Drogheda	-5.1	0.0	0.0	-13.1	21.2	-3.6	-0.1	-13.5	-20.0	-11.5	0.0	0.0	0.0	-0.3	0.0	-0.1	0.0	-17.5	2.0	-0.5
Swords Pavilion	-23.7	-23.8	-14.8	-38.5	-16.3	-29.0	2.0	-15.4	-11.8	-47.9	-14.7	9.3	-31.1	-6.5	0.7	-0.5	-13.7	0.0	0.5	-3.2
Swords East	1.1	-2.4	2.6	-12.0	-1.1	-2.7	0.4	-0.6	3.1	-11.2	2.9	3.0	-2.3	-4.7	0.1	-0.5	0.1	-0.1	0.0	0.4
Airport	-15.8	-16.2	-6.1	-24.6	-7.1	-24.4	-0.7	-5.8	-2.1	-28.8	3.9	7.6	-21.2	6.9	-2.9	-0.5	-0.5	-0.3	1.9	0.0

Table 6-13: 2060 AM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Scheme

Journey Time 2060 DS - 2060 DM Business Case AM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.0	-7.9	0.0	0.4	-12.7	0.4	0.2	0.0	0.0	-0.9	-0.7	0.0	0.0	0.0	-27.5	-0.6	-22.8
St. Stephen's Green	0.0	0.0	0.0	-2.8	-11.8	0.0	0.5	-14.9	-2.0	0.0	0.0	0.0	-2.3	-2.9	0.0	0.0	0.0	-33.4	-1.1	-16.3
College Street (Trinity)	0.0	0.0	0.0	0.3	-8.6	0.1	0.4	-13.0	0.5	0.1	0.0	0.0	-0.2	-0.4	0.0	0.0	0.0	-28.7	5.2	-10.8
Glasnevin	-4.1	-9.5	-3.2	0.0	0.0	-9.5	-7.9	2.0	0.3	-17.8	0.4	0.6	-11.7	-0.5	-4.9	-6.9	-7.3	-30.1	-10.7	-24.4
DCU	-5.4	-10.3	-5.3	0.1	0.0	-11.1	0.0	0.0	-0.1	-17.2	-3.2	-3.2	-12.6	-2.6	-23.0	-18.0	-2.1	-15.8	-15.6	-10.1
Rathgar Road	0.1	0.1	0.1	-4.6	-16.1	0.0	0.6	-19.4	-0.6	0.0	0.0	0.6	-6.9	-5.3	0.3	0.2	0.8	-34.3	-2.0	-24.2
Coolock	0.5	0.5	0.4	-6.8	-0.1	0.6	0.0	-0.7	-0.7	-1.0	0.7	0.6	0.5	-14.3	0.5	0.5	0.5	-0.3	0.4	-2.1
Ballymun	-9.6	-15.0	-8.9	2.6	0.0	-16.6	0.0	0.0	0.0	-20.8	-0.6	-0.6	-22.4	-2.3	-12.3	-22.2	-2.1	-12.5	-12.0	-8.2
Finglas	0.9	-4.1	1.1	2.1	0.0	-3.0	-0.1	0.0	0.0	-9.7	4.8	4.2	0.0	-0.8	0.5	-8.0	-10.5	-12.9	-13.6	-1.0
Sandyford	0.0	0.0	0.0	-7.7	-15.7	-0.1	-0.2	-18.4	-0.7	0.0	0.0	0.0	-4.6	-5.7	-0.3	-0.3	-0.1	-35.1	-2.3	-25.2
Tallaght	0.0	0.0	0.0	2.0	-5.9	0.0	0.4	-10.8	1.4	0.1	0.0	0.0	0.0	1.9	0.0	0.0	0.0	-24.4	6.1	-19.7
Red Cow	0.0	0.0	0.0	1.9	-5.8	0.0	0.4	-9.2	1.3	0.3	0.0	0.0	0.0	2.0	0.0	0.0	0.0	-23.1	7.3	-19.1
Blanchardstown	1.6	0.0	-0.4	-12.1	-2.6	-1.0	0.3	-8.2	0.0	-1.7	0.4	0.4	0.0	0.1	0.0	0.0	0.0	-23.7	-2.2	-21.3
Ashbourne	-2.7	-2.7	-2.7	-2.9	-2.5	-3.3	-1.8	-0.6	-3.2	-4.8	-1.8	-1.8	-18.0	0.0	-9.7	-16.4	23.6	-22.5	-18.5	3.1
Donabate	0.0	0.0	0.0	7.3	-6.8	1.1	0.3	-16.9	-7.8	-2.1	0.0	0.0	0.0	-17.3	0.0	0.0	0.0	-0.4	-1.1	-9.8
Balbriggan	0.0	0.0	0.0	-7.5	-6.1	1.1	0.3	-21.3	-4.1	-2.0	0.0	0.0	0.0	-0.9	0.0	0.0	-0.1	-7.9	-1.4	1.0
Drogheda	0.0	0.0	0.0	-5.8	2.0	1.1	2.0	4.6	-8.4	-1.8	-0.1	-0.1	0.0	-0.7	0.0	2.5	0.0	5.0	-1.4	1.8
Swords Pavilion	-19.3	-20.5	-11.6	-38.8	-15.4	-18.5	1.2	-15.7	-17.0	-23.7	-11.4	-11.4	-27.9	-33.5	0.6	0.8	-9.0	0.0	-0.1	-11.3
Swords East	1.5	2.6	7.8	-15.4	-14.2	1.6	-1.7	-14.3	-15.7	-4.9	5.9	5.6	-8.3	-24.6	0.7	0.9	0.6	-0.7	0.0	-6.4
Airport	-16.9	-9.7	-8.8	-29.0	-6.9	-27.7	0.2	-5.6	-7.0	-29.5	-5.4	17.5	-23.9	-18.0	-9.2	-1.1	-2.2	-0.4	1.0	0.0

Table 6-14: 2060 PM Peak – Journey Time Comparisons (minutes) between Do Minimum and Do Scheme

Journey Time 2060 DS - 2060 DM Business Case PM Peak Period	O'Connell Street	St. Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.1	-8.6	-0.1	0.2	-12.9	-0.4	0.2	0.0	0.0	-0.9	1.5	0.0	0.0	0.0	-21.3	-5.4	-14.9
St. Stephen's Green	0.0	0.0	0.1	-1.9	-11.7	0.1	0.5	-16.6	-5.2	0.0	0.0	0.0	-0.1	-1.0	0.0	0.0	0.0	-17.7	-9.0	-24.0
College Street (Trinity)	0.0	0.0	0.0	0.5	-8.7	0.4	0.5	-13.4	0.5	0.1	0.0	0.0	-0.1	1.0	0.0	0.0	0.0	-19.3	-2.0	-8.3
Glasnevin	-1.4	-7.3	-0.2	0.0	0.2	-7.7	-15.4	1.8	0.2	-15.3	0.1	0.5	-11.2	1.0	-4.2	-6.5	-6.5	-36.4	-28.0	-28.5
DCU	-3.6	-7.9	-3.5	0.2	0.0	-9.4	-0.4	0.0	-0.8	-14.6	-7.3	5.6	-10.8	-14.5	-11.0	-16.5	-6.9	-20.5	-16.6	-10.7
Rathgar Road	0.2	0.1	0.2	-4.4	-16.8	0.0	0.8	-20.4	-3.1	0.0	0.3	0.4	-7.8	1.7	-0.3	-0.3	-0.2	-28.1	-4.0	-27.1
Coolock	0.5	0.7	0.5	-10.2	-0.5	1.0	0.0	-0.6	-1.3	0.6	0.6	0.5	0.6	1.2	0.5	0.5	0.6	0.0	0.1	-1.3
Ballymun	-8.5	-13.8	-8.6	2.9	0.1	-15.1	-2.5	0.0	-0.7	-19.5	-7.0	-0.1	-10.5	-1.5	-16.8	-20.5	-7.8	-16.3	-15.5	-9.0
Finglas	-0.4	-6.5	-0.1	0.2	-0.1	-6.7	-0.5	-0.2	0.0	-13.3	3.0	3.0	0.0	0.6	11.1	-6.7	-14.6	-16.5	-15.7	-9.2
Sandyford	-0.1	0.0	-0.1	-8.2	-16.6	-0.1	-1.6	-20.0	-5.5	0.0	-0.1	-0.1	-2.9	-5.4	-0.6	-0.6	-0.6	-24.1	-14.1	-28.4
Tallaght	0.0	0.0	0.0	7.5	-7.8	-3.8	0.5	-12.1	0.4	0.8	0.0	0.0	-0.4	3.3	0.0	0.0	0.0	-13.8	-1.1	-16.8
Red Cow	0.0	0.0	0.0	3.7	-7.8	-0.2	0.2	-12.1	0.4	0.8	0.0	0.0	-0.5	3.3	0.0	0.0	0.0	-13.8	0.2	8.0
Blanchardstown	1.7	0.0	0.7	-12.0	-3.3	-0.7	1.9	-7.5	0.0	-2.2	-0.2	-0.2	0.0	0.6	0.0	0.0	0.0	-30.0	-7.7	-24.2
Ashbourne	0.4	0.4	0.4	0.2	1.3	0.4	1.9	3.7	0.1	-0.7	0.9	0.9	-6.9	0.0	-0.1	0.3	0.0	2.2	5.5	12.0
Donabate	0.0	0.0	0.0	-6.0	-8.0	0.8	0.5	-2.9	-2.7	-2.2	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.3	0.3	-25.1
Balbriggan	-0.2	0.1	0.0	-8.4	-12.7	0.8	0.3	-24.2	-15.5	-7.0	1.2	0.8	0.3	1.4	0.0	0.0	0.0	-0.2	6.7	0.0
Drogheda	0.0	0.0	0.0	-12.2	20.4	-1.4	0.1	-14.6	-17.7	-4.6	0.0	0.0	0.0	-0.4	0.0	0.1	0.0	-17.6	0.5	-1.3
Swords Pavilion	-34.7	-28.4	-19.1	-39.1	-18.5	-43.2	3.2	-16.2	-13.5	-48.6	-19.0	5.8	-31.8	-10.3	1.2	1.7	-12.5	0.0	0.9	-3.5
Swords East	0.3	-2.8	2.2	-12.4	-2.8	-3.1	0.1	-1.2	1.6	-11.6	2.6	2.6	-2.7	-4.1	0.1	-2.0	0.1	-0.1	0.0	0.1
Airport	-17.3	-18.8	-7.8	-27.6	-7.8	-26.3	1.1	-5.9	-3.2	-31.9	-5.1	10.0	-22.9	3.3	-1.9	1.7	0.2	-0.2	1.0	0.0

The implementation of MetroLink provides substantial time savings in 2030, 2045 and 2060, from a range of locations in north Dublin, the city centre, and south Dublin. In 2045 AM, the largest journey time savings can be seen in journeys to and from Dublin Airport and Swords Pavilion. The largest journey time saving occurs from Swords Pavilion to Glasnevin, with a saving of approximately 40 minutes in all three years. This is due to the presence of the interchange with the heavy rail network at Glasnevin station, contributing to an overall public transport journey time saving. A saving of approximately 26 minutes can be seen from Dublin Airport to Sandyford at the south of the city in 2045, as a result of the MetroLink interchange with the Luas Green Line at Charlemont station, increasing to a saving of 30 minutes in 2060, in the AM period. Similar journey time savings can also be seen from Swords Pavilion to Blanchardstown.

Overall, in the AM period, journeys to the north (to Swords Pavilion and Swords East) and Dublin Airport see widespread journey time reductions, of up to 35 minutes from Sandyford and Rathgar Road to Swords Pavilion, as a result of the interchange with Luas Green Line. The journey from O'Connell Street to Dublin Airport sees a reduction of approximately 14 minutes in 2030, jumping to a reduction of 23 minutes in 2045 between these key locations. Improvements can also be seen along the MetroLink corridor, with time savings of up to 20 minutes to and from DCU and Ballymun.

In the PM period, the largest reduction in journey time in 2030 is from Swords Pavilion to Sandyford, which sees a reduction of approximately 43 minutes in journey time when MetroLink is in place. This increases to a saving of approximately 50 minutes in 2045 and 2060, respectively. As with the AM period, large journey time savings can also be seen to and from Swords Pavilion and Glasnevin as a result of the interchange with the rail network at Glasnevin station. The Fingal Metro corridor sees consistent journey time savings to and from key locations such as O'Connell Street and St Stephen's Green, with journey time savings of 15 minutes and 25 minutes respectively in 2060.

6.6.3 Transfers to and from MetroLink

Table 6-15, Table 6-16, and Table 6-17 show the volume of 12hr transfers to and from MetroLink, either walking or cycling to/from the surrounding zones, or using other forms of public transport to interchange, in 2030, 2045 and 2060 respectively.

A '**First Boarder'** refers to a passenger who first accesses the public transport network via MetroLink. Therefore, passengers who transfer from bus/rail/Luas to MetroLink are not considered 'First Boarders'.

A '**Final Destinations'** passenger is someone who exits the public transport network via MetroLink. Therefore, passengers who transfer to bus/rail/Luas from MetroLink to continue their journey are not considered to be 'Final Destinations' passengers.

In all scenarios, the majority of transfers from 'First Boarders' and 'Final Destination' at Estuary are to/from the Estuary Park and Ride. For all other stations, 'First Boarder' and 'Final Destination' passengers are predominantly in relation to those living within the walking catchments of the stations.

Table 6-15: Transfers to/From MetroLink Stations – 12hr period in 2030

Transfers To/From MetroLink Stations - 12hr Period								
Station	Transfers to MetroLink				Transfers from MetroLink			
	First Boarders	From Bus	From Rail/DART	From Luas	Final Destination	To Bus	To Rail/DART	To Luas
Estuary Park-and-Ride	7,567	3,730	-	-	7,462	2,202	-	-
Seatown	4,240	485	-	-	4,005	70	-	-
Swords Central	4,582	702	-	-	4,211	2,023	-	-
Fosterstown	4,136	1,621	-	-	3,620	670	-	-
Dublin Airport	22,377	661	-	-	20,606	764	-	-
Dardistown	-	-	-	-	-	-	-	-
Northwood	2,786	94	-	-	2,776	405	-	-
Ballymun	5,627	727	-	-	5,145	901	-	-
Collins Avenue	5,975	652	-	-	5,519	1,806	-	-
Griffiths Park	2,161	3	-	-	2,425	15	-	-
Glasnevin	1,671	3,029	2,513	-	1,899	1,978	2,315	-
Mater	2,736	1,345	-	-	2,845	1,063	-	-
O'Connell Street	4,768	979	-	3,696	4,876	150	-	4,134
Tara	7,609	4,369	3,323	11	8,802	6,559	3,536	4
St Stephen's Green	8,003	540	-	-	8,809	3,904	-	-
Charlemont	5,536	3,942	-	5,986	5,744	2,098	-	4,837

Table 6-16: Transfers to/From MetroLink Stations-12hr period in 2045

Transfers To/From MetroLink Stations - 12hr Period								
Station	Transfers to MetroLink				Transfers from MetroLink			
	First Boarders	From Bus	From Rail/DART	From Luas	Final Destination	To Bus	To Rail/DART	To Luas
Estuary Park-and-Ride	6,027	3,690	-	-	5,921	2,594	-	-
Seatown	4,995	427	-	-	4,665	108	-	-
Swords Central	5,622	840	-	-	5,183	2,435	-	-
Fosterstown	5,263	1,538	-	-	4,401	715	-	-
Dublin Airport	31,146	725	-	-	28,976	877	-	-

Dardistown	-	-	-	-	-	-	-	-
Northwood	3,641	97	-	-	3,569	465	-	-
Ballymun	7,599	865	-	-	6,826	1,016	-	-
Collins Avenue	6,530	690	-	-	6,170	2,097	-	-
Griffiths Park	2,445	4	-	-	2,787	19	-	-
Glasnevin	1,980	3,568	3,538	-	2,255	2,354	3,343	-
Mater	3,323	1,659	-	-	3,402	1,361	-	-
O'Connell Street	5,717	1,392	-	5,330	5,758	183	-	5,717
Tara	9,226	5,681	4,129	17	10,425	8,240	4,469	6
St Stephen's Green	9,060	621	-	-	9,866	4,480	-	-
Charlemont	6,646	4,696	-	7,363	6,905	2,431	-	6,071

Table 6-17:Transfers to/from MetroLink Stations – 12hr period in 2060

Transfers To/From MetroLink Stations - 12hr Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	8,625	4,564	-	-	8,542	3,528	-	-
Seatown	6,326	614	-	-	6,171	120	-	-
Swords Central	7,964	1,203	-	-	7,384	3,187	-	-
Fosterstown	6,863	2,092	-	-	5,860	874	-	-
Dublin Airport	45,637	779	-	-	42,199	1,115	-	-
Dardistown	-	-	-	-	-	-	-	-
Northwood	4,781	118	-	-	4,595	590	-	-
Ballymun	9,893	998	-	-	8,765	1,167	-	-
Collins Avenue	7,379	855	-	-	7,014	2,447	-	-
Griffiths Park	2,915	6	-	-	3,265	23	-	-
Glasnevin	2,428	4,395	5,452	-	2,767	3,009	5,240	-
Mater	4,285	2,005	-	-	4,351	1,844	-	-
O'Connell Street	7,640	1,934	-	7,540	7,654	221	-	7,990
Tara	12,546	7,716	5,482	29	13,919	11,238	6,047	11
St Stephen's Green	11,379	757	-	-	12,437	5,483	-	-

Charlemont	8,451	5,809	-	9,353	8,838	3,013	-	7,905

Dublin Airport sees the largest number of transfers to/from zone across all years. After Dublin Airport, stations in the city centre, such as Tara and St Stephen's Green, see significant volumes of transfers to/from zone. Stations such as Collins Avenue and Ballymun, and along the R132, see large numbers of transfers to/from zone due to the surrounding residential catchments of the stations.

Tara sees the largest volume of transfers to/from bus in both scenarios. Estuary and Charlemont also see large volumes of bus transfers both to and from MetroLink.

Interchange with the heavy rail network is also possible at Glasnevin and Tara stations, however Tara sees a higher volume of transfers to and from this mode.

There is a large volume of transfers to/from Luas at Charlemont and O'Connell Street, as these stations are in close proximity to Luas services (Green Line at Charlemont and both Red and Green lines at O'Connell Street). In terms of transfers at O'Connell Street, Luas Green line has more transfers than Luas Red Line.

6.7 Road Network Analysis

6.7.1 Link Flows

In comparing the Do Minimum Scenario to the Do Scheme Scenarios, decreases and increases can be seen both in actual and Demand flows on the strategic road network throughout the area of interest.

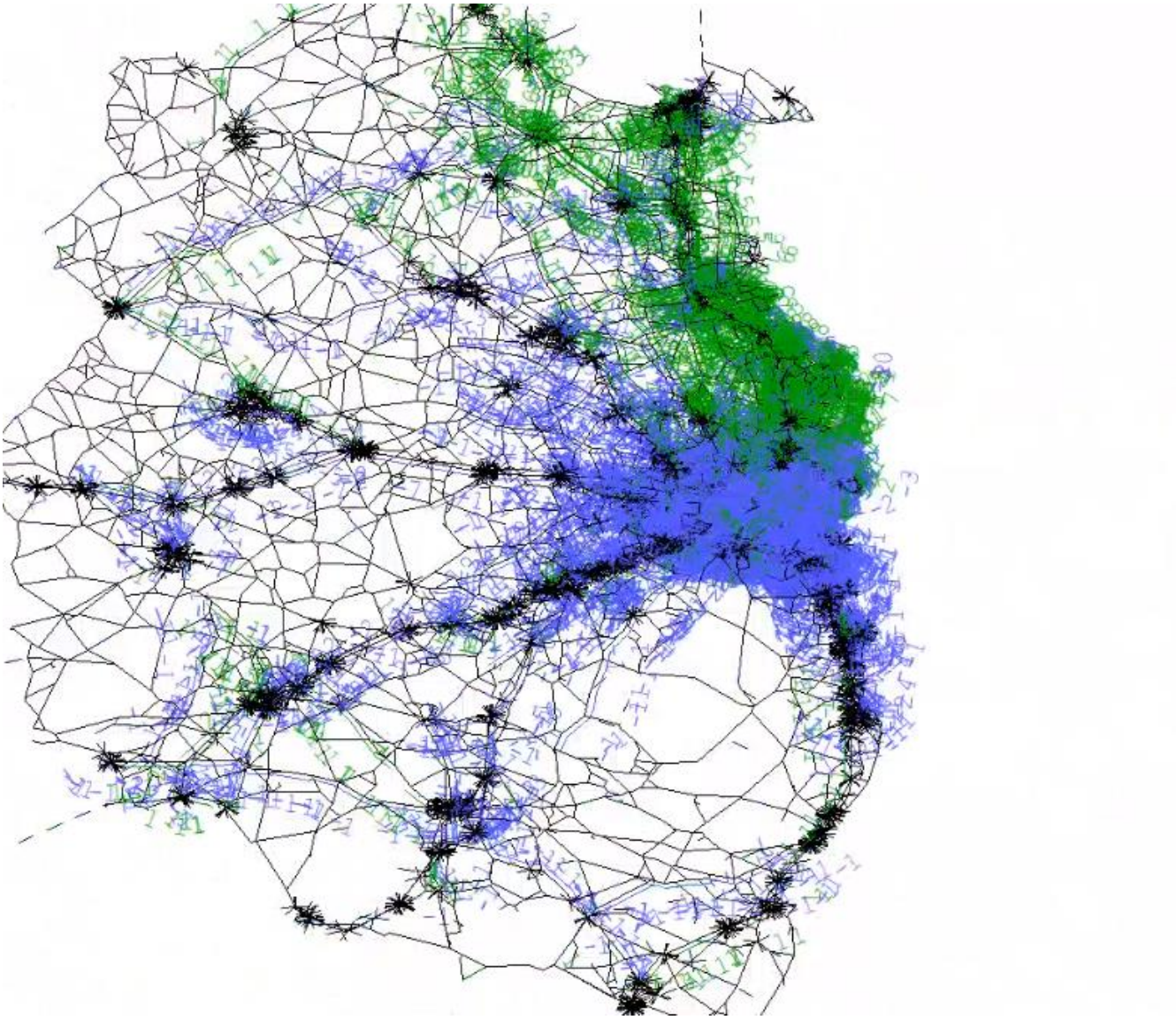

Figure 6-21: Saturn Highway Model - Flow Changes AM Peak

Figure 6-21 displays the difference in traffic flows on the highway network with the MetroLink scheme in place, the blue shows an increase in flows and the green shows a decrease in flows. The plot shows the increases in traffic flows to the north of the Estuary Park and Ride and decreases in traffic flow south of the Airport and along most of the radial routes into Dublin city.

Figure 6-22 shows local changes in traffic flow around the M1 and M50. There are increases in flows on the main roads to the north of the Estuary Park and Ride and there are decreases in flows south of the Airport and along the M50. These decreases in flows along the M50 result in journey time benefits for the significant number of users of the M50, which has an AADT of close to 150,000 vehicles.

Figure 6-22: Saturn Highway Model - Flow Changes (M1/M50)

Figure 6-23 and Figure 6-24 below shows the AADT traffic flow differences between the Do Scheme and Do Minimum scenario in 2030, with Figure 6-25 and Figure 6-26 illustrating the same for 2045, and Figure 6-27 and Figure 6-28 illustrating the same for 2060.

There are increases in traffic flow in both directions to the North of Swords in all future years. This can be expected due to traffic travelling to the Strategic Park and Ride site at Estuary. As a result of the Park and Ride, there is a general decrease in traffic between Swords and the City Centre

In 2045, reductions in AADT traffic flow can be seen on key national routes such as the M3, M4, M7/M9, M11 and M50. This relates to the transfer of road passengers onto the public transport network, utilising the Maynooth, Kildare and Cork rail lines.

In 2060, reductions in AADT traffic flow can be seen on national routes such as the M1, M3 and M4, as well as throughout the City Centre and Port Tunnel. The largest reduction of up to 15,000 vehicles is on the M1, where it joins the M50, which can be attributed to the presence of the Park and Ride facility.

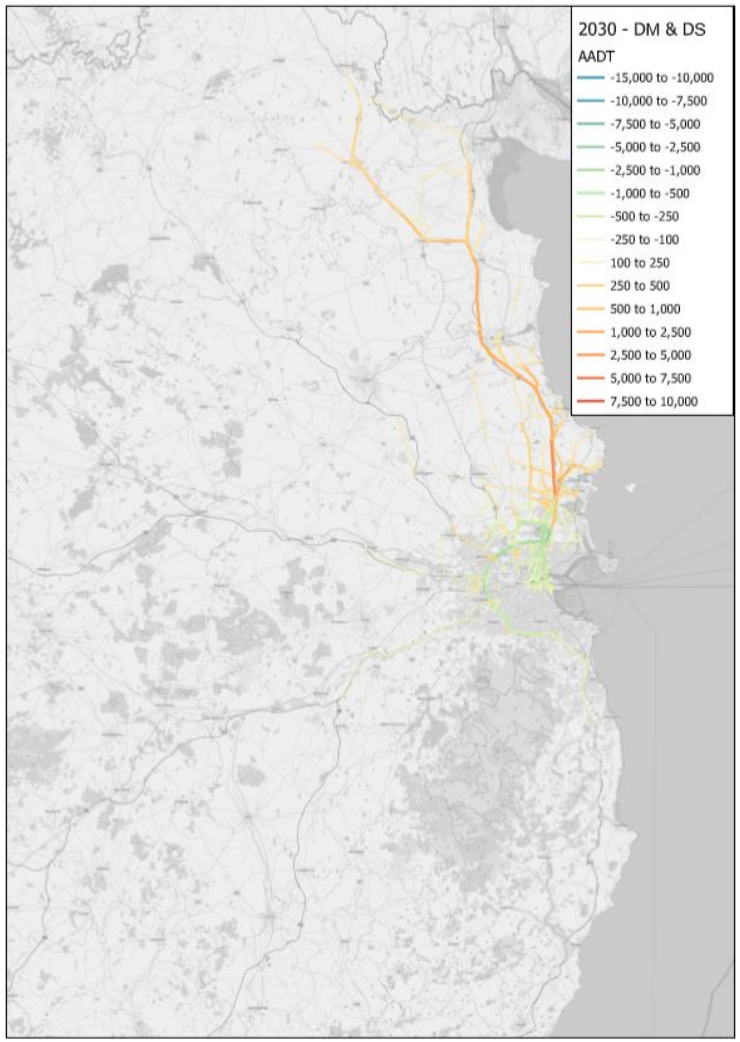

Figure 6-23 Overview 2030 DS – DM AADT Traffic Flow

Figure 6-24: 2030 DS-DM AADT Traffic Flow along Scheme

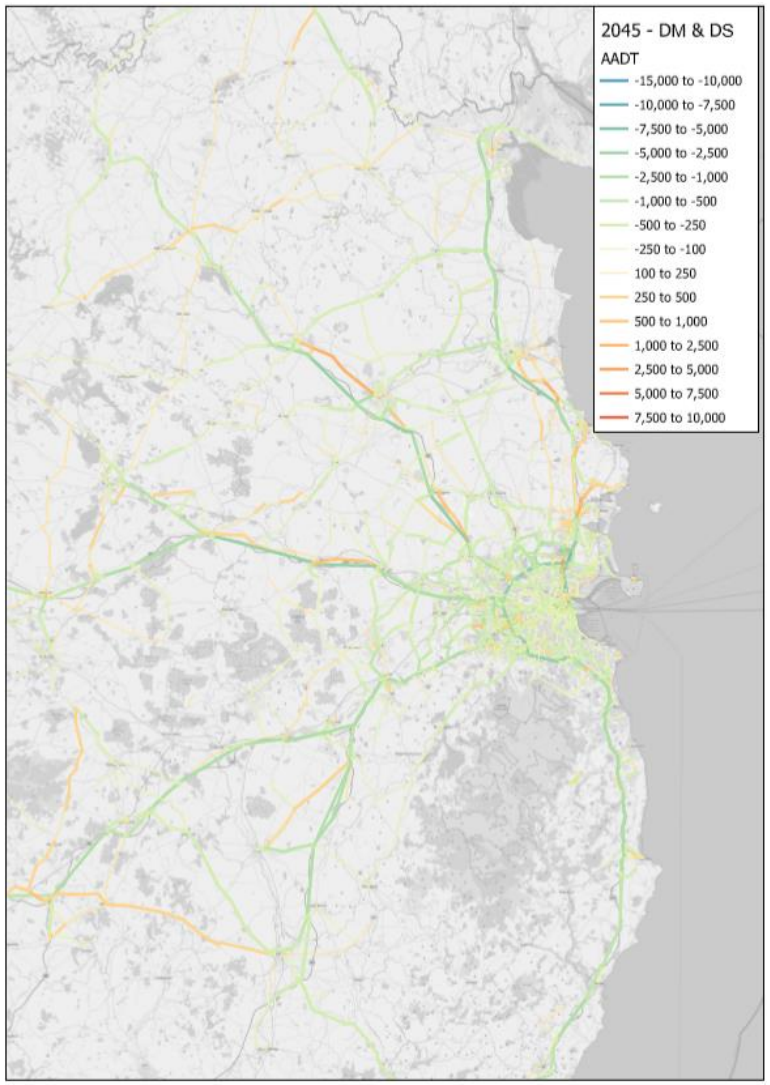

Figure 6-25: Overview 2045 DS-DM AADT Traffic Flow

Figure 6-26: 2045 DS-DM AADT Traffic Flow along Scheme

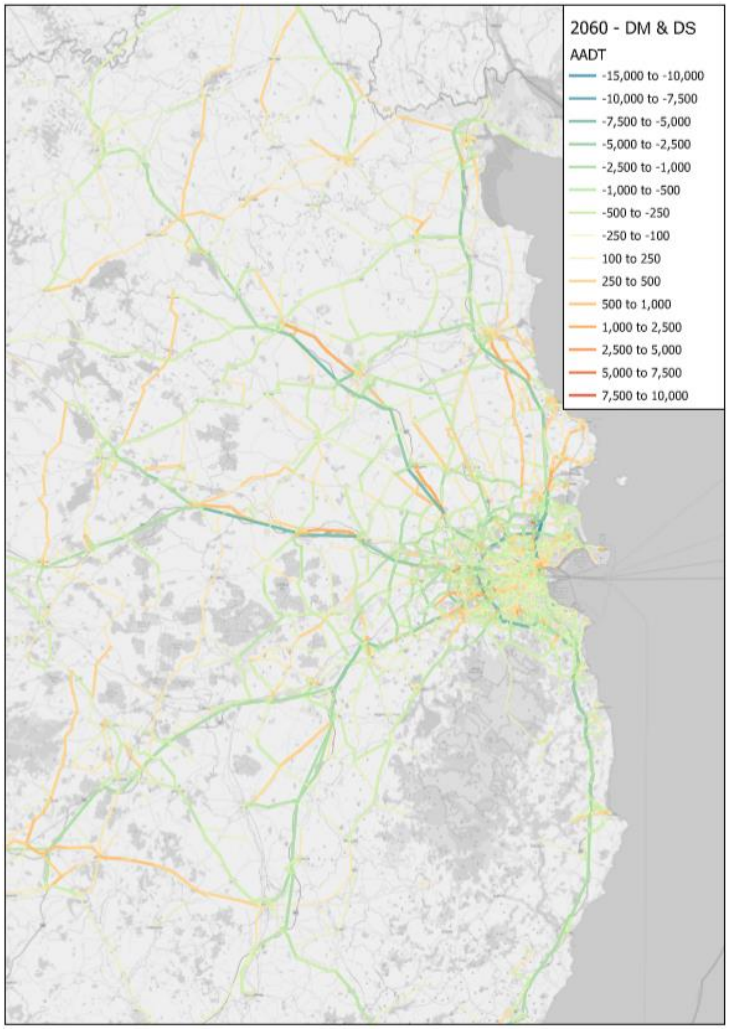

Figure 6-27: Overview 2060 DS-DM AADT Traffic Flow

Figure 6-28: Overview 2060 DS-DM AADT Traffic Flow along Scheme

6.7.2 Volume Capacity Ratio

Figure 6-29 to Figure 6-34 shows links with Volume to Capacity ratios greater than 85% without the Project in place, that are reduced to be less than 85% with the Project in place (shown in green), as well as links that would have Volume to Capacity ratios less than 85% without the Project in place that now have Volume to Capacity ratio's greater than 85% with the Project in place (shown in red) in the AM and PM peaks in 2030, 2045 and 2060.

The figures show that there are a number of links to the North of Estuary Park and Ride Site that result in increases in Volume to Capacity to values greater than 85% as a result of the impact of the scheme. These can be expected with the implementation of the Park and Ride scheme, and as shown with the traffic flow increases in the section above. In 2030 AM period, a number of links reduce by between 20%-30%, such as the Swords Bypass, and R125 between Swords Bypass and Lissenhall. In 2030 AM and PM most increases in VC to >85% are minimal, with the Dublin Airport car park complex and N7 Naas Road towards M50 J9 increasing by 8% to 89% and 87% respectively.

Similarly, there are congested links without the scheme in place that are relieved and have resultant Volume to Capacity ratios less than 85% with the scheme in place. In 2045, links near Dublin Airport see a decrease in Volume to Capacity to values less than 85% due to the implementation of MetroLink, such as the South Parallel Road (near Long Term Car Park), which decreases from a 100% to 49% Volume to Capacity ratio. As with 2030, most increases to Volume to Capacity ratios greater than 85% are minimal, with the largest increase occurring at M1 J4, which can be attributed to the attraction of the Park and Ride facility at Estuary station.

In 2060, links with Volume to Capacity Rations that are reduced to less than 85% can be seen along the R132, and Port Tunnel.

In 2045 and 2060, increases in Volume to Capacity ratios can be seen at the M50/N7 junction, however the N7 as a whole shows a reduction in AADT in all years.

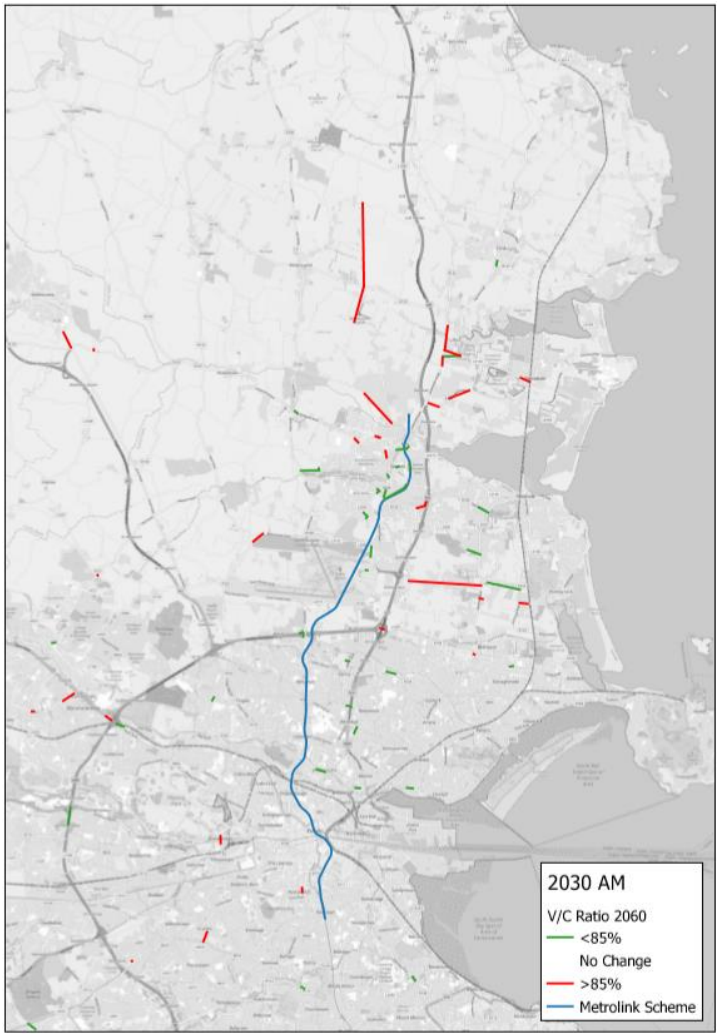

Figure 6-29 - Change in VC Ratios in 2030 AM Peak Period DS

Figure 6-30 - Change in VC Ratios in 2030 PM Peak Period DS

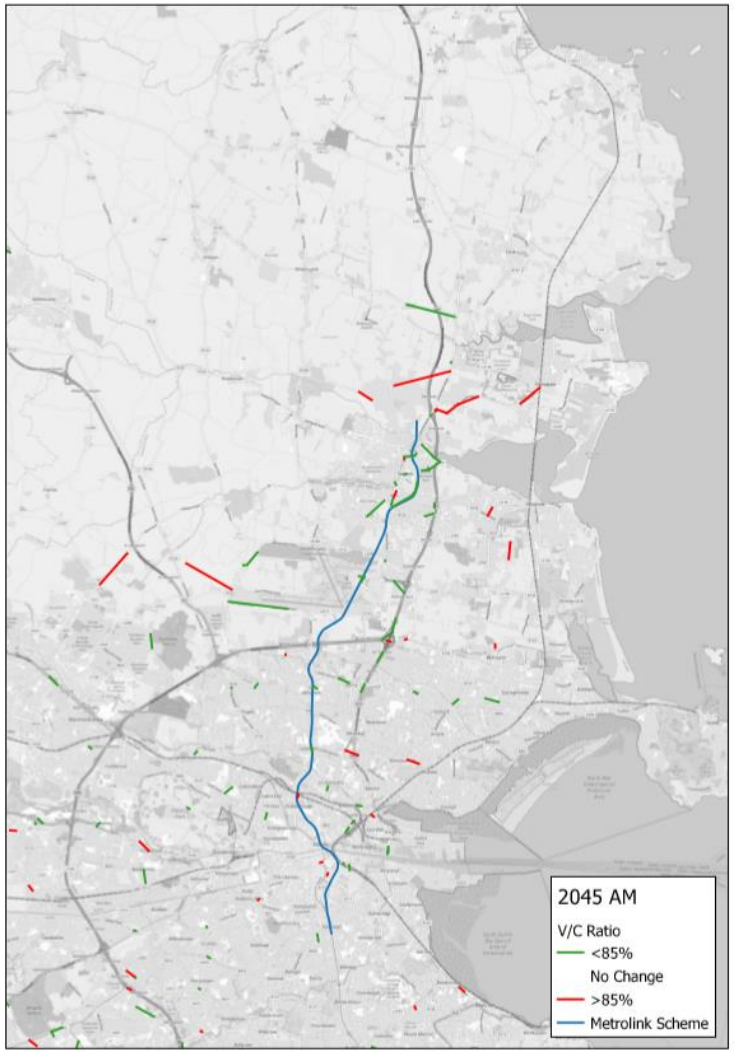

Figure 6-31: Change in VC Ratios in 2045 AM Peak Period DS

Figure 6-32: Change in VC Ratios in 2045 PM Peak Period DS

Figure 6-33: Changes in VC Ratios in 2060 AM Peak Period DS

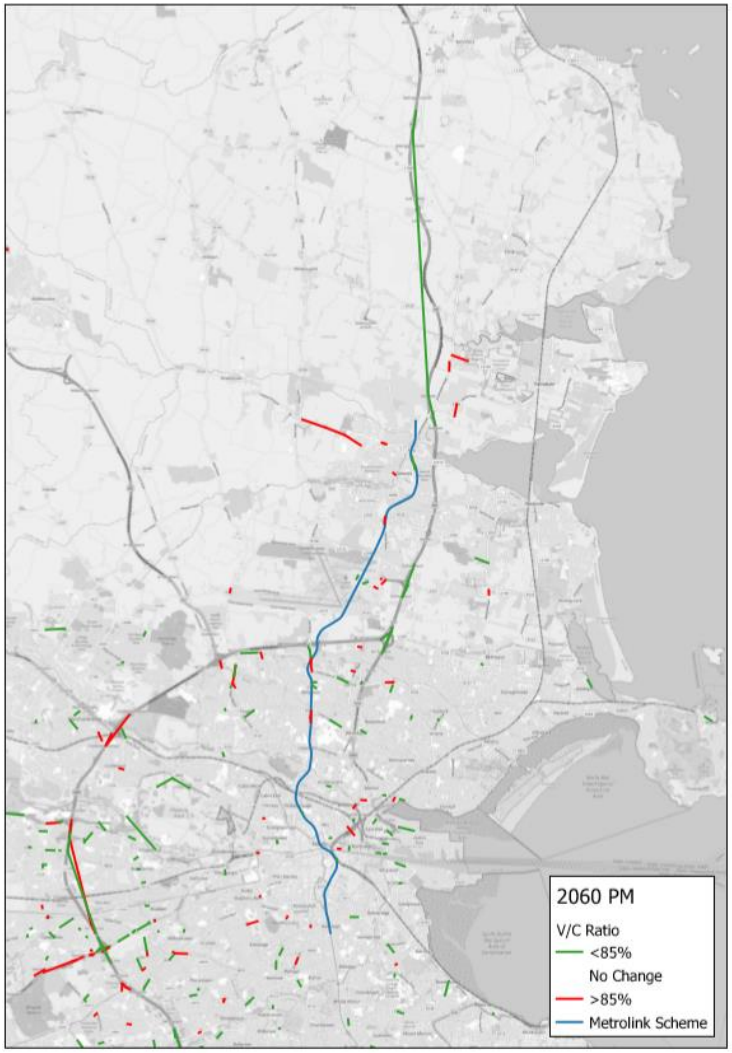

Figure 6-34: Changes in VC Ratios in 20600 PM Peak Period DS

6.7.3 Delay

Figure 6-35 to Figure 6-40 shows the changes in delays with the scheme in place in the AM and PM peaks in 2030, 2045 and 2060.

As would be expected, and as in line with the Volume to Capacity ratio plots, there are increases in delays on links to the North of Estuary Park and Ride, due to the increase in traffic travelling to and from the Park and Ride Sites in the respective AM and PM Peaks. There are also decreases in delays between Estuary and the City Centre, due to a reduction in traffic on the road network, as a result of previous highway trips using the MetroLink instead.

The 2030 PM peak illustrates a number of delay impacts within the City Centre, however these delays are not present in the 2045 and 2060 scenarios, so may be attributed to variances within the model.

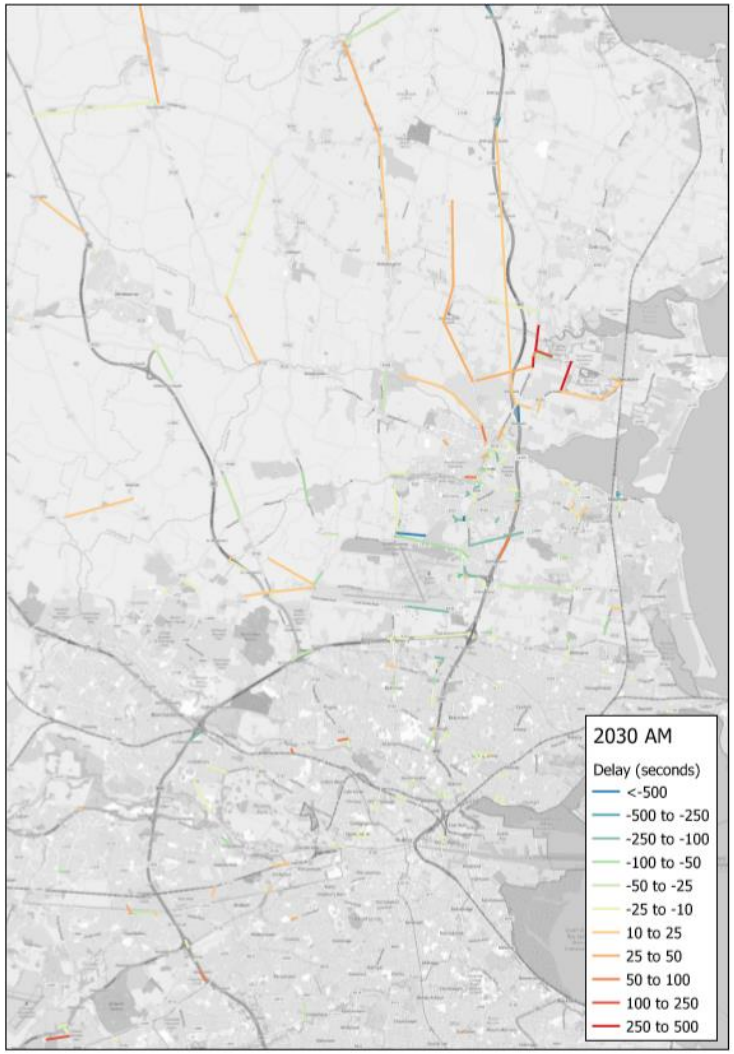

Figure 6-35 - Change in Delay in 2030 AM Peak Period DS

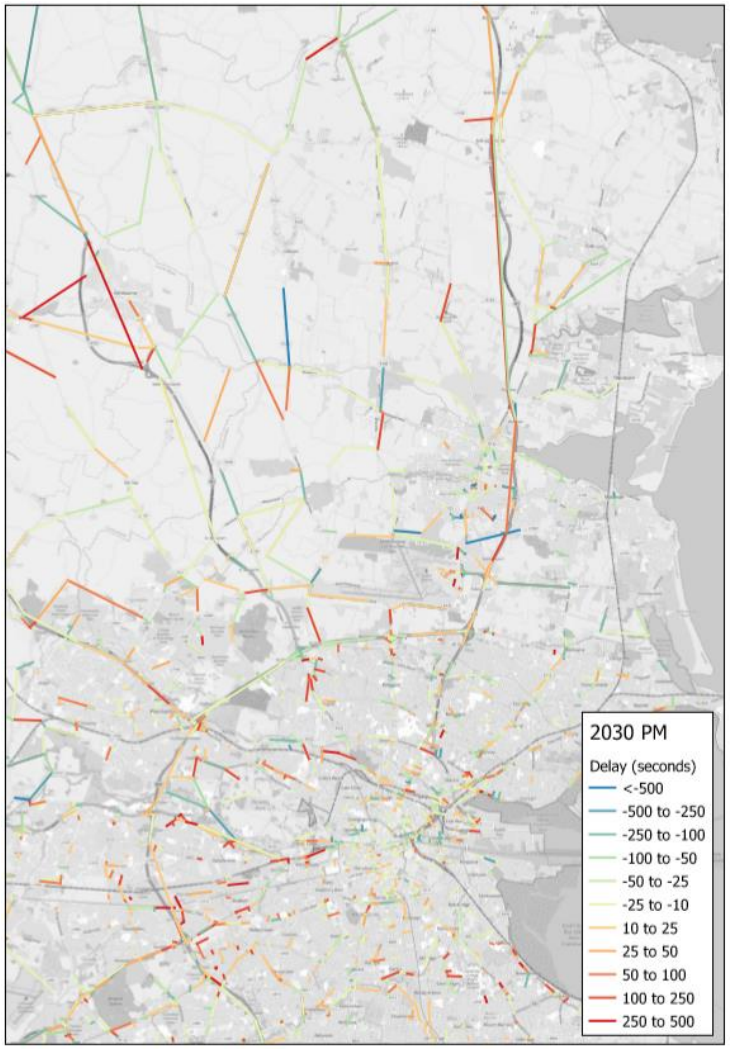

Figure 6-36 - Change in Delay in 2030 PM Peak Period DS

Figure 6-37: Change in Delay in 2045 AM Peak Period DS

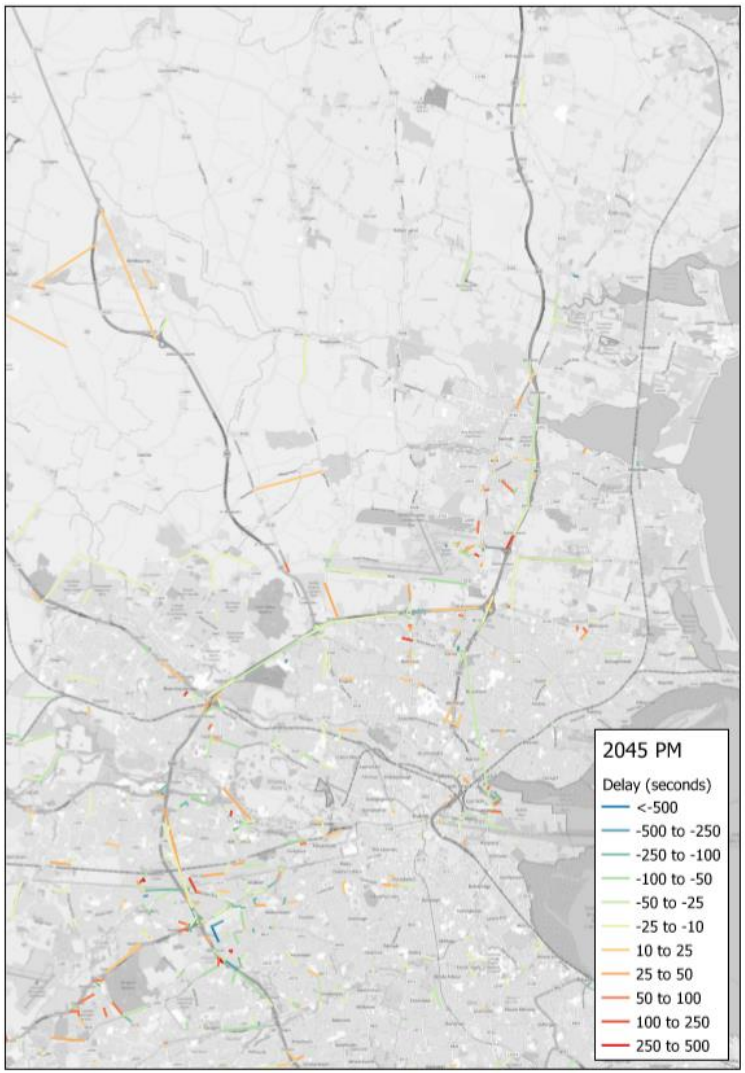

Figure 6-38: Change in Delay in 2045 PM Peak Period DS

Figure 6-39: Changes in Delay in 2060 AM Peak Period DS

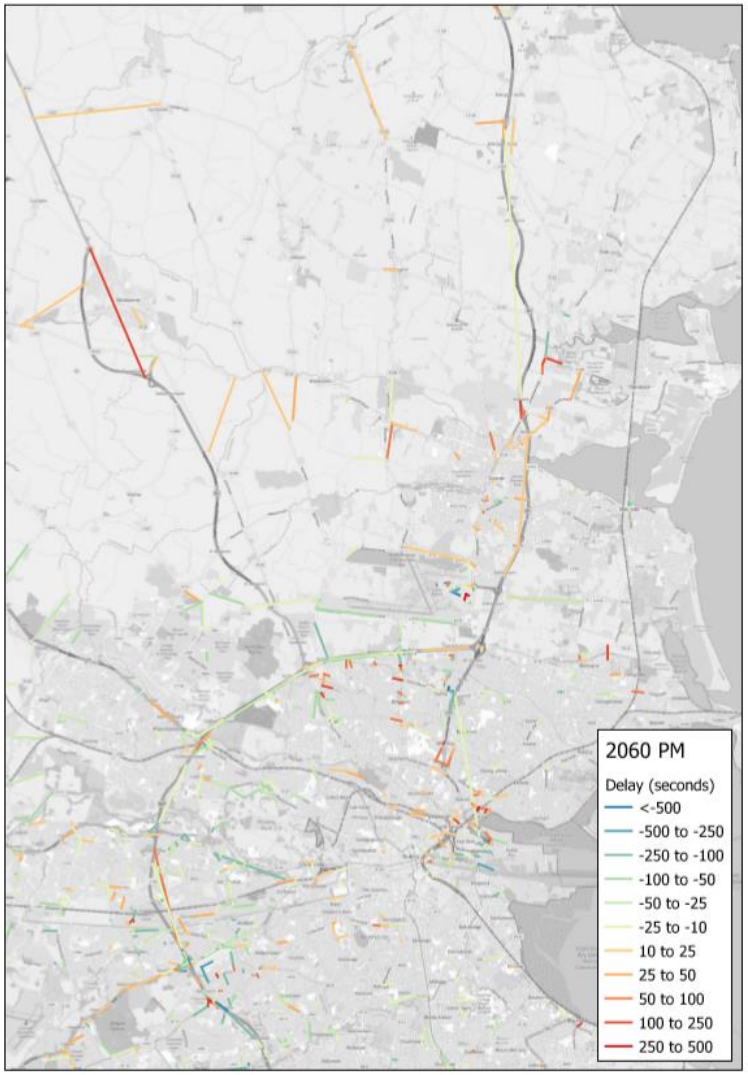

Figure 6-40: Changes in Delay in 2060 PM Peak Period DS

7. MetroLink Modelling Results: Sensitivity Analysis

7.1 Introduction

Five sets of Sensitivity Tests have been undertaken for the MetroLink appraisal. These are:

- Slow Growth;
- Low Frequency;
- Alternative Demand;
- Enhanced Transport Network: National Development Plan;
- Enhanced Transport Network: National Development Plan + Alternative Demand; and
- Enhanced Transport Network: NTA Greater Dublin Area Strategy.

Each of the above scenarios were assessed for the forecast years of 2030, 2045 and 2060, or in the cases of the Enhanced Transport Network two of these years, (exception of National Development Plan + Alternative Demand Scenario, which was assessed for all three years). These were then compared with the Business Case Core Run Do Something results for the corresponding year. The results are presented in this section. Model outputs for all time periods can be found in Appendix B.

7.2 Slow Growth

7.2.1 Description

The Slow Growth scenario has been undertaken to help understand the impact of population and jobs growth on the MetroLink scheme. The slower growth scenario assumes that growth in population and jobs follows the same pattern as the Business Case Core runs but happens at a slower pace, such that the difference increases as the forecast years get closer to 2060. The forecasts have been developed by taking a planning datasheet from an earlier year and using that for the forecast years, as summarized within Table 7-1.

Table 7-1:Slow Growth Forecast

Forecast Year	Planning Datasheet Year used for Slow Growth
2030	2028
2045	2040
2060	2052

Analysis of peak hour passenger loading and 12-hour total boarding and alighting model results are presented here, with more detailed results of boarding, alighting and load by period and direction provided in Appendix A.

7.2.2 Loading Profile

The loading results for the Slow Growth runs are summarised in Table 7-2. Line loading by station is presented in detail with charts for each peak period and direction. This section also compares the results with those from the corresponding Business Case (BC) Core runs.

Table 7-2: Maximum Loading in Peak Periods for Slow Growth runs

Direction	Year	Max Loading		Difference from Business Case	
		AM	PM	AM	PM
Northbound	2030	4,860	7,271	-3%	-5%
	2045	5,744	7,758	-7%	-6%
	2060	6,950	9,518	-16%	-14%
Southbound	2030	10,096	3,827	-3%	-4%
	2045	11,028	4,049	-6%	-12%
	2060	13,560	5,273	-9%	-19%

Figure 7-1 to Figure 7-4 show the load for each year across stations for each peak period and direction. In the Northbound AM peak, shown in Figure 7-1, the maximum load in 2030 is 4,860, which is 3% lower than the corresponding BC Core Run maximum load (5,024). For 2045 it is 5,744, which is 7% lower than in the BC Core Run (6,167). In 2060, the maximum load of 6,950 is 16% lower than the BC Core Run 2060 maximum load (8,243).

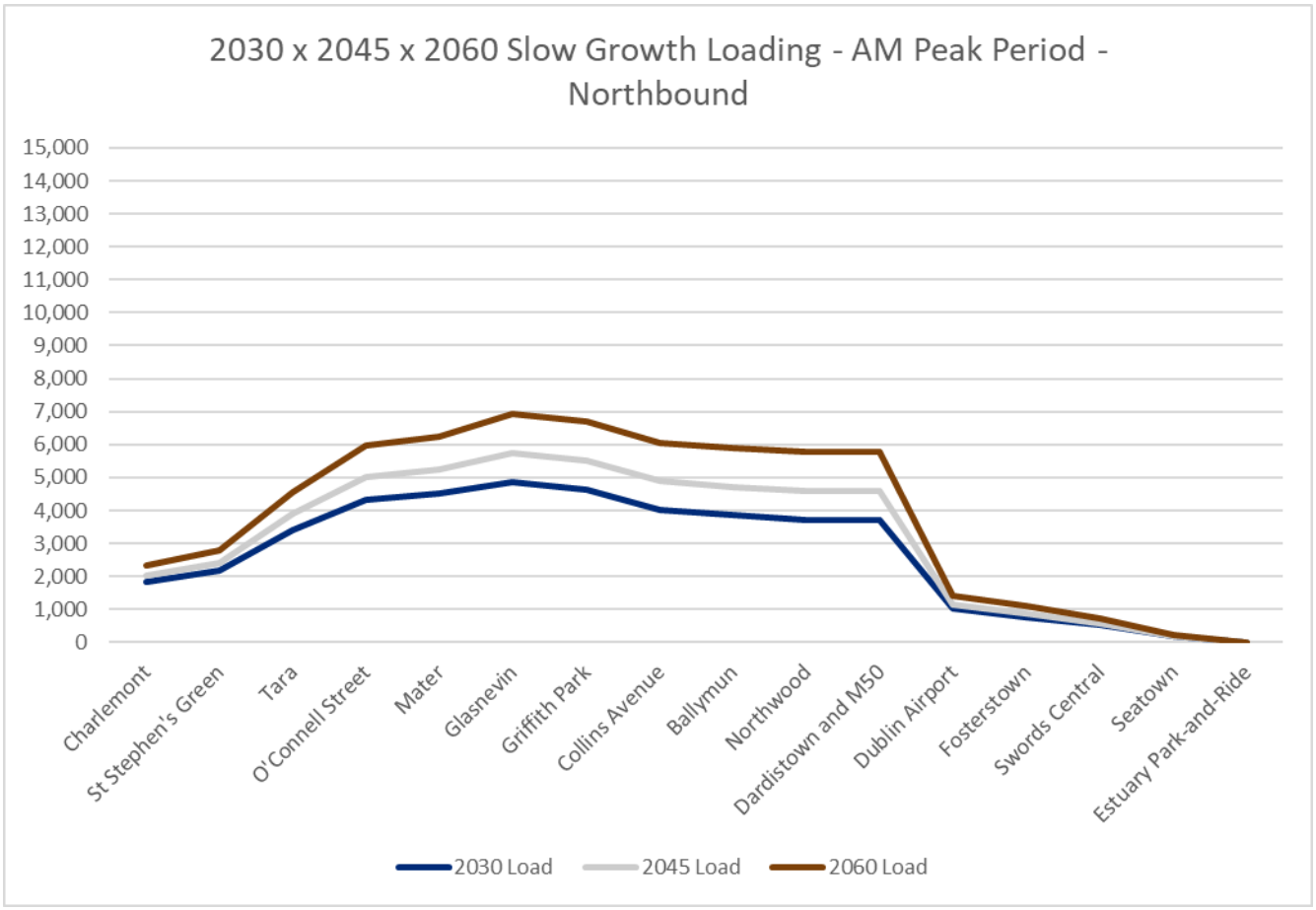

Figure 7-1: Slow Growth Sensitivity Test – AM Peak loading in Northbound direction

In the Southbound direction, loading results for the AM peak are shown in Figure 7-2. The 2030 maximum load here is 10,096, a 3% decrease from the BC Core Run (10,412). 2045 maximum loading is 11,028 which is 6% lower than in the BC Core Run (11,765). For 2060, the maximum load is 13,560, 9% lower than the BC Core Run (14,859).

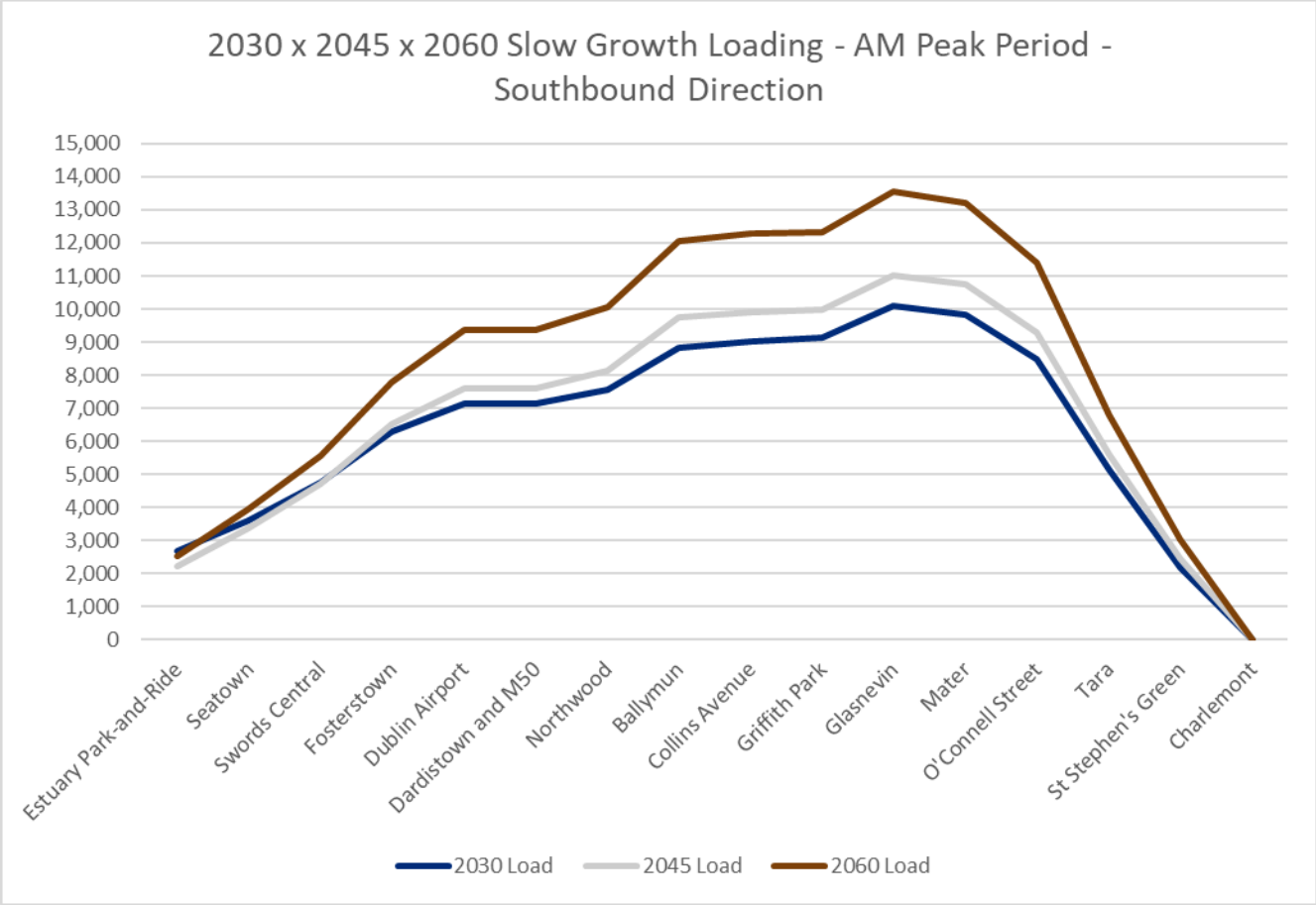

Figure 7-2: Slow Growth Sensitivity Test – AM Peak loading in Southbound direction

Figure 7-3 presents the PM peak loading in the Northbound direction. The 2030 Slow Growth maximum PM loading for this direction is 7,271. This is 5% lower than the BC Core Run value (7,616). The 2045 maximum load is 7,758, which is 6% lower than in the BC Core Run (8,280). The 2060 maximum load is again lower than the BC Core Run, at 9,518; 14% lower than the BC Core Run (11,006).

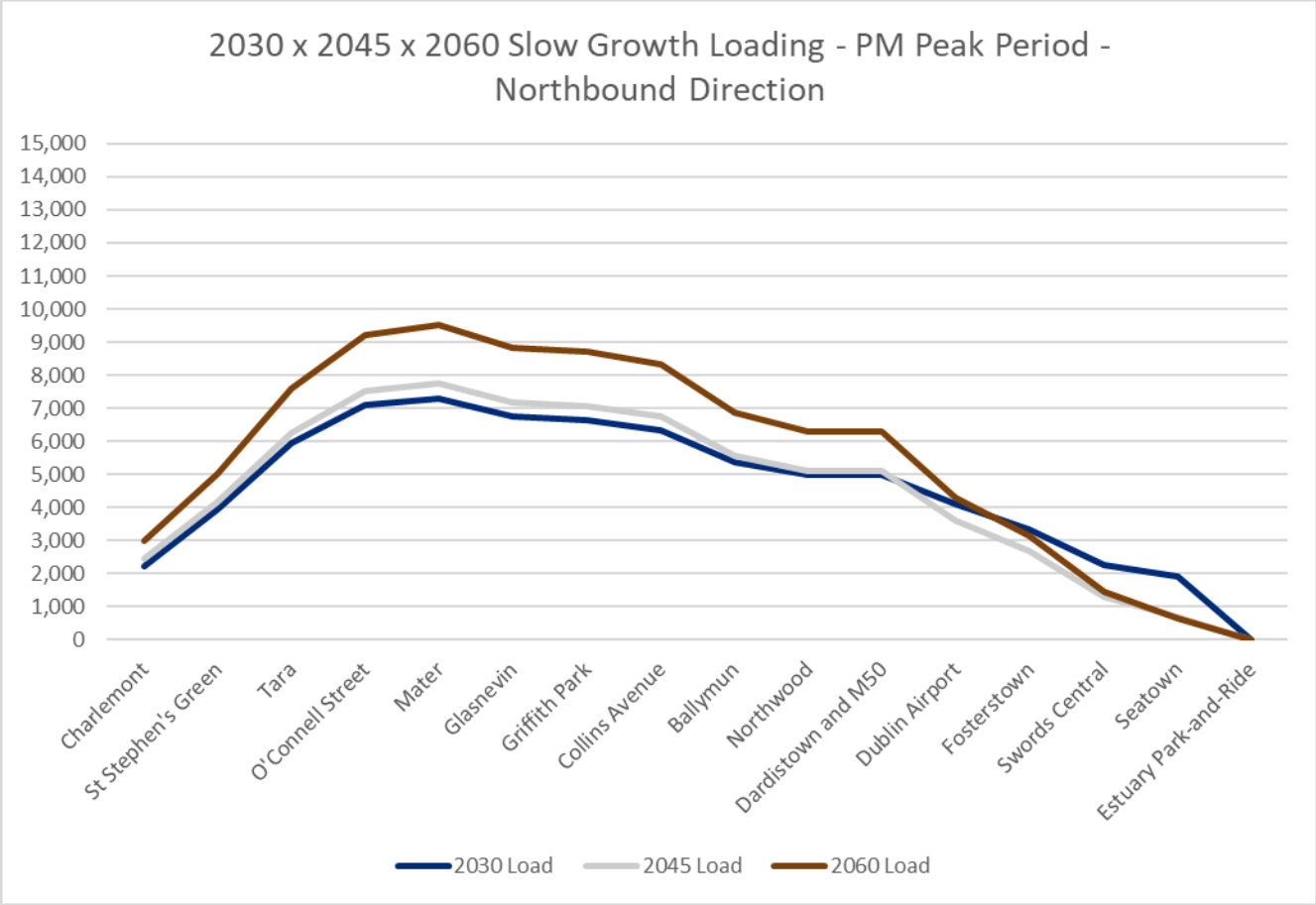

Figure 7-3: Slow Growth Sensitivity Test – PM Peak loading in Northbound direction

Figure 7-4 provides the PM peak loading results in the Southbound direction. In 2030, the maximum load is 3,827, which is 4% smaller than the BC Core Run (3,999). The 2045 maximum load is 4,049, 12% lower than the BC Core Run (4,619). In 2060 with a value of 5,273, the maximum load is 19% smaller than the Core BC Run (6,529).

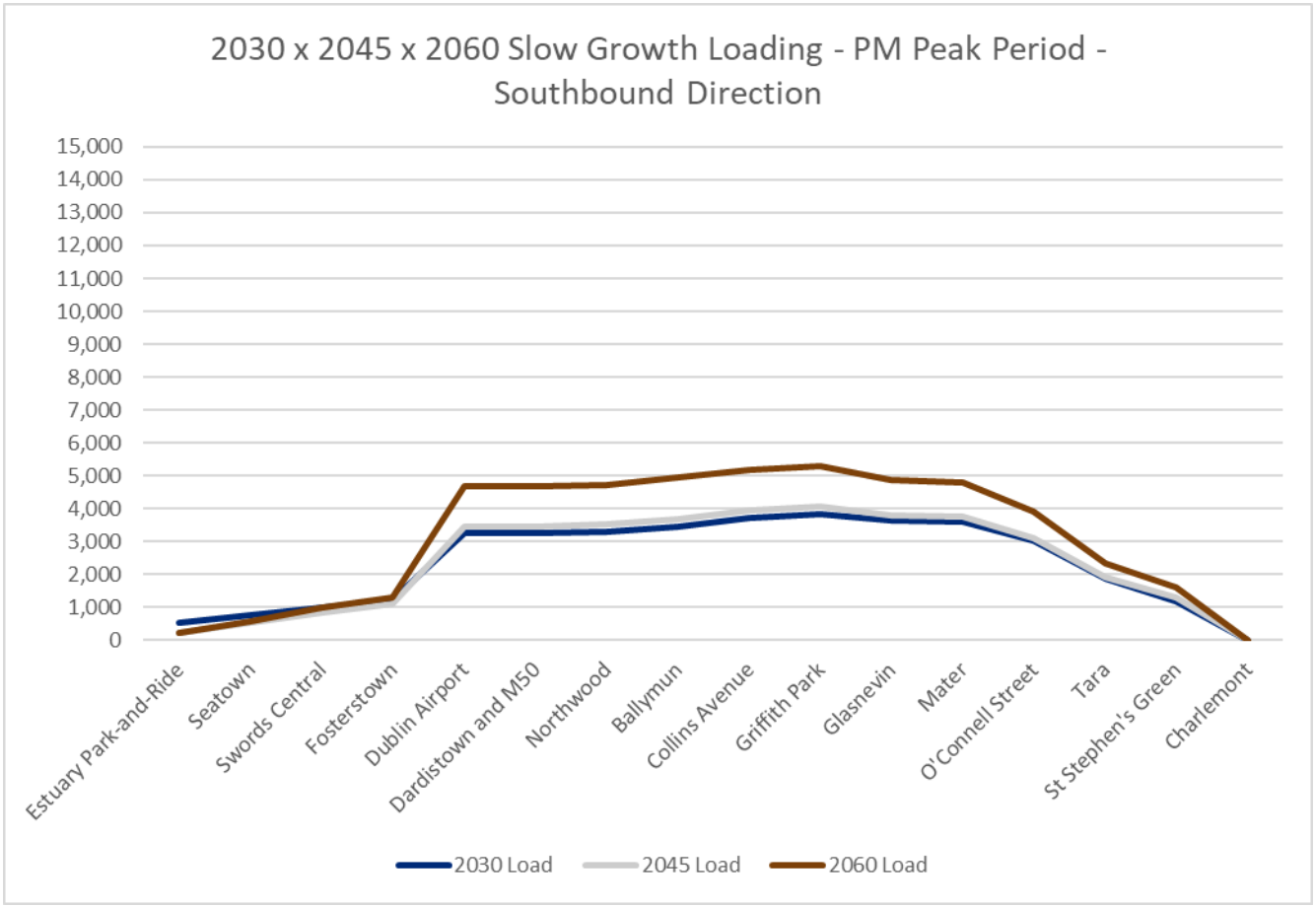

Figure 7-4: Slow Growth Sensitivity Test – PM Peak loading in southbound direction

7.2.3 Boarding and Alighting Numbers

The 12-hour boarding and alighting totals on the MetroLink line for the Slow Growth runs are shown in Figure 7-5. The boardings and alightings at each station generally increase across the modelled years. Total 12-hour boardings go from 123,396 in 2030 to 142,033 in 2045 (an increase of 15% between these years), then to 177,755 in 2060 (an increase of 25% between 2045 and 2060). Dublin Airport shows the largest increase in both boardings and alightings in 2060. The Estuary Park-and-Ride station is the only station showing a decrease in boardings and alightings across the years.

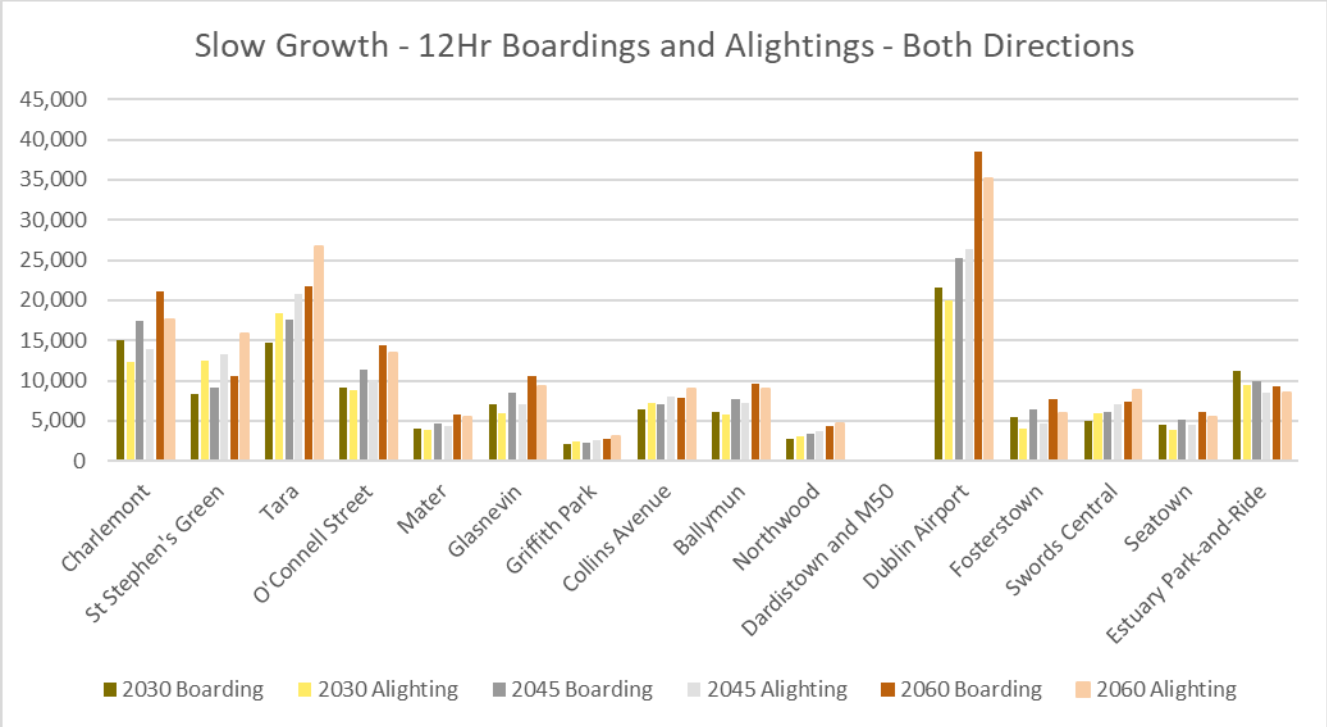

Figure 7-5: Slow Growth Sensitivity Test – 12hr Boardings and Alightings Both Directions

Slow Growth results for each year are provided in Table 7-4. The Slow Growth boardings and alightings at each station are compared with the BC Core run results in Figure 7-6 to Figure 7-8. “SG” in the charts refers to Slow Growth runs, and “BC Core” refers to the Business Case Core runs.

Table 7-3: 12-Hour Boarding and Alighting in Peak Periods for Slow Growth runs

Year	Boarding	Difference from Core BC
2030	123,396	-4%
2045	142,033	-9%
2060	177,755	-15%

Figure 7-6 shows a comparison of boarding and alighting totals for the 2030 Slow Growth run. The overall boardings are 4% less than the Business case boardings, with 123,396 boardings in the 2030 Slow Growth results compared to 128,182 boardings in the Business Case.

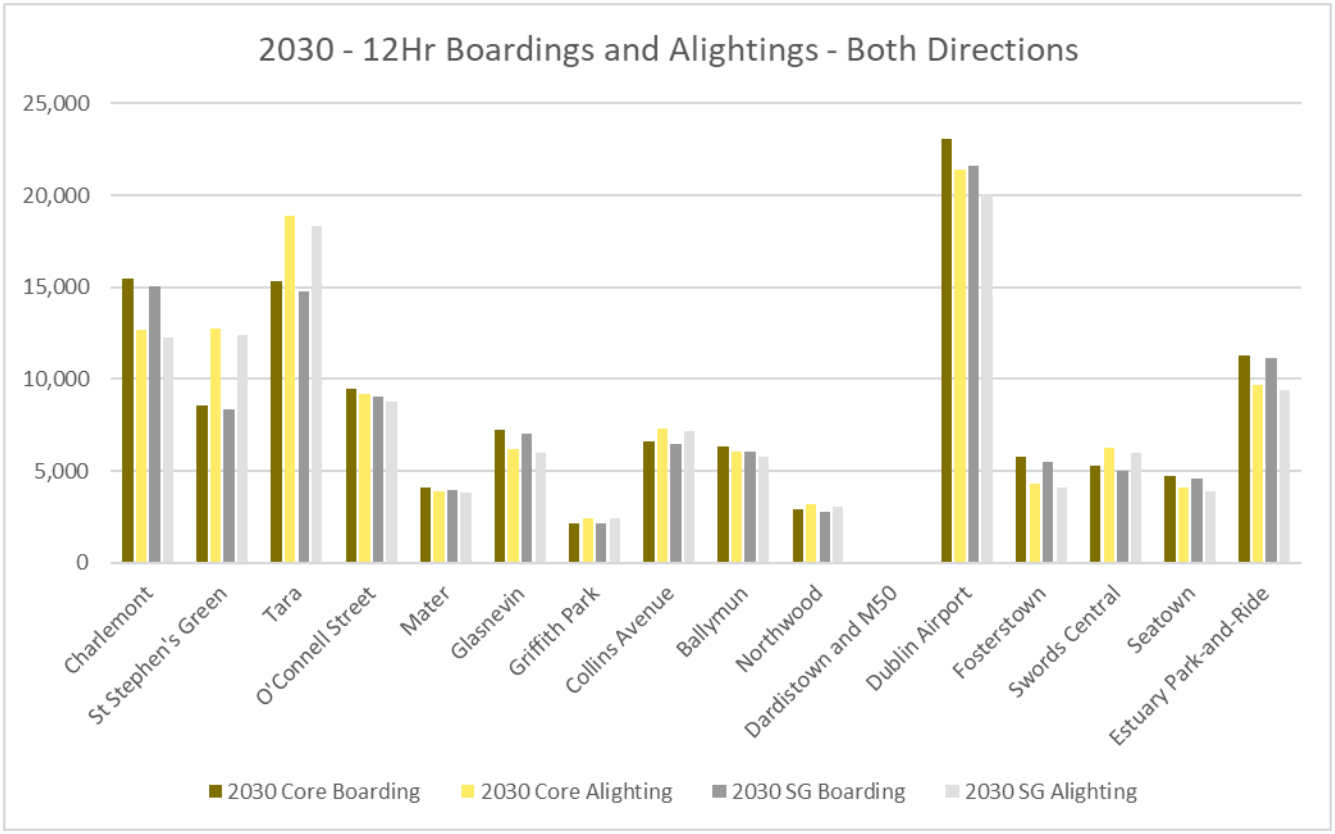

Figure 7-6: 2030 Slow Growth Sensitivity Test x Business Case Scenario – 12hr Boardings and Alightings Both Directions

In 2045, the 12-hour Slow Growth boarding and alighting are also lower than in the Business Case run, as shown in Figure 7-7. Overall, the 2045 Slow Growth run results showed 142,033 boardings. This is 9% less boardings than the Business Case 2045, which showed 156,091 boardings. The station with the largest difference is Dublin Airport. The 2045 Slow Growth run has 21% less boardings and 12% less alightings at Dublin Airport than the BC Core run.

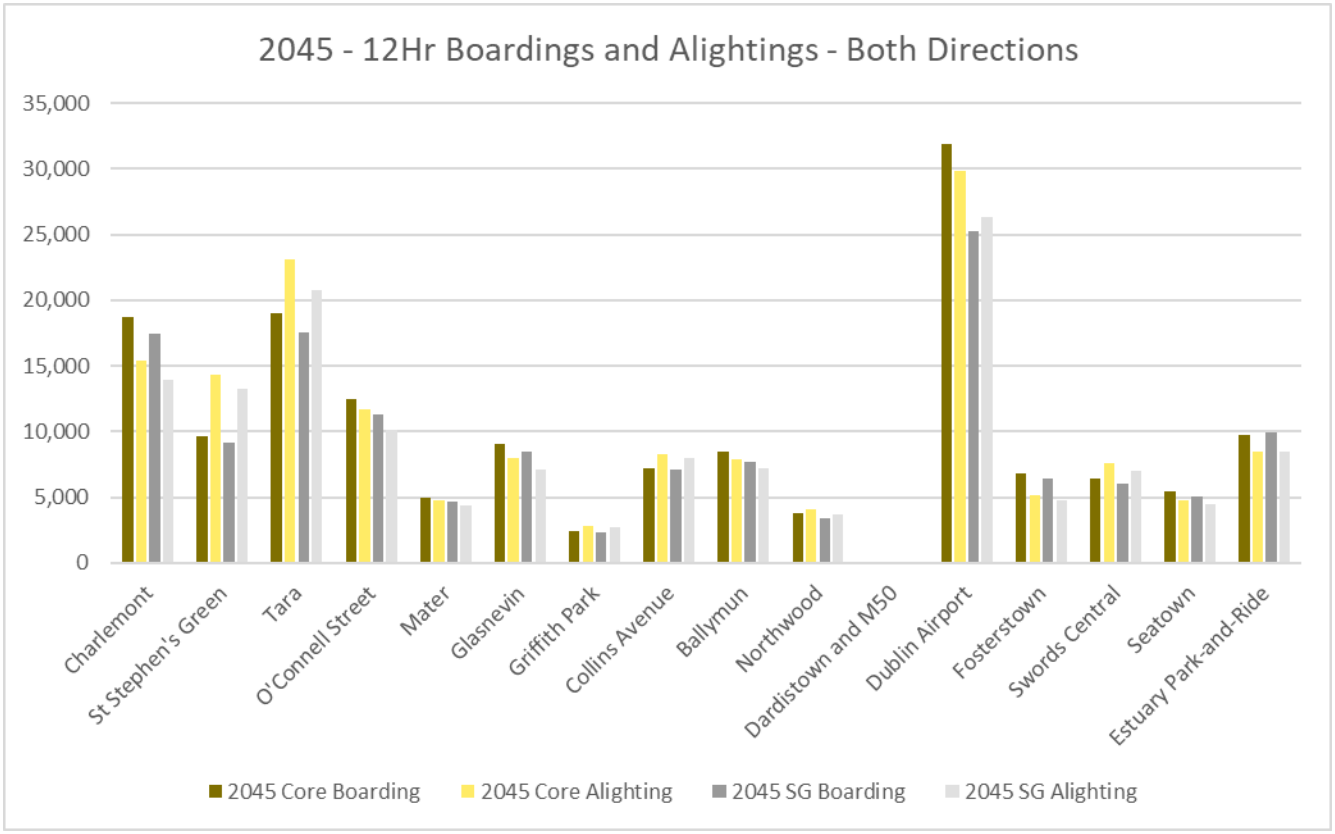

Figure 7-7: 2045 Slow Growth Sensitivity Test x Business Case scenario – 12hr Boardings and Alightings Both Directions

The 2060 Slow Growth results are shown in Figure 7-8. This Scenario has 15% less boardings and alightings than the BC Core run. The Estuary Park-and-Ride station shows the largest difference in 2060, with 29% less boardings and 30% less alightings in the Slow Growth than the BC Core run.

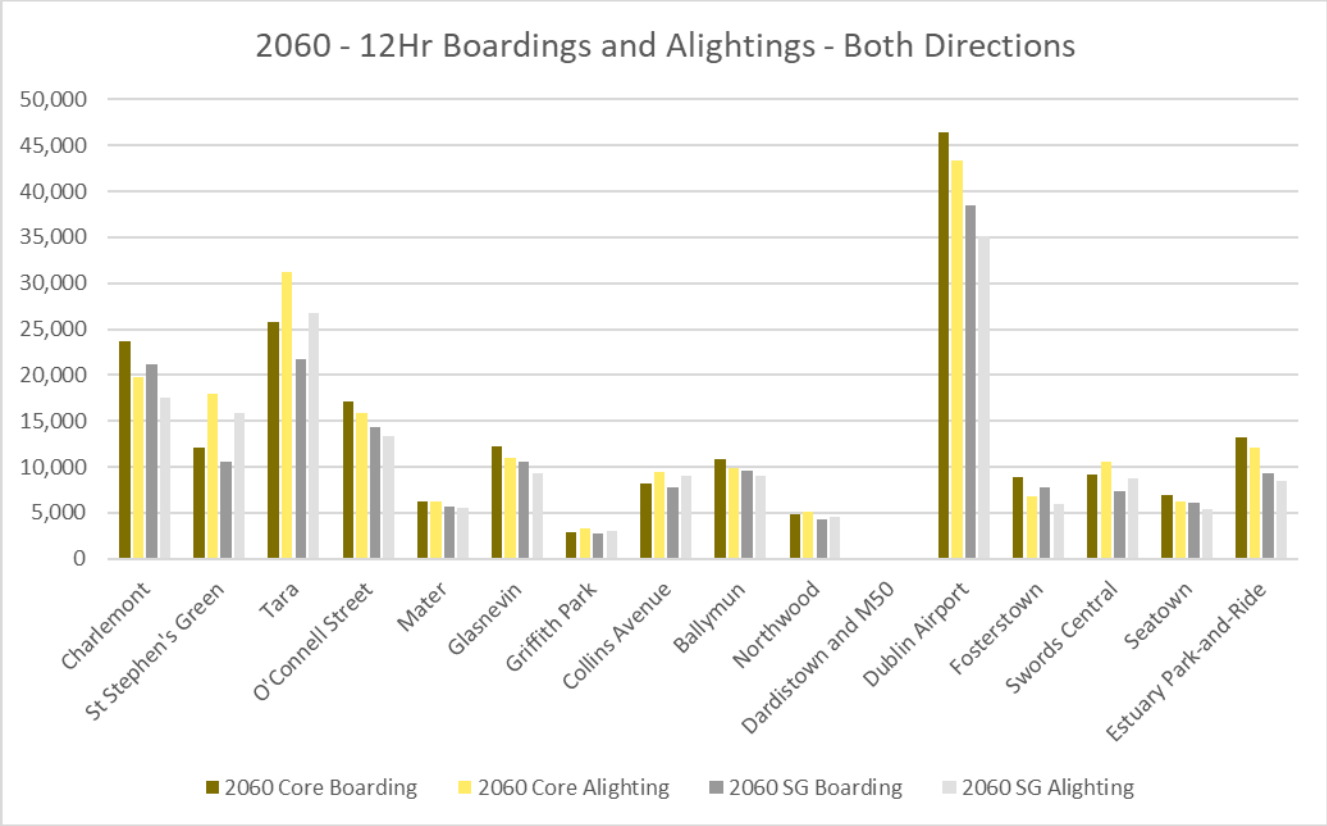

Figure 7-8: 2060 Slow Growth Sensitivity Test x Business Case scenario – 12hr Boardings and Alightings Both Directions

7.3 Low Frequency

7.3.1 Description

In the Low Frequency sensitivity test, the core population, job forecasts and travel patterns have been assumed to remain in place, but the frequency of trains on the MetroLink has been reduced. This sensitivity test has been undertaken to understand how the MetroLink may perform if it was operated with a lower frequency, i.e., with less trains.

Table 7-4 details the lower frequencies assessed in comparison with the Business Case runs.

Table 7-4: Headways in the Low Frequency Sensitivity Test

Forecast Year	Business Case Core Run Headways	Low Frequency Headways
2030	All Periods: 2 minutes	All Periods: 5 minutes
2045	All Periods: 2 minutes	All Periods: 3.5 minutes
2060	All Periods: 1.5 minutes	All Periods: 3 minutes

7.3.2 Loading Profile

The loading results for the Low Frequency runs are summarised in Table 7-5. Line loading by station is presented in detail with charts for each peak period and direction. This section also compares the results with those from the corresponding Business Case (BC) Core runs.

Table 7-5: Maximum Loading in Peak Periods for Low Frequency runs

Direction	Year	Max Loading		Difference from Business Case	
		AM	PM	AM	PM
Northbound	2030	4,427	6,204	-12%	-19%
	2045	5,809	7,617	-6%	-8%
	2060	7,429	9,615	-10%	-13%
Southbound	2030	8,723	3,387	-16%	-15%
	2045	10,760	4,354	-9%	-6%
	2060	13,581	5,674	-9%	-13%

The load for each year across stations for each peak period and direction is shown in Figure 7-9 to Figure 7-12.

Figure 7-9 shows the Northbound AM peak loading. The maximum load in 2030 is 4,427, which is 12% lower than the corresponding BC Core Run maximum load (5,024). For 2045 it is 5,809, which is 6% lower than in the BC Core Run (6,167). In 2060, the maximum load is 7,429, 10% lower than the BC Core Run 2060 maximum load (8,243).

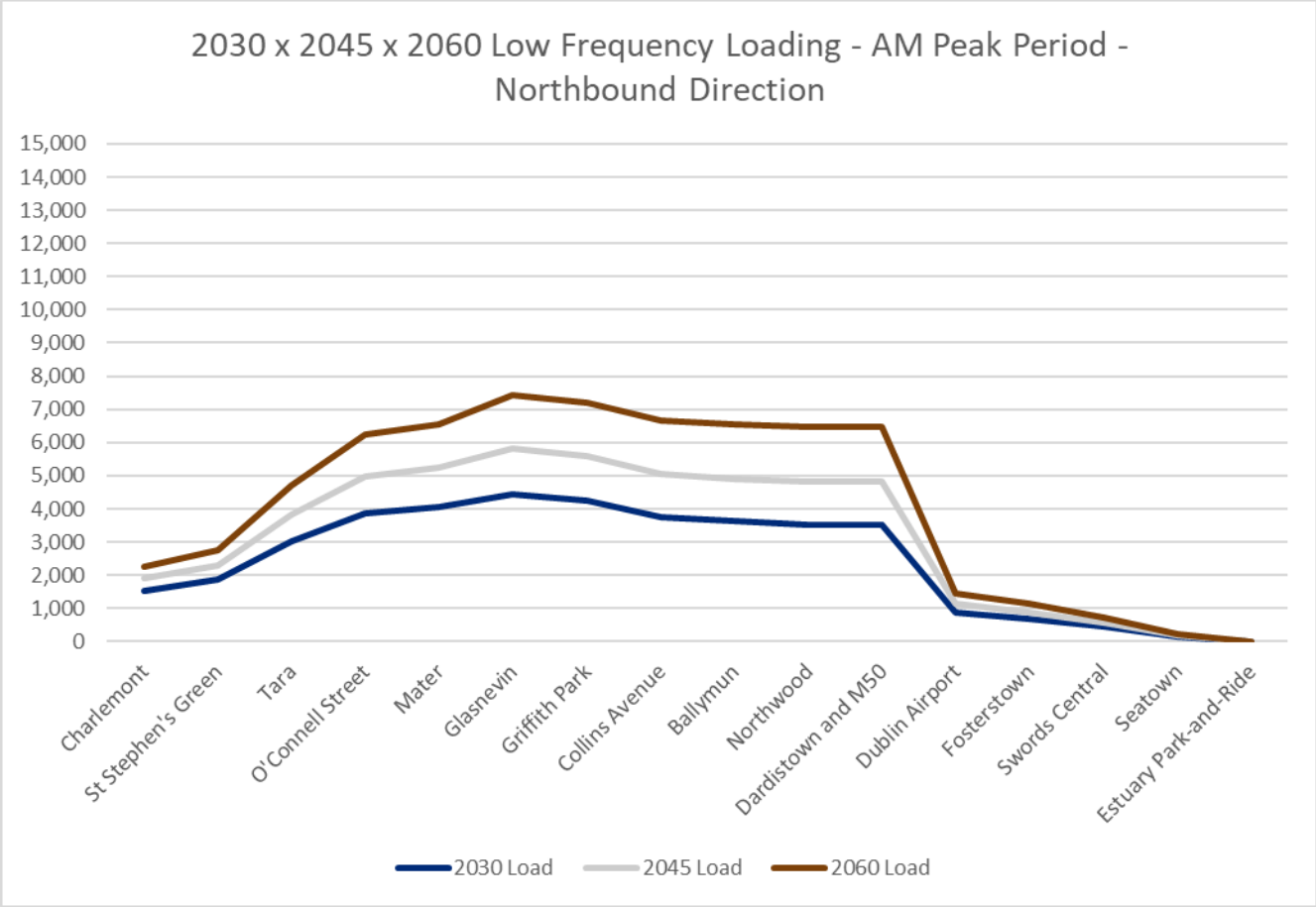

Figure 7-9: Low Frequency Sensitivity Test – AM Peak loading in Northbound direction

Figure 7-10 presents the AM peak loading in the Southbound direction. The 2030 Slow Growth maximum PM loading for this direction is 8,723. This is 16% lower than the BC Core Run value (10,412). The 2045 maximum load is 10,760, which is 9% lower than in the BC Core Run (11,765). The 2060 maximum load is again lower than the BC Core Run, at 13,581; 9% lower than the BC Core Run (14,859).

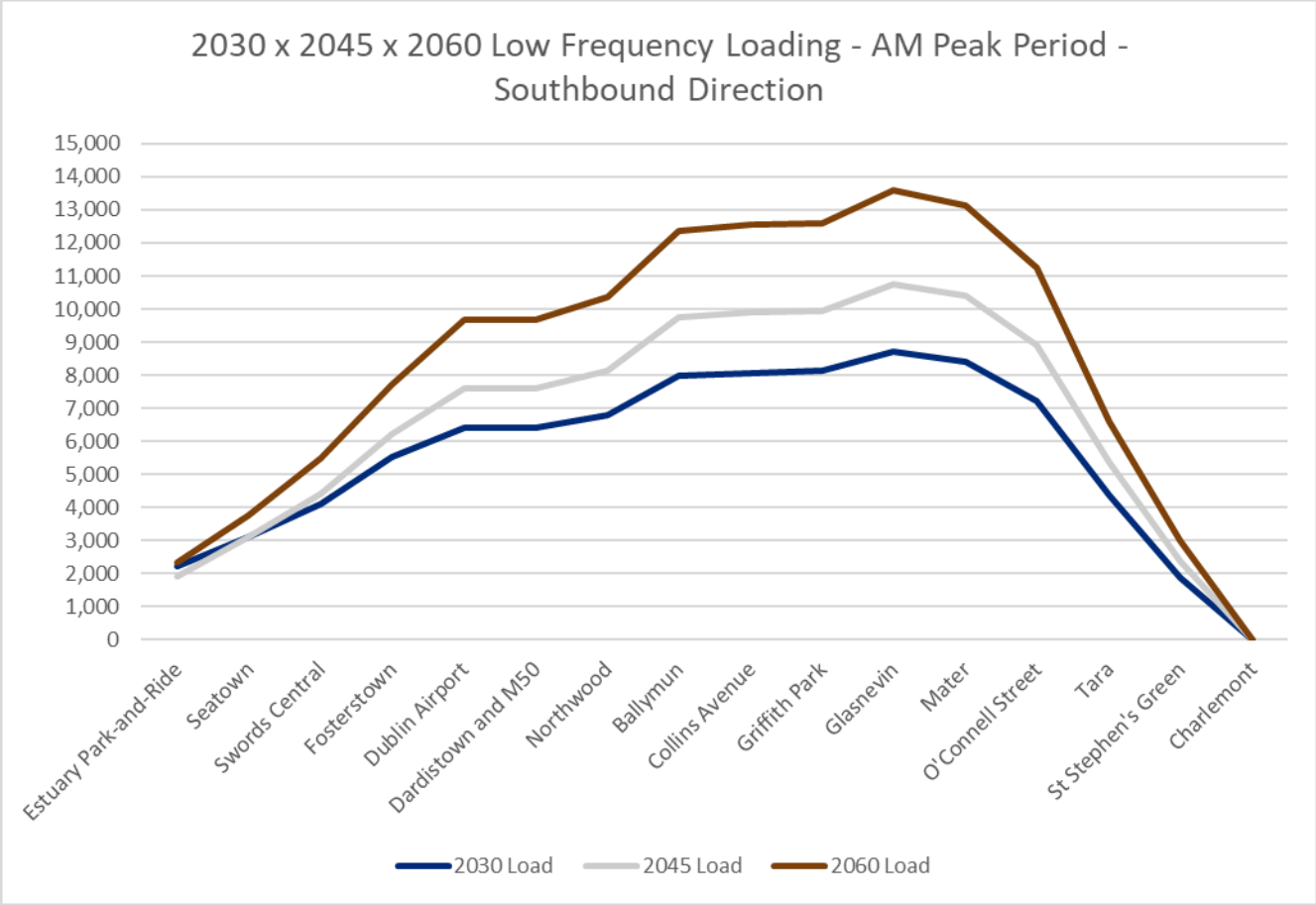

Figure 7-10: Low Frequency Sensitivity Test – AM Peak loading in Southbound direction

Loading results for the PM peak travelling Northbound are shown in Figure 7-11. In 2030, the maximum load is 6,204, which is 19% lower than the BC Core Run (7,616). The 2045 maximum load is 7,617, 8% smaller than the BC Core Run (8,280). In 2060 with a value of 9,615, the maximum load is 13% smaller than the Core BC Run (11,006).

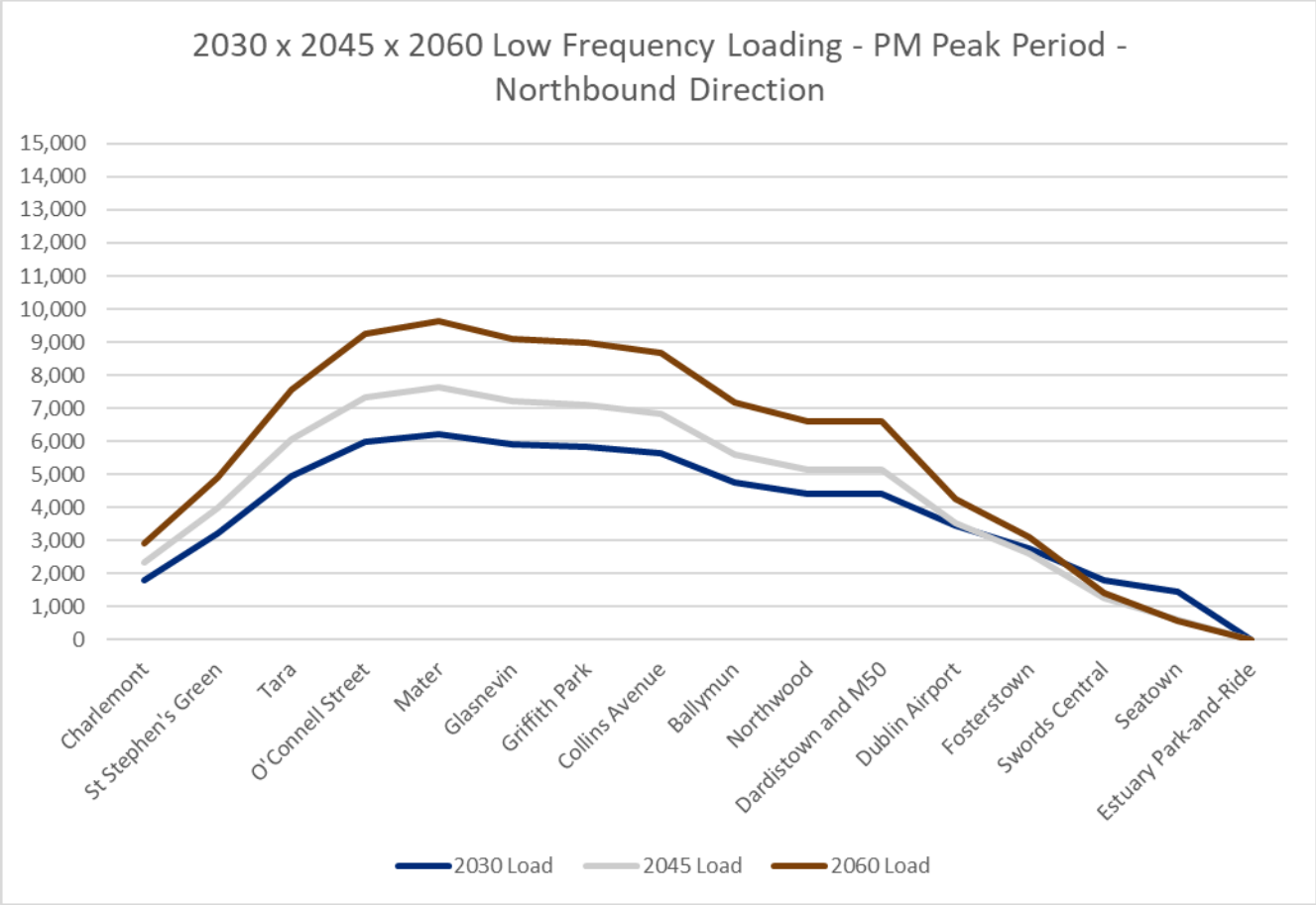

Figure 7-11: Low Frequency Sensitivity Test – PM Peak loading in Northbound direction

Figure 7-12 provides the PM peak loading results in the Southbound direction. The 2030 maximum load here is 3,387, a decrease of 15% from the BC Core Run (3,999). 2045 maximum loading is 4,354 which is 6% lower than the BC Core Run (4,619). For 2060, the maximum load is 5,674, 13% lower than in the BC Core Run (6,529).

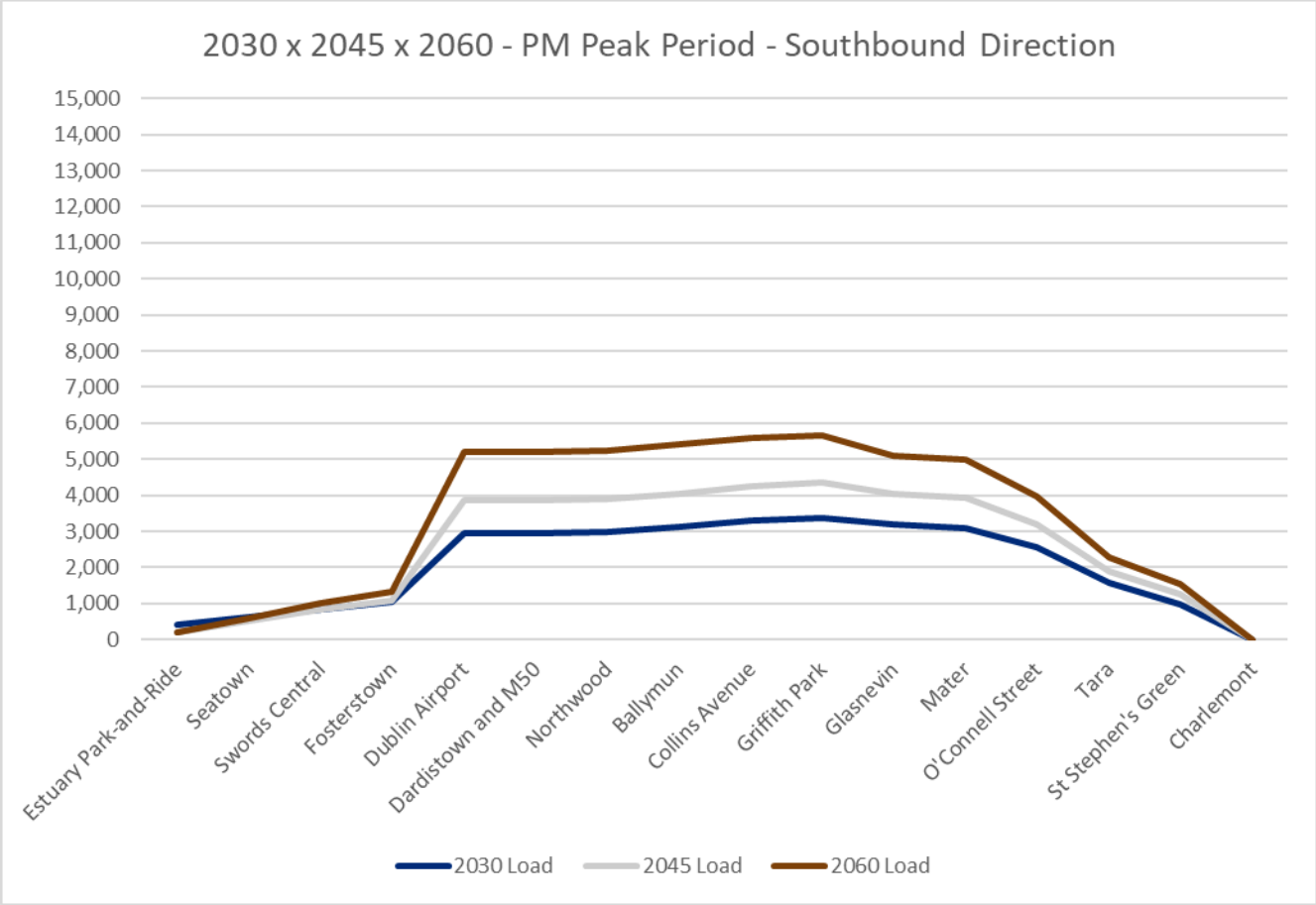

Figure 7-12: Low Frequency Sensitivity Test – PM Peak loading in Southbound direction

7.3.3 Boarding and Alighting Numbers

The 12-hour boarding and alighting totals on the MetroLink line, as modelled in the three Low Frequency runs, are shown in Figure 7-13. Total 12-hour boardings are 108,160 in 2030, rising to 143,539 in 2045 (an increase of 32.7%), then to 184,696 in 2060 (an increase of (28.7%). Boardings and alightings at each station generally increase across the modelled years, apart from the Estuary Park-and-Ride station, for which usage decreases in 2045 then increases again slightly in 2060. The Dublin Airport station shows the steepest absolute increase across the three years. Low Frequency run results for each year are compared with the Business Case run results in this section.

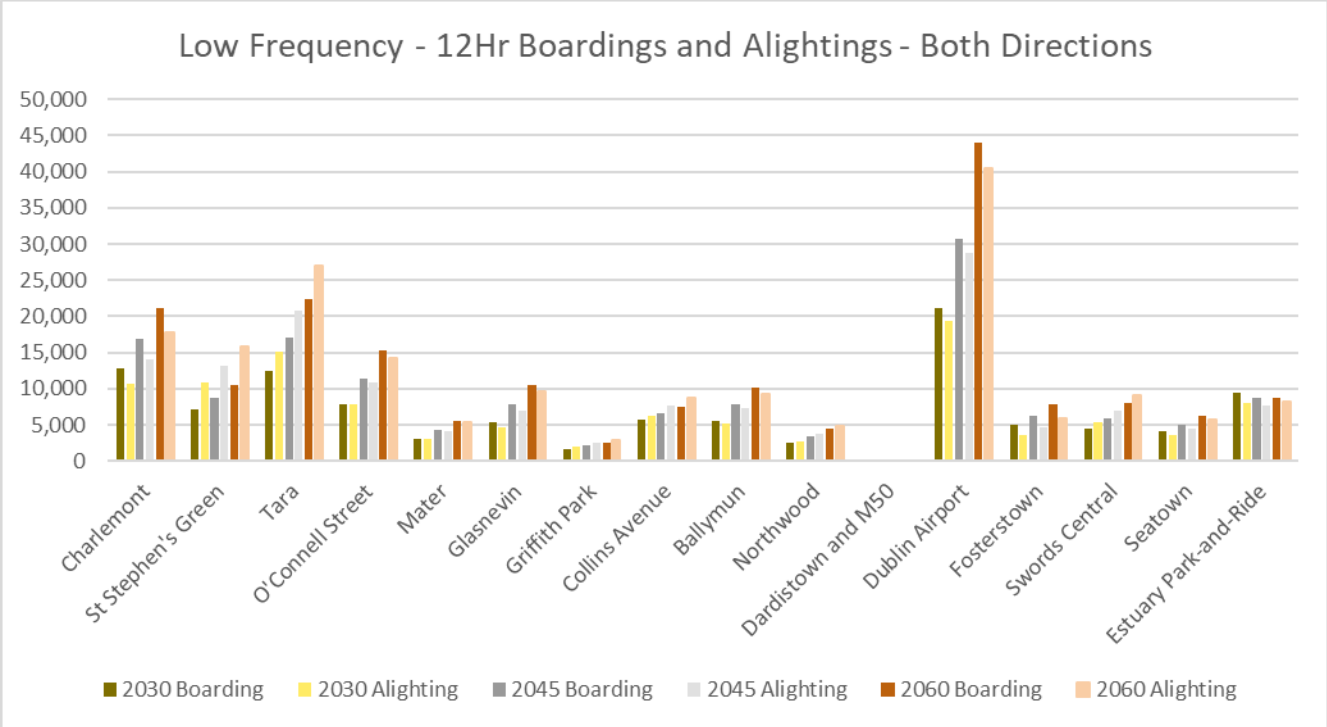

Figure 7-13: Low Frequency Sensitivity Test – 12hr Boardings and Alightings Both Directions

Table 7-6 shows Low Frequency 12-hour boarding results for each year. The Low Frequency results at each station are compared with the BC Core run results in Figure 7-14 to Figure 7-16. “LF” in the charts refers to Low Frequency runs, and “BC Core” refers to the Business Case Core runs.

Table 7-6: 12-Hour Boarding and Alighting in Peak Periods for Low Frequency runs

Year	Boarding	Difference from Core BC
2030	108,160	-16%
2045	143,539	-8%
2060	184,696	-12%

Figure 7-14 shows a comparison of 12-hour boarding and alighting totals for the 2030 Low Frequency run, alongside the Business Case run results. In this Low Frequency run, boardings and alightings are 16% lower than those in the Business Case run. There are 108,160 boardings and alightings in the 2030 Low Frequency results compared to 128,182 boardings and alightings in the Business Case. The Glasnevin station shows the largest difference between the runs, with 25% less boardings and 26% less alightings in the Low Frequency than the BC Core run. At Mater, there are 24% less boardings and 23% less alightings in the Low Frequency than the BC Core run.

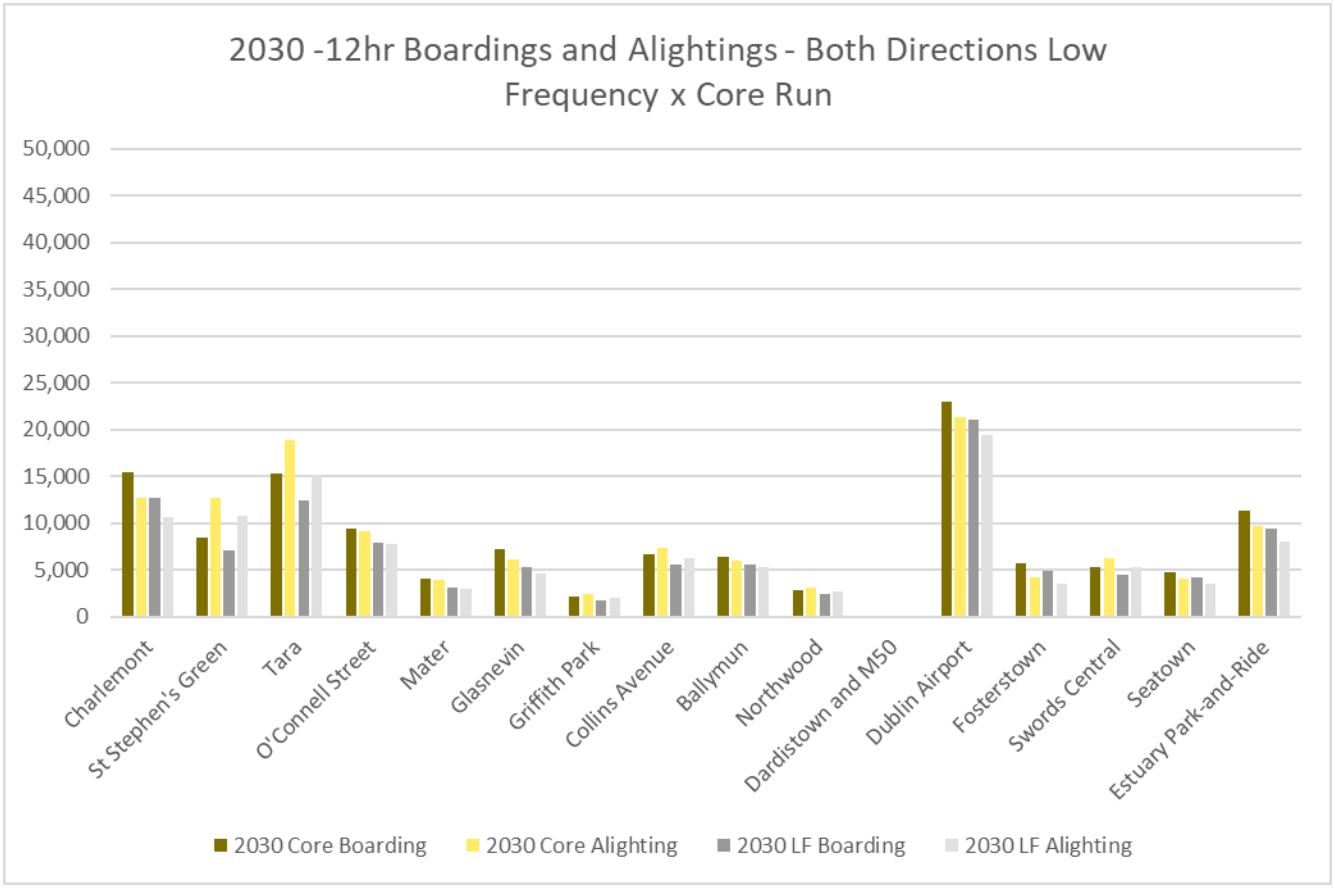

Figure 7-14: 2030 Low Frequency Sensitivity Test x Business Case Scenario – 12hr Boardings and Alightings Both Directions

In 2045, shown in Figure 7-15, the 12-hour Low Frequency boarding and alighting are 8% lower than in the Business Case run. Overall, the 2045 Low Frequency run results showed 143,539 boardings, compared to the BC Core Run which showed 156,091.

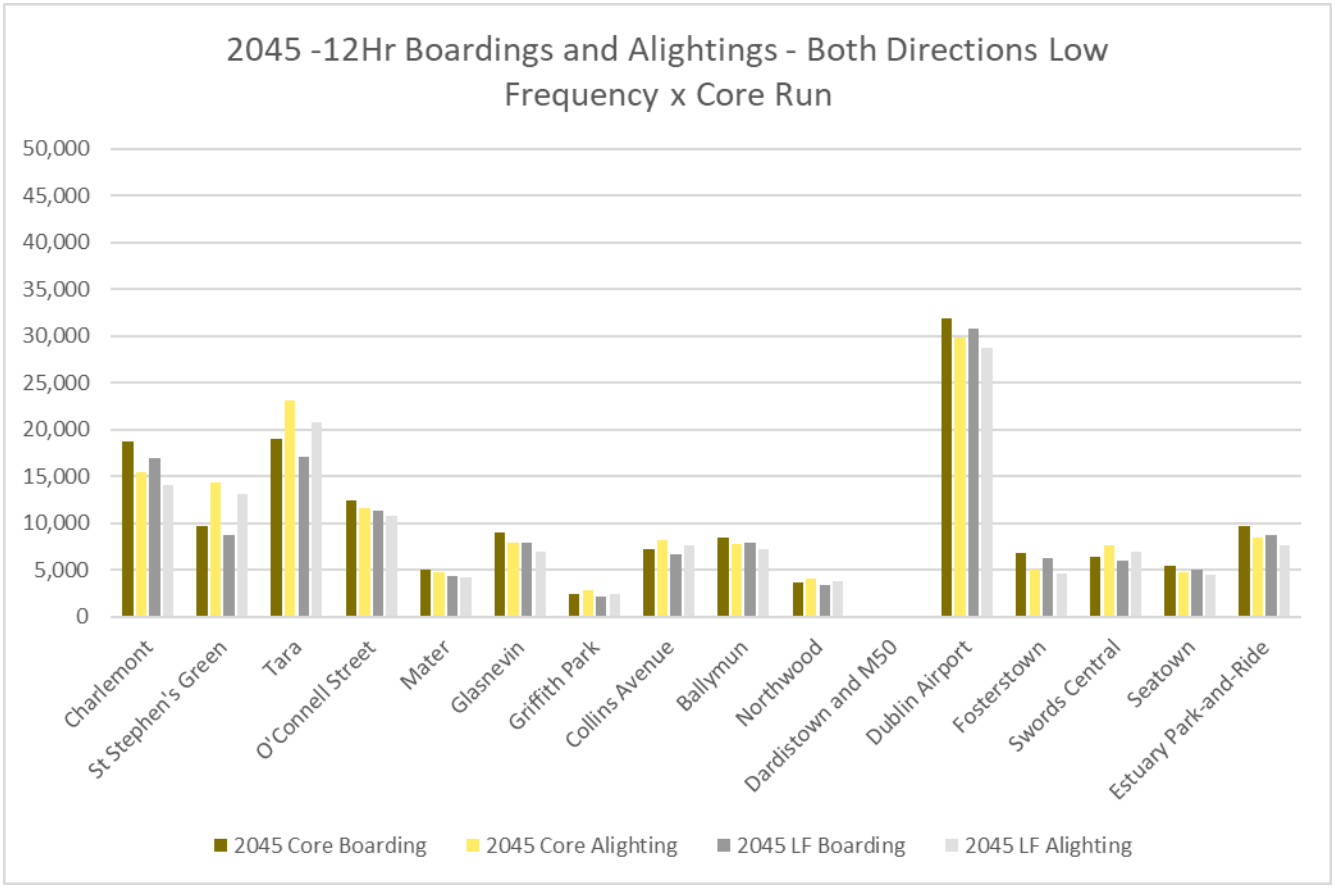

Figure 7-15: 2045 Low Frequency Sensitivity Test x Business Case Scenario – 12hr Boardings and Aligtings Both Directions

The 2060 Low Frequency results are shown in Figure 7-16. This Scenario has 12% less boardings and alightings than the BC Core Run. There are 184,696 boardings and alightings in the 2060 Low Frequency run and 208,815 in the BC Core Run. At the Estuary Park-and-Ride station, the Low Frequency run shows 33% less boardings and 32% less alightings than the BC Core Run.

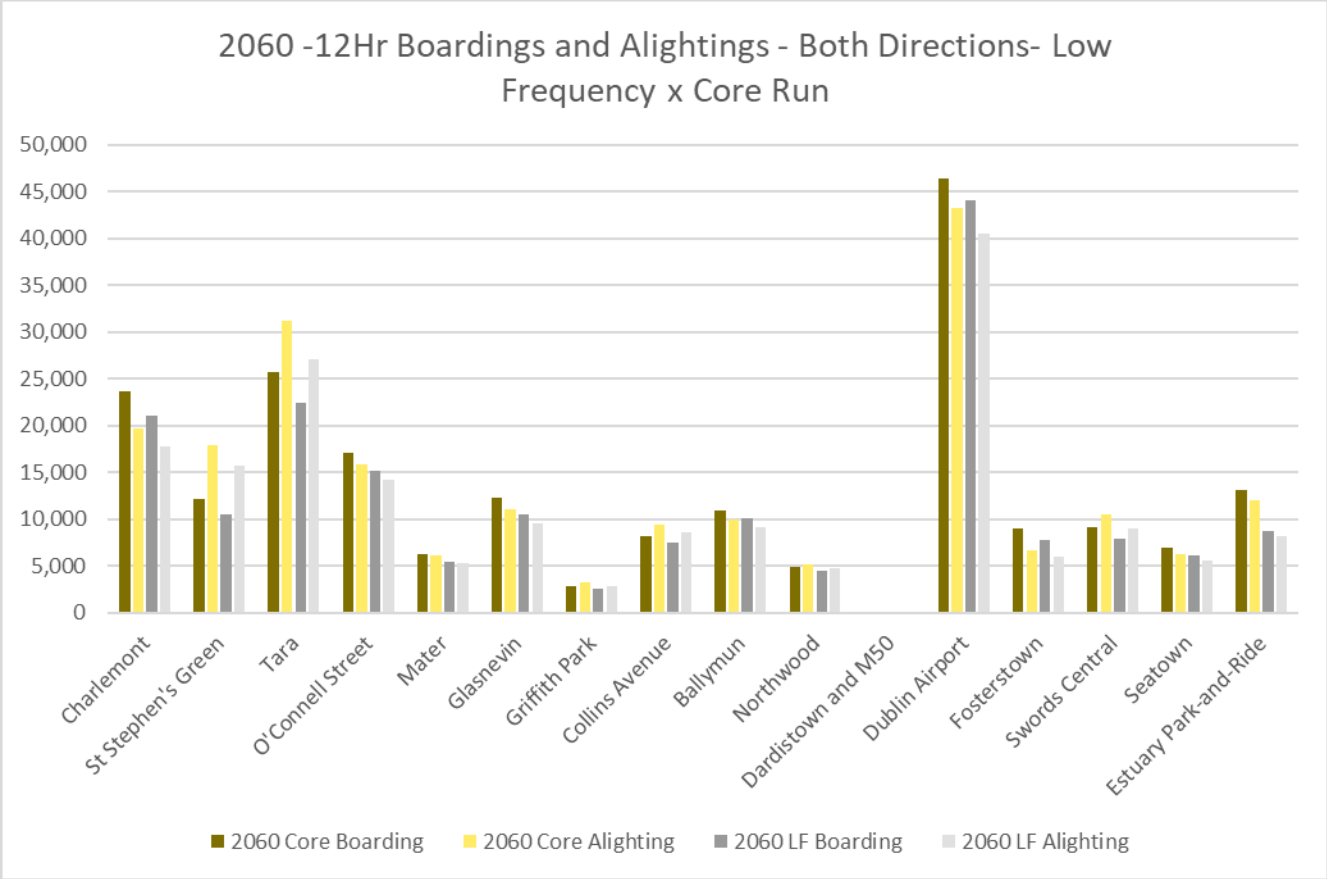

Figure 7-16: 2060 Low Frequency Sensitivity Test x Business Case Scenario – 12hr Boardings and Alightings Both Directions

7.4 Alternative Demand

7.4.1 Description

This Alternative Demand scenario has been developed by the NTA to consider the impact that the Covid-19 pandemic may have on future trip patterns, including a reduction in some types of Commute to Work and Education trips. The Alternative Demand has been assessed for a 2030, 2045 and a 2060 forecast scenario.

An explanatory note has been prepared by the NTA, *Alternative Future Scenario for Travel Demand*. The Alternative Demand scenario represents a reduction of approximately 8% in the total number of trips on the transport network. The adjustments made to trip rates for different user classes as part of this scenario are listed in Table 7-7.

Table 7-7: Alternative Demand Scenario: Adjustments to trip rates provided by NTA

User Class	Adjustment to Trip Rates
Commute to Work	No change to Blue-Collar Worker trip rates 25% reduction in White-Collar Worker trip rates
Journeys to Education (Including Escorted)	No change to Primary Education trip rates 10% reduction in Secondary Education trip rates 25% reduction in Tertiary Education trip rates
Shopping - Food	10% increase
Shopping – Non-Food	20% reduction
Leisure and Social	10% increase
Business Trips (White-Collar)	20% reduction
Goods and Freight	No change
Airport	20% reduction in business travel No change to leisure travel

Figure 7-17, an extract from the NTA report, shows the total number of trips per day for the Alternative Demand scenario compares to the reference case forecasts and a typical slower growth scenario.

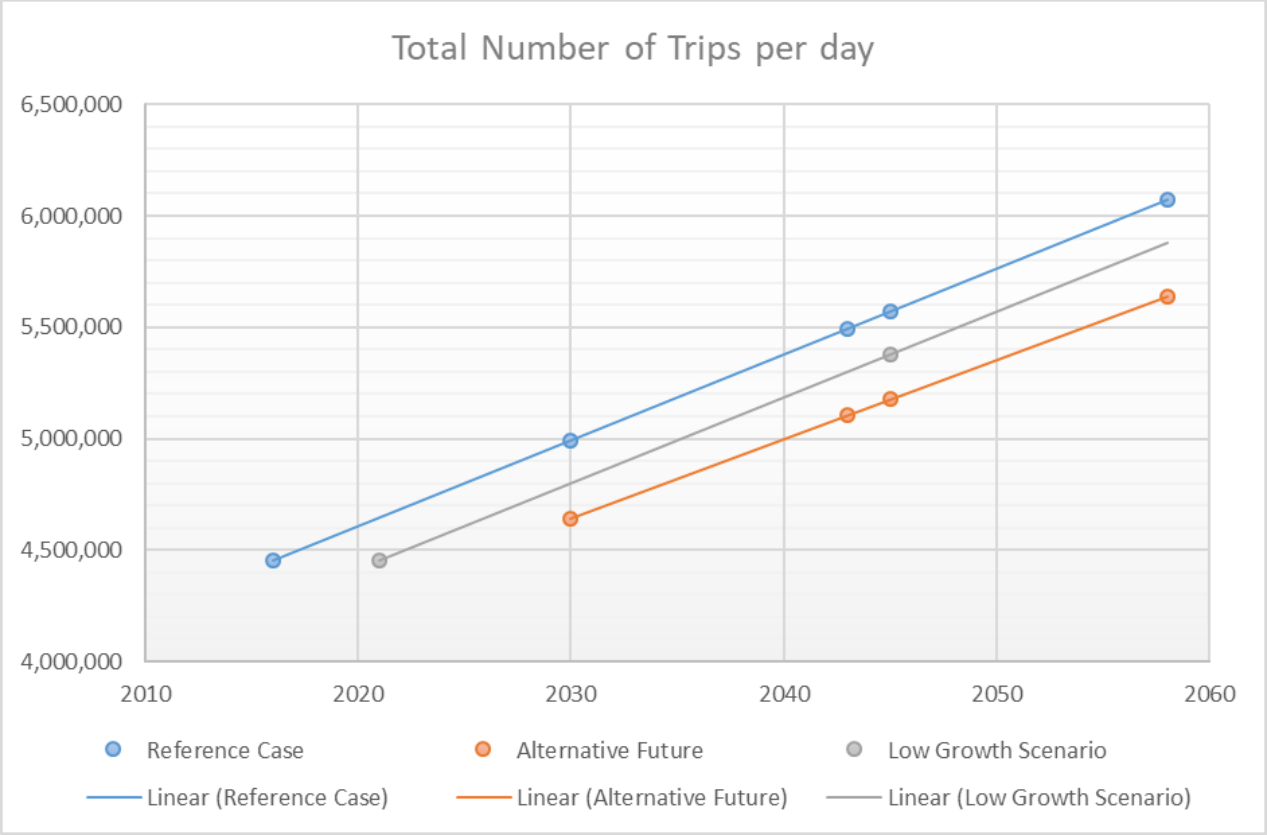

Figure 7-17: Trips per day for Reference Case, Alternative Demand and Slow Growth scenario (source NTA)

7.4.2 Loading Profile

The loading results for the Alternative Demand runs are summarised in Table 7-8. Line loading by station is presented in detail with charts for each peak period and direction. In this section, results are also compared with those from the corresponding Business Case (BC) Core runs.

Table 7-8: Maximum Loading in Peak Periods for Alternative Demand runs

Direction	Year	Max Loading		Difference from Business Case	
		AM	PM	AM	PM
Northbound	2030	4,582	6,169	-9%	-19%
	2045	5,797	7,764	-6%	-6%
	2060	6,958	8,647	-16%	-21%
Southbound	2030	8,573	3,501	-18%	-12%
	2045	10,450	4,645	-11%	1%
	2060	12,123	5,345	-18%	-18%

Figure 7-18 to Figure 7-21 show the load for each year across stations for each peak period and direction. In the Northbound AM peak, shown in Figure 7-18, the maximum load in 2030 is 4,582, which is 9% lower than the corresponding BC Core Run maximum load (5,024). For 2045 it is 5,797, which is 6% lower than in the BC Core Run (6,167). In 2060, the maximum load of 6,958 is 16% lower than the BC Core Run 2060 maximum load (8,243).

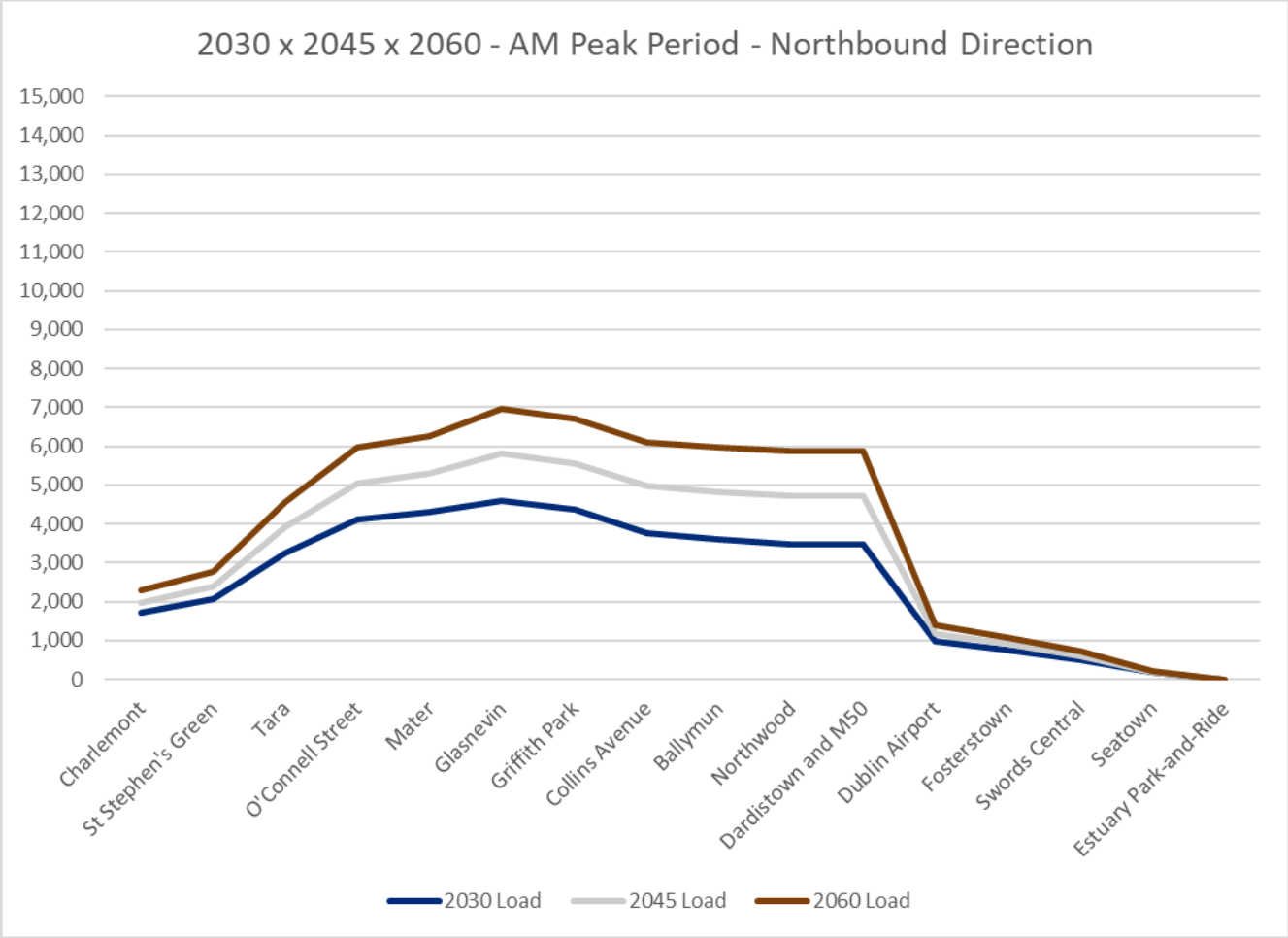

Figure 7-18: Alternative Demand Sensitivity Test – AM Peak loading in Northbound direction

Loading results for the AM peak in the Southbound direction are shown in Figure 7-19. The 2030 maximum load here is 8,573, a 18% decrease from the BC Core Run (10,412). 2045 maximum loading is 10,450 which is 11% lower than in the BC Core Run (11,765). For 2060, the maximum load is 12,123, 18% lower than the BC Core Run (14,859).

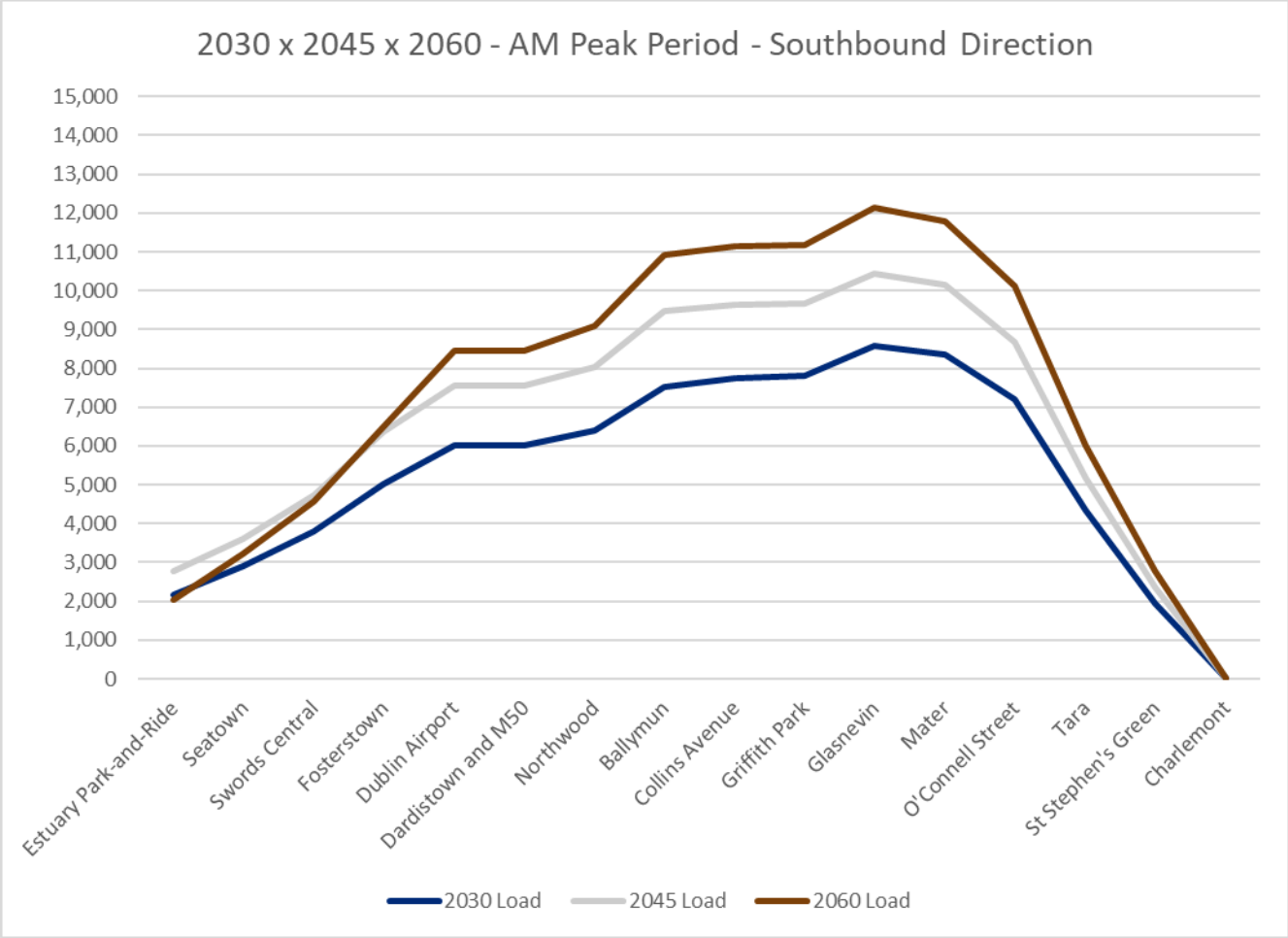

Figure 7-19: Alternative Demand Sensitivity Test – AM Peak loading in Southbound direction

Figure 7-20 presents the PM peak loading in the Northbound direction. The 2030 Alternative Demand maximum PM loading for this direction is 6,169. This is 19% lower than the BC Core Run value (7,616). The 2045 maximum load is 7,764, which is 6% lower than in the BC Core Run (8,280). The 2060 maximum load is again lower than the BC Core Run, at 8,647; 21% lower than the BC Core Run (11,006).

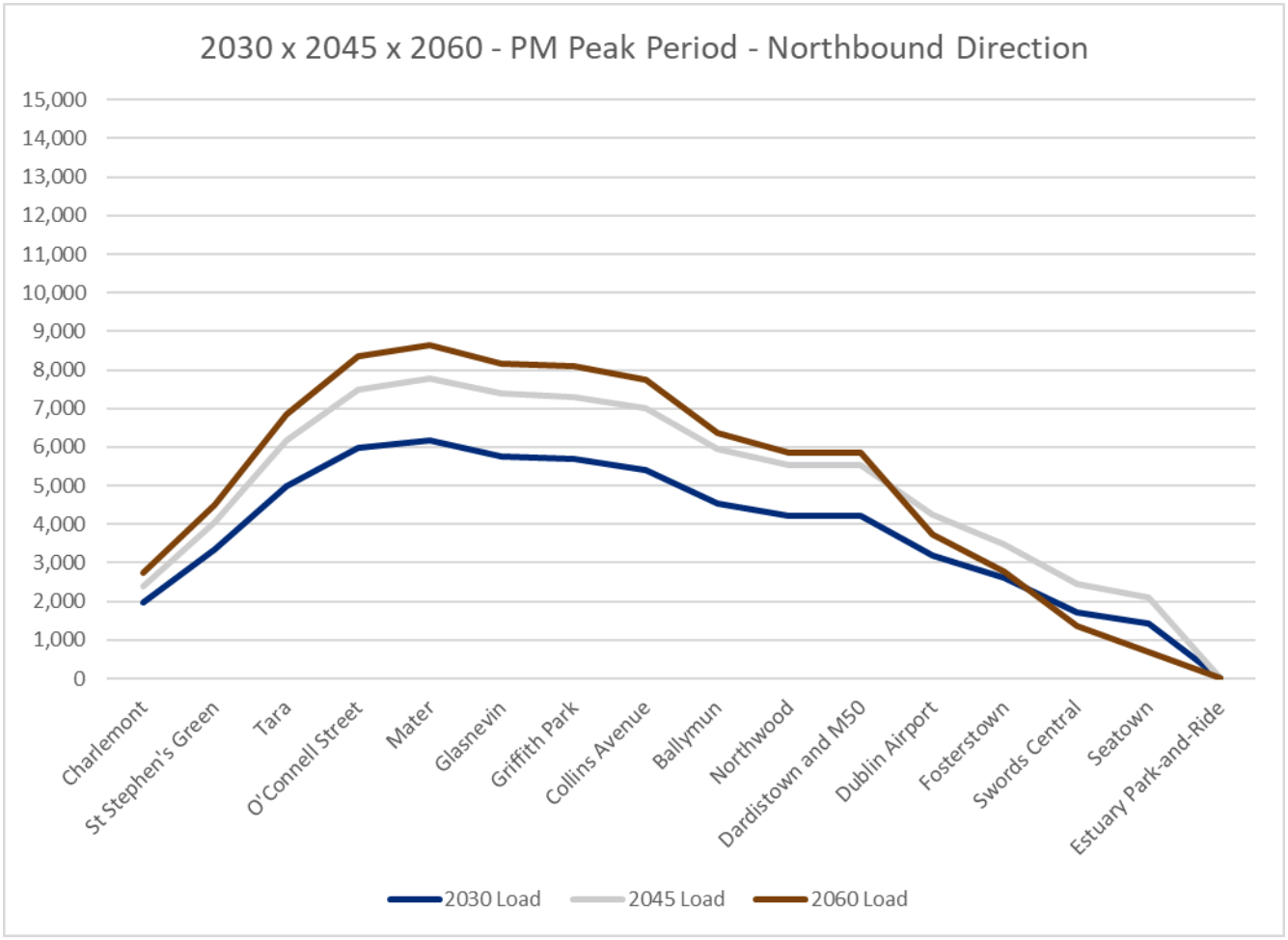

Figure 7-20: Alternative Demand Sensitivity Test – PM Peak loading in Northbound direction

Figure 7-21 provides the PM peak loading results in the Southbound direction. In 2030, the maximum load is 3,501, which is 12% smaller than the BC Core Run (3,999). The 2045 maximum load is 4,645, 1% lower than the BC Core Run (4,619). In 2060 with a value of 5,245, the maximum load is 18% smaller than the Core BC Run (6,529).

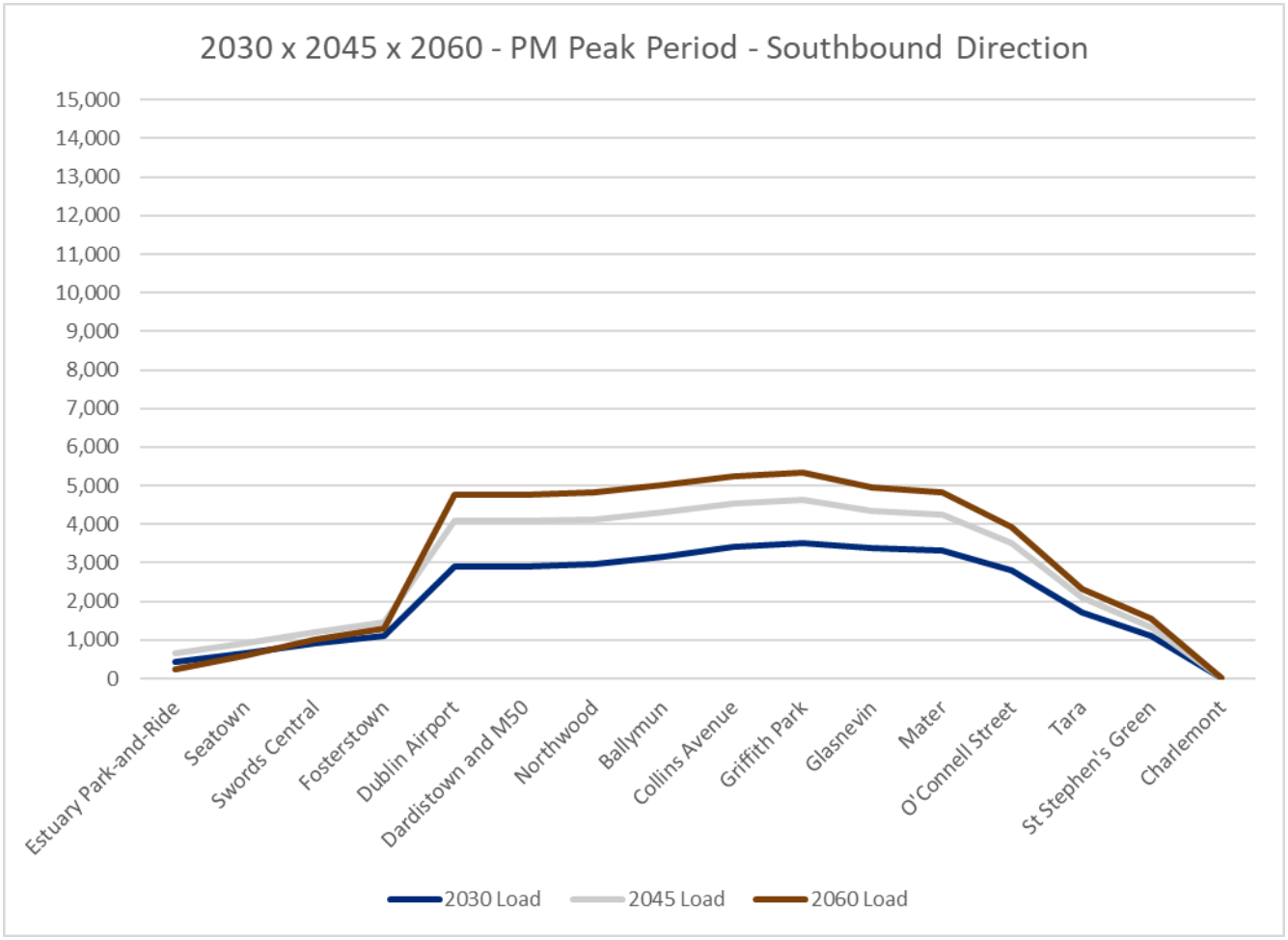

Figure 7-21: Alternative Demand Sensitivity Test – AM Peak loading in Southbound direction

7.4.3 Boarding and Alighting Numbers

The 12-hour boarding and alighting totals on the MetroLink line for the Alternative Demand runs are shown in Figure 7-22. Total 12-hour boardings increase from 111,507 in 2030 to 141,998 in 2045 (an increase of 27% between these years), then to 176,353 in 2060 (an increase of 24% between 2045 and 2060).

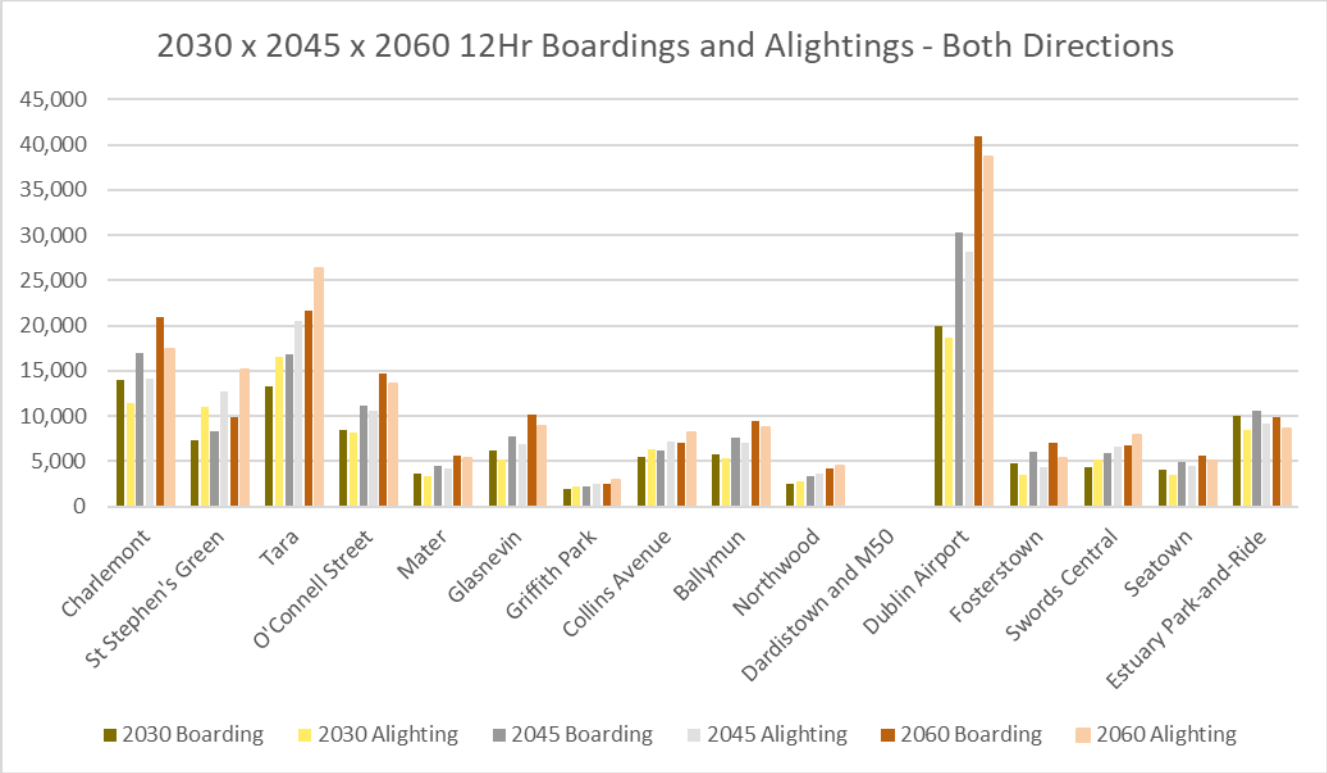

Figure 7-22 Alternative Demand Sensitivity Test – 12hr Boardings and Alightings Both Directions

Alternative Demand results for each year are provided in Table 7-9. The Alternative Demand boardings and alightings at each station are compared with the BC Core run results in Figure 7-23 to Figure 7-25. “AD” in the charts refers to Alternative Demand runs, and “BC Core” refers to the Business Case Core runs.

Table 7-9: 12-Hour Boarding and Alighting in Peak Periods for Alternative Demand runs

Year	Boarding	Difference from Core BC
2030	111,507	-13%
2045	141,998	-9%
2060	176,353	-16%

Figure 7-23 shows a comparison of boarding and alighting totals for the 2030 Alternative Demand run. The overall boardings are 13% less than the BC Core boardings, with 111,507 boardings in the 2030 Alternative Demand results compared to 128,182 boardings in the BC.

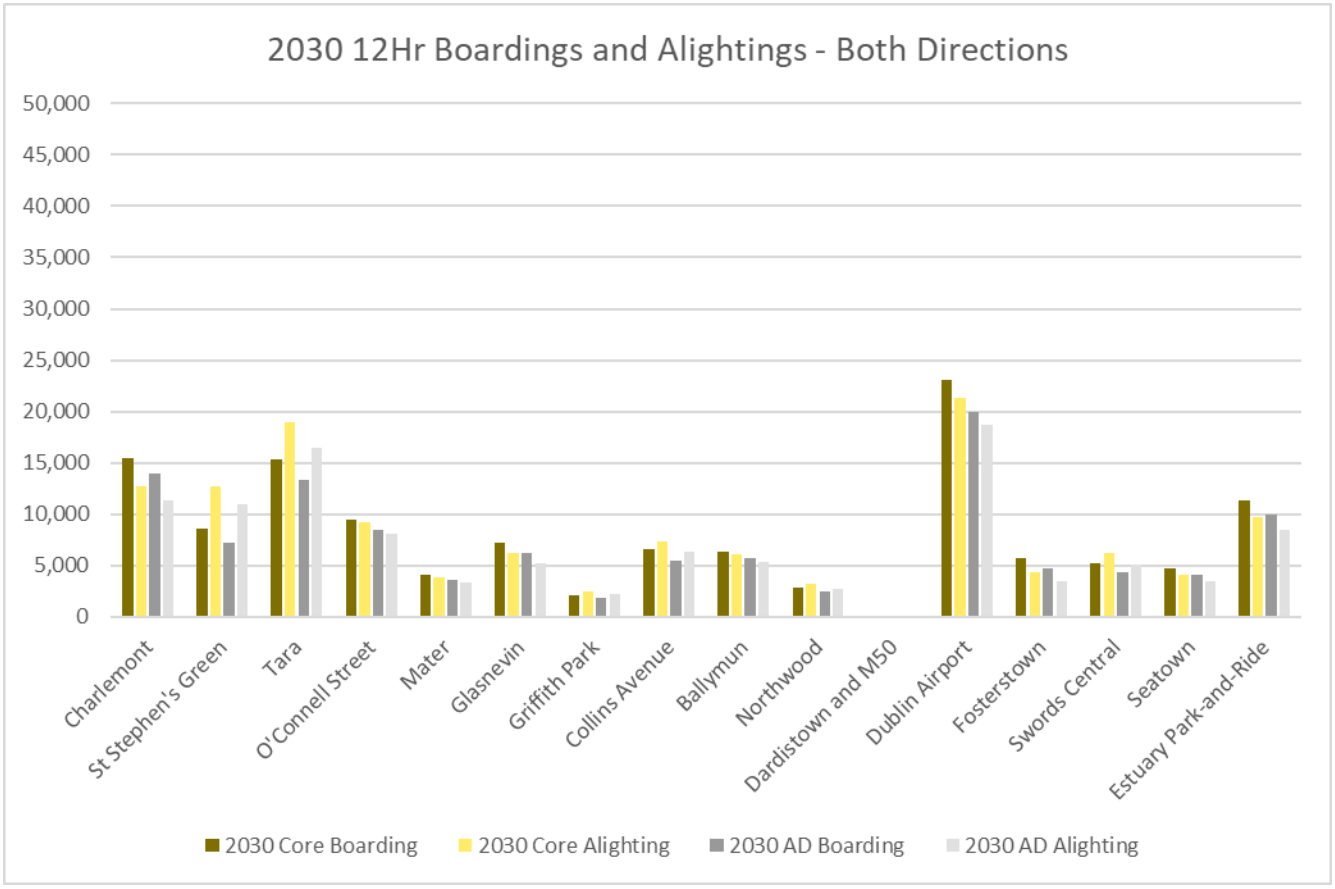

Figure 7-23: 2030 Alternative Demand Sensitivity Test x Business Case – 12hr Boardings and Alightings

The Alternative Demand 12-hour boarding and alighting in 2045 are also lower than in the BC Core Run, as shown in Figure 7-24. Overall, the 2045 Alternative Demand run results showed 9% less boardings than the BC Core 2045, with 141,998 boardings in the Alternative Demand and 156,091 in the BC Core Run.

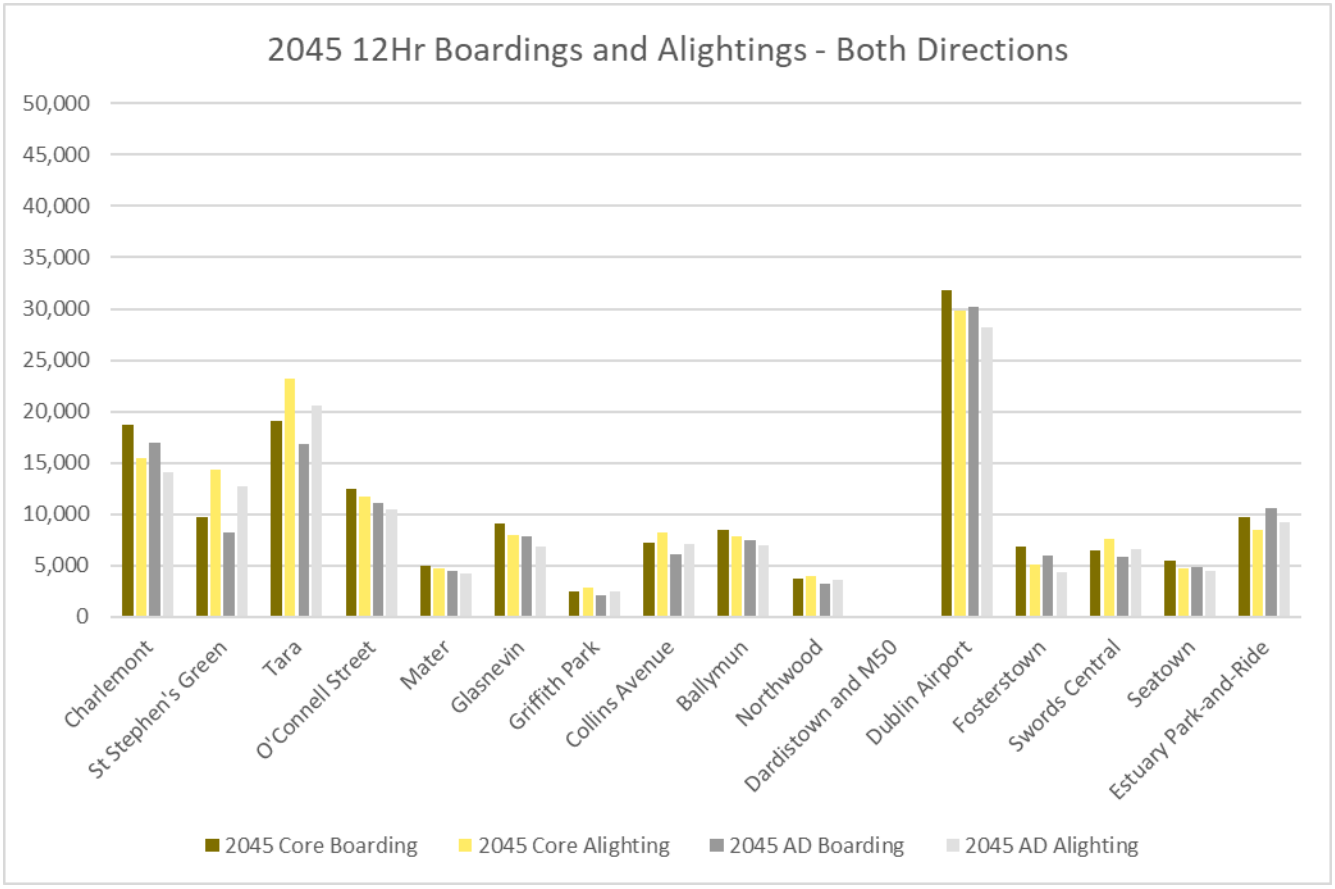

Figure 7-24: 2045 Alternative Demand Sensitivity Test x Business Case – 12hr Boardings and Alightings Both Direction

The 2060 Alternative Demand results are shown in Figure 7-25. There are 16% less boardings and alightings than the BC Core run. The Swords Central station shows the largest difference in boardings in 2060, with 26% less boardings and 25% less alightings in the Alternative Demand than the BC Core run. The Estuary Park-and-Ride station in 2060 has 25% less boardings and 29% less alightings than the BC Core run.

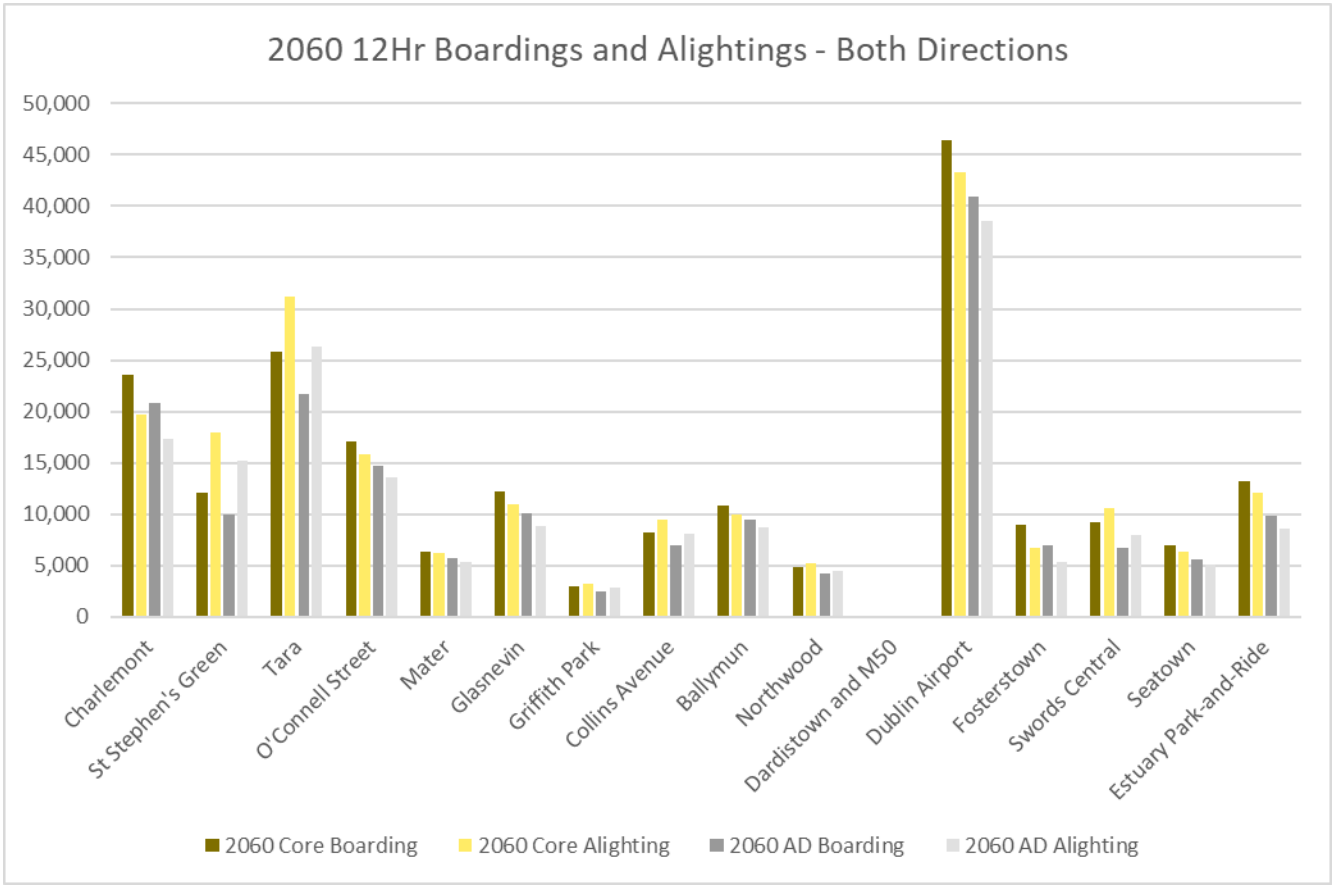

Figure 7-25: 2060 Alternative Demand Sensitivity Test x Business Case – 12hr Boardings and Alightings Both Directions

7.5 Enhanced Transport Network – National Development Plan

7.5.1 Description

The Enhanced Transport Network sensitivity tests have been developed to understand how usage of the MetroLink and how user and non-user benefits may change if other planned infrastructure schemes are delivered during the appraisal period.

A scheme bundle approach has been developed to examine the impacts of the enhanced network, with one bundle representing the schemes within the National Development Plan (2018-2027) and the other bundle representing the full build out of the infrastructure and initiatives contained within the NTA's Transport Strategy for the Greater Dublin Area (2016-2035); these are generally referred to as the DoNDP and the DoGDA model runs respectively The DoGDA results will be discussed in section 7.6.

Each of these model runs has been done both with and without the MetroLink in place. The runs without MetroLink are referred to as DM and the runs with MetroLink are referred to as DS. Full details of the schemes contained within the DoNDP and the DoGDA are contained within the TMP. A summary of the Enhanced Transport Network scenarios assessed are contained within Table 7-10.

Table 7-10: Enhanced Transport Network Sensitivity Tests- Do NDP

Forecast Year	2030	2045	2060
Scenario	Do NDP	Do NDP	-

The results from the Do NDP scenarios have been used within the Business Case for MetroLink and full TUBA analysis has been undertaken using the results from the runs.

The results for each Enhanced Transport Network test are presented below, along with a comparison against the Business Case Core runs.

7.5.2 Loading Profile

For the Enhanced Transport Network Do NDP runs, loading results are summarised in Table 7-11. Line loading by station is presented in detail with charts for each peak period and direction. This section also compares the results with those from the corresponding Business Case (BC) Core runs.

Table 7-11: Maximum Loading in Peak Periods for DoNDP runs

Direction	Year	Max Loading		Difference from Business Case	
		AM	PM	AM	PM
Northbound	2030	5,077	7,110	1%	-7%
	2045	6,570	8,807	7%	6%
Southbound	2030	9,302	4,376	-11%	9%
	2045	11,227	5,835	-5%	26%

Figure 7-26 to Figure 7-29 show the load for each year across stations for each peak period and direction. Figure 7-26 shows the Northbound AM peak loading. The maximum load in the 2030 DoNDP is 5,077, which is 1% higher than the corresponding BC Core Run maximum load (5,024). For the 2045 DoNDP it is 6,570, which is 7% higher than in the BC Core Run (6,167).

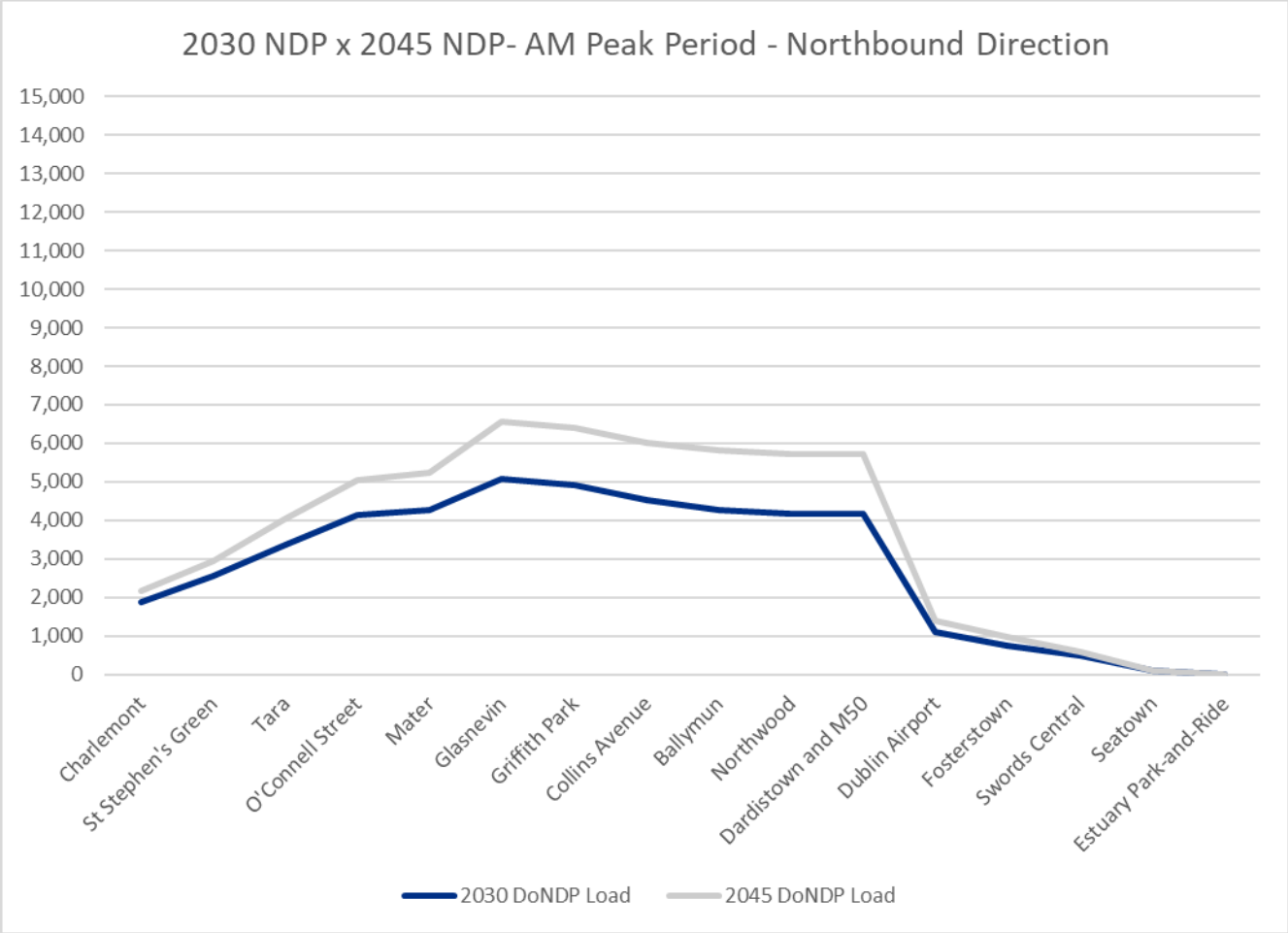

Figure 7-26: 2030 DoNDP x 2045 Do NDP Loading Profiles -AM Northbound

Figure 7-27 presents the AM peak loading in the Southbound direction. The 2030 DoNDP maximum PM loading for this direction is 9,302. This is 11% lower than the BC Core Run value (10,412). The 2045 DoNDP maximum load is 11,227, which is 5% lower than in the BC Core Run (11,765).

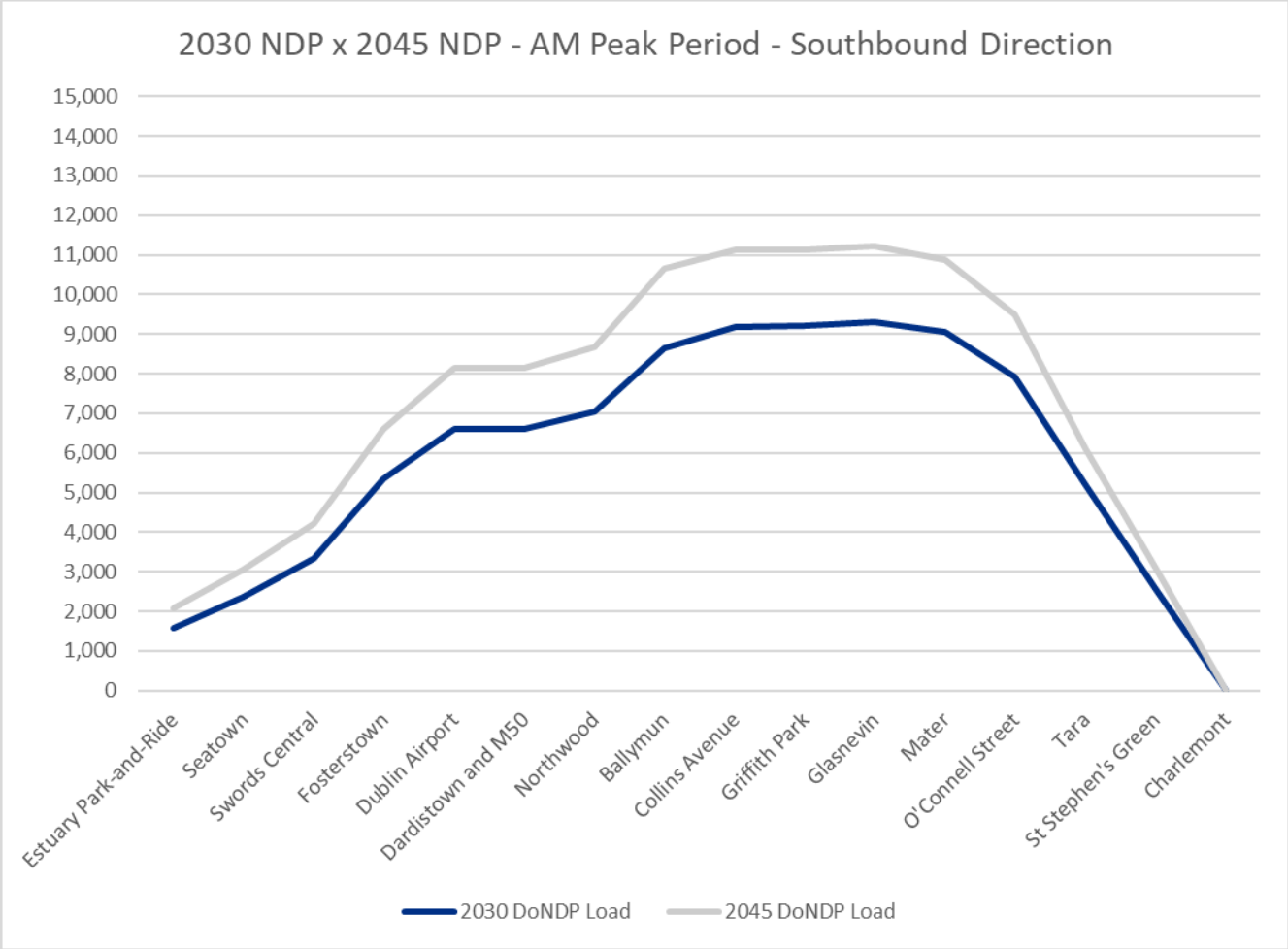

Figure 7-27: 2030 DoNDP x 2045 Do NDP Loading Profiles -AM Southbound

Loading results for the PM peak travelling Northbound are shown in Figure 7-28. In the 2030 DoNDP, the maximum load is 7,110, which is 7% lower than the BC Core Run (7,616). For the 2045 DoNDP it is 8,807, which is 6% higher than in the BC Core Run (8,280).

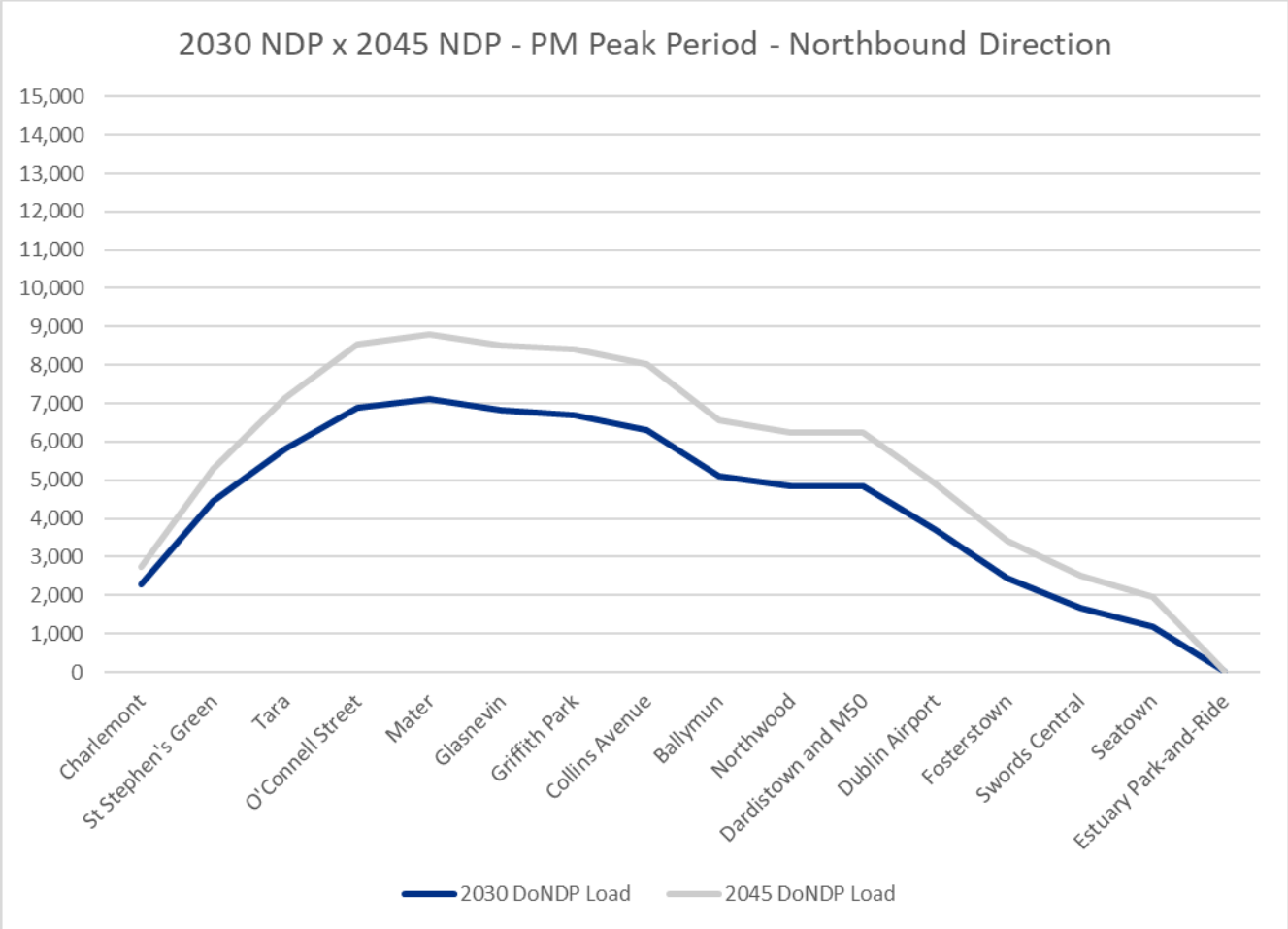

Figure 7-28: 2030 DoNDP x 2045 Do NDP Loading Profiles -PM Northbound

Figure 7-29 provides the PM peak loading results in the Southbound direction. The 2030 DoNDP maximum load here is 4,376, an increase of 9% from the BC Core Run (3,999). 2045 DoNDP maximum loading is 5,835 which is 26% higher than the BC Core Run (4,619).

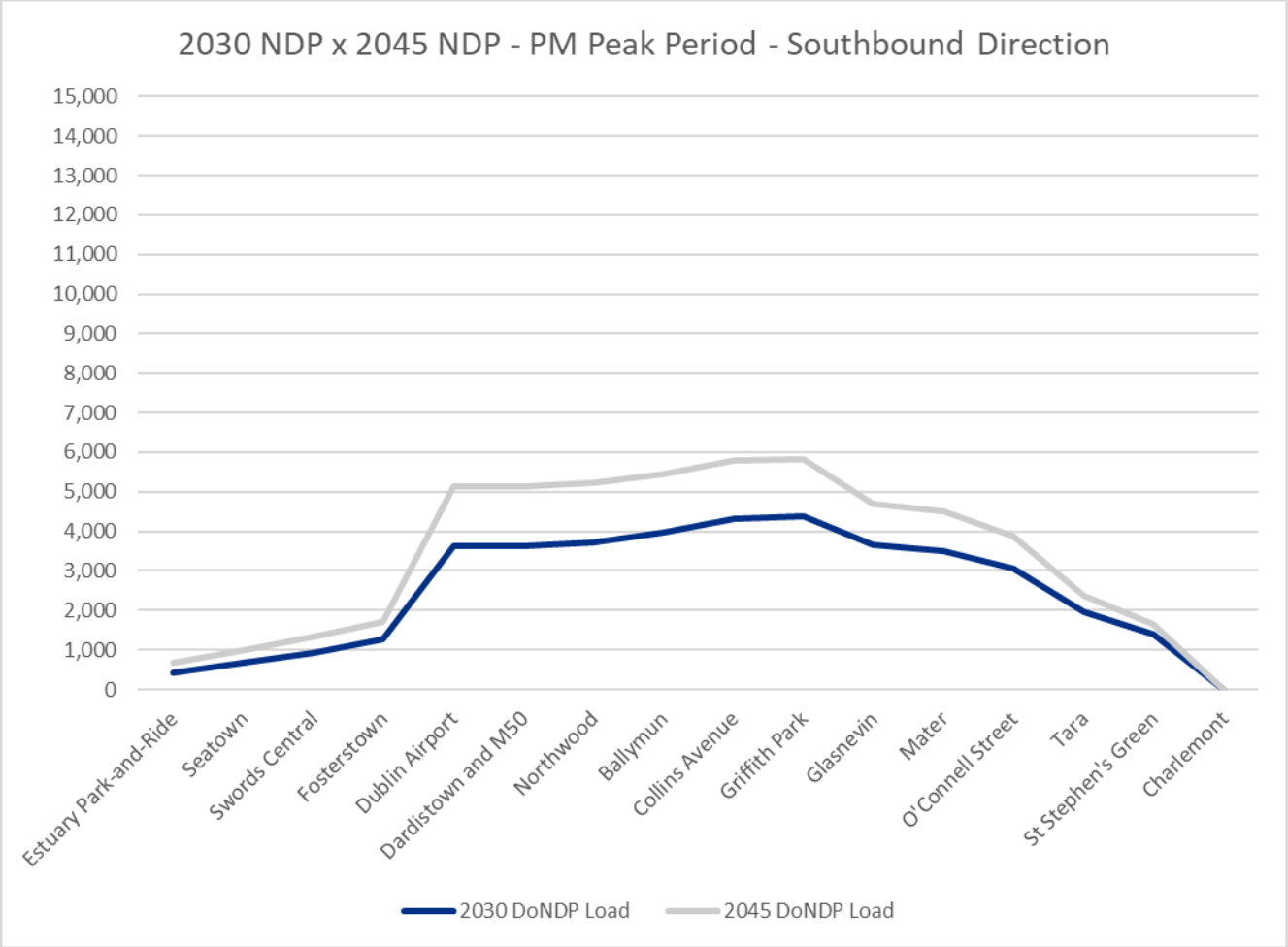

Figure 7-29: 2030 DoNDP x 2045 Do NDP Loading Profiles -PM Southbound

7.5.3 Boarding and Alighting Numbers

The 12-hour boarding and alighting totals on the MetroLink line as modelled in the two National Development Plan runs are shown in Figure 7-30. Total 12-hour boardings are 126,647 in the 2030 DoNDP and 163,318 in the 2045 DoNDP.

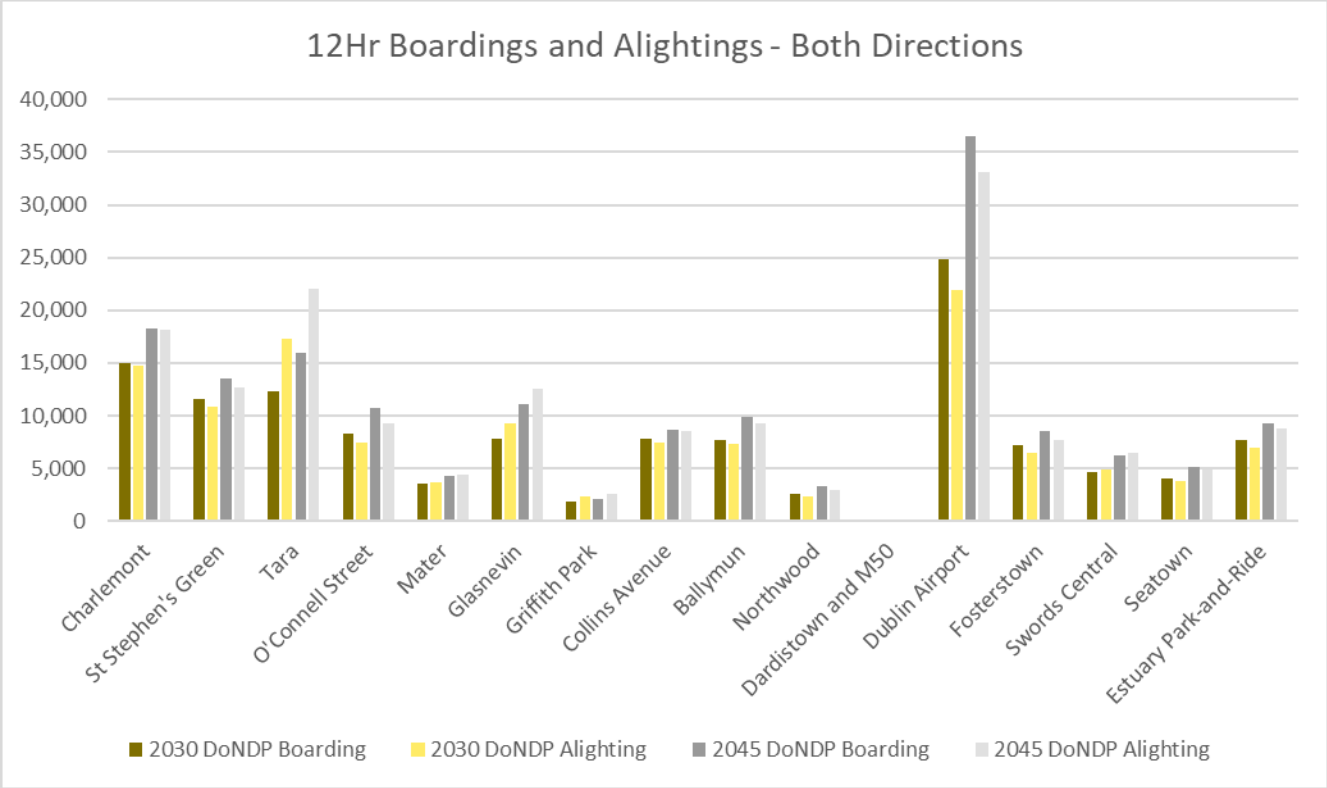

Figure 7-30: 2030 DoNDP x 2045 Do NDP Boarding and Alighting – 12hr Both Direction

Table 7-12 shows the NDP 12-hour boarding results for each year. The NDP results at each station are compared with the BC Core run results in Figure 7-31 and Figure 7-32. “DoNDP” in the charts refers to the NDP runs, and “BC Core” refers to the Business Case Core runs.

Table 7-12: 12-Hour Boarding and Alighting in Peak Periods for DoNDP runs

Year	Boarding	Difference from Core BC
2030	126,647	-1%
2045	163,318	5%

Figure 7-31 shows a comparison of 12-hour boarding and alighting totals for the 2030 DoNDP run alongside the Business Case run results. In this DoNDP run, boardings and alightings are 1% lower than those in the Business Case run. There are 126,647 boardings and alightings in the 2030 DoNDP results compared to 128,182 boardings and alightings in the Business Case. The St Stephen’s Green station shows the largest difference between the runs, with 35% more boardings and 15% less alightings in the DoNDP than the BC Core run. At Estuary Park-and-Ride, there are 32% less boardings and 28% less alightings in the Low Frequency than the DoNDP run.

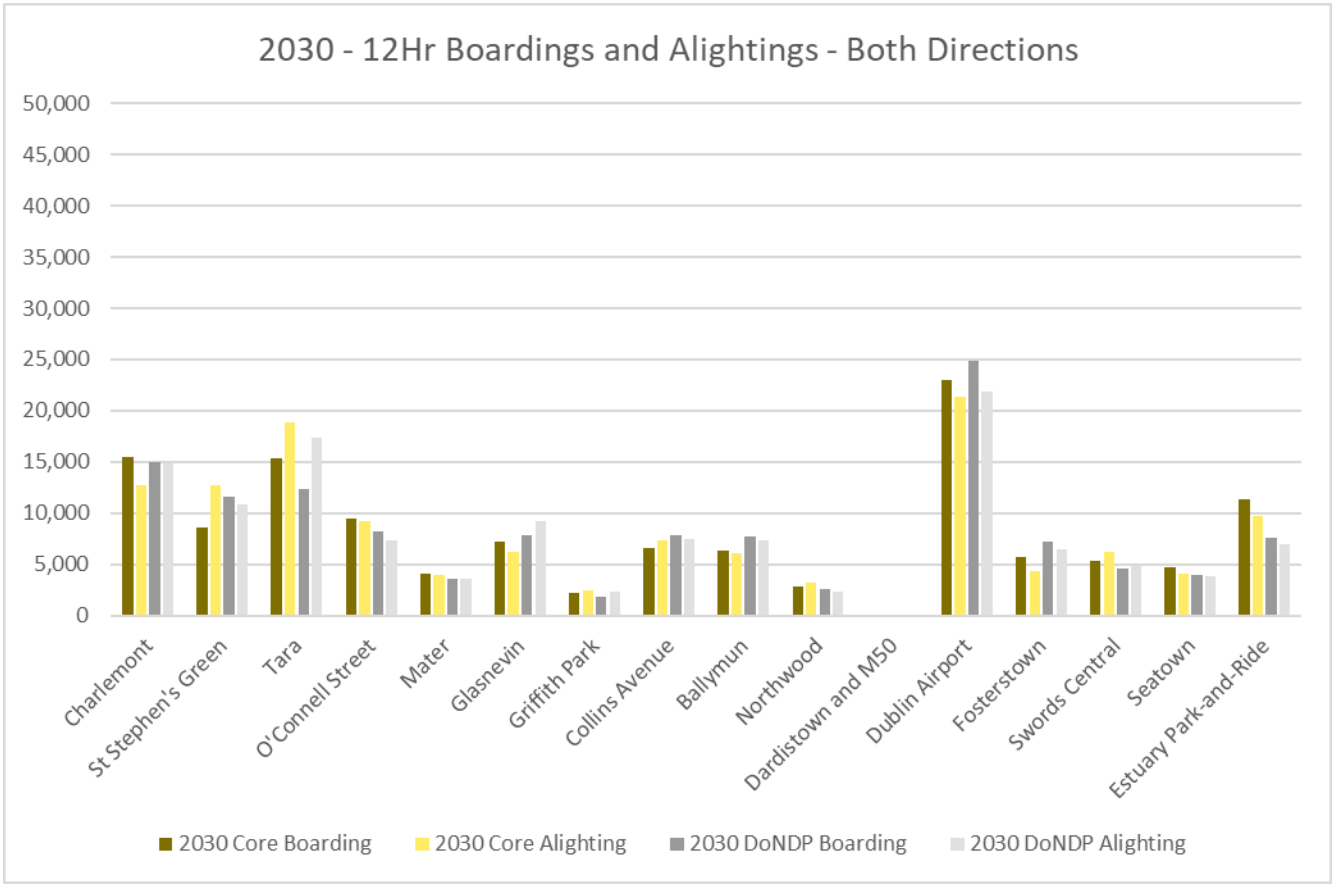

Figure 7-31: 2030 Core x 2030 Do NDP Boarding and Alighting -12hr Both Directions

In 2045, shown in Figure 7-32, the 12-hour DoNDP boarding and alighting are 5% higher than in the Business Case run. Overall, the 2045 DoNDP run results showed 163,318 boardings, compared to the BC Core Run which showed 156,091. At Glasnevin, there are 22% more boardings and 58% more alightings in the DoNDP than the BC Core run.

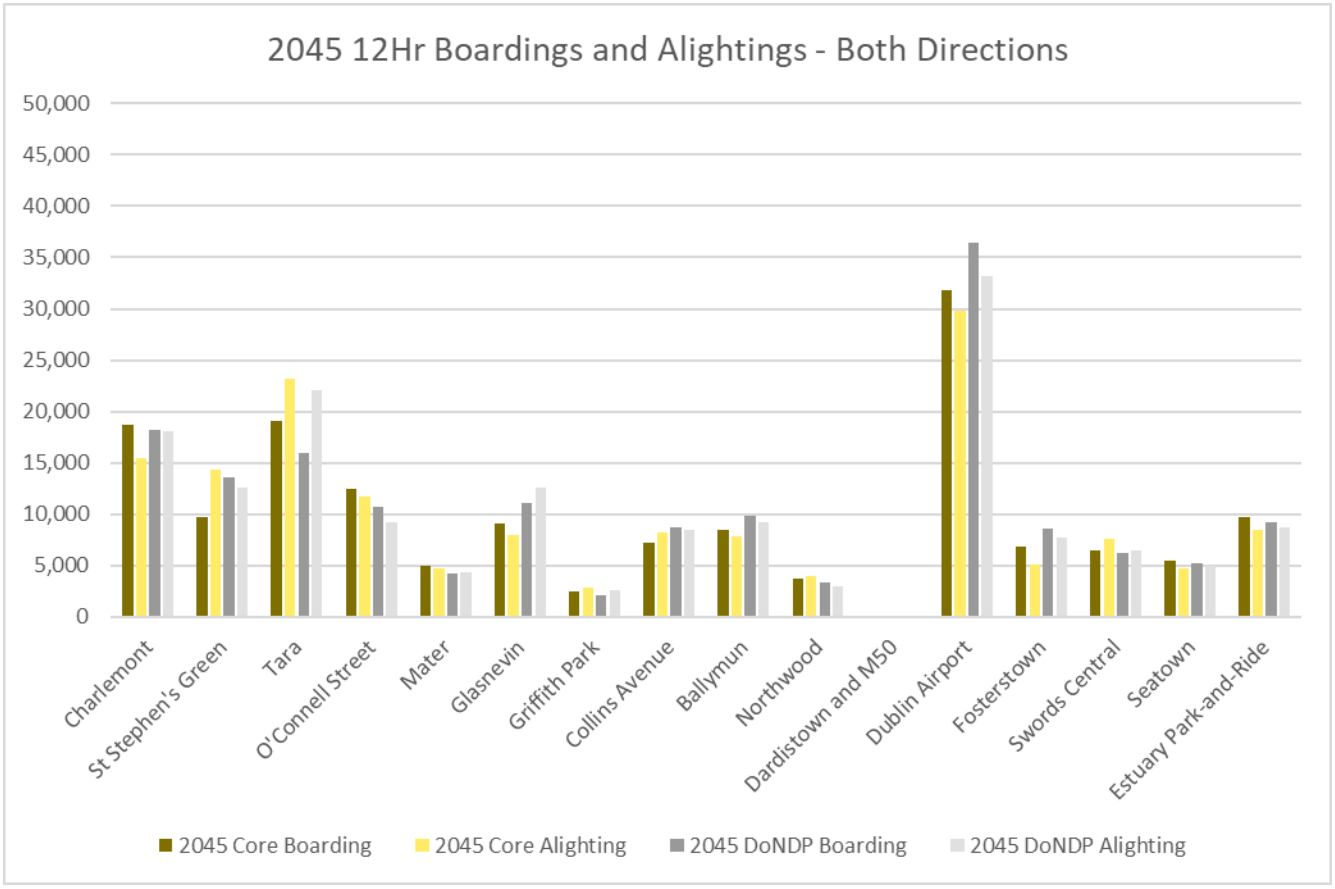

Figure 7-32:2045 Core x 2045 Do NDP Boarding and Alighting – 12hr Both Directions

7.6 Enhanced Transport Network – National Development Plan +Alternative Demand

7.6.1 Description

As detailed, a scheme bundle approach has been developed to examine the impacts of the enhanced network, with one bundle representing the schemes within the National Development Plan (2018-2027), in conjunction with the Alternative Demand scenario (presented in section 7.4). Each of these model runs has been done both with and without the MetroLink in place (Do Minimum and Do Scheme).

The Alternative Demand scenario has been developed by the NTA to consider the impact that the Covid-19 pandemic may have on future trip patterns, including a reduction in some types of Commute to Work and Education trips.

This scenario has been assessed for 2030, 2045 and 2060.

7.6.2 Loading Profile

For the Enhanced Transport Network Do NDP +Alternative Demand runs, loading results are summarised in Table 7-13. Line loading by station is presented in detail with charts for each peak period and direction. This section also compares the results with those from the corresponding Business Case (BC) Core runs.

Table 7-13: Maximum Loading in Peak Periods for NDP + Alternative Demand runs

Direction	Year	Max Loading		Difference from Business Case	
		AM	PM	AM	PM
Northbound	2030	4,555	6,134	-9%	-19%
	2045	5,843	7,134	-5%	-14%
	2060	7,200	8,890	-13%	-19%
Southbound	2030	7,871	3,860	-24%	-3%
	2045	9,417	4,941	-20%	7%
	2060	11,523	6,329	-22%	-3%

Figure 7-33 to Figure 7-36 show the load for each year across stations for each peak period and direction. In the Northbound AM peak, shown in Figure 7-33, the maximum load in 2030 is 4,555, which is 9% lower than the corresponding BC Core Run maximum load (5,024). For 2045 it is 5,843, which is 5% lower than in the BC Core Run (6,167). In 2060, the maximum load of 7,200 is 13% lower than the BC Core Run 2060 maximum load (8,243).

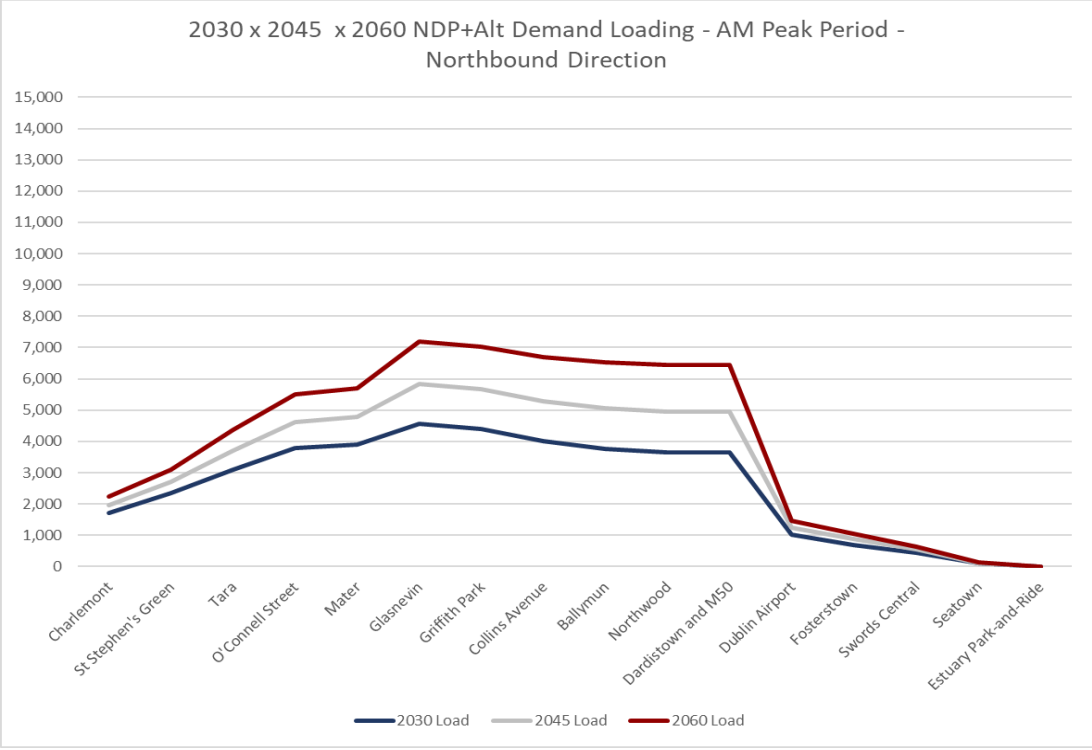

Figure 7-33: 2030 NDP+AD x 2045 NDP+AD x 2060 NDP+AD Loading Profiles -AM Northbound

Loading results for the AM peak in the Southbound direction are shown in Figure 7-34. The 2030 maximum load here is 7,871, a 24% decrease from the BC Core Run (10,412). 2045 maximum loading is 9,417 which is 20% lower than in the BC Core Run (11,765). For 2060, the maximum load is 11,523, 22% lower than the BC Core Run (14,859).

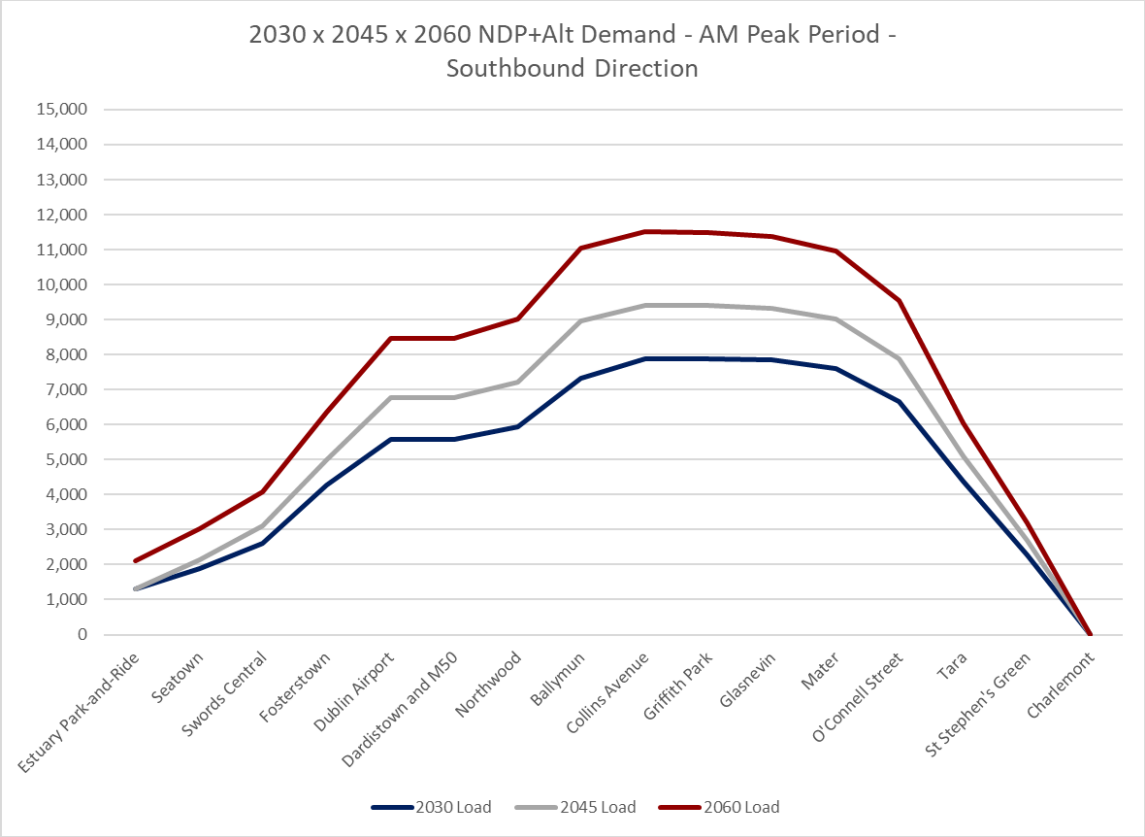

Figure 7-34: 2030 NDP+AD x 2045 NDP+AD x 2060 NDP+AD Loading Profiles – AM Southbound

Figure 7-35 presents the PM peak loading in the Northbound direction. The 2030 NDP+Alternative Demand maximum PM loading for this direction is 6,134. This is 19% lower than the BC Core Run value (7,616). The 2045 maximum load is 7,134, which is 14% lower than in the BC Core Run (8,280). The 2060 maximum load is again lower than the BC Core Run, at 8,890; 19% lower than the BC Core Run (11,006).

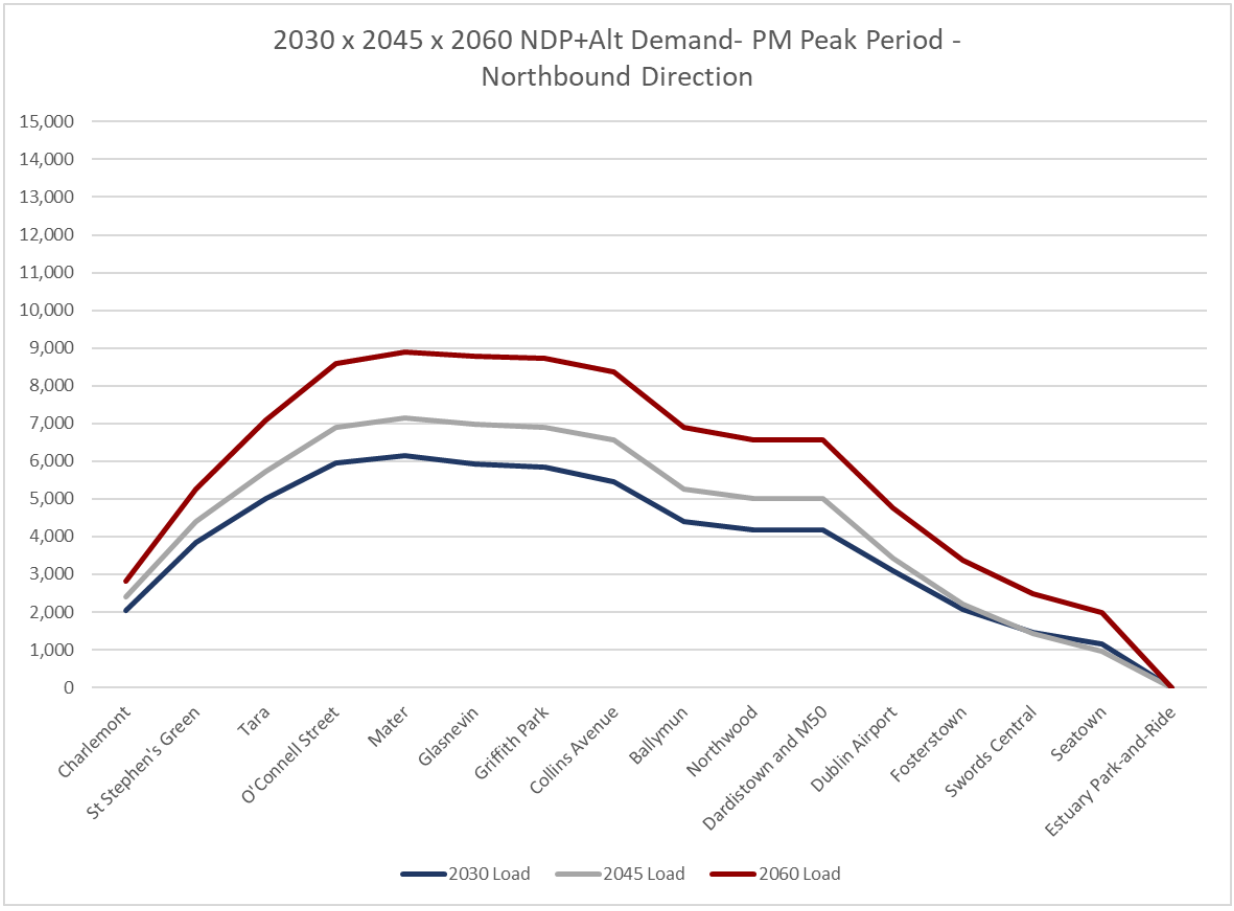

Figure 7-35: 2030 NDP+AD x 2045 NDP+AD x 2060 NDP+AD – PM Northbound

Figure 7-36 provides the PM peak loading results in the Southbound direction. In 2030, the maximum load is 3,860, which is 3% smaller than the BC Core Run (3,999). The 2045 maximum load is 4,941, 7% higher than the BC Core Run (4,619). In 2060 with a value of 6,329, the maximum load is 3% smaller than the Core BC Run (6,529).

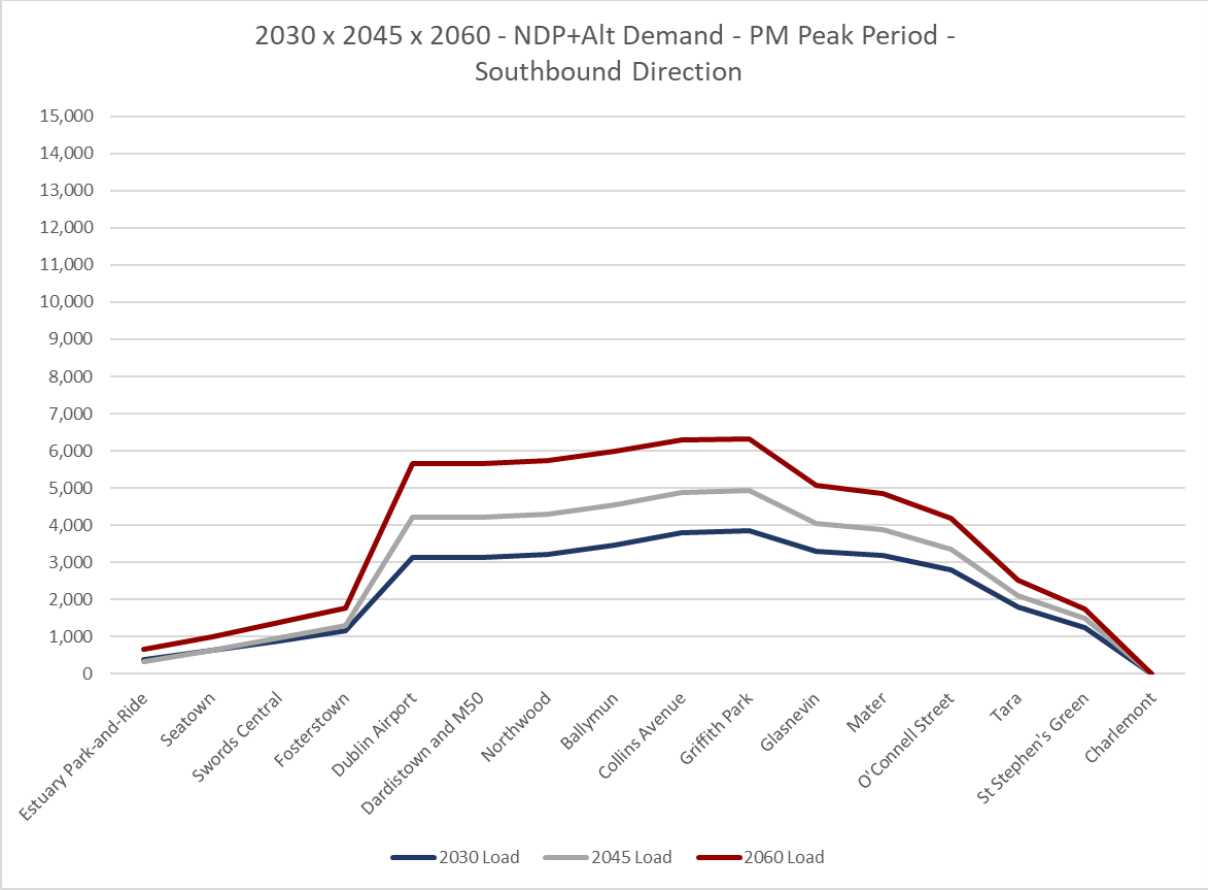

Figure 7-36: 2030 NDP+AD x 2045 NDP+AD x 2060 NDP+AD – PM Southbound

7.6.3 Boarding and Alighting Numbers

The 12-hour boarding and alighting totals on the MetroLink line as modelled in the three National Development Plan + Alternative Demand runs are shown in Figure 7-30. Total 12-hour boardings are 112,166 in the 2030 DoNDP +Alternative Demand, 143, 913 in the 2045 scenario, and 183,370 in 2060.

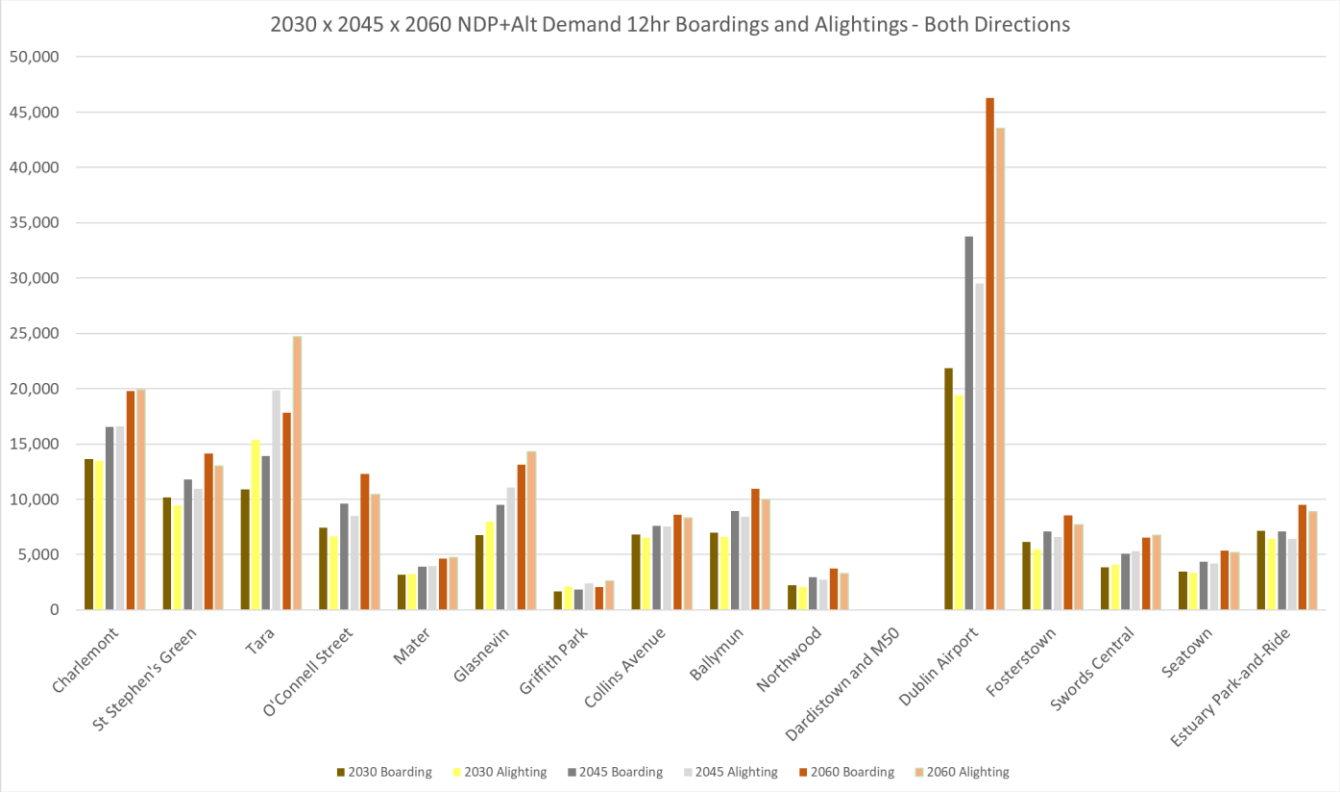

Figure 7-37: 2030 DoNDP+AD x 2045 Do NDP+AD x 2060 Do NDP+AD Boarding and Alighting – 12hr Both Directions

Do NDP+Alternative Demand results for each year are provided in Table 7-14. The Alternative Demand boardings and alightings at each station are compared with the BC Core run results in Figure 7-38 to Figure 7-40. “NDP+AD” in the charts refers to Do NDP+ Alternative Demand runs, and “BC Core” refers to the Business Case Core runs.

Table 7-14: 12-Hour Boarding and Alighting in Peak Periods for NDP+ Alternative Demand runs

Year	Boarding	Difference from Core BC
2030	112,166	-13%
2045	143,913	-8%
2060	183,370	-12%

Figure 7-38 shows a comparison of boarding and alighting totals for the 2030 NDP+ Alternative Demand run. The overall boardings are 13% less than the BC Core boardings, with 112, 166 boardings in the 2030 Alternative Demand results compared to 128,182 boardings in the BC.

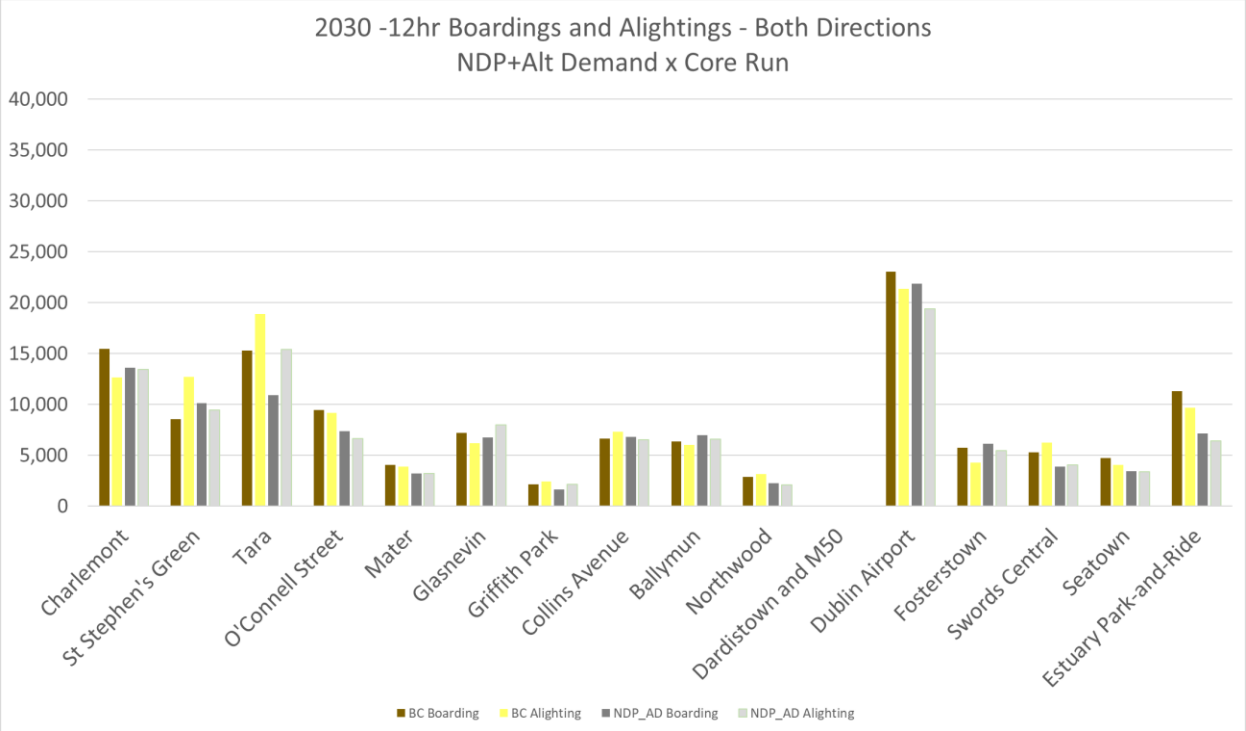

Figure 7-38: 2030 Core x 2030 Do NDP+ Alternative Demand Boarding and Alighting – 12hr Both Directions

The NDP+ Alternative Demand 12-hour boarding and alighting in 2045 are also lower than in the BC Core Run, as shown in Figure 7-39. Overall, the 2045 NDP +Alternative Demand run results showed 8% less boardings than the BC Core 2045, with 143,913 boardings in the NDP + Alternative Demand and 156,091 in the BC Core Run.

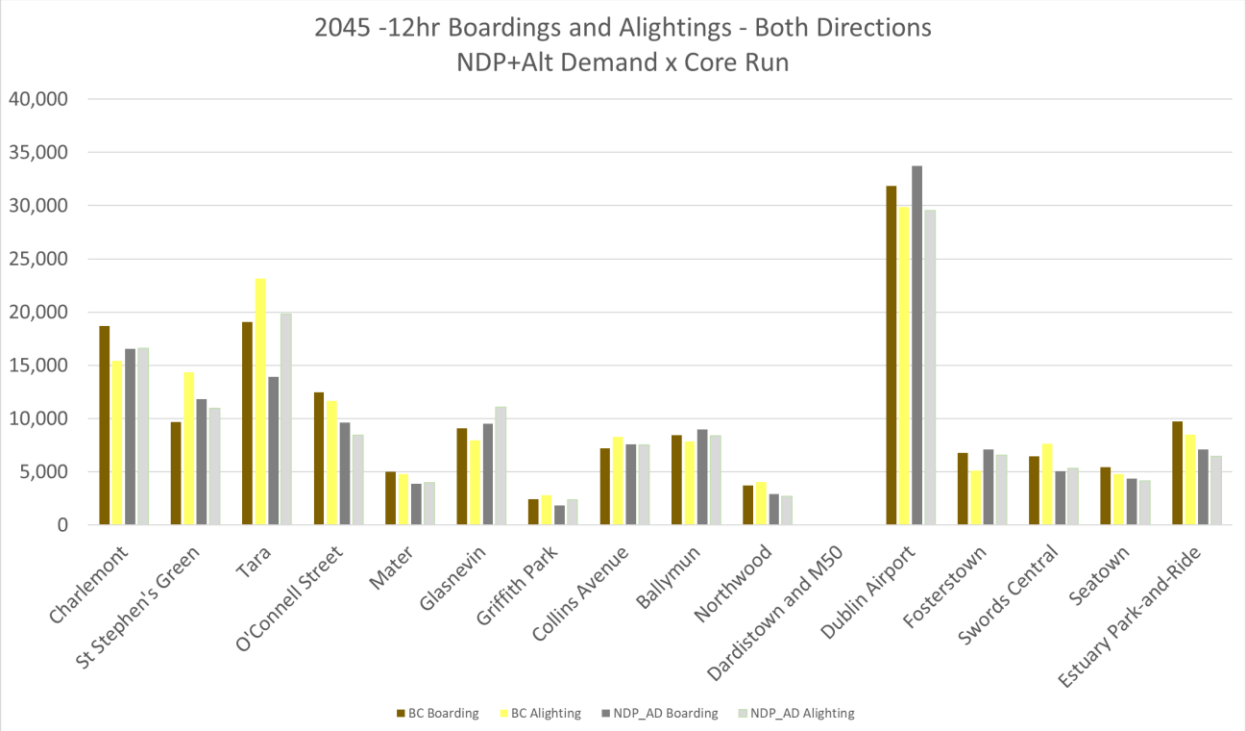

Figure 7-39: 2045 Core x 2045 Do NDP+ Alternative Demand Boarding and Alighting – 12hr Both Directions

The 2060 NDP+ Alternative Demand results are shown in Figure 7-40. There are 12% less boardings and alightings than the BC Core run. The Tara Street station shows the largest difference in boardings in 2060, with 31% less boardings, while Swords Central has 36% less alightings in the NDP+ Alternative Demand than the BC Core run.

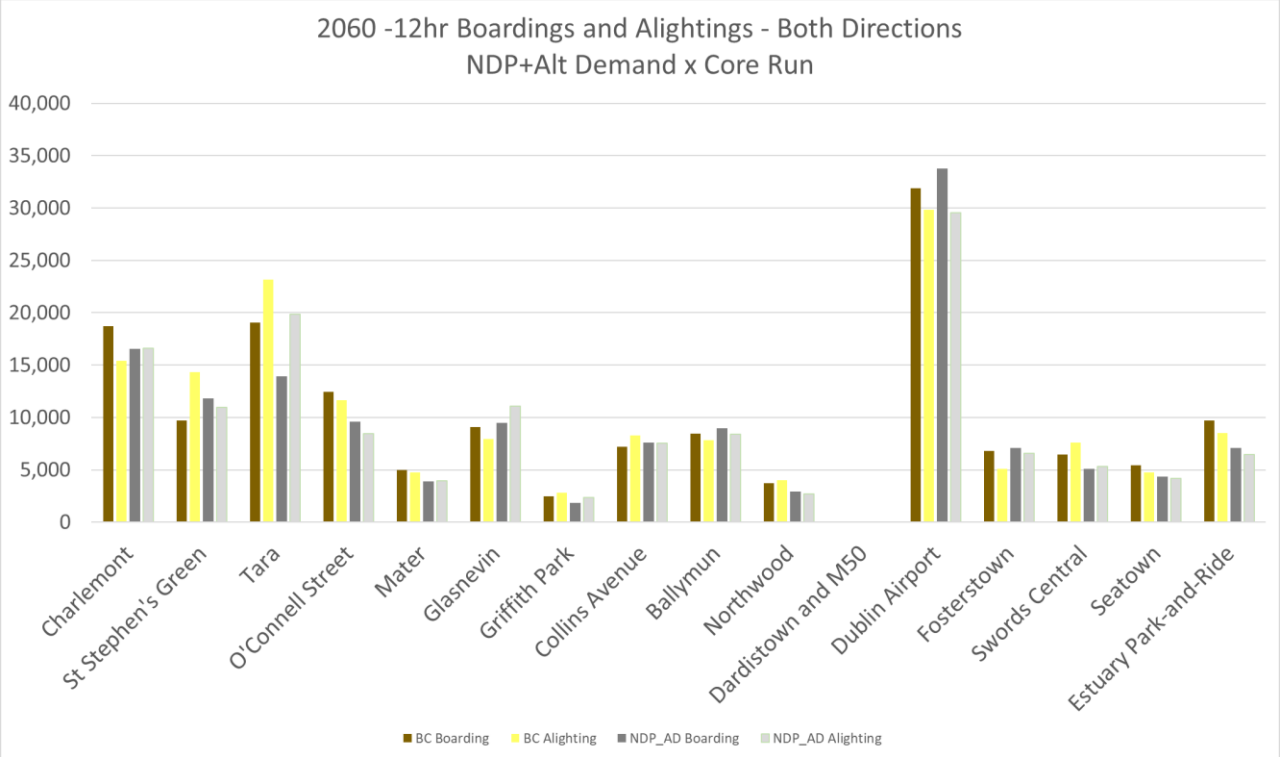

Figure 7-40:2060 Core x 2060 Do NDP+ Alternative Demand Boarding and Alighting – 12hr Both Directions

7.7 Enhanced Transport Network – NTA's GDA Strategy

7.7.1 Description

A scheme bundle approach has been developed to examine the impacts of the enhanced network, with one bundle representing the full build out of the infrastructure and initiatives contained within the NTA's Transport Strategy for the Greater Dublin Area (2016-2035); these are generally referred to as the DoNDP and the DoGDA model runs respectively.

Each of these model runs has been done both with and without the MetroLink in place. For the DoGDA strategy, the Metro South scheme was not included in either the Do Minimum or Do Scheme MetroLink runs. Full details of the schemes contained within the DoGDA are contained within the TMP. A summary of the Cumulative Impact Do GDA scenarios assessed are contained within Table 7-15.

Table 7-15: Enhanced Transport Network Tests – Do GDA

Forecast Year	2030	2045	2060
Scenario	-	Do GDA	Do DGA

The results from the Do GDA scenarios have been used to inform potential changes in patronage of the MetroLink, but a full TUBA analysis has not been undertaken on these results.

The results for each Enhanced Transport Network test are presented below, along with a comparison against the Business Case Core runs.

7.7.2 Loading Profile

For the Enhanced Transport Network Do GDA runs, loading results are summarised in Table 7-16. Line loading by station is presented in detail with charts for each peak period and direction. This section also compares the results with those from the corresponding Business Case (BC) Core runs.

Table 7-16: Maximum Loading in Peak Periods for DoGDA runs

Direction	Year	Max Loading		Difference from Business Case	
		AM	PM	AM	PM
Northbound	2045	5,765	8,279	-7%	0%
	2060	7,469	9,927	-9%	-10%
Southbound	2045	12,153	4,632	3%	0%
	2060	14,323	6,261	-4%	-4%

Figure 7-41 to Figure 7-44 show the load for each year across stations for each peak period and direction. Figure 7-41 shows the Northbound AM peak loading. The 2045 DoGDA maximum load of 5,765 is 7% lower than the BC Core Run (6,167). In the 2060 DoGDA, the maximum load is 7,469, 9% lower than the BC Core Run 2060 maximum load (8,243).

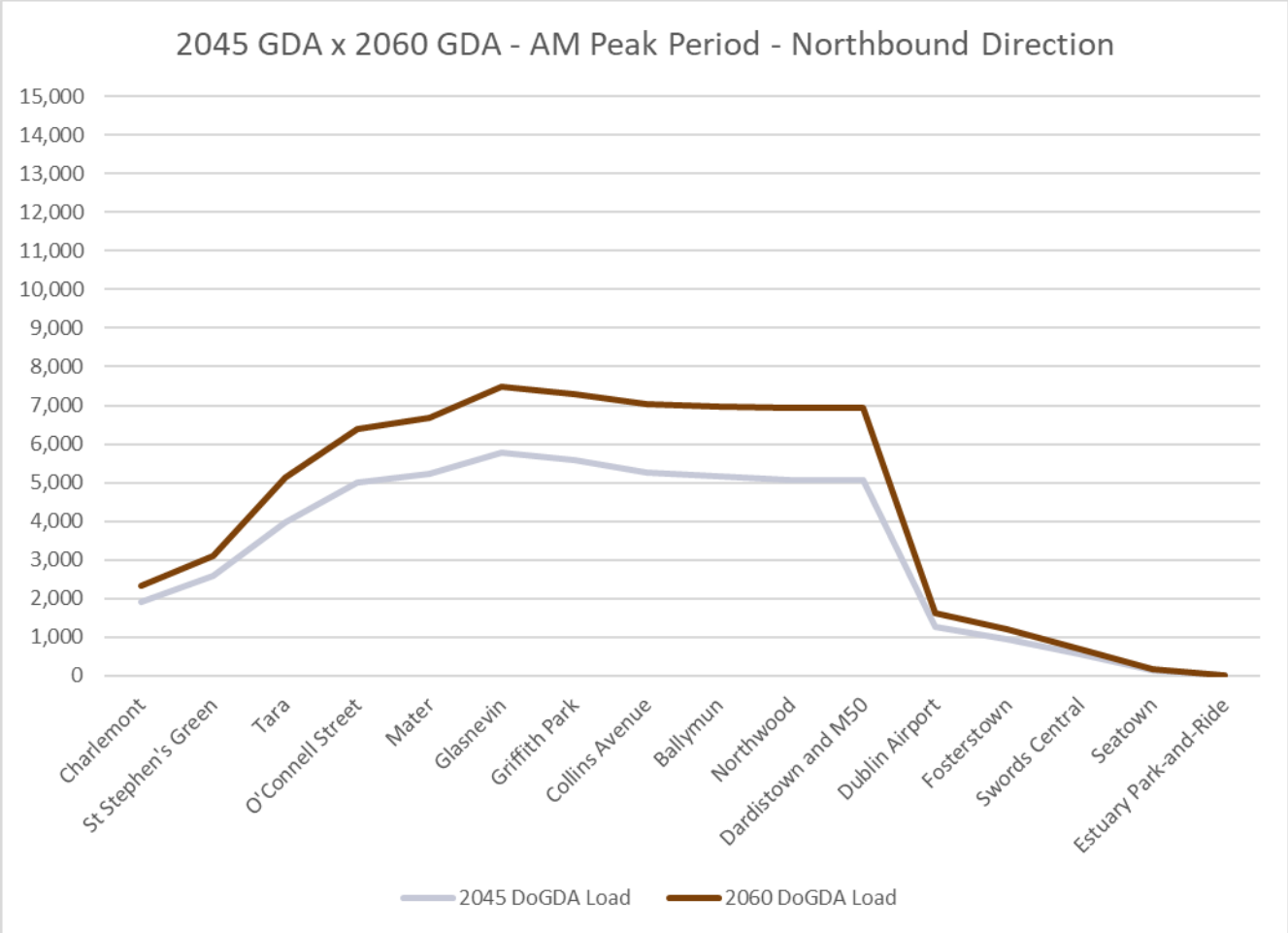

Figure 7-41: 2045 DoGDA x 2060 DoGDA Loading Profiles -AM Northbound

Figure 7-42 presents the AM peak loading in the Southbound direction. The 2045 DoGDA maximum load, 12,153, is 3% higher than in the BC Core Run (11,765). The 2060 DoGDA maximum load is lower than the BC Core Run, at 14,323; 4% less than the BC Core Run (14,859).

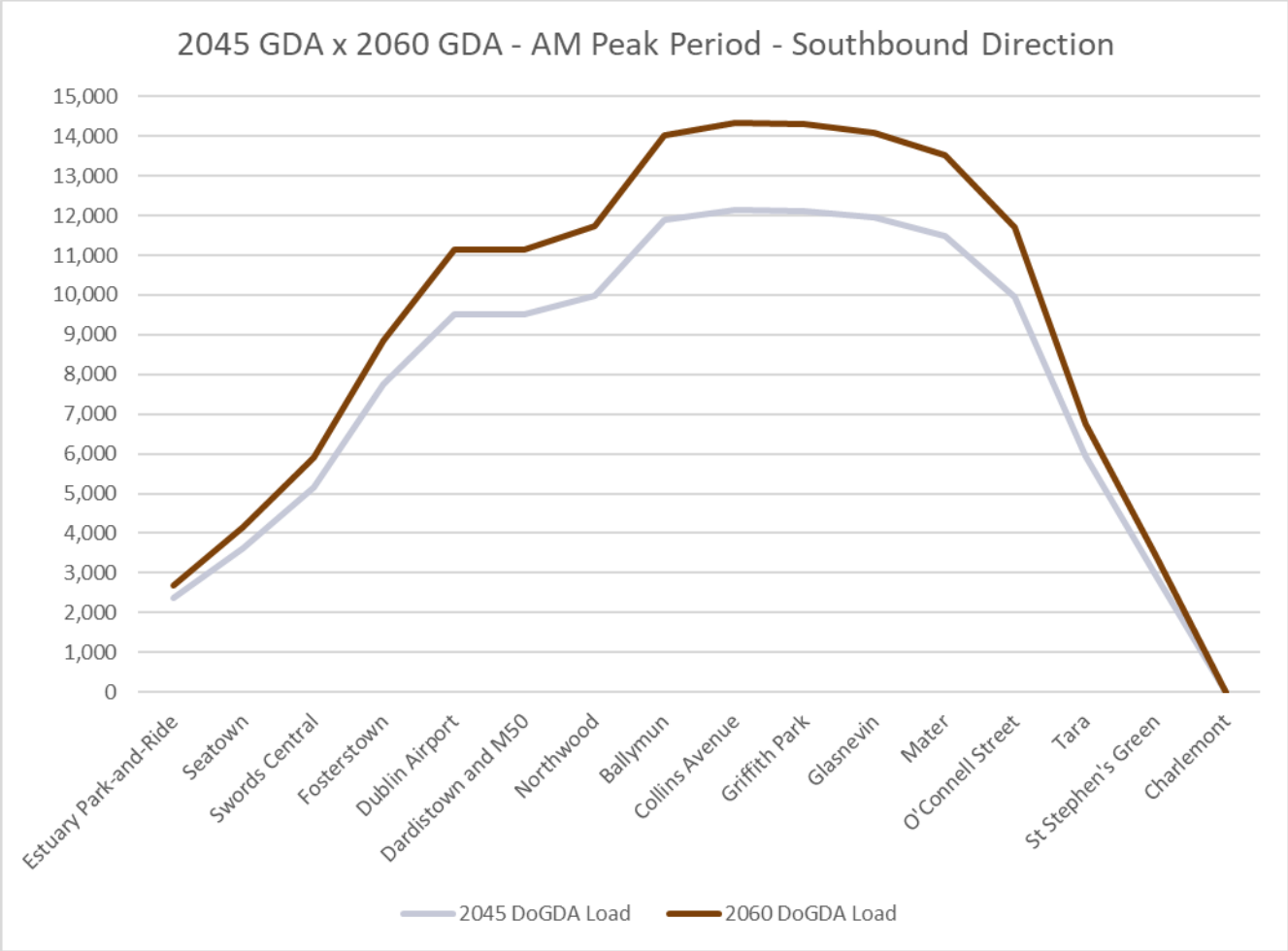

Figure 7-42: 2045 DoGDA x 2060 DoGDA Loading Profiles -AM Southbound

Loading results for the PM peak travelling Northbound are shown in Figure 7-43. The 2045 DoGDA maximum load is 8,279, less than a 0% change from the BC Core Run (8,280). In 2060, with a value of 9,927, the maximum load is 10% smaller than the Core BC Run (11,006).

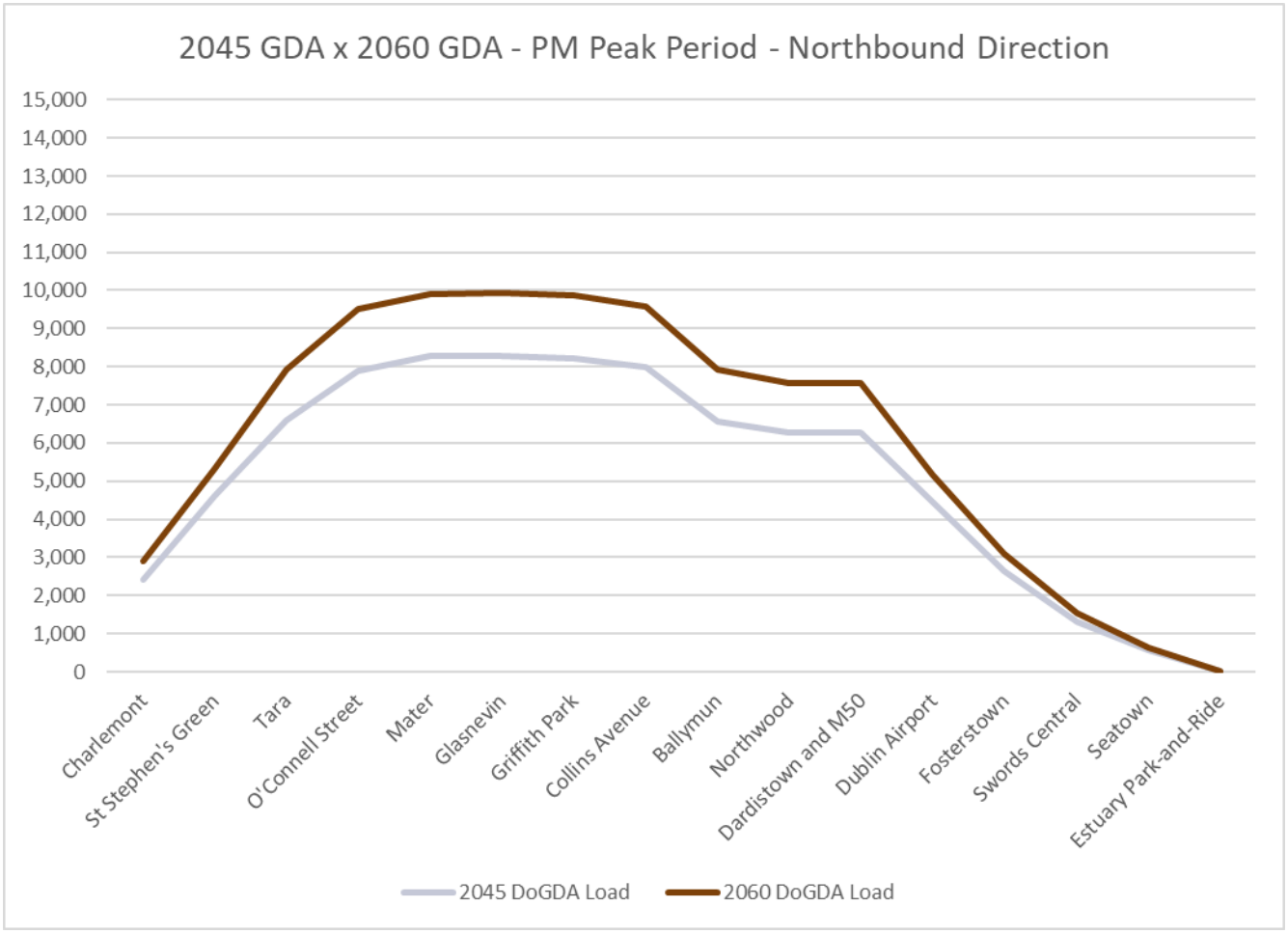

Figure 7-43: 2045 DoGDA x 2060 DoGDA Loading Profiles -PM Northbound

Figure 7-44 provides the PM peak loading results in the Southbound direction. In the 2045 DoGDA the maximum load is 4,632, less than 0% different from the Core BC Run maximum load (4,619). For 2060, the maximum load is 6,261, 4% lower than in the BC Core Run (6,529).

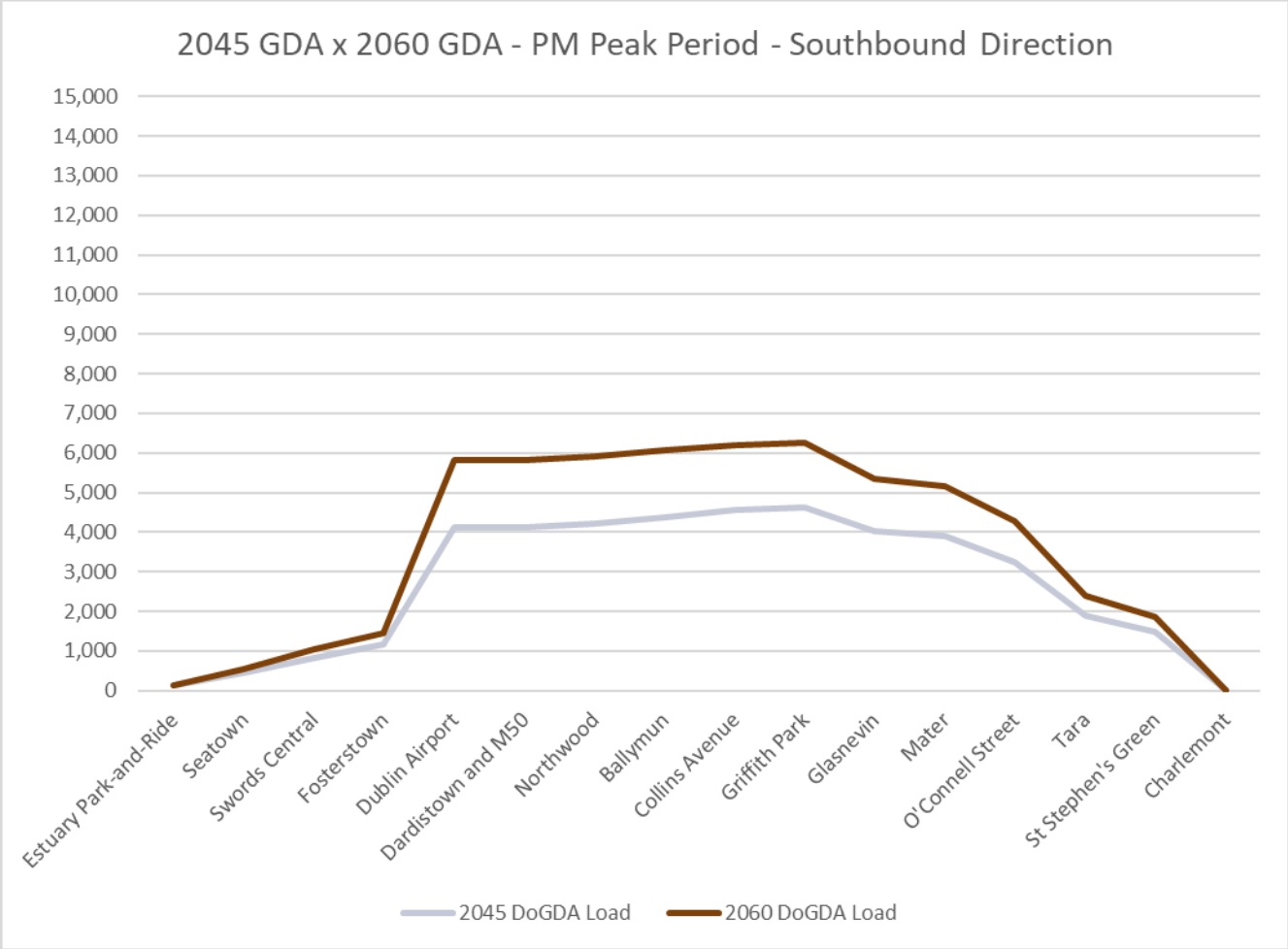

Figure 7-44: 2045 DoGDA x 2060 DoGDA Loading Profiles -PM Southbound

7.7.3 Boarding and Alighting Numbers

The 12-hour boarding and alighting totals on the MetroLink line as modelled in the two Enhanced Transport Network GDA runs are shown in Figure 7-45. Total 12-hour boardings are 151,968 in the 2045 DoGDA, rising to 196,389 in 2060 (an increase of 29%).

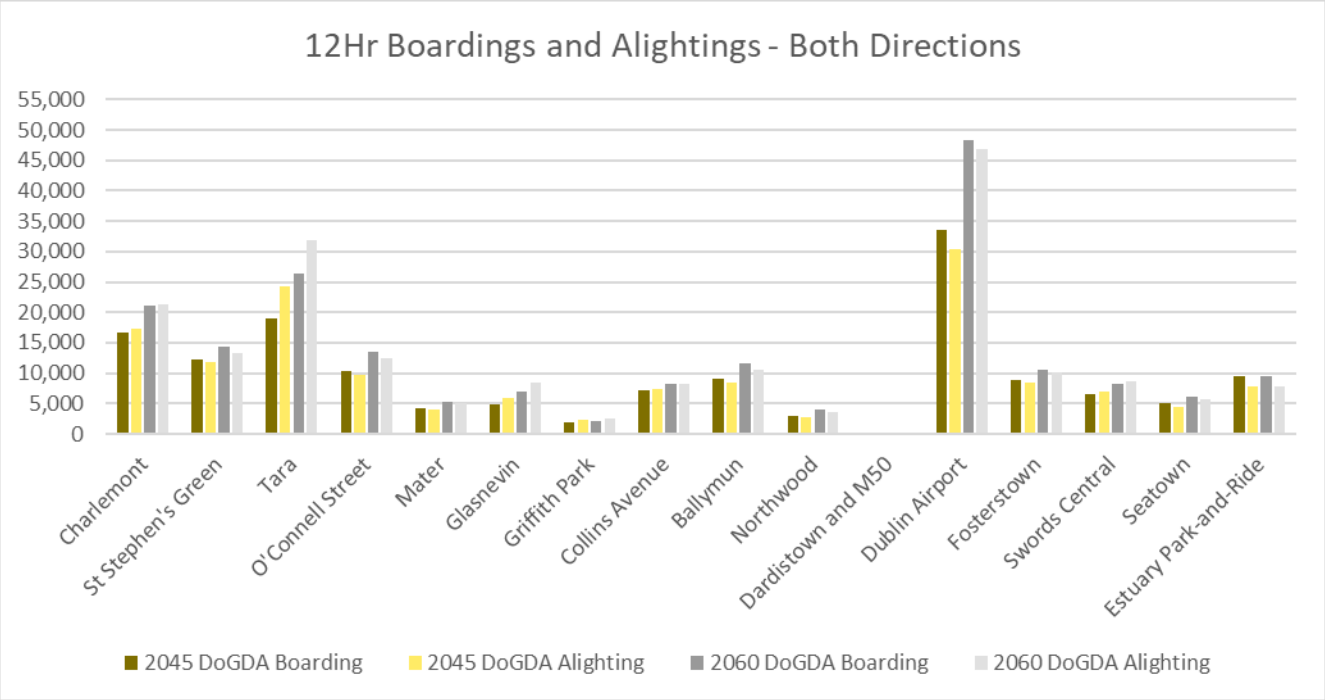

Figure 7-45: 2045 DoGDA x 2060 DoGDA Boarding and Alighting – 12hr Both Directions

GDA boarding results for each year are provided in Table 7-17. The GDA boardings and alightings at each station are compared with the BC Core run results in Figure 7-46 and Figure 7-47. “DoGDA” in the charts refers to GDA runs, and “BC Core” refers to the Business Case Core runs.

Table 7-17: 12-Hour Boarding and Alighting in Peak Periods for DoGDA runs

Year	Boarding	Difference from Core BC
2045	151,968	-3%
2060	196,389	-6%

Figure 7-46 shows a comparison of boarding and alighting totals for the 2045 DoGDA run. The overall boardings are 3% less than the BC Core boardings, with 151,968 boardings in the 2045 DoGDA results compared to 156,091 boardings in the BC.

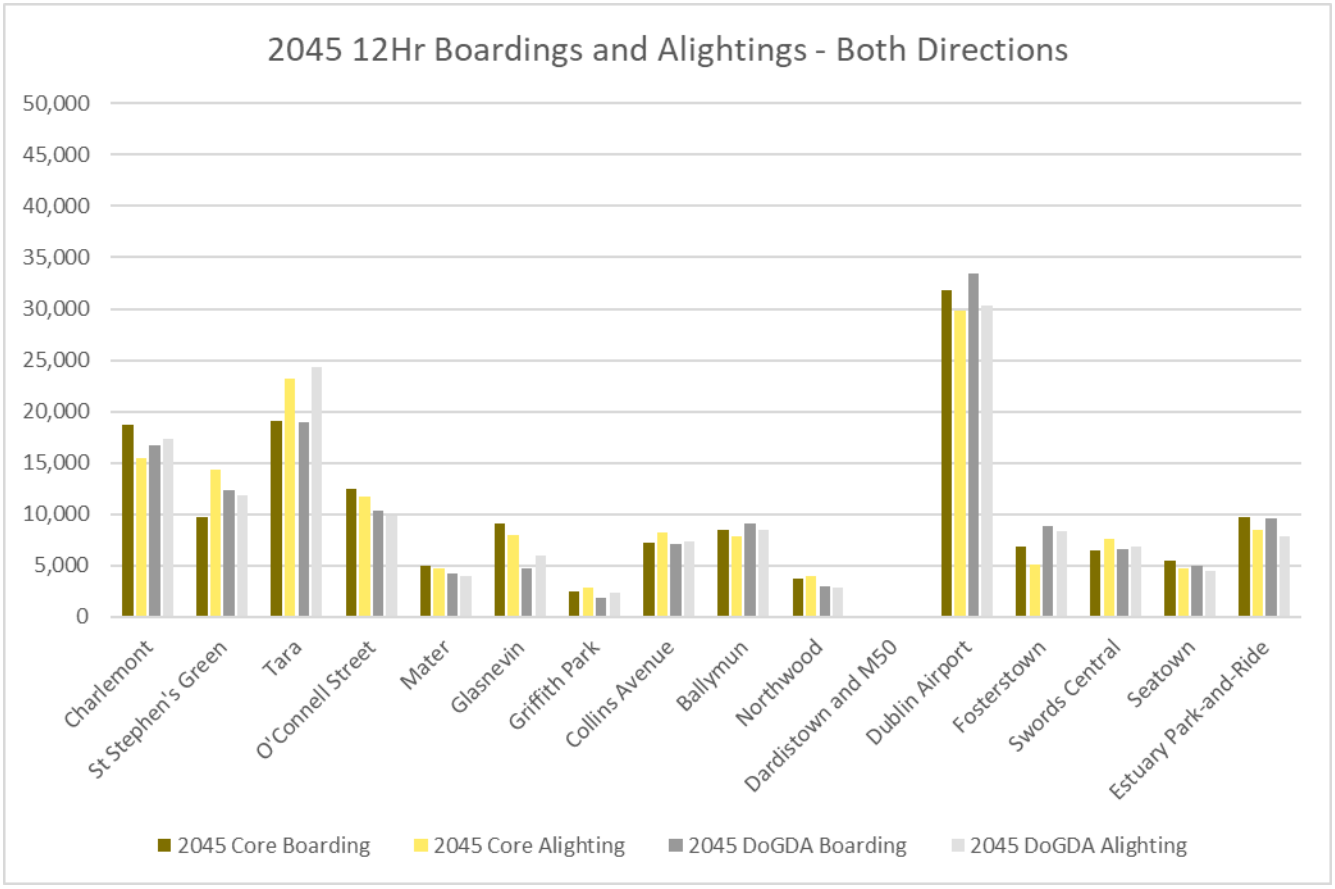

Figure 7-46: 2045 Core x 2045 DoGDA Boarding and Alighting – 12hr Both Directions

The 2060 DoGDA results are shown in Figure 7-47. There are 6% less boardings and alightings than the BC Core run. There are 196,389 boardings in the DoGDA and 208,815 in the BC Core run. The Fosterstown station shows the largest difference in alightings in 2060, with 50% more alightings in the DoGDA than the BC Core run. The Glasnevin station in 2060 has 43% less boardings and 24% less alightings than the BC Core run.

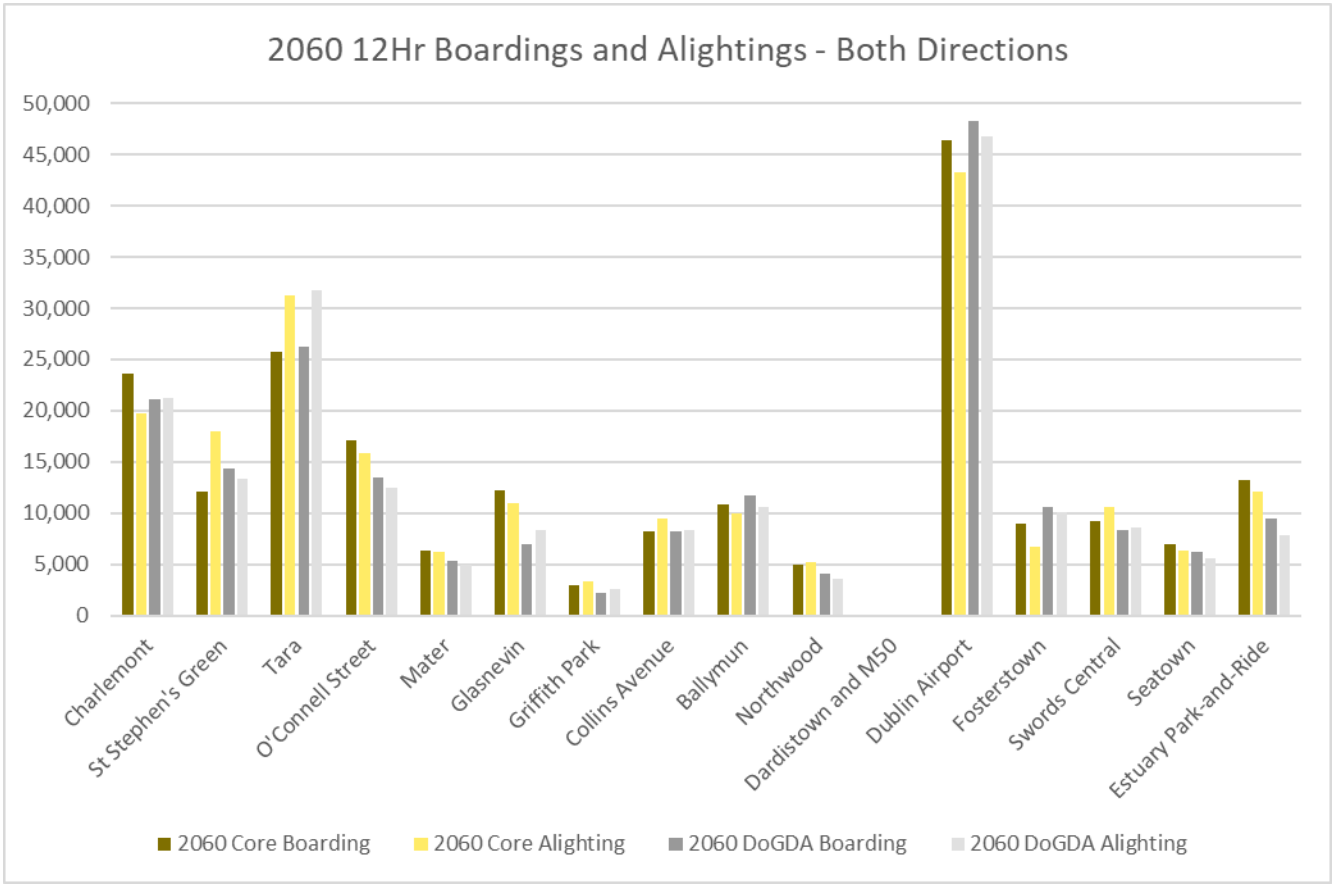

Figure 7-47: 2060 Core x 2060 DoGDA Boarding and Alighting – 12hr Both Directions

7.8 Business Case Core Runs v Sensitivity Tests

A final comparison of the Business Case Core Runs against all sensitivity tests (Slow Growth, Low Frequency, Alternative Demand, Enhanced Transport Network, and Enhanced Transport Network + Alternative Demand) was undertaken for 2030, 2045 and 2060. As expected, the constrained growth of the population in the Slow Growth scenario, and the reduced demand for travel in the Alternative Demand scenario, contributes to the reduced number of boarding passengers in these scenarios, when compared with the Core run. The Low Frequency sensitivity test presents a scenario where MetroLink does not run as often, and as such it cannot carry as many passengers throughout the day. The NDP and GDA scenarios generally see slightly lower boarding passengers due to the presence of other schemes which may attract passengers in place of using MetroLink. The NDP+ Alternative Demand sensitivity test presents the build out of the NDP in conjunction with the alternative demand scenario which sees a reduced number of boarding passengers in line with the Alternative Demand scenario.

Table 7-18 presents the total 12hr boarding figures in each scenario, as well as presenting the percentage difference between the sensitivity tests and their respective Core Run.

Table 7-18: 12hr Boarding Passengers Both Directions – All Scenarios.

Scenario	12hr Boarding	Diff from Core
2030 Core	128,182	-
2030 Low Frequency	108,160	-16%
2030 Slow Growth	123,396	-4%
2030 Alt. Demand	111,507	-13%
2030 NDP	126,647	-1%
2030 NDP+Alt Demand	112,166	-15%
2045 Core	156,091	-
2045 Low Frequency	143,539	-8%
2045 Slow Growth	142,033	-9%
2045 Alt. Demand	141,998	-9%
2045 NDP	163,318	5%
2045 GDA	151,968	-3%
2045 NDP+Alt Demand	143,913	-8%
2060 Core	208,815	-
2060 Low Frequency	184,696	-12%
2060 Slow Growth	177,755	-15%
2060 Alt. Demand	176,353	-16%
2060 GDA	196,389	-6%
2060 NDP+Alt Demand	183,370	-14%

Figure 7-48 to Figure 7-50 present the 12hr boarding figures both directions for the Core Runs and Sensitivity Tests in 2030, 2045 and 2060 respectively.

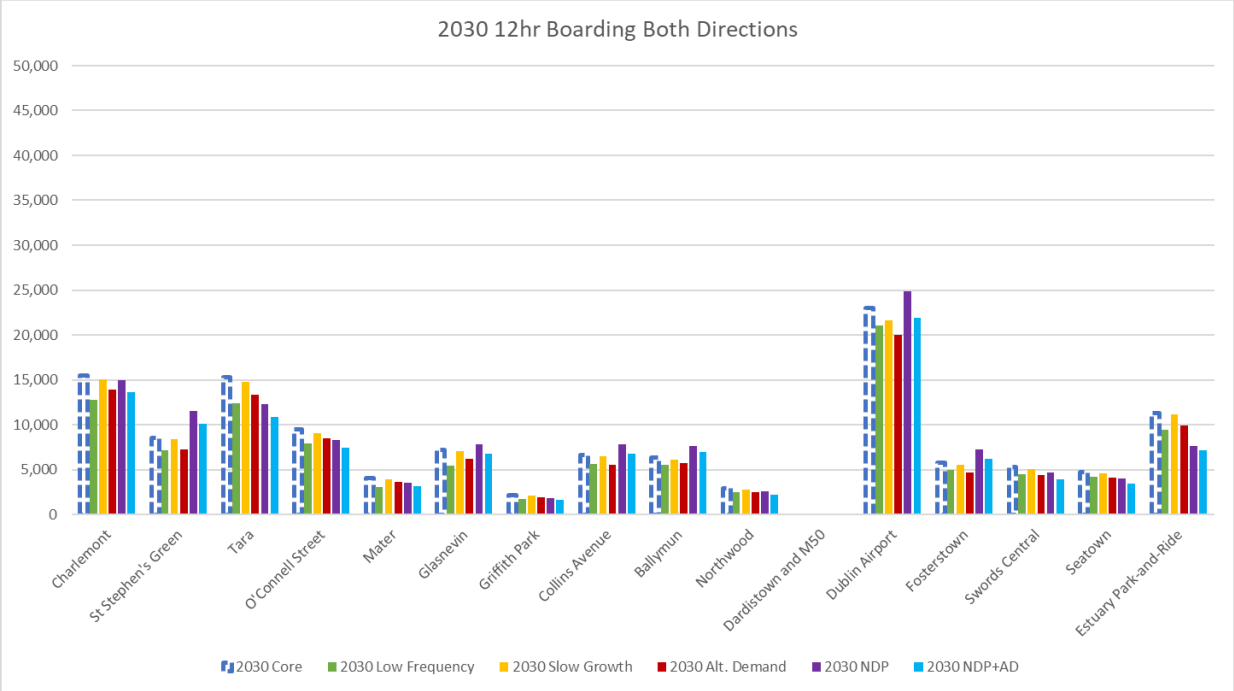

Figure 7-48: 2030 Boarding Passengers – 12hr Both Directions

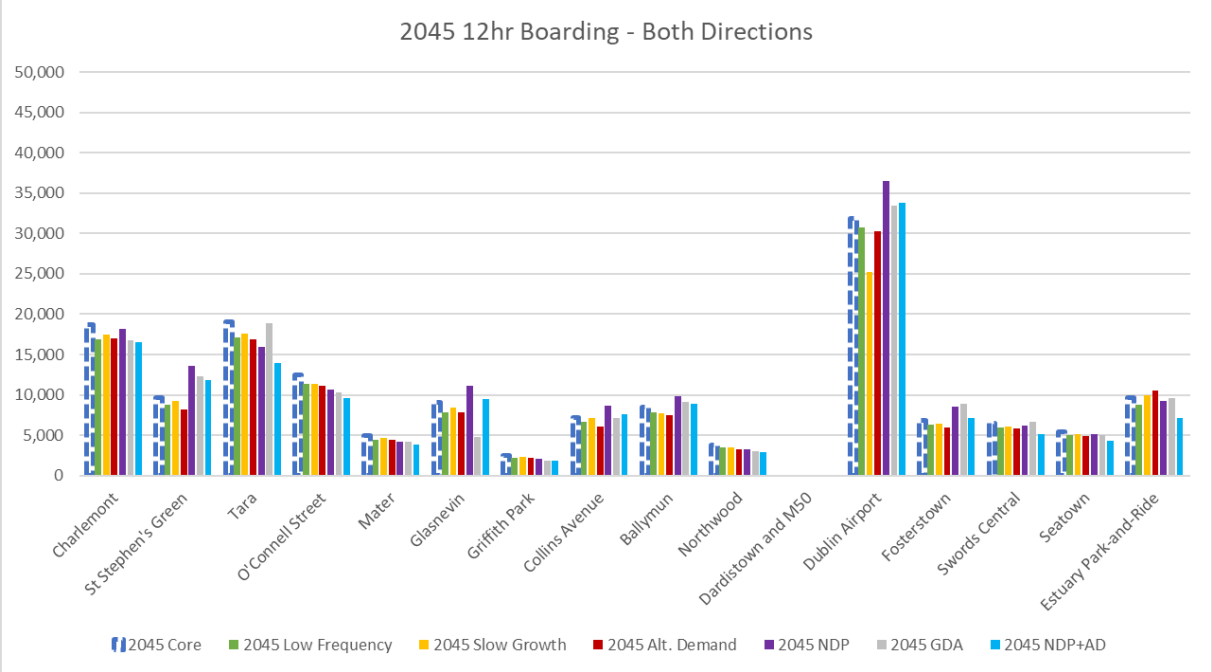

Figure 7-49: 2045 Boarding Passengers – 12hr Both Directions

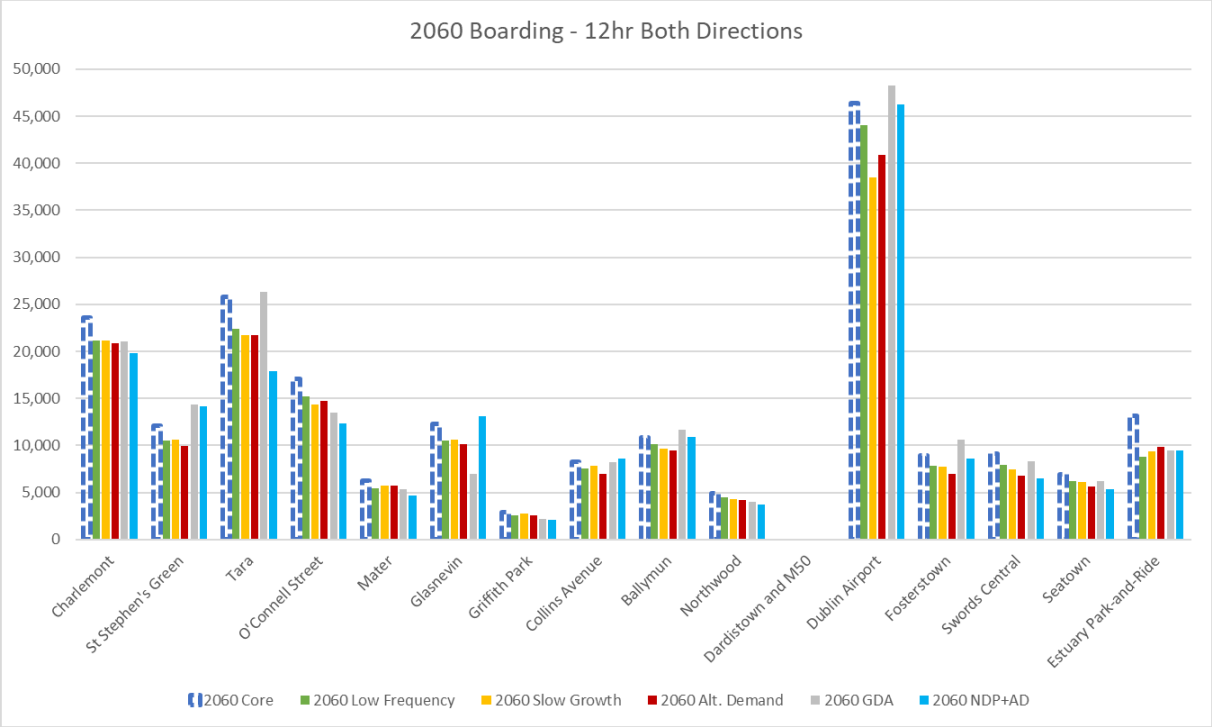

Figure 7-50: 2060 Boarding Passengers – 12hr Southbound

8. Model Assessment

8.1 Model Benefits

In the 12hr period, the total number of boarding passengers increases by 22% from 2030 to 2045, from 128,182 passengers to 156,091 passengers respectively. This further increases to 209,815 boarding passengers in 2060, representing an increase of 34% from 2045 to 2060.

From the modelling results presented, the maximum line flow across all years in the AM peak period southbound is present at Glasnevin station, with approximately 10,400 passengers in 2030, 11,800 passengers in 2045, and 14,900 passengers in 2060. This is as a result of the opportunity of interchange with the rail network. In the PM peak period southbound, the maximum line flow in all years is present at Griffith Park station, with approximately 4,000 passengers in 2030, approximately 4,600 passengers in 2045 and 6,500 passengers in 2060.

The results from the MetroLink modelling exercise indicated the following:

- The strategic park and ride site facilitates significant volumes of people primarily along the M1 corridor (Balbriggan, Drogheda etc.) and to a lesser extent, from towns from the north of Fingal (Skerries, Donabate) and from the N2 corridor to access the MetroLink and reducing the length of their private car trips and removing trips from other parts of the strategic road network;
- Reduces the public transport journey time from Swords, Dublin Airport and Ballymun to/from the City Centre;
- Reduces private car travel along the length of the corridor of the MetroLink, but in particular in areas such as Swords and Dublin Airport;
- Increases in public transport usages along other corridors such as the rail line to/from Cork, Maynooth and the Luas Green and Red Lines, as well as the DART along the southern side of the city; and
- The transfer of people from bus to MetroLink from Swords, Dublin Airport and from the Ballymun areas.

8.1.1 Economic Benefits

TUBA (Transport User Benefit Appraisal) software has been utilised to assess the potential economic benefits to the surrounding Highways (HW) and Public Transport network (PT) when MetroLink is in place. The results of this appraisal have been illustrated per zone in the following figures, showing the PT, HW and Total (PT and HW combined) benefits in both 2030 and 2045.

In terms of PT benefits, zones that see benefits of between €20million and €50million in 2030 and 2045 are located at Dublin Airport and Estuary, where the Park and Ride facility will be situated. In the zones immediately surrounding the scheme alignment, there are PT benefits of between €100,00 and €1million in both 2030 and 2045.

Zones at Estuary and further north along the M1 experience a reduction of up to €5million in HW benefits. This is a result of the presence of the Park and Ride facility at Estuary station which encourages those in the surrounding area to drive to the facility to interchange with MetroLink. As a result, there may be increases in traffic flow and delays experienced. However, these disbenefits decrease in 2045. The zone at Dublin Airport experiences an increase of up to €40million in HW benefits in both 2030 and 2045, as a large volume of people will choose to use MetroLink rather than private vehicles.

In total, Dublin Airport sees an increase of over €50million in benefits, in both 2030 and 2045. A reduction in benefits of up to €100,000 along the DART line to the east of the alignment, when considering Origins, however this improves in 2045. Benefits of up to €20million can also be see in the areas beyond the M50, showing the far-reaching economic benefits of MetroLink.

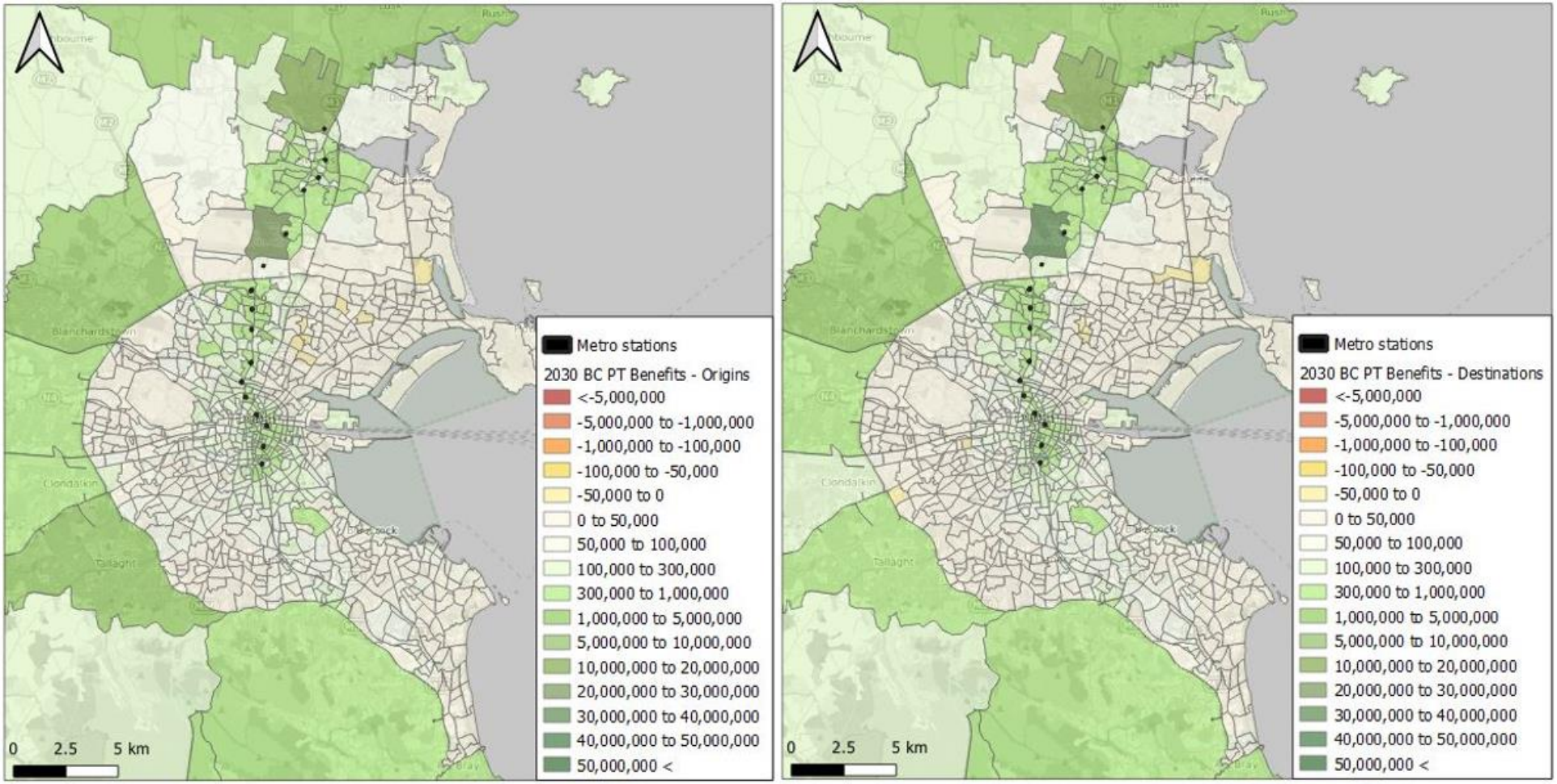

Figure 8-1: 2030 PT Benefits- Origins and Destinations

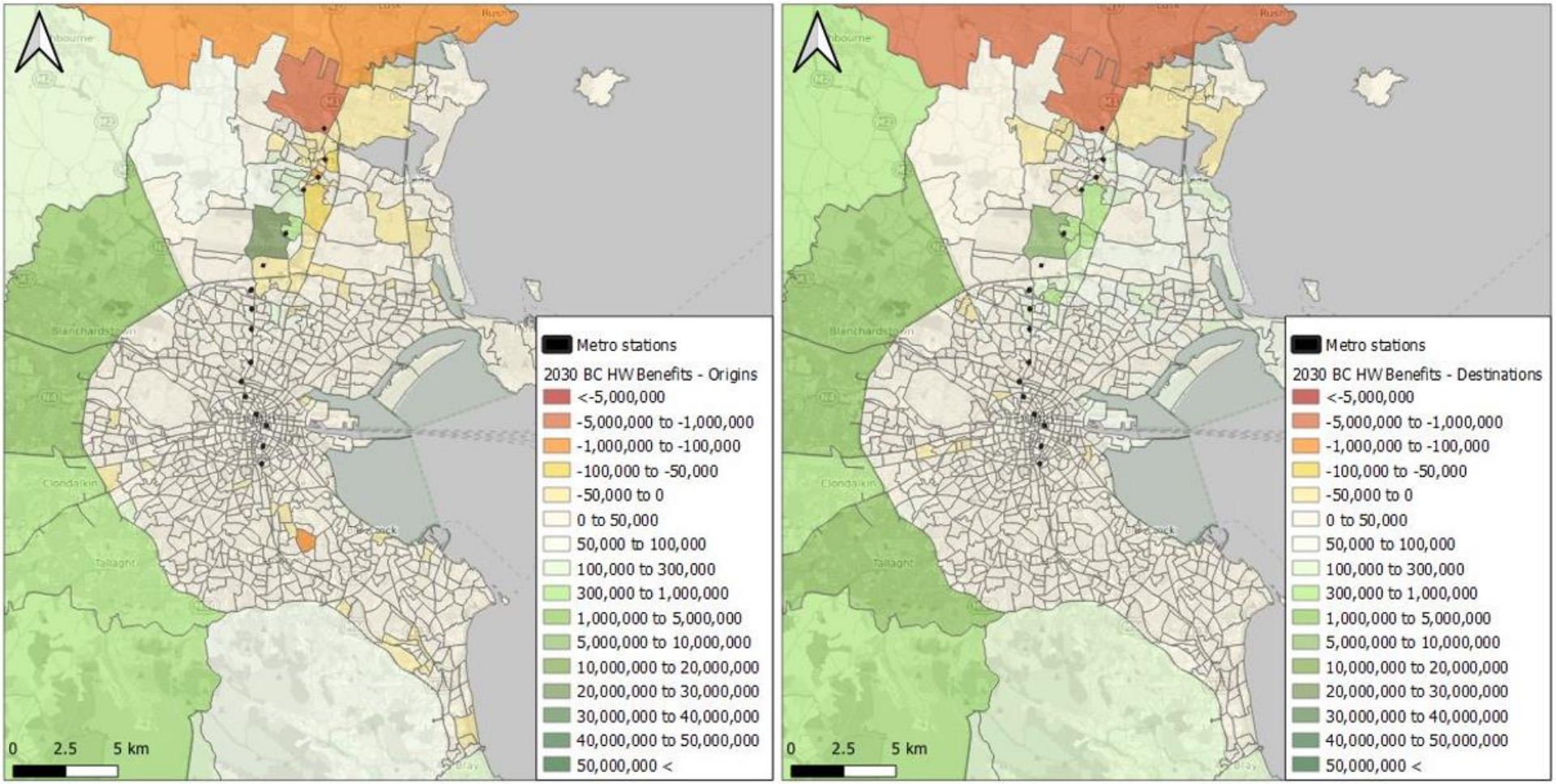

Figure 8-2: 2030 HW Benefits – Origins and Destinations

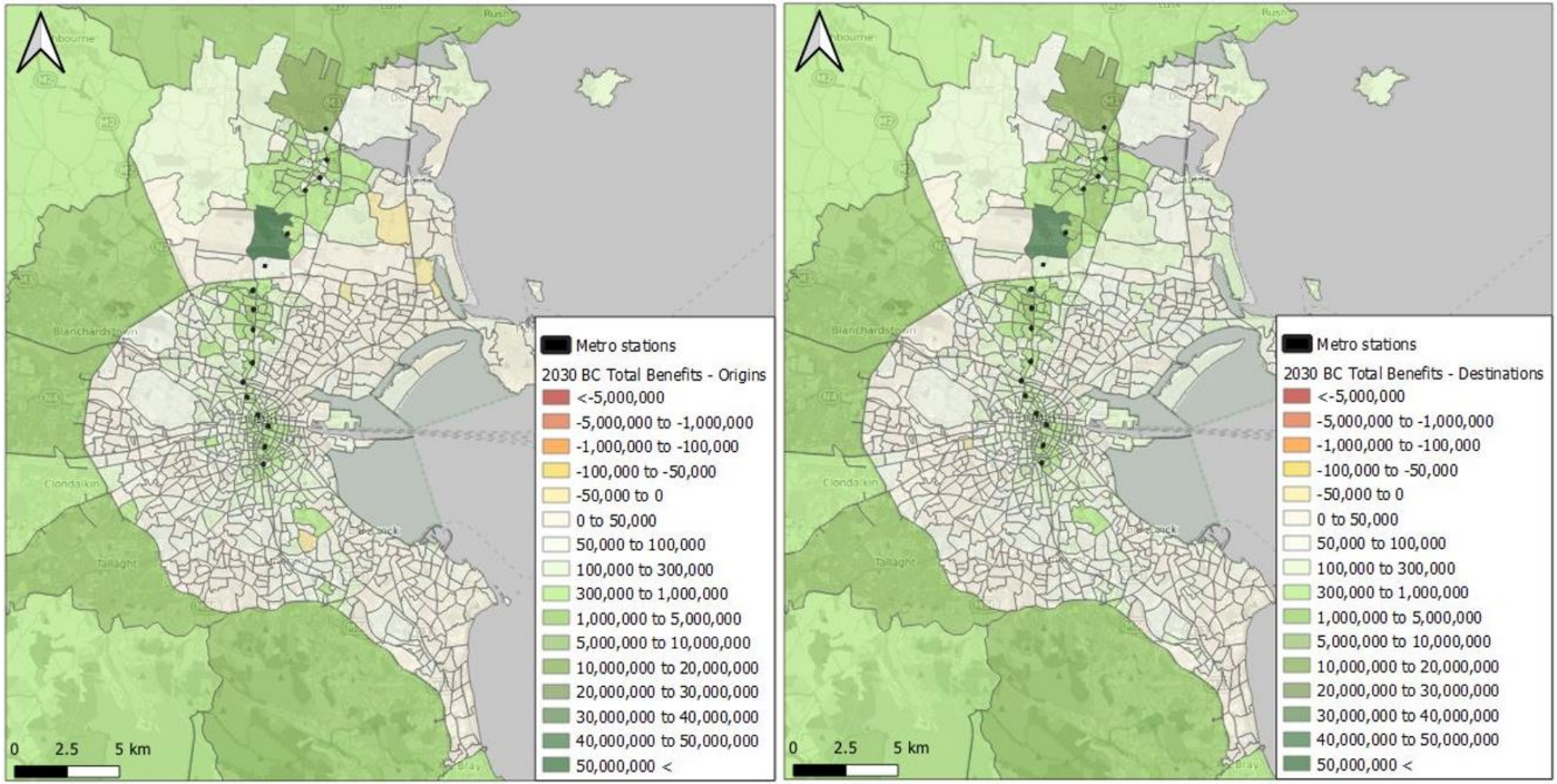

Figure 8-3: 2030 Total Benefits – Origins and Destinations

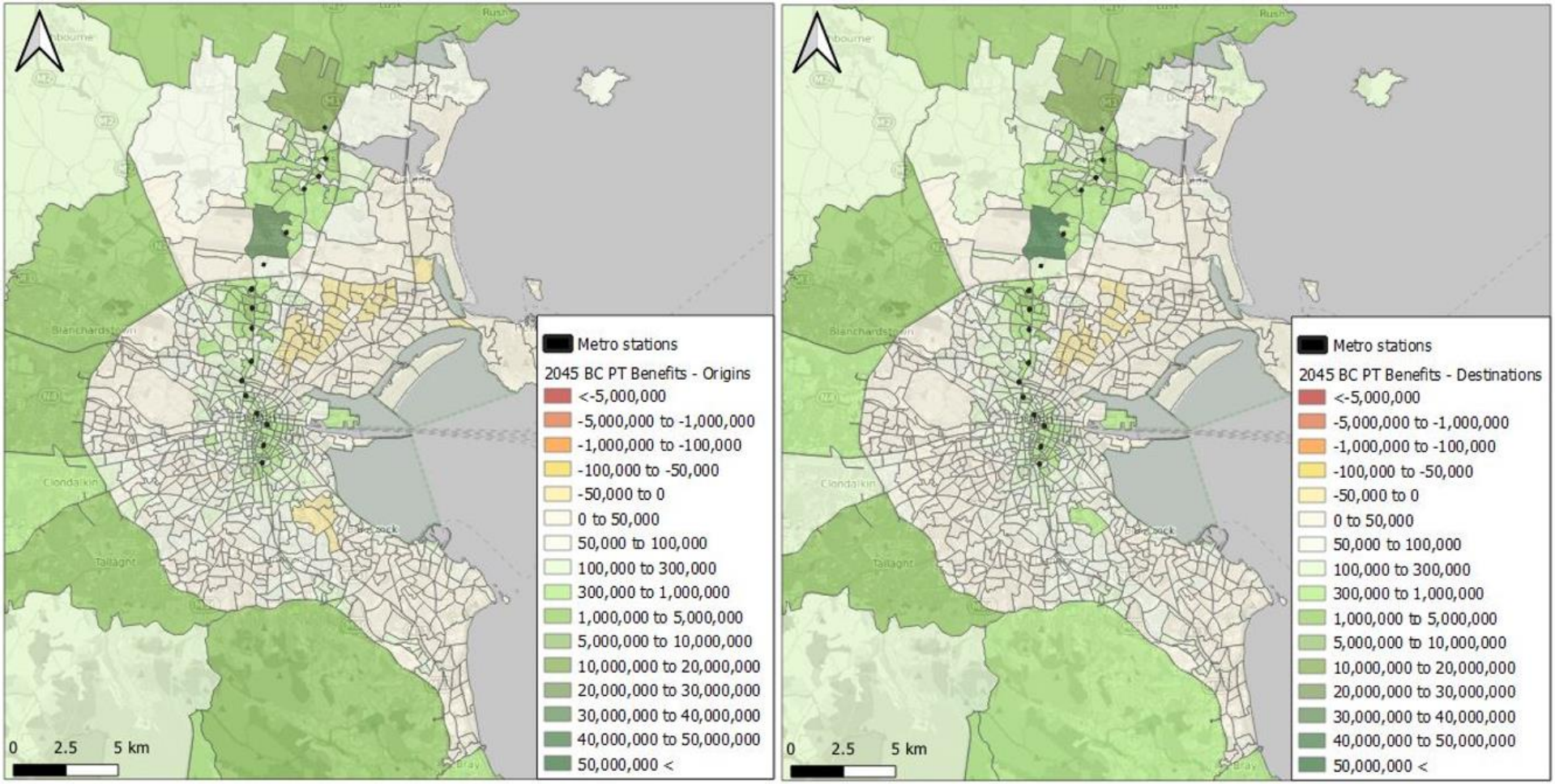

Figure 8-4: 2045 PT Benefits – Origins and Destinations

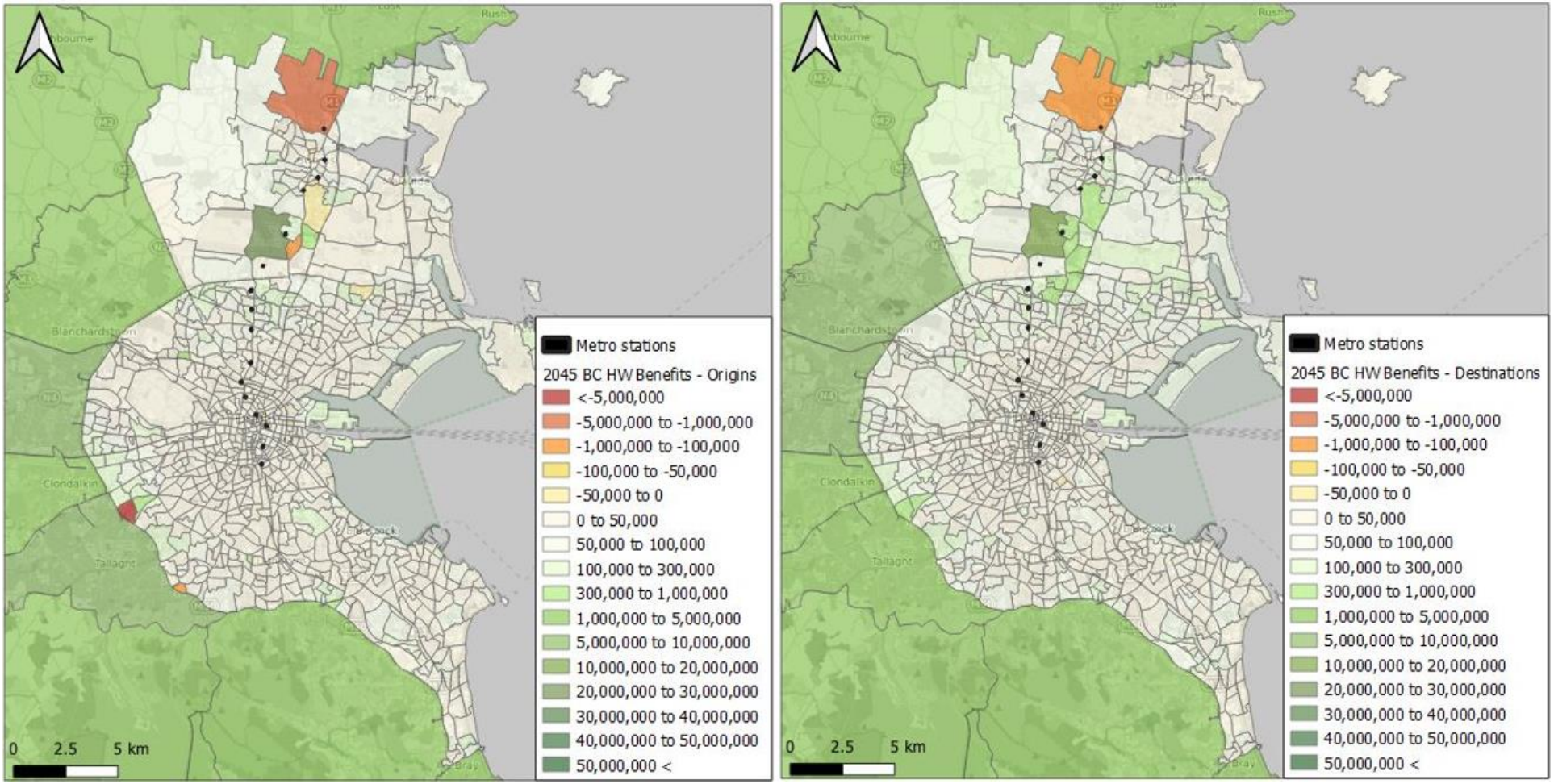

Figure 8-5: 2045 HW Benefits – Origins and Destinations

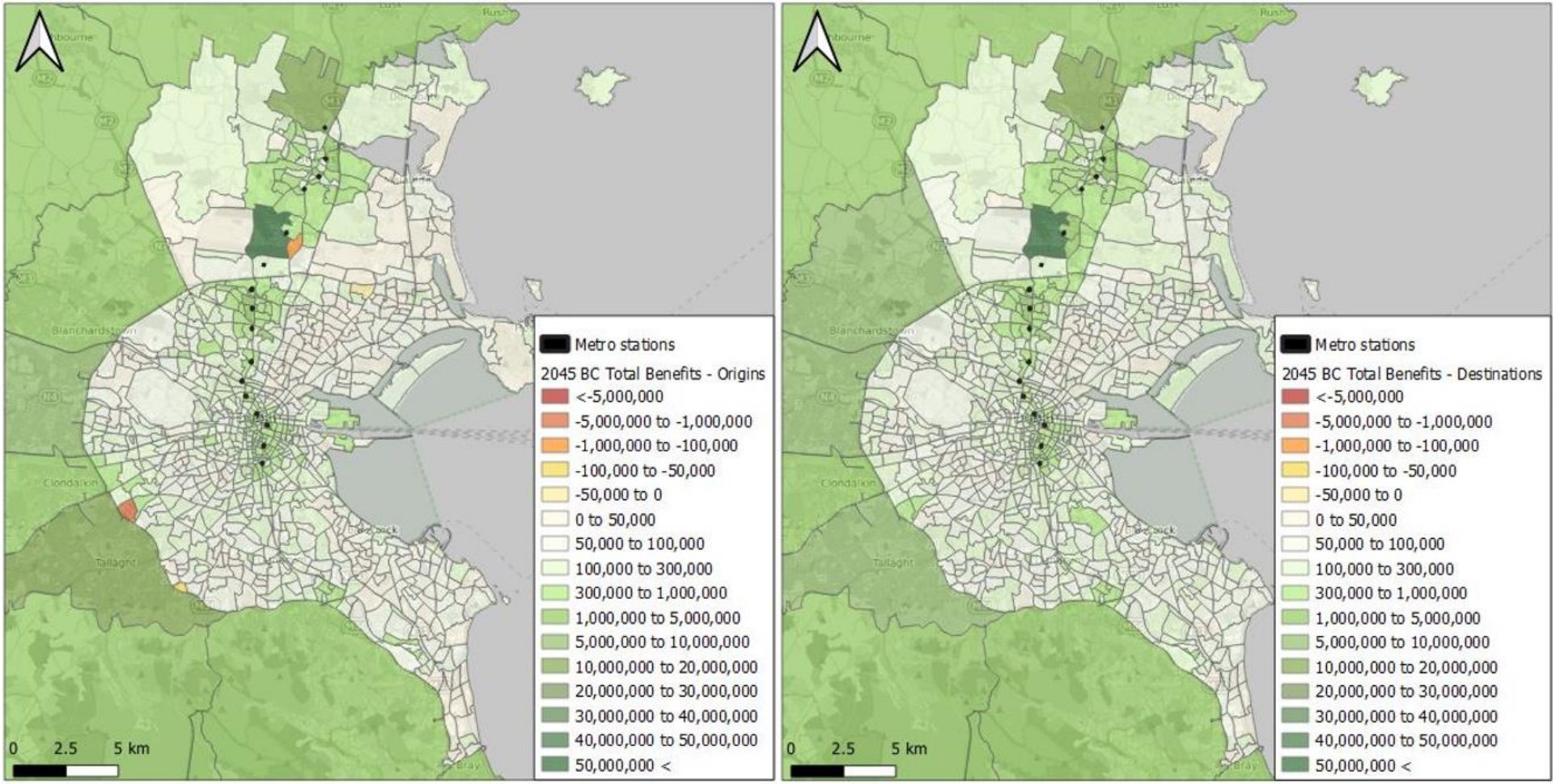

Figure 8-6: 2045 Total Benefits – Origins and Destinations

8.1.2 Health Benefits

The NTA Health Appraisal Module was utilised to monetise the impact of physical activity on premature deaths and absenteeism, which results from changes in the levels of cycling. The tools that it employs are Cube Voyager and Microsoft Excel.

The Cube Voyage element aggregates transport model outputs to 24 hours and calculates the average walking and cycling times and distances, which are then used in Excel spreadsheet. Currently end to end activity mode trips are included in this process with walk leg for public transport mode trips included.

The Excel spreadsheet monetises these impacts based on the relative number of lives saved, in accordance with the HEAT Tool developed by the World Health Organisation (WHO), and reduction in absenteeism as suggested in the Active Travel 'toolkit' developed by the Department for Transport (DfT, UK).

The results outlined below combine both Active Mode travel trips (end to end trips) and walk-leg trips to/from Public Transport.

Table 8-1 summarises the model inputs for the Do Minimum and Do Scheme scenarios for 2030 year. Results for Physical Activity are summarised in Table 8-2 and Table 8-3 presents results for absenteeism.

Model inputs for year 2045 are summarised in Table 8-4. Results for Physical Activity are outlined in Table 8-5 and Table 8-6 presents results for absenteeism.

Table 8-1: 2030 Business Case - Model Inputs

Mode	Model Inputs	Do Minimum Scenario	Do Scheme Scenario
Walking	Journeys per day	2,264,383	2,292,320
	Average Distance (km)	1.56	1.59
	Average Time (mins)	18.59	18.92
Cycling	Journeys per day	157,198	153,203
	Average Distance (km)	4.06	4.02
	Average Time (mins)	14.69	14.49

Table 8-2: 2030 Business Case – Physical Activity Calculations

Impact	Description	Cyclists	Walkers
Impact on New Users	Expected deaths among new users	-4.1745	29.1946
	Relative Risk FY	0.0336	0.0217
	Lives saved FY	-0.1404	0.6332
	Value (€ per year)	**€ -317,054.17**	**€ 1,429,881.90**

Impact on existing users (if route Journey Time changes)	Difference in minutes	-0.092	0.131
	Difference relative risk	0.000	0.000
	Deaths amongst existing users	158.747	2,314.960
	Lives saved FY	-0.074	0.876
	Value (€ per year)	**€ -166,414.89**	**€ 1,977,578.13**
Net Impact per annum		**€ -509,483.89**	**€ 3,407,460.03**

Table 8-3: 2030 Business Case - Absenteeism

Description	Result
Output lost from day leave	€ 193.73
Change in absenteeism (days)	2,537
Monetised costs	€ 491,486.07

Table 8-4 :2045 Business Case - Model Inputs

Mode	Model Inputs	Do Minimum Scenario	Do Scheme Scenario
Walking	Journeys per day	2,591,119	2,633,804
	Average Distance (km)	1.58	1.62
	Average Time (mins)	18.81	19.22
Cycling	Journeys per day	185,718	181,119
	Average Distance (km)	4.23	4.19
	Average Time (mins)	15.09	14.93

Table 8-5: 2045 Business Case - Physical Activity Calculations

Impact	Description	Cyclists	Walkers
Impact on New Users	Expected deaths among new users	-4.8050	44.6062
	Relative Risk FY	0.0347	0.0220
	Lives saved FY	-0.1665	0.9828
	Value (€ per year)	**€ -376,021.31**	**€ 2,219,346.01**

Impact on existing users (if route Journey Time changes)	Difference in minutes	-0.074	0.162
	Difference relative risk	0.000	0.001
	Deaths amongst existing users	187.350	2,648.062
	Lives saved FY	-0.070	1.245
	Value (€ per year)	**€ -157,119.31**	**€ 2,810,530.56**
Net Impact per annum		**€ -573,247.47**	**€ 5,029,876.57**

Table 8-6: 2045 Business Case - Absenteeism

Description	Result
Output lost from day leave	€ 193.73
Change in absenteeism (days)	4,052
Monetised costs	€ 784,974.23

The results from the Health Appraisal Tool for the MetroLink opening year 2030 show a combined net impact per annum (physical activity and absenteeism) of approximately €3.41 million. For year 2045, the combined net impact per annum is approximately €5.28 million. It is worth mention that the disbenefit associated to cyclists for both years accounts for end to end trips only. We acknowledge that the Metrolink scheme is likely to reduce, in some level, end to end active mode trips however, we understand that the scheme is also likely to enhance first and last leg active mode trips to and from the stations' catchment area.

8.2 Sensitivity Test Benefits

Table 8-7 presents a comparison of the breakdown of the Present Value of Benefits in the Business Case Core Run and the sensitivity tests that have been undertaken. The benefits received in the Slow Growth and the Alternative Demand scenarios are approximately €2billion less than that of the Core scenario. This is due to the constrained growth of the population in the Slow Growth scenario, and the reduced demand for travel in the Alternative Demand scenario, contributing to the reduced number of boarding passengers in these scenarios, as mentioned in section 7.7.

The Low Frequency sensitivity test was not assessed, however similar levels of benefits can be expected for the Road Network Users, however benefits to Public Transport Users would see a further reduction when compared to the Core scenario.

The Complimentary Infrastructure scenario sees a reduction of approximately €3billion in benefits to Road Network Users as a result of the presence of other schemes in this scenario.

The combined NDP +Alternative Demand scenario has the lowest total benefits of €11.83 billion.

Table 8-7: Comparison of Benefits – Core x Sensitivity Test Scenarios (in Billions)

Scenario	Core	Complimentary Infrastructure	Slow Growth	Alternative Demand	NDP + Alternative Demand
Public Transport Users	9.4	9.4	8.3	8.1	9.1
Road Network Users	5.5	2.7	4.5	4.7	2.7
Safety	0.03	0.03	0.04	0.03	0.03
PV Benefits	**14.93**	**12.13**	**12.84**	**12.83**	**11.83**

8.3 Model Constraints

As highlighted in Section 5 Model Validation/Calibration, there are some constraints present within the model. The NTA model does not achieve the UK TAG recommendation of 0.2% convergence, which can in turn affect convergence levels within the MetroLink model. The following details the constraints present within the MetroLink model, and the solutions provided to improve these.

8.3.1 Park and Ride

The outputs from the ERM v3 suggest that the model does not constrain use of the Estuary Park and Ride site to match the available parking capacity. In many runs the solutions give additional MetroLink demand beyond what the car park capacity supports. Although this happens in some AM peak runs, it also occurs more extensively in LT period runs where arriving demand at the Park and Ride site in that interval exceeds the spare capacity available after AM trips have taken spaces.

This 'excess demand' may be unable to use MetroLink as the car park capacity should limit the demand. In order to understand the significance of this we have quantified the extent of that demand and its impact on MetroLink flows. The main model runs (Business Case 2030 and 2045, NDP 2030 and GDA 2045) were analysed.

The Park and Ride model works with tours (outward from home trips in a time period, followed by a return to home later in the day). Any trip which does not fit into the car park capacity will affect both outward and returning time periods, with MetroLink trips from Estuary in the former and back to Estuary in the latter. The number of excess tours is 1,600-1,720 in some runs (for 2030 Core Run and 2045 DoNDP where the AM period overloads the carpark) and about 600 in the other 2 cases (where spare capacity at the end of the AM peak is over-used by LT period outward trips).

The excess trips amount to 1,050 to 3,422 one-way MetroLink trips per day. When set against a daily total of 128,000 to 163,000 trips, the overestimate of usage due to lack of Park and Ride capacity constraint is very

small at 0.8%-2.1% of the total MetroLink trips. The low percentage reflects the fact that the majority of MetroLink trips are between Dublin Airport and City Centre.

To improve on this, capped DoGDA scenarios were run, which gave outputs reflecting the correct available capacity of the Park and Ride facility, as well as conducting a penultimate loop analysis, as below.

8.4 Penultimate Loop Analysis

8.4.1 Description

The ERM model goes through various loops as it converges towards an output. There will be differences in the outputs from loop to loop, the smaller the difference in between loops the better the convergence. Section 5.2 details the convergence on the model run. The convergence levels reported are based on the differences between the penultimate and final runs, with the higher differences between the final and the penultimate runs giving a higher GAP number. If the model was run for a large number of loops it should eventually reach a point where the difference between the penultimate and final run is very small, this converged answer lies close to the penultimate and final loop results. In order to understand the potential impact that this range in outputs created by the difference between the penultimate and final loop we have reviewed and assessed the results provided by the penultimate loop model runs for the core business case. Model outputs for all time periods can be found in Appendix C.

8.4.2 Penultimate and Final Loop Comparisons

Line flow differences between the penultimate and final loop runs for the AM and PM peak periods as well as 12hr period boarding and alighting differences for the Business Case Core runs for years 2030 and 2045 are presented below.

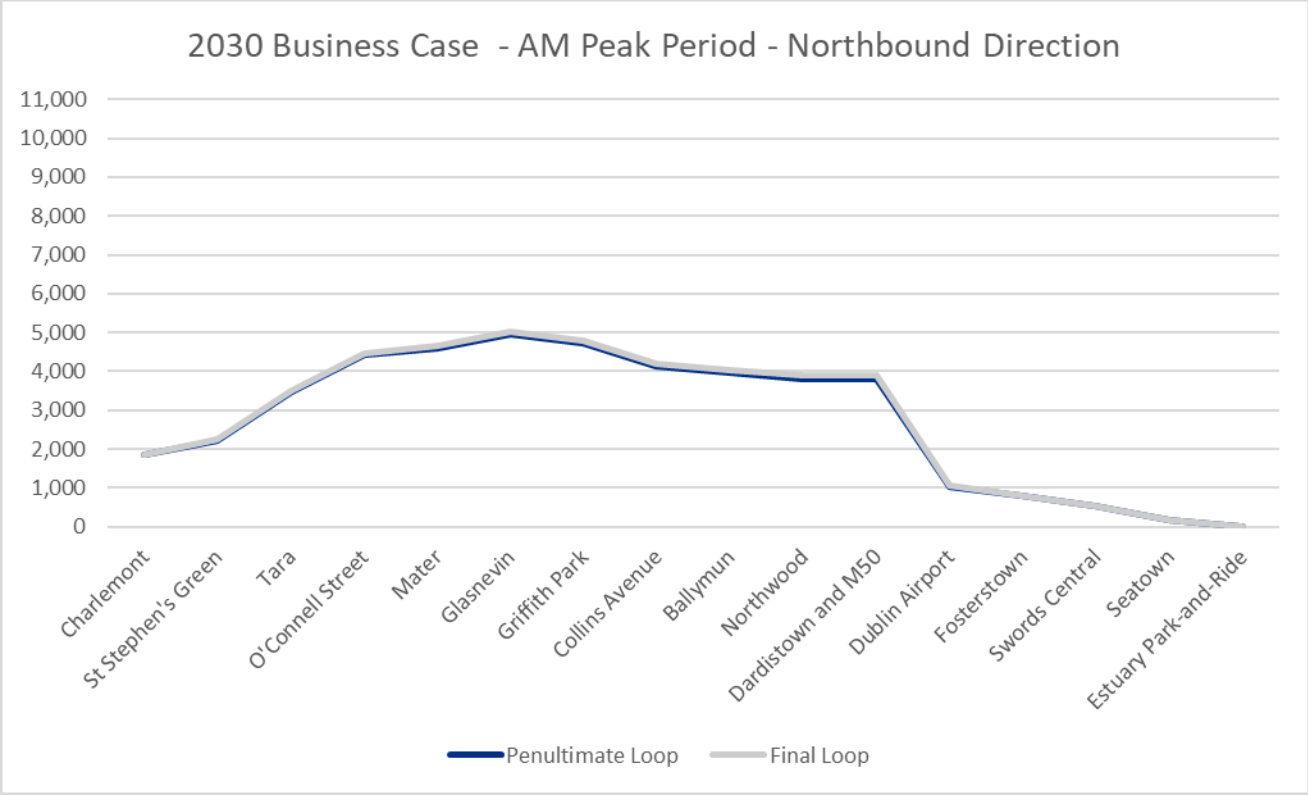

Figure 8-7: Line Flow Comparison, AM Peak 2030 Business Case Northbound Direction

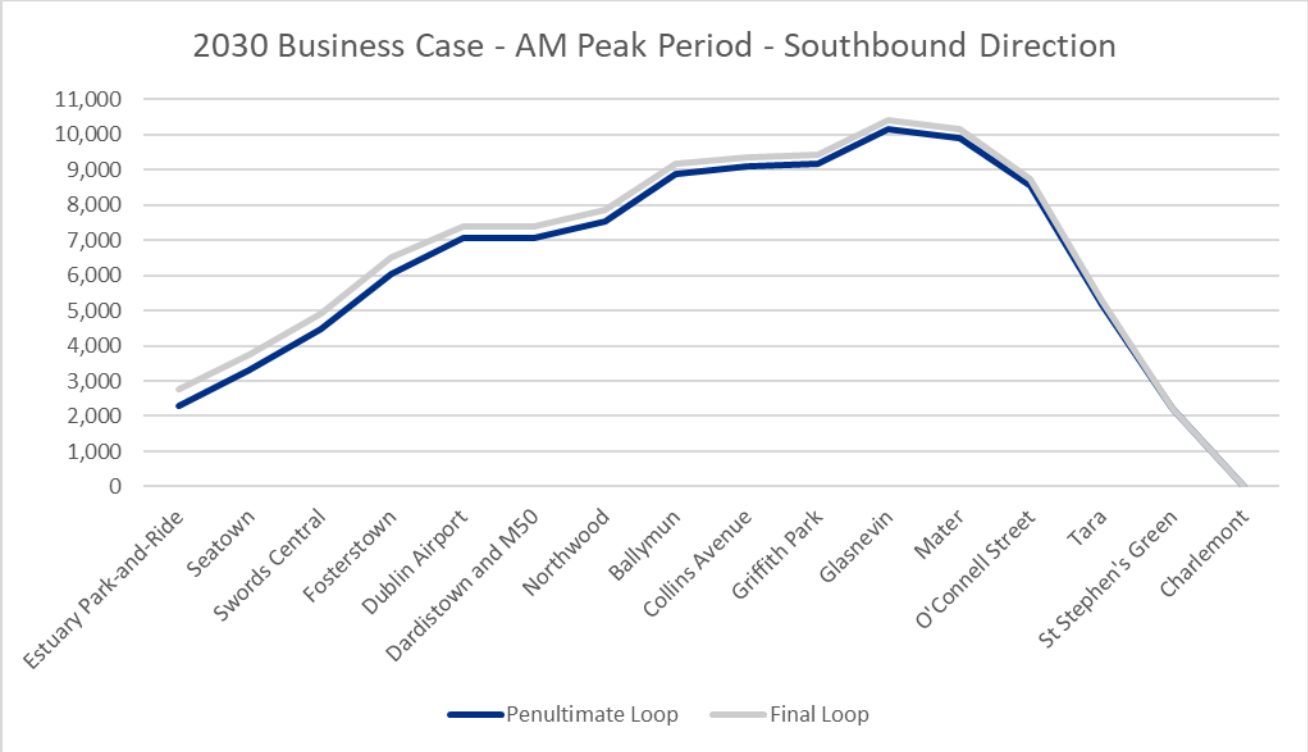

Figure 8-8: Line Flow Comparison, AM Peak 2030 Business Case Southbound Direction

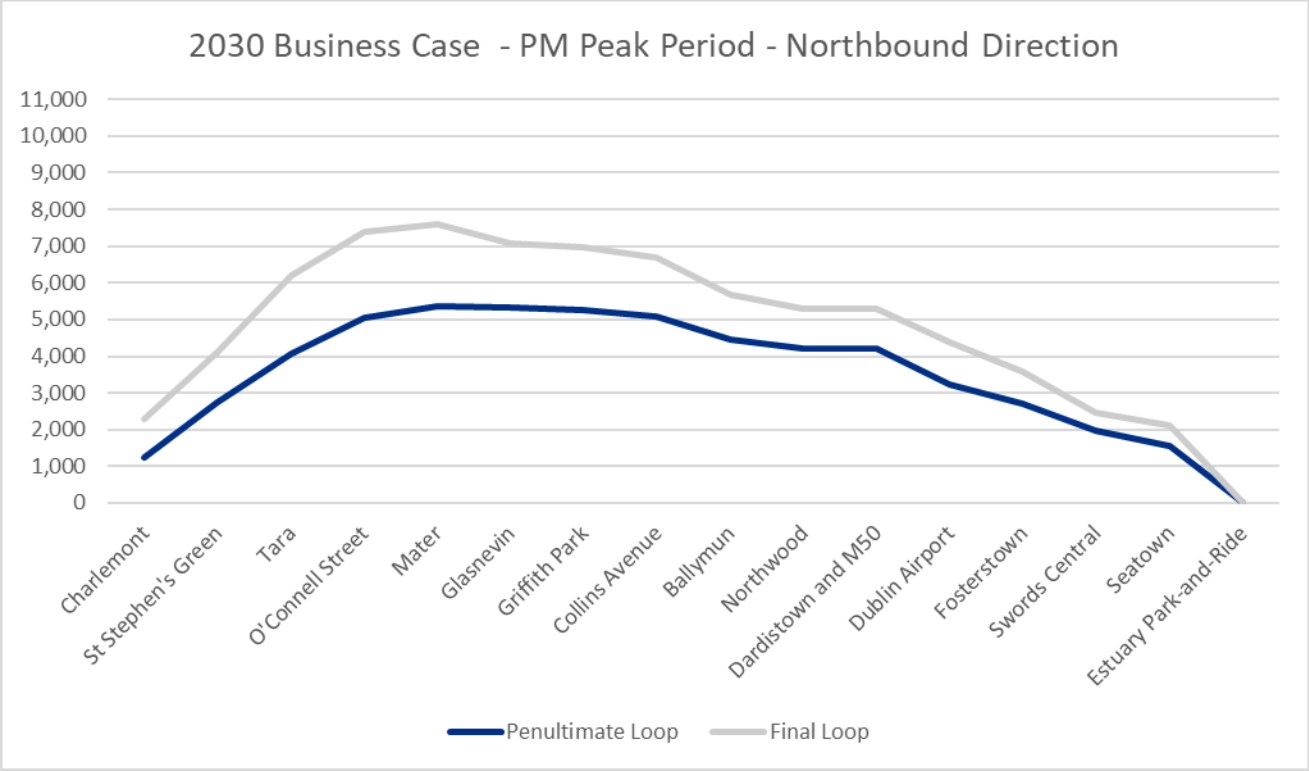

Figure 8-9: Line Flow Comparison, PM Peak 2030 Business Case Northbound Direction

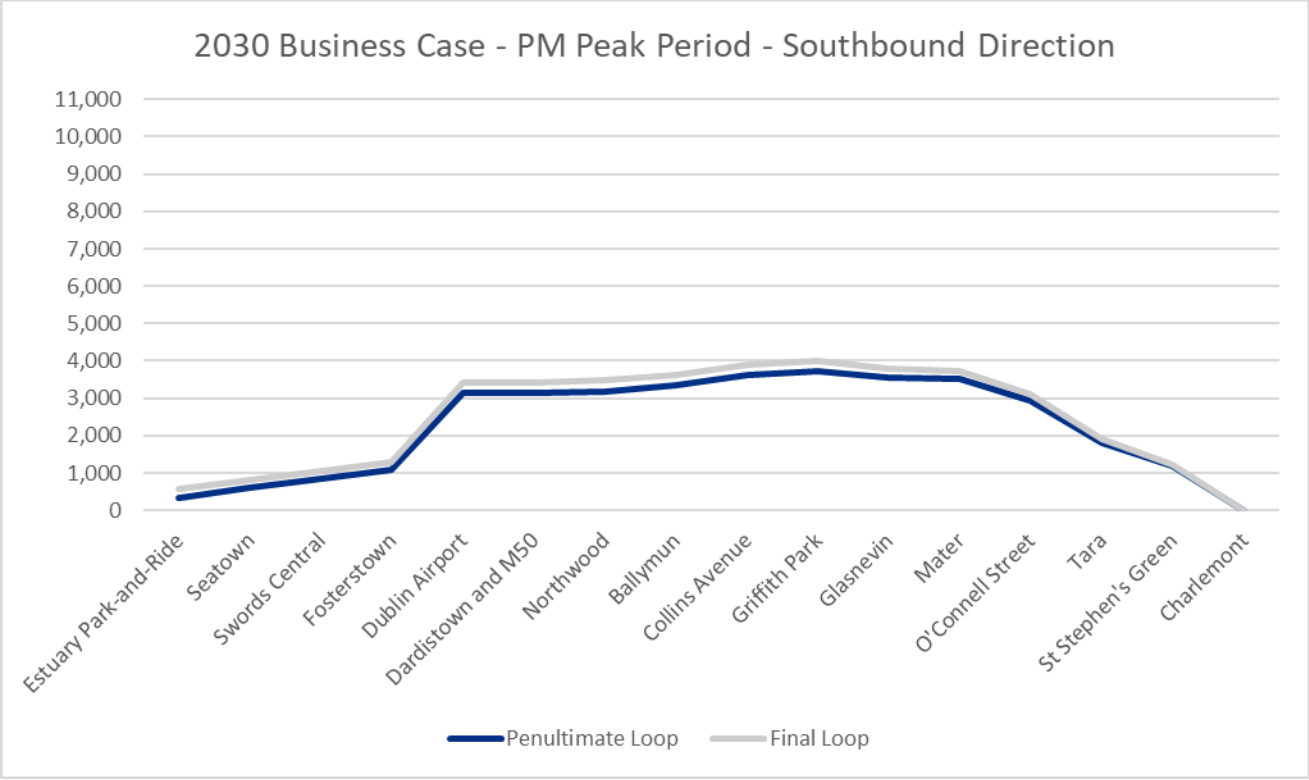

Figure 8-10: Line Flow Comparison, PM Peak 2030 Business Case Southbound Direction

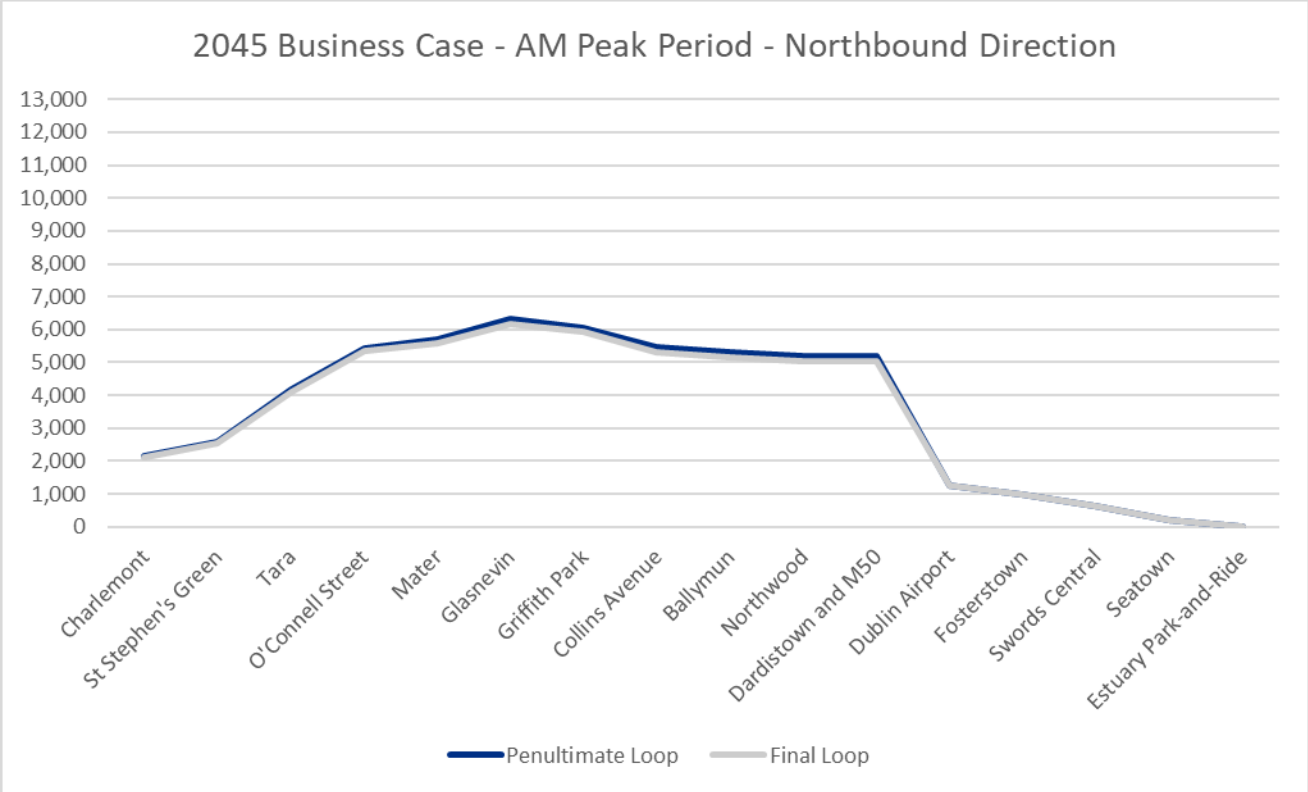

Figure 8-11: Line Flow Comparison, AM Peak 2045 Business Case Northbound Direction

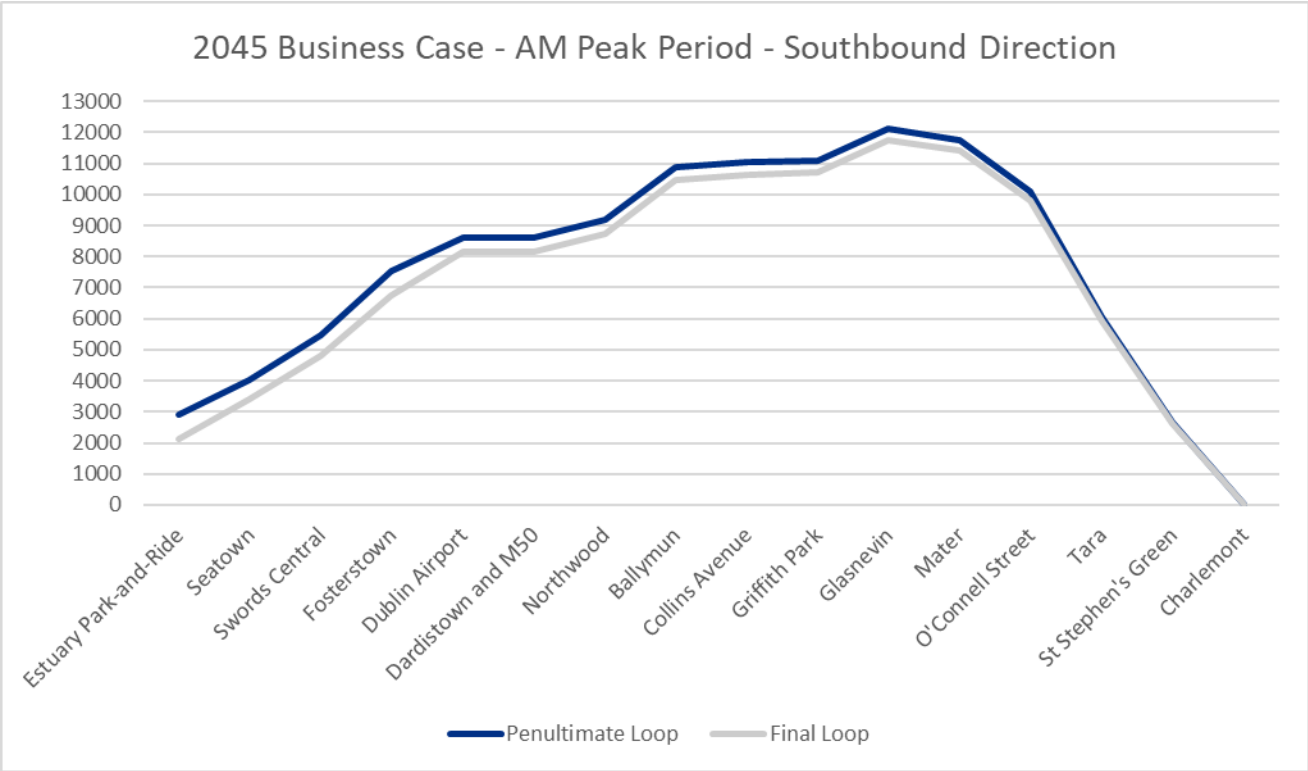

Figure 8-12: Line Flow Comparison, AM Peak 2045 Business Case Southbound Direction

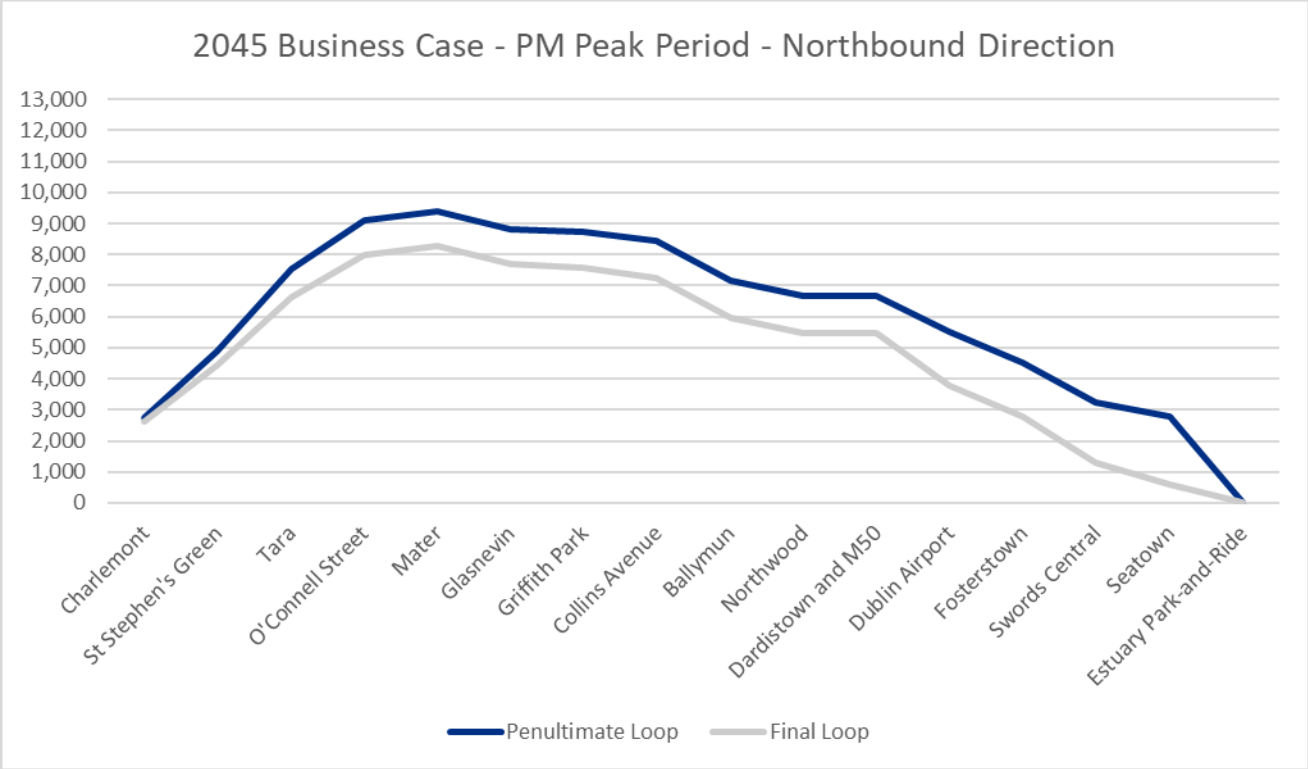

Figure 8-13: Line Flow Comparison, PM Peak 2045 Business Case Northbound Direction

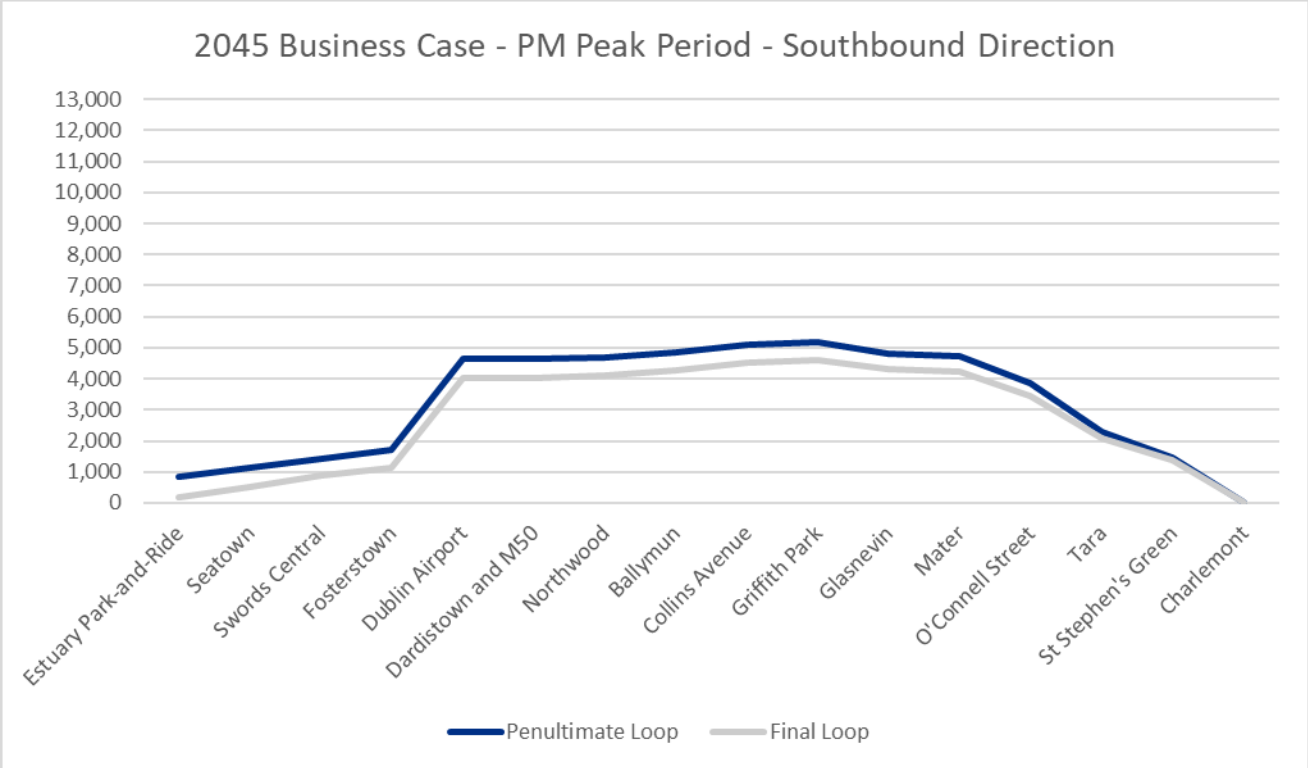

Figure 8-14: Line Flow Comparison, PM Peak 2045 Business Case Southbound Direction

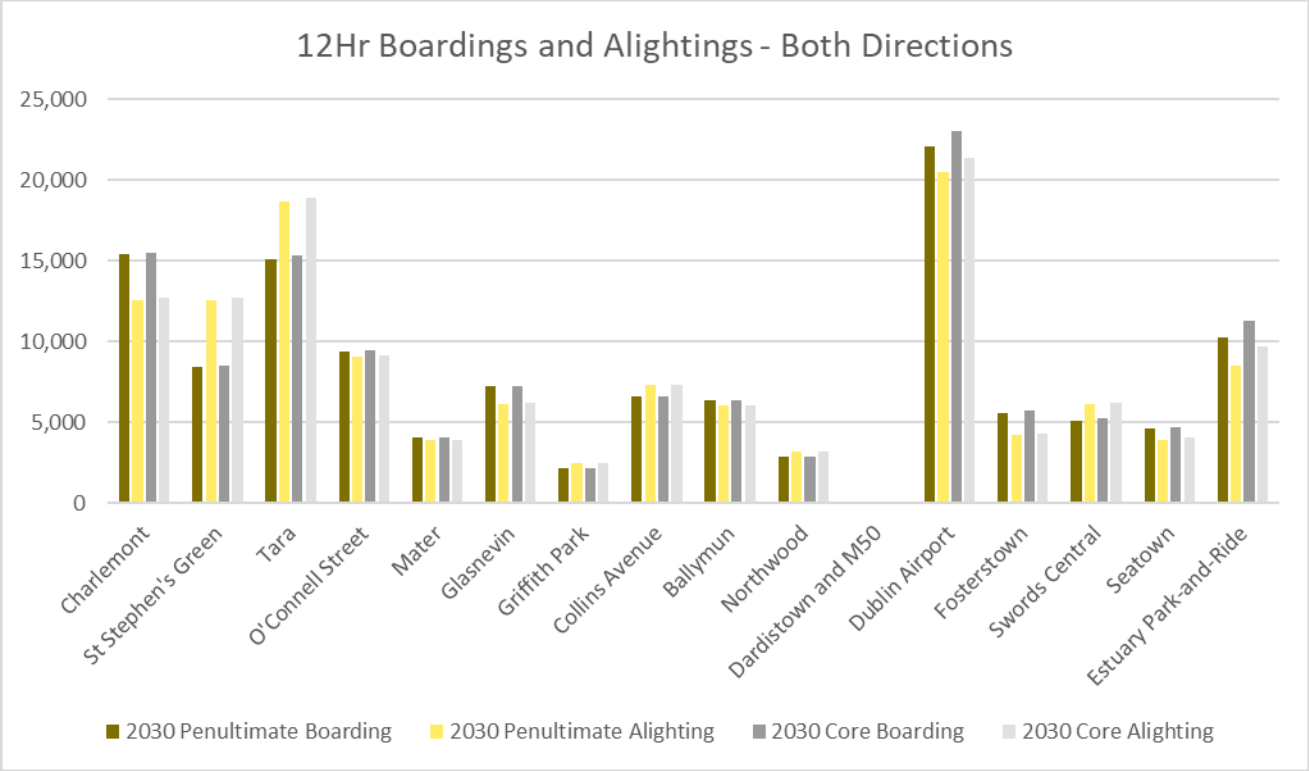

Figure 8-15: Boarding & Alighting Comparison, 12hr Period 2030 Business Case Both Directions

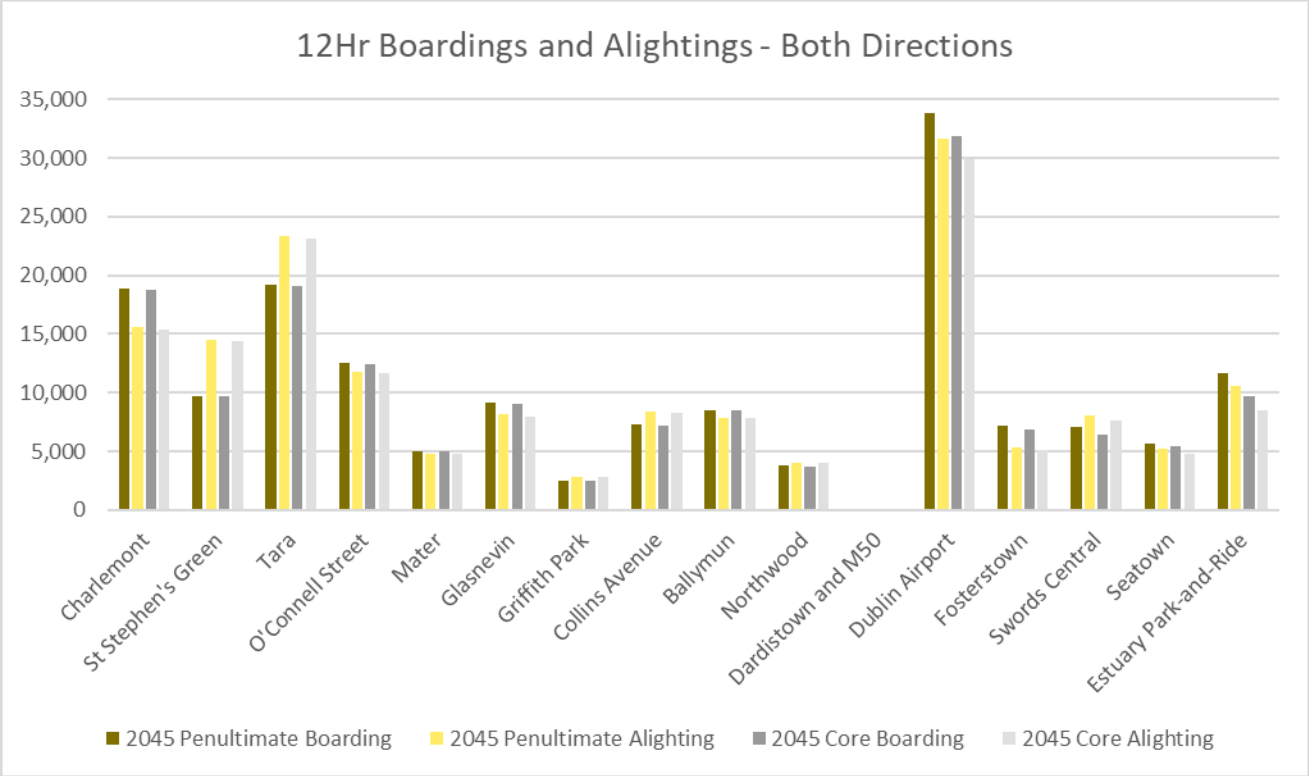

Figure 8-16: Boarding & Alighting Comparison, 12hr Period 2045 Business Case Both Directions

The results for 2030 show a similar pattern on the line flow for both final and penultimate loops, with the final loop presenting higher values across all time periods. The final loop maximum load is 5.024 in the northbound direction and 10.412 in the southbound direction. Differences with the penultimate loop in the AM peak for both northbound and southbound directions are minimal, 1.2% and 2.4% respectively. In the PM peak period, the differences are slightly higher, 7.5% in the northbound direction and 6.6% in the southbound direction. The maximum load for the final loop in the northbound direction is 7.616 and 3.999 in the southbound direction.

In 2045, the line flow is also similar however, the penultimate loop is the iteration with higher values across all time periods. Again, the AM period for both directions presents minimal differences in terms of maximum load, 6.307 in the northbound direction and 12.107 in the southbound direction, representing a percentage difference of 2.2% and 2.8% respectively. For the PM peak, the differences are higher, 13.3% in the northbound direction and 11.1% in the southbound direction. The maximum load for the penultimate loop in the northbound direction is 9.388 and 5.197 in the southbound direction.

In terms of boardings and alightings over a 12hr period, the difference between penultimate and final loop are minimal for both years from Charlemont to Northwood. In 2030 at Estuary, boardings and alightings are higher in the final loop, 9.5% and 12% respectively. For 2045, the final loop is higher, 20% for boardings and 23.9% for alightings.

Further analysis was undertaken to understand the differences in terms of user benefits in the penultimate and final loop runs for the 2030 and 2045 Business Case scenarios. The percentage difference in user benefits across the time periods for Public Transport in 2030 is small in both years. The penultimate loop is 1.09% higher in 2030 and 1.91% lower in 2045. The difference in user benefits for highway is higher, the penultimate loop is 10.7% higher in 2030 and 10.6% lower in 2045

Regarding overall impacts, the Net Present Value (NPV) difference for Public Transport is small. The penultimate loop is less than 1% lower than the final loop iteration. For highway, the penultimate loop is 10.8% lower than the final loop. Given that highway benefits accounts for approximately 30% of the total benefit, the aggregated impact is approximately 3%, standing for a small difference between both iterations.

9. Summary and Conclusion

The MetroLink modelling process has used the latest NTA ERM model to perform a series of 29 runs as the basis of appraisal of the Metrolink scheme. The Business Case (referred to as 'Core') runs used a Do Committed Schemes base for the 2030, 2045 and 2060 years.

Three scenario years (2030, 2045 and 2060) have been assessed and presented in detail in this report. For each year, the Core run has been modelled, as well as sensitivity tests including Slow Growth, Low Frequency, Alternative Demand, Enhanced Transport Networks and Enhanced Transport Network + Alternative Demand.

9.1 ERM Model Validation and MetroLink Convergence

The NTA ERM model development report notes that:

"The ERM was calibrated and validated against the recommended criteria set out in the UK TAG. The level of calibration and validation achieved across each of the model components is of a high standard when considering the model scale and type."

While the convergence of the modelling undertaken for Metrolink does not achieve the gap value recommended in the UK TAG, the convergence values are typical for a model of the size and complexity of MetroLink operating over a medium length forecast period in urban congested conditions.

To understand that potential significance of this, analysis was undertaken to understand the differences in terms of user benefits in the penultimate and final loop runs for the 2030 and 2045 Business Case scenarios. The results of this were:

- In both years, the percentage difference in user benefits across the time periods for Public Transport is small. The penultimate loop is 1.09% higher than the final loop in 2030 and 1.91% lower in 2045.
- The difference in user benefits for highway is higher, the penultimate loop is 10.7% higher in 2030 and 10.6% lower in 2045

Regarding overall impacts, the Net Present Value (NPV) difference for Public Transport is small. The penultimate loop is less than 1% lower than the final loop iteration. For highway, the penultimate loop is 10.8% lower than the final loop. Given that highway benefits accounts for approximately 30% of the total benefit, the aggregated impact is approximately 3%, standing for a small difference between both iterations.

In overall terms, this level of change in the benefits better the penultimate and final run is not significant and indicates that the model is appropriate tool for the appraisal process.

9.2 Summary of Business Case Core Run Results

The modelling exercise involved analysing various model outputs from each scenario to assess changes in travel behaviour. The key findings of the exercise were that with introduction of the MetroLink scheme:

- The strategic park and ride site facilitates significant volumes of people primarily along the M1 corridor (Balbriggan, Drogheda etc.) and to a lesser extent from towns from the north of Fingal (Skerries, Donabate) and from the N2 corridor to access the MetroLink, also reducing the length of their private car trips and removing trips from other parts of the strategic road network;
- There is a reduction in the public transport journey time from Swords, Dublin Airport and Ballymun to/from the City Centre;

- There is a reduction in private car travel along the length of the corridor of the MetroLink, in particular in areas such as Swords and Dublin Airport;
- Public transport usage is increased along other corridors such as the rail line to/from Cork, Maynooth and the Luas Green and Red Lines, as well as the DART along the southern side of the city; and
- There is transfer of people from bus to MetroLink from Swords, Dublin Airport and from the Ballymun areas.

Total passenger boardings over a 12-hour period in the Core runs were assessed. In the 2030 Core run, the total number of boarding passengers was 128,182. This increased by 22% from 2030 to 2045, up to 156,091 passengers. In 2060 this further increased to 209,815 boarding passengers, representing an 34% increase from 2045 to 2060.

9.3 Summary of Sensitivity Analysis

Sensitivity tests were undertaken to assess how sensitive the performance of the MetroLink is to slower growth, to operating a lower frequency service, to a change in travel behaviour (such as higher percentages of work from home), and finally how it performs where other proposed infrastructure and demand management measures are delivered over the lifetime of MetroLink.

The following sensitivity tests were undertaken for the MetroLink appraisal.

- Slow Growth;
- Low Frequency;
- Alternative Demand; and
- Enhanced Transport Networks (NDP and GDA).
- Enhanced Transport Network NDP + Alternative Demand

The different PV of benefits for assessed Sensitivity Analysis runs are summarised in Table 9-1.

Table 9-1: Comparison of Benefits – Core x Sensitivity Test Scenarios (in Billions)

Scenario	Core	NDP	Slow Growth	Alternative Demand	NDP + Alternative Demand
PV Benefits	**14.93**	**12.13**	**12.84**	**12.83**	**11.83**

10. References

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Transport Analysis Guidance (TAG) Unit 3.2 Public Transport Assignment, Department for Transport, 2020

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Transport Modelling Plan ML1-JAI-TRA-ROUT_XX-PL-Y-00001

Transport Strategy for the Greater Dublin Area 2016 – 2035 (National Transport Authority, 2016)

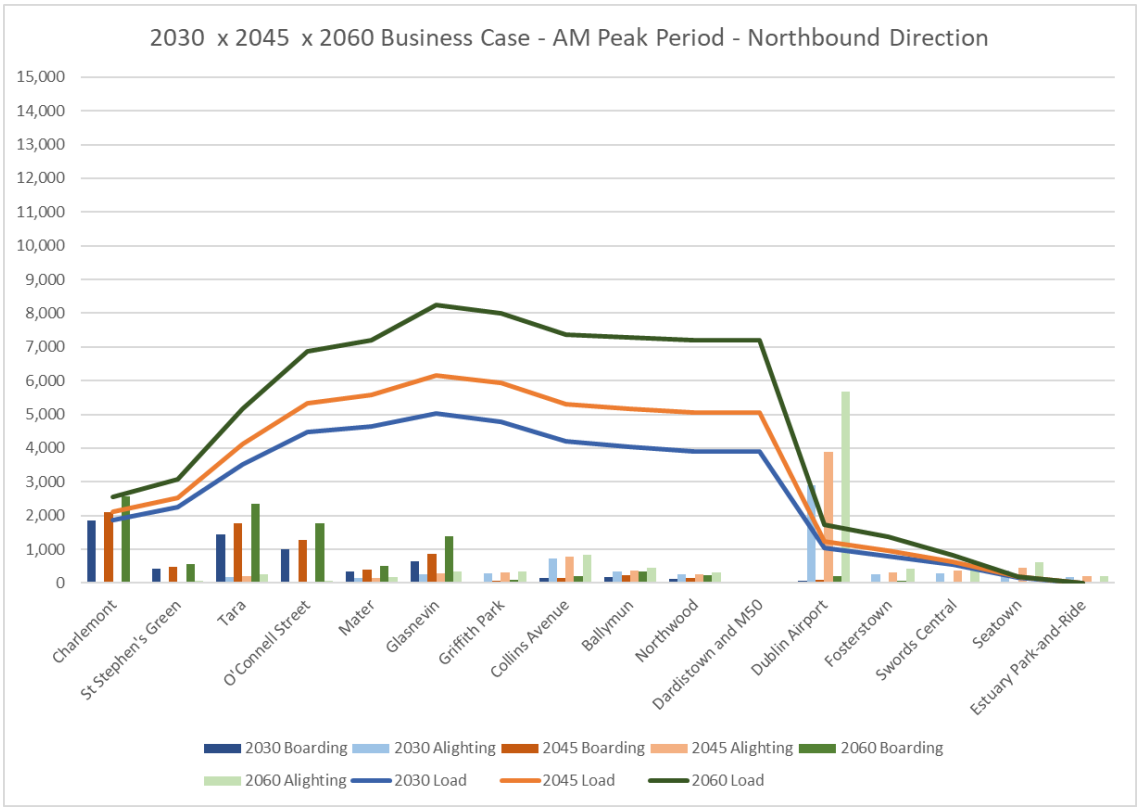
Appendix A. Modelling Results: Core Run Analysis

A.1 Boardings, Alightings and Loading Profile

2030 Business Case Core Run - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1866	0	1866	976	0	976	1083	0	1083	2276	0	2276
St Stephen's Green	416	43	2239	422	8	1390	645	4	1724	1833	5	4104
Tara	1444	170	3513	864	49	2205	1089	50	2763	2398	316	6186
O'Connell Street	996	42	4467	592	16	2782	720	19	3464	1265	47	7405
Mater	340	152	4655	191	59	2914	220	78	3606	398	186	7616
Glasnevin	638	269	5024	150	104	2960	137	172	3572	317	852	7082
Griffith Park	52	285	4791	30	66	2924	81	79	3574	129	235	6976
Collins Avenue	142	736	4197	77	184	2817	255	236	3594	465	751	6691
Ballymun	166	337	4027	74	217	2674	61	361	3294	84	1079	5695
Northwood	114	246	3895	43	95	2622	35	157	3173	71	465	5301
Dardistown and M50	0	0	3895	0	0	2622	0	0	3173	0	0	5301
Dublin Airport	58	2908	1046	101	1624	1099	162	1570	1764	522	1448	4374
Fosterstown	28	272	802	26	154	972	30	301	1493	61	842	3594
Swords Central	19	286	535	35	242	765	37	459	1072	133	1250	2477
Seatown	4	366	173	24	191	598	42	257	857	191	561	2107
Estuary Park-and-Ride	0	173	0	0	598	0	0	857	0	0	2107	0
2030 Business Case Core Run - Southbound Direction												
Estuary Park-and-Ride	2776	0	2776	870	0	870	497	0	497	573	0	573
Seatown	1105	145	3736	180	36	1013	156	36	617	289	48	814
Swords Central	1300	135	4901	245	38	1221	183	24	776	277	37	1054
Fosterstown	1673	58	6516	232	32	1421	160	20	916	262	28	1287
Dublin Airport	1652	787	7381	1950	96	3275	2241	80	3078	2264	138	3414
Dardistown and M50	0	0	7381	0	0	3275	0	0	3078	0	0	3414
Northwood	571	107	7845	120	48	3347	90	57	3110	163	104	3472
Ballymun	1427	110	9162	316	66	3597	232	84	3258	309	146	3635
Collins Avenue	903	714	9351	228	174	3650	238	111	3385	396	135	3896
Griffith Park	276	193	9434	65	54	3662	88	44	3429	159	56	3999
Glasnevin	1303	325	10412	149	141	3669	111	161	3380	269	468	3800
Mater	218	490	10141	70	212	3527	53	193	3239	157	216	3740
O'Connell Street	81	1487	8735	26	710	2843	27	701	2566	62	681	3121
Tara	128	3582	5281	36	1187	1692	34	1103	1498	117	1325	1913
St Stephen's Green	2	3051	2232	4	847	850	10	647	861	25	709	1229
Charlemont	0	2232	0	0	850	0	0	861	0	0	1229	0

2045 Business Case Core Run - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2106	0	2106	1297	0	1297	1445	0	1445	2606	0	2606
St Stephen's Green	477	46	2537	511	10	1798	928	5	2369	1828	6	4428
Tara	1774	194	4117	1238	60	2976	1606	59	3915	2556	354	6630
O'Connell Street	1268	46	5338	899	19	3856	1106	21	5000	1429	51	8008
Mater	406	159	5586	265	76	4045	319	85	5234	471	199	8280
Glasnevin	869	287	6167	235	143	4137	207	199	5242	442	1026	7695
Griffith Park	62	305	5924	42	79	4100	104	87	5258	149	262	7582
Collins Avenue	162	775	5311	102	212	3990	289	263	5284	505	833	7255
Ballymun	229	378	5162	108	285	3813	103	466	4921	115	1411	5959
Northwood	154	270	5045	63	125	3751	50	200	4771	87	590	5456
Dardistown and M50	0	0	5045	0	0	3751	0	0	4771	0	0	5456
Dublin Airport	91	3893	1243	182	2586	1347	356	2346	2781	321	2015	3762
Fosterstown	43	316	970	29	194	1182	55	375	2461	20	1008	2775
Swords Central	28	359	639	40	333	889	99	592	1968	31	1513	1293
Seatown	4	445	199	25	252	662	98	329	1737	27	720	600
Estuary Park-and-Ride	0	199	0	0	662	0	0	1737	0	0	600	0
2045 Business Case Core Run - Southbound Direction												
Estuary Park-and-Ride	2138	0	2138	994	0	994	647	0	647	192	0	192
Seatown	1352	100	3390	236	31	1199	197	27	817	346	8	530
Swords Central	1551	113	4828	346	41	1504	246	28	1034	367	26	871
Fosterstown	1962	41	6749	305	38	1771	197	28	1203	302	26	1148
Dublin Airport	2220	823	8146	2872	130	4513	3304	98	4409	2972	80	4040
Dardistown and M50	0	0	8146	0	0	4513	0	0	4409	0	0	4040
Northwood	735	130	8751	169	72	4610	117	90	4436	190	137	4093
Ballymun	1861	140	10472	445	98	4957	301	126	4611	385	199	4279
Collins Avenue	968	791	10649	261	228	4990	260	157	4714	393	155	4517
Griffith Park	290	229	10709	77	73	4994	99	57	4756	169	67	4619
Glasnevin	1480	424	11765	189	230	4952	135	252	4638	298	622	4295
Mater	236	573	11428	80	315	4717	58	270	4426	161	239	4218
O'Connell Street	95	1706	9817	32	1005	3744	31	986	3471	69	830	3457
Tara	150	4060	5907	49	1626	2166	44	1568	1947	138	1515	2080
St Stephen's Green	3	3293	2617	5	1059	1112	9	831	1124	25	704	1401
Charlemont	0	2617	0	0	1112	0	0	1124	0	0	1401	0

2060 Business Case Core Run - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2560	0	2560	1663	0	1663	1830	0	1830	3340	0	3340
St Stephen's Green	566	58	3069	604	13	2254	1151	6	2976	2356	7	5689
Tara	2361	261	5169	1671	82	3843	2148	82	5042	3496	434	8751
O'Connell Street	1770	70	6869	1243	29	5056	1504	36	6510	1958	69	10641
Mater	505	187	7187	348	101	5303	417	106	6821	593	227	11006
Glasnevin	1385	329	8243	333	182	5454	269	252	6838	613	1316	10303
Griffith Park	86	331	7998	56	95	5415	135	104	6869	183	293	10192
Collins Avenue	216	840	7375	127	246	5295	341	305	6905	567	930	9830
Ballymun	337	438	7274	150	358	5088	132	599	6438	164	1747	8246
Northwood	229	313	7190	91	157	5022	63	266	6235	127	720	7653
Dardistown and M50	0	0	7190	0	0	5022	0	0	6235	0	0	7653
Dublin Airport	217	5683	1724	298	3711	1610	512	3160	3587	728	2852	5528
Fosterstown	63	429	1358	31	247	1394	63	497	3152	41	1321	4249
Swords Central	36	573	822	37	450	981	139	773	2519	136	2035	2350
Seatown	3	623	201	24	327	678	91	417	2192	99	941	1508
Estuary Park-and-Ride	0	201	0	0	678	0	0	2192	0	0	1508	0
2060 Business Case Core Run - Southbound Direction												
Estuary Park-and-Ride	2503	0	2503	1438	0	1438	857	0	857	530	0	530
Seatown	1680	78	4105	300	49	1688	264	47	1074	460	34	956
Swords Central	2176	195	6086	454	67	2076	325	43	1356	543	53	1446
Fosterstown	2639	47	8678	374	48	2402	254	36	1574	386	46	1786
Dublin Airport	3291	1449	10520	4266	209	6459	4246	141	5679	4428	224	5990
Dardistown and M50	0	0	10520	0	0	6459	0	0	5679	0	0	5990
Northwood	924	185	11259	224	108	6575	153	119	5713	236	201	6026
Ballymun	2328	190	13398	576	140	7011	388	163	5937	482	287	6221
Collins Avenue	1089	912	13574	298	286	7024	292	169	6060	423	211	6433
Griffith Park	336	282	13628	91	91	7023	112	69	6103	184	88	6529
Glasnevin	1860	630	14859	238	364	6897	169	336	5936	349	997	5880
Mater	294	754	14398	102	444	6555	72	357	5651	186	309	5758
O'Connell Street	140	2188	12350	43	1430	5167	41	1290	4402	87	1212	4634
Tara	223	5238	7334	70	2368	2869	64	2049	2417	185	2167	2652
St Stephen's Green	5	4005	3333	7	1409	1467	14	1020	1412	43	894	1801
Charlemont	0	3333	0	0	1467	0	0	1412	0	0	1801	0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Dardistown and M50
Dublin Airport
Fosterstown
Swords Central
Seatown
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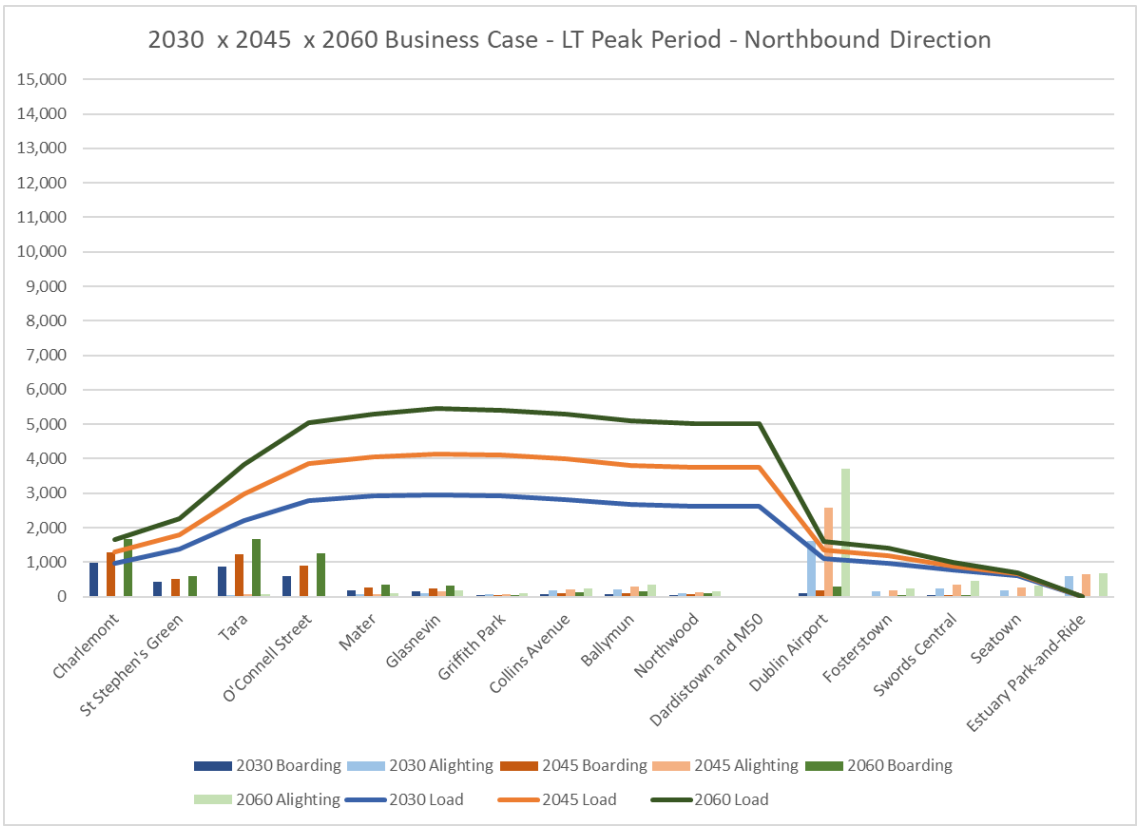
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Dardistown and M50
Dublin Airport
Fosterstown
Swords Central
Seatown
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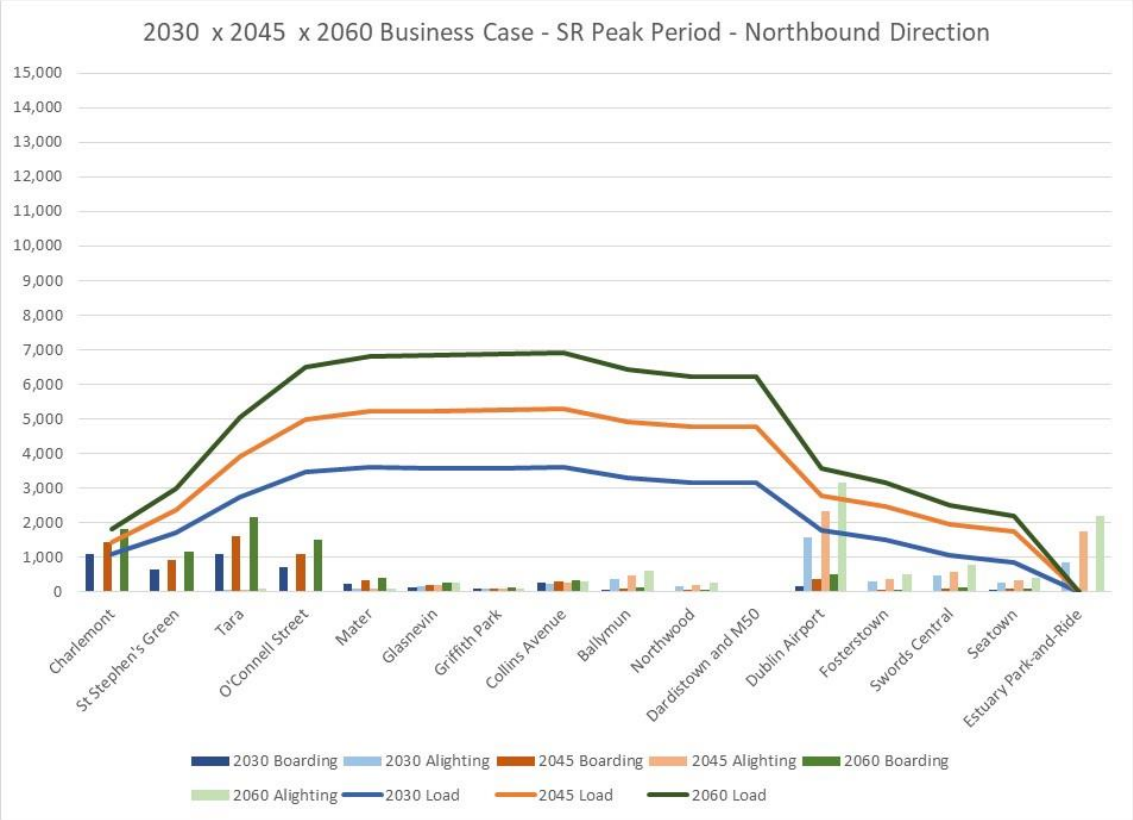
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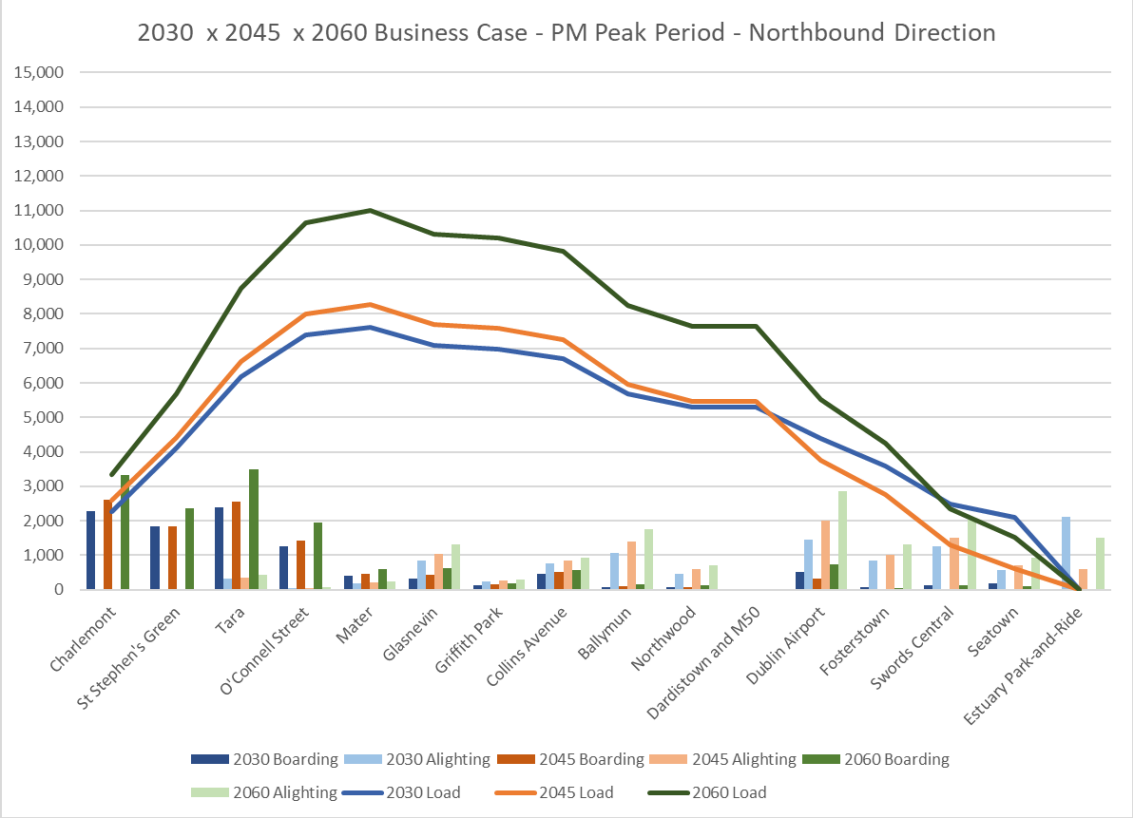
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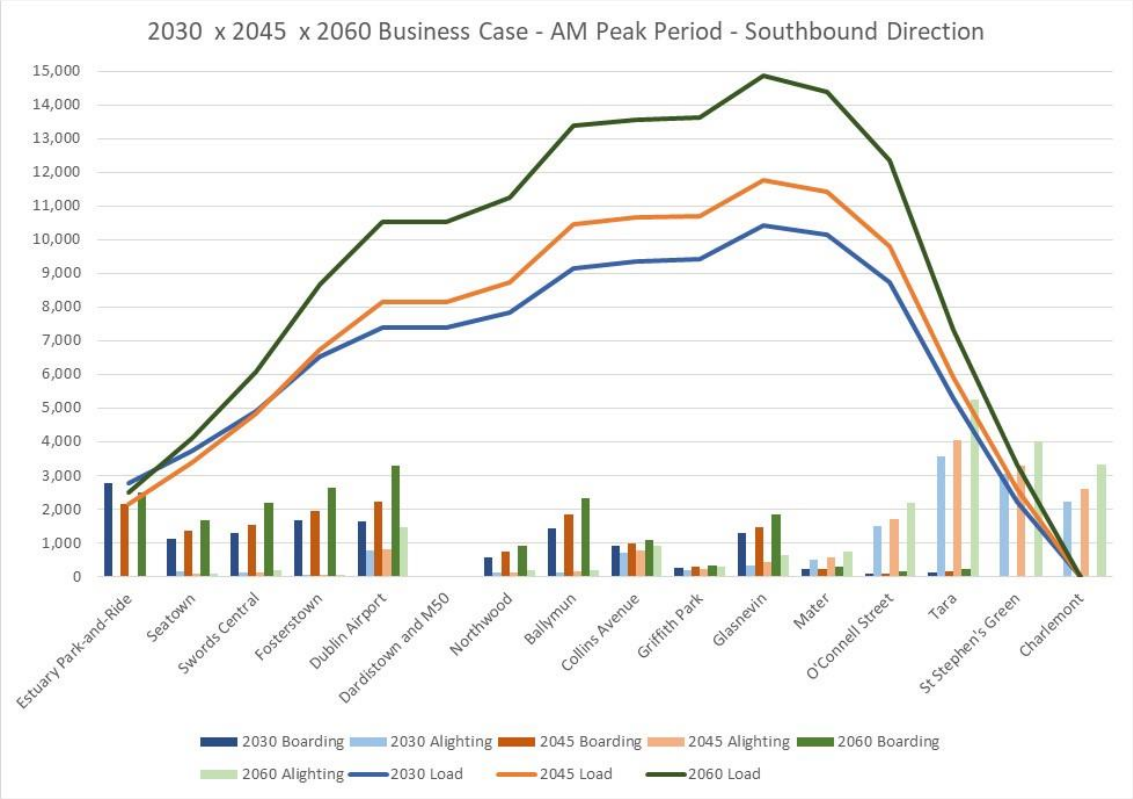
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Mater
O'Connell Street
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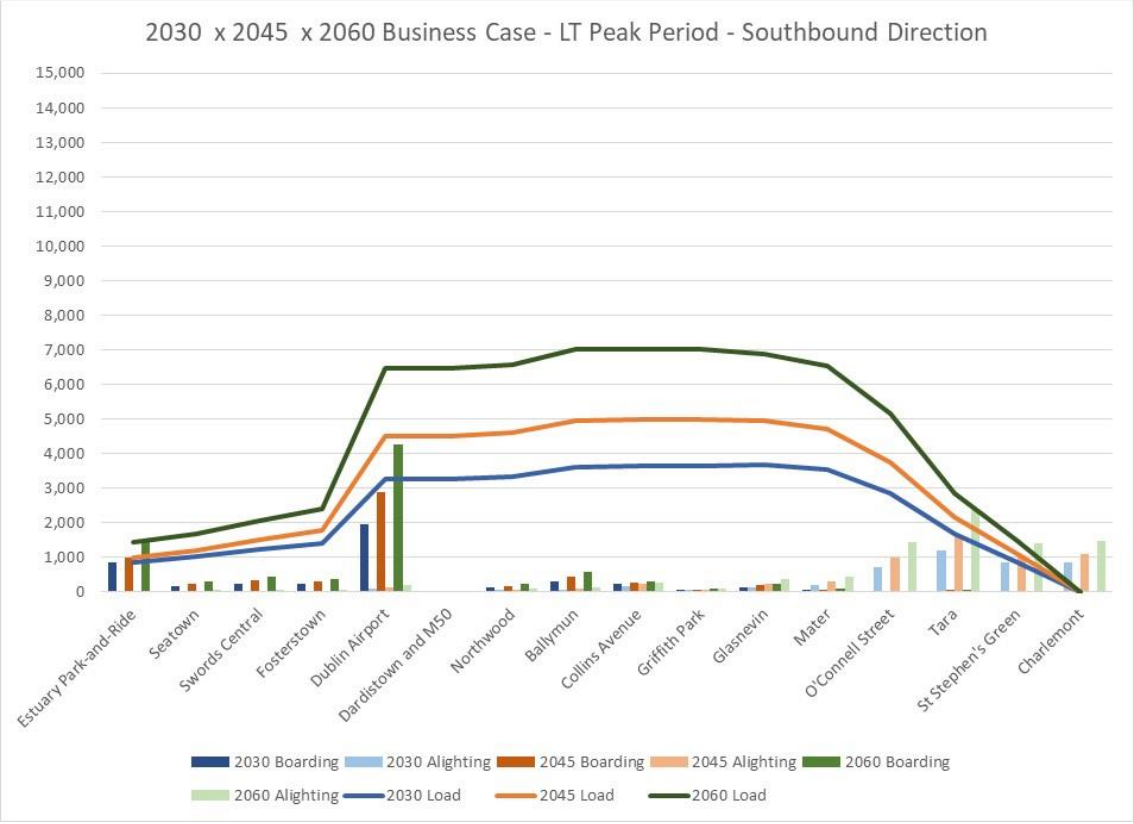
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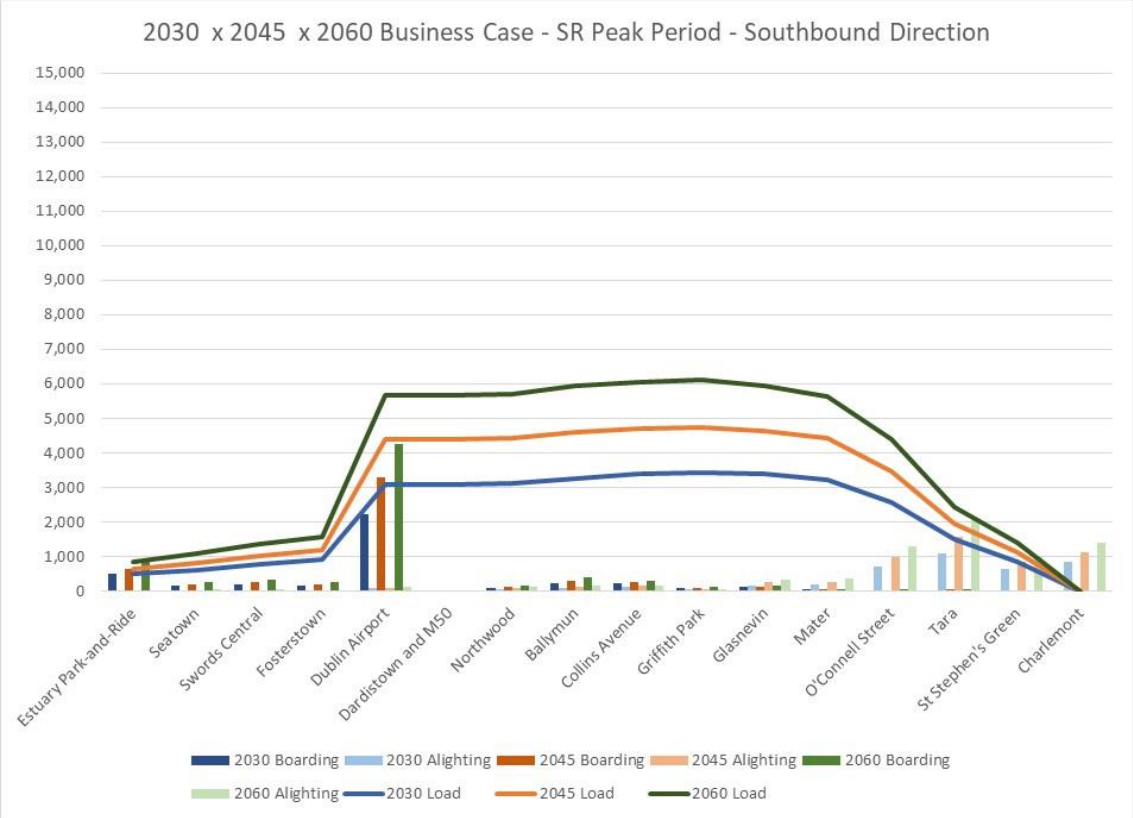
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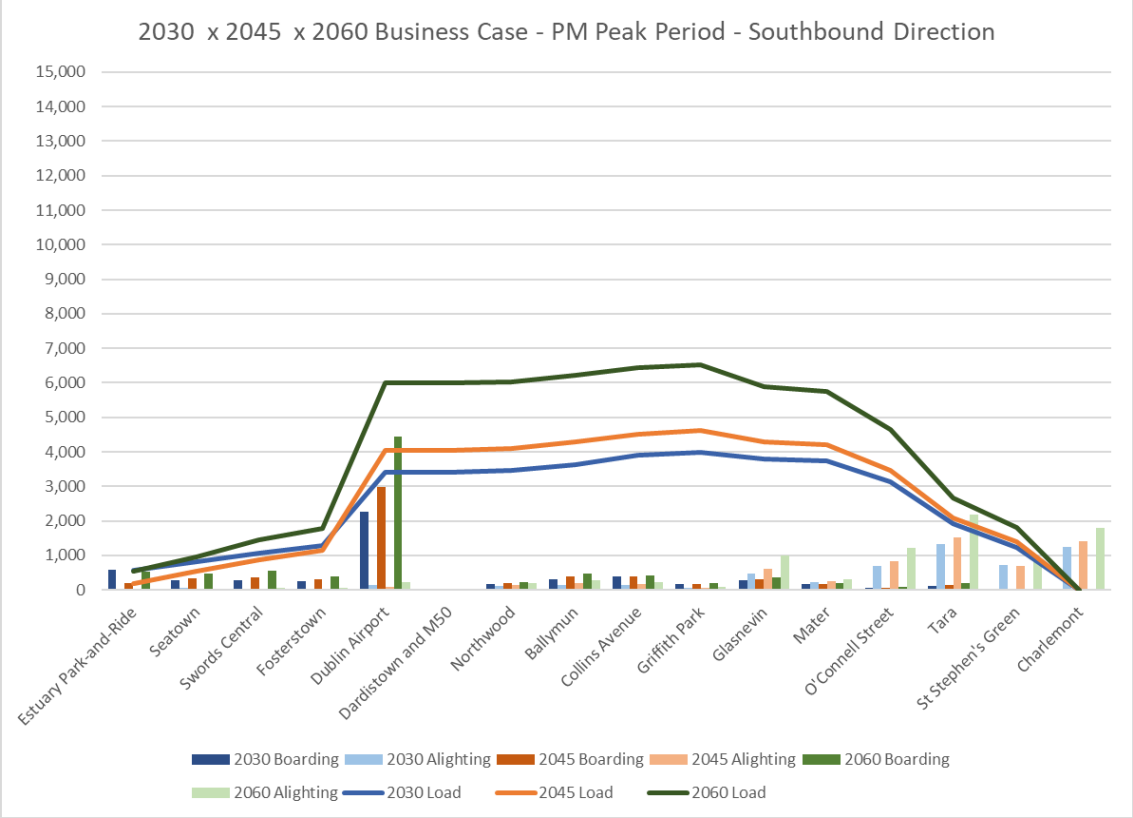
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O'Connell Street
Tara
St Stephen's Green
Charlemont
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A.2 Overall Network Statistics

A.2.1 Road Network Statistics

AM Peak Period						
Network Statistics	2030		2045		2060	
	Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do Scheme
Total Road Travel Time (pcu.hrs)	159,726	158,880	190,863	186,057	222,682	214,052
Total Road Distance Travelled (pcu.km)	7,291,245	7,304,301	8,291,512	8,096,762	9,177,830	8,879,845
Average Road Network Speed (kph)	46	46	43	44	41	42

LT Peak Period						
Network Statistics	2030		2045		2060	
	Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do Scheme
Total Road Travel Time (pcu.hrs)	87,596	87,368	106,349	103,534	128,201	120,684
Total Road Distance Travelled (pcu.km)	4,696,350	4,708,339	5,520,903	5,395,657	6,245,501	6,012,055
Average Road Network Speed (kph)	54	54	52	52	49	50

SR Peak Period						
Network Statistics	2030		2045		2060	
	Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do Scheme
Total Road Travel Time (pcu.hrs)	97,605	97,239	116,819	114,103	134,138	134,928
Total Road Distance Travelled (pcu.km)	5,202,898	5,213,349	5,976,679	5,882,246	6,680,679	6,534,840
Average Road Network Speed (kph)	53	54	51	52	50	48

PM Peak Period						
Network Statistics	2030		2045		2060	
	Do Minimum	Do Scheme	Do Minimum	Do Scheme	Do Minimum	Do scheme
Total Road Travel Time (pcu.hrs)	147,706	147,901	173,126	168,007	198,474	188,643
Total Road Distance Travelled (pcu.km)	6,979,879	6,999,539	7,834,600	7,628,528	8,598,786	8,260,824
Average Road Network Speed (kph)	47	47	45	45	43	44

> Public Transport Statistics

Passenger Km and Vehicle Km by mode - 3h and 12h period											
2030 Business Case		Do Minimum					Do Something				
		AM	LT	SR	PM	12h	AM	LT	SR	PM	12h
Passenger Km	Bus	1,838,414	925,967	928,625	1,829,062	5,522,067	1,606,171	776,499	786,528	1,627,921	4,797,119
	Rail	1,522,848	508,318	528,897	1,795,866	4,355,929	1,500,272	503,055	523,259	1,786,709	4,313,295
	Luas	355,837	143,731	177,039	336,412	1,013,019	344,336	143,787	176,951	329,602	994,675
	Metro	0	0	0	0	0	388,346	231,967	231,160	345,863	1,197,336
	Total	3,717,099	1,578,016	1,634,561	3,961,340	10,891,016	3,839,124	1,655,309	1,717,898	4,090,094	11,302,425
2045 Business Case		Do Minimum					Do Something				
		AM	LT	SR	PM	12h	AM	LT	SR	PM	12h
Passenger Km	Bus	2,036,484	1,213,509	1,117,210	2,005,246	6,372,449	1,802,215	978,779	913,015	1,830,269	5,524,279
	Rail	1,868,167	654,616	662,884	2,205,257	5,390,924	1,934,494	645,065	668,172	2,272,131	5,519,862
	Luas	416,153	193,476	221,996	396,009	1,227,634	410,426	192,069	221,516	391,745	1,215,755
	Metro	0	0	0	0	0	440,156	313,777	335,388	357,112	1,446,433
	Total	4,320,804	2,061,601	2,002,090	4,606,512	12,991,007	4,587,291	2,129,691	2,138,091	4,851,257	13,706,329
2060 Business Case		Do Minimum					Do Something				
		AM	LT	SR	PM	12h	AM	LT	SR	PM	12h
Passenger Km	Bus	2,294,383	1,412,069	1,421,556	2,231,740	7,359,749	2,066,119	1,161,325	1,055,219	2,057,119	6,339,782
	Rail	2,327,160	801,180	857,961	2,690,532	6,676,833	2,504,802	801,164	853,932	2,832,831	6,992,729
	Luas	491,839	238,553	282,253	469,318	1,481,963	489,818	242,266	271,414	467,359	1,470,858
	Metro	0	0	0	0	0	570,870	425,743	433,322	502,228	1,932,163
	Total	5,113,382	2,451,802	2,561,770	5,391,591	15,518,545	5,631,609	2,630,499	2,613,888	5,859,537	16,735,532

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A.3 Mode Share

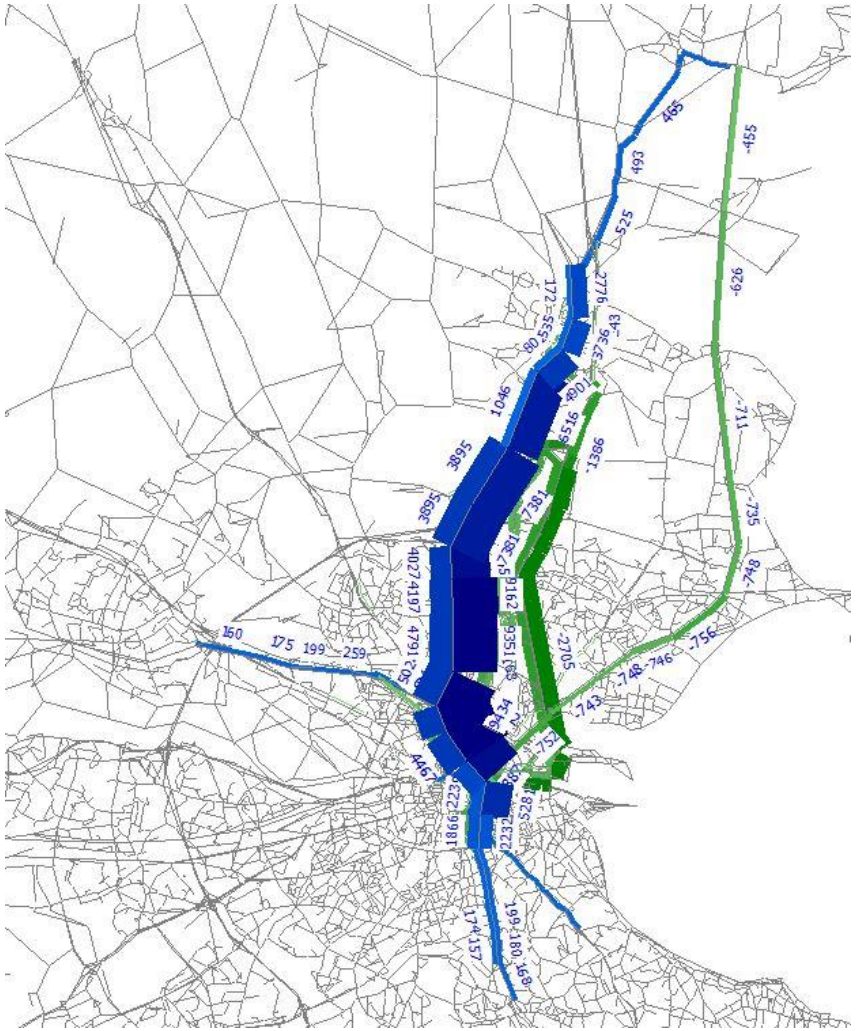
2030 Business Case Core Run								
DO MINIMUM	AM	%MODE SPLIT	LT	%MODE SPLIT	SR	%MODE SPLIT	PM	%MODE SPLIT
PT	124,279	15.79%	42,004	11.24%	48,580	9.82%	103,774	15.59%
Metro only	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Road	479,671	60.93%	239,802	64.15%	315,677	63.83%	432,753	65.02%
Cycle	19,735	2.51%	6,734	1.80%	8,509	1.72%	18,614	2.80%
Walk	163,620	20.78%	85,301	22.82%	121,774	24.62%	110,433	16.59%
DO SOMETHING	AM	%MODE SPLIT	LT	%MODE SPLIT	SR	%MODE SPLIT	PM	%MODE SPLIT
PT	117,949	14.92%	38,796	10.33%	44,847	9.04%	97,239	14.53%
Metro only	11,851	1.50%	5,913	1.57%	6,544	1.32%	11,772	1.76%
Road	479,198	60.62%	239,759	63.86%	315,535	63.58%	433,119	64.71%
Cycle	19,159	2.42%	6,595	1.76%	8,368	1.69%	18,042	2.70%
Walk	162,377	20.54%	84,359	22.47%	121,023	24.38%	109,190	16.31%

2045 Business Case Core Run								
DO MINIMUM	AM	%MODE SPLIT	LT	%MODE SPLIT	SR	%MODE SPLIT	PM	%MODE SPLIT
PT	141,887	16.17%	52,319	12.33%	57,371	10.30%	119,321	16.15%
Metro only	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Road	525,904	59.95%	266,207	62.73%	350,961	63.02%	472,867	63.99%
Cycle	23,579	2.69%	7,924	1.87%	10,502	1.89%	21,535	2.91%
Walk	185,939	21.19%	97,897	23.07%	138,077	24.79%	125,241	16.95%
DO SOMETHING	AM	%MODE SPLIT	LT	%MODE SPLIT	SR	%MODE SPLIT	PM	%MODE SPLIT
PT	135,050	15.35%	47,137	11.09%	52,067	9.31%	112,200	15.17%
Metro only	13,932	1.58%	7,952	1.87%	9,463	1.69%	12,254	1.66%
Road	522,885	59.42%	264,685	62.27%	349,461	62.51%	469,567	63.51%
Cycle	22,933	2.61%	7,757	1.82%	10,350	1.85%	20,834	2.82%
Walk	185,148	21.04%	97,528	22.94%	137,696	24.63%	124,536	16.84%

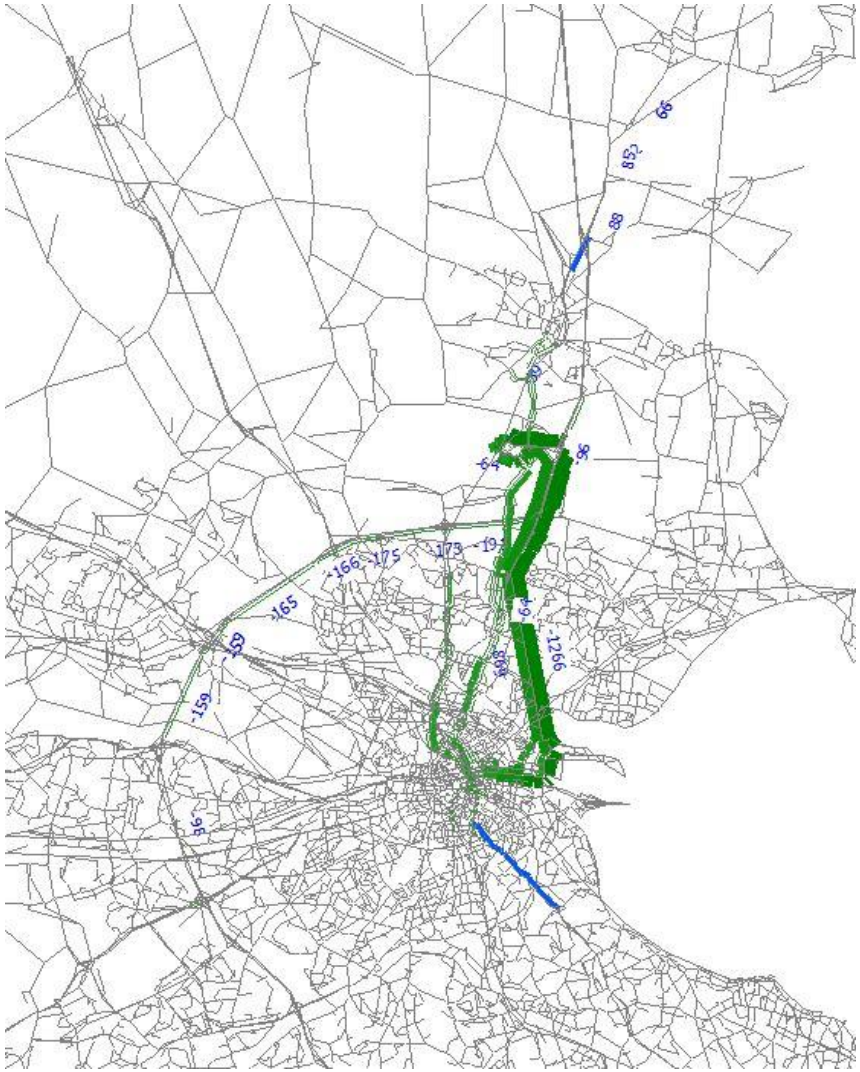
2060 Business Case Core Run								
DO MINIMUM	AM	%MODE SPLIT	LT	%MODE SPLIT	SR	%MODE SPLIT	PM	%MODE SPLIT
PT	164,740	16.95%	61,237	12.93%	69,524	11.25%	138,318	16.96%
Metro only	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Road	567,051	58.34%	292,012	61.67%	379,684	61.42%	509,731	62.50%
Cycle	28,516	2.93%	9,104	1.92%	12,803	2.07%	25,226	3.09%
Walk	211,711	21.78%	111,172	23.48%	156,186	25.26%	142,270	17.44%
DO SOMETHING	AM	%MODE SPLIT	LT	%MODE SPLIT	SR	%MODE SPLIT	PM	%MODE SPLIT
PT	158,622	16.25%	55,378	11.65%	60,823	9.76%	130,365	15.94%
Metro only	18,140	1.86%	10,932	2.30%	12,248	1.97%	17,338	2.12%
Road	560,626	57.43%	288,867	60.75%	380,972	61.16%	504,149	61.64%
Cycle	27,535	2.82%	8,930	1.88%	12,635	2.03%	24,210	2.96%
Walk	211,288	21.64%	111,391	23.43%	156,189	25.08%	141,893	17.35%

A.4 Link Flows

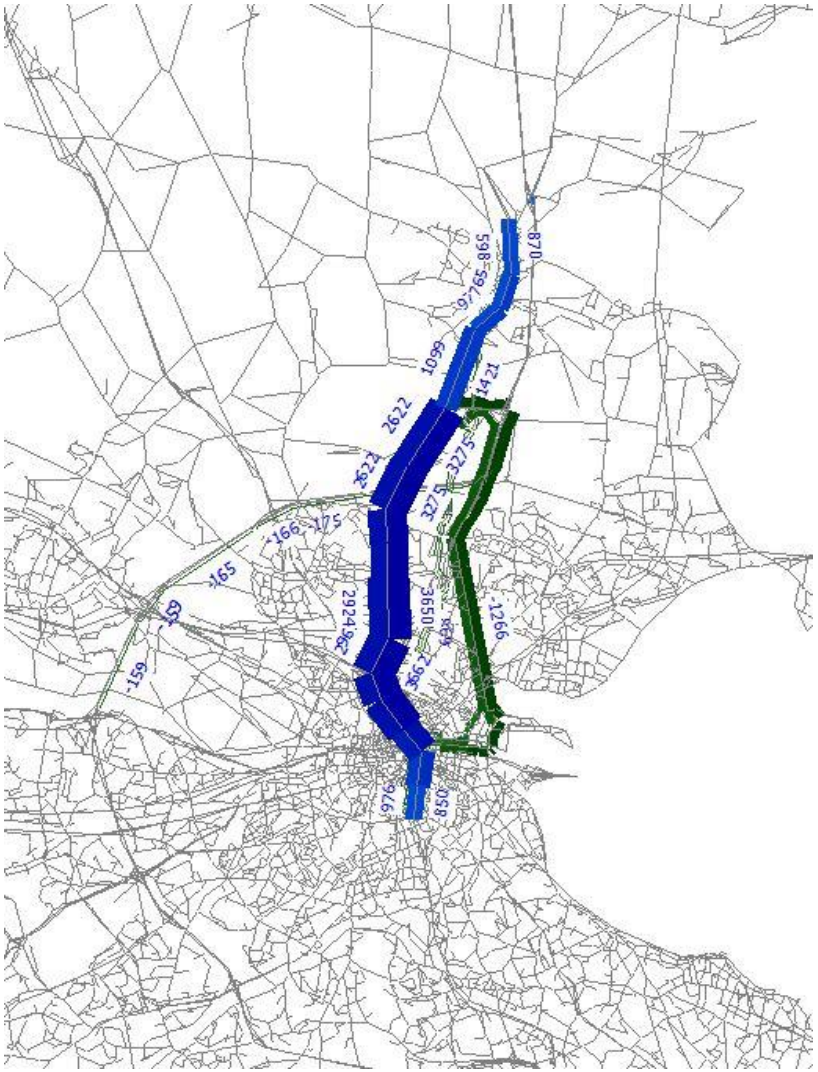
2030 Business Case Core Run – Bus Only – AM Peak Period



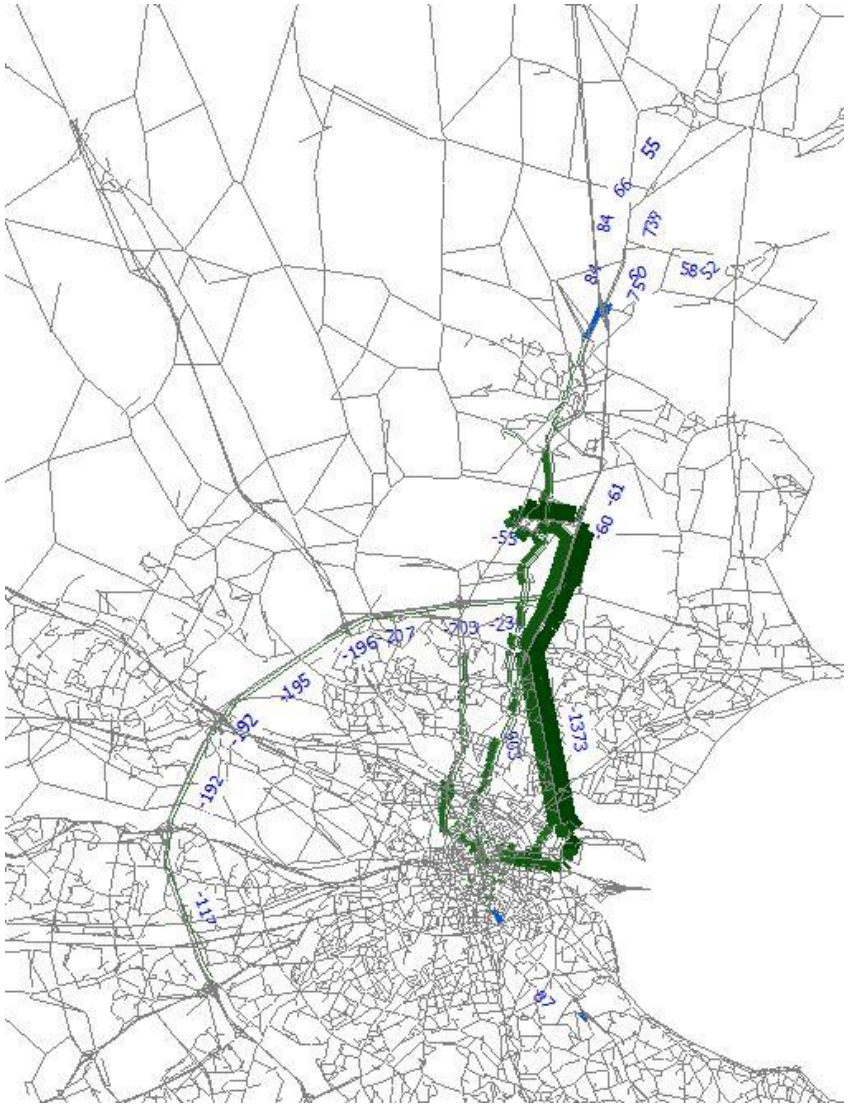
2030 Business Case Core Run – All Modes – AM Peak Period



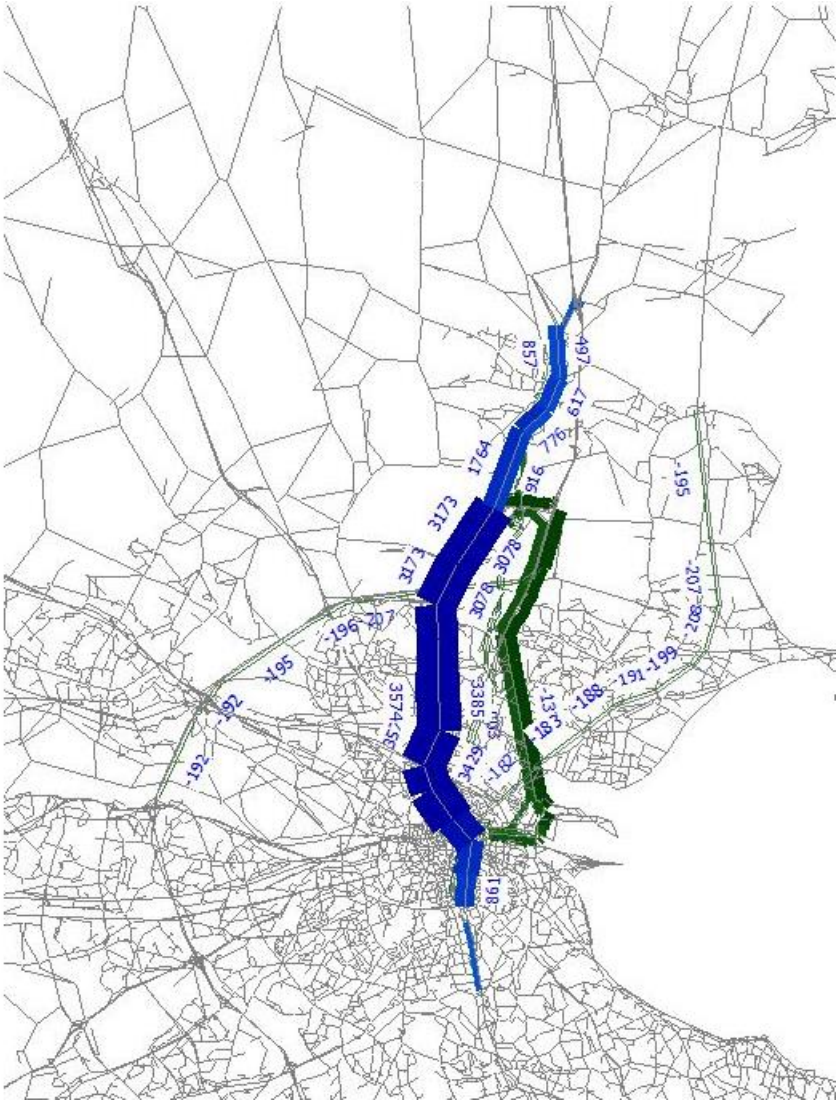
2030 Business Case Core Run – Bus Only - LT Peak Period



2030 Business Case Core Run – All Modes – LT Peak Period

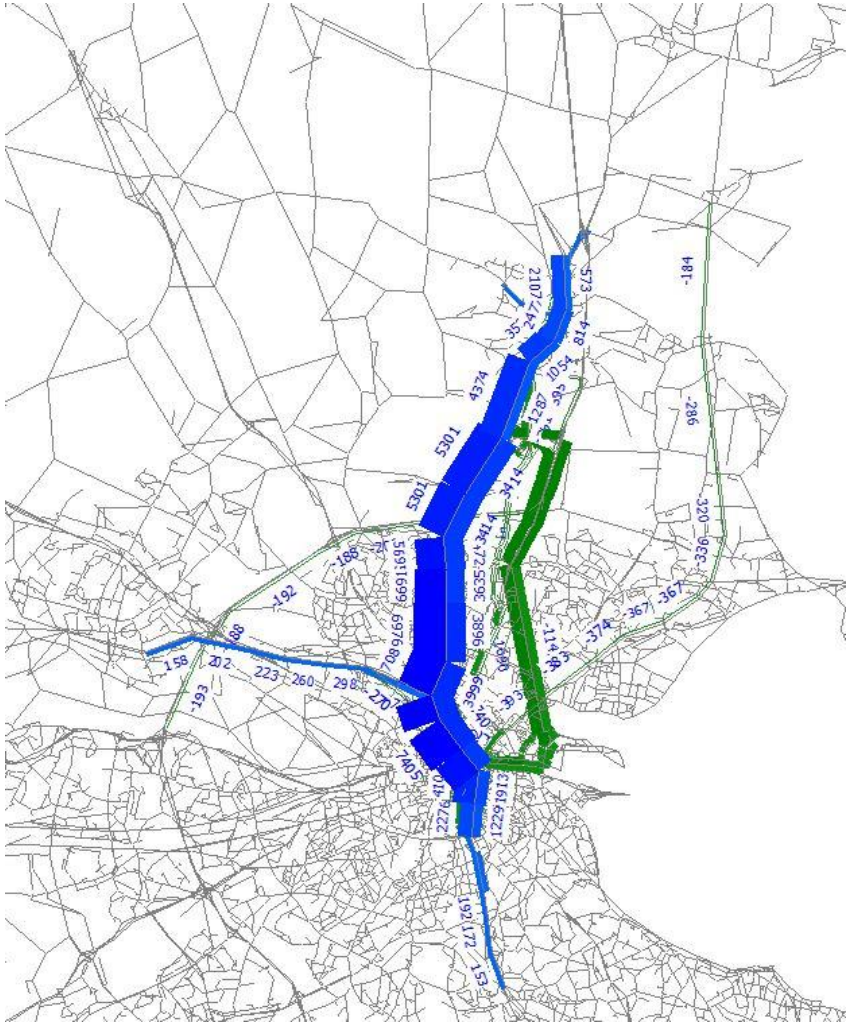


2030 Business Case Core Run – Bus Only – SR Peak Period

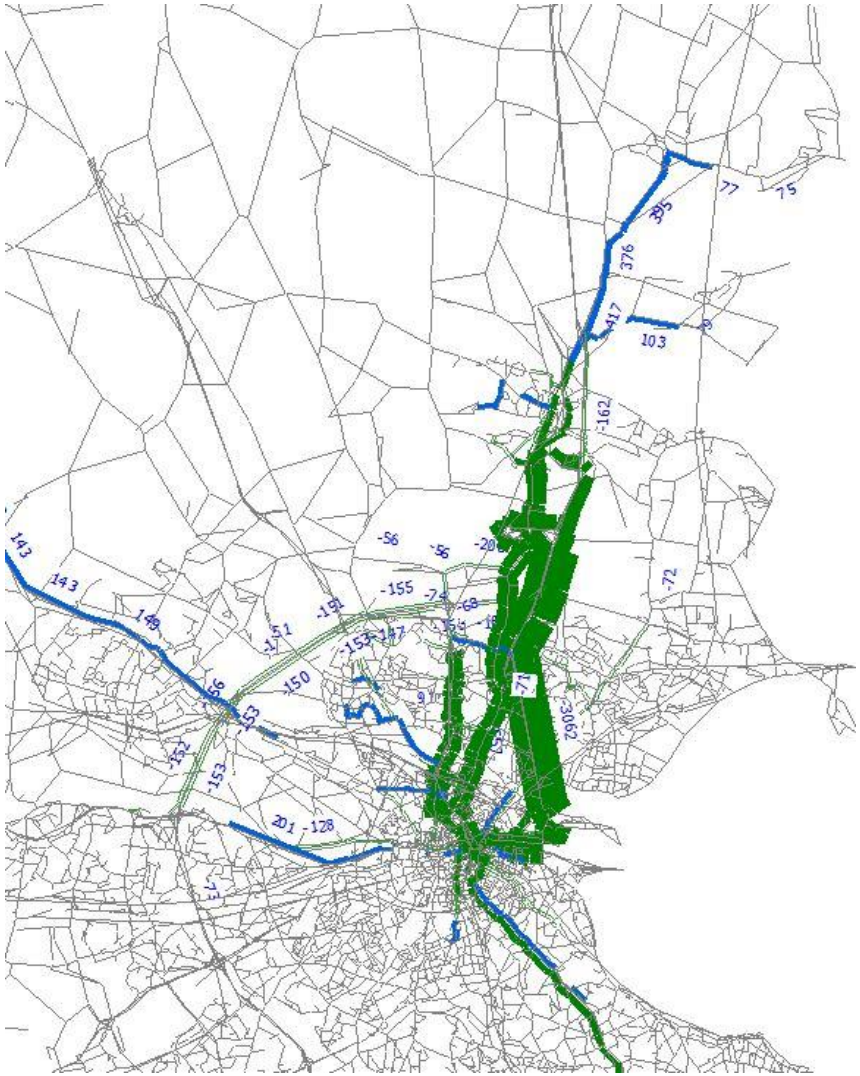


2030 Business Case Core Run – All Modes – SR Peak Period

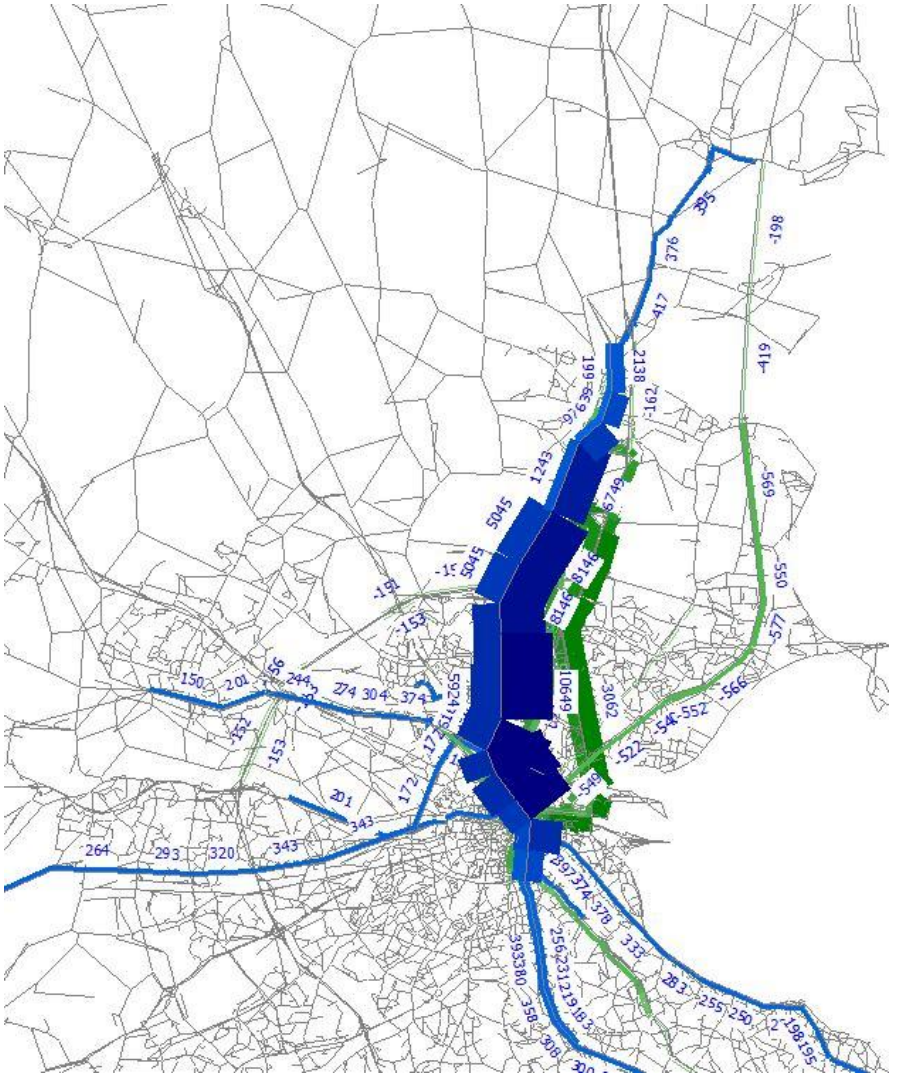
2030 Business Case Core Run – Bus Only – PM Peak Period



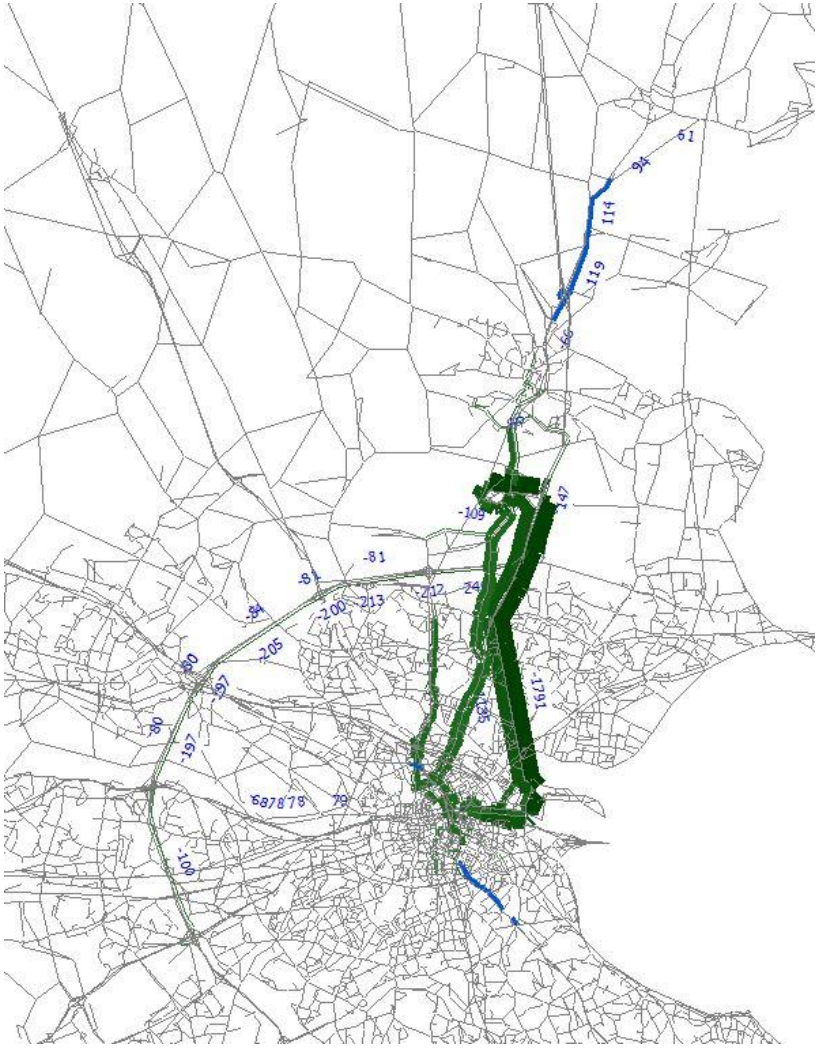
2030 Business Case Core Run - All Modes - PM Peak Period



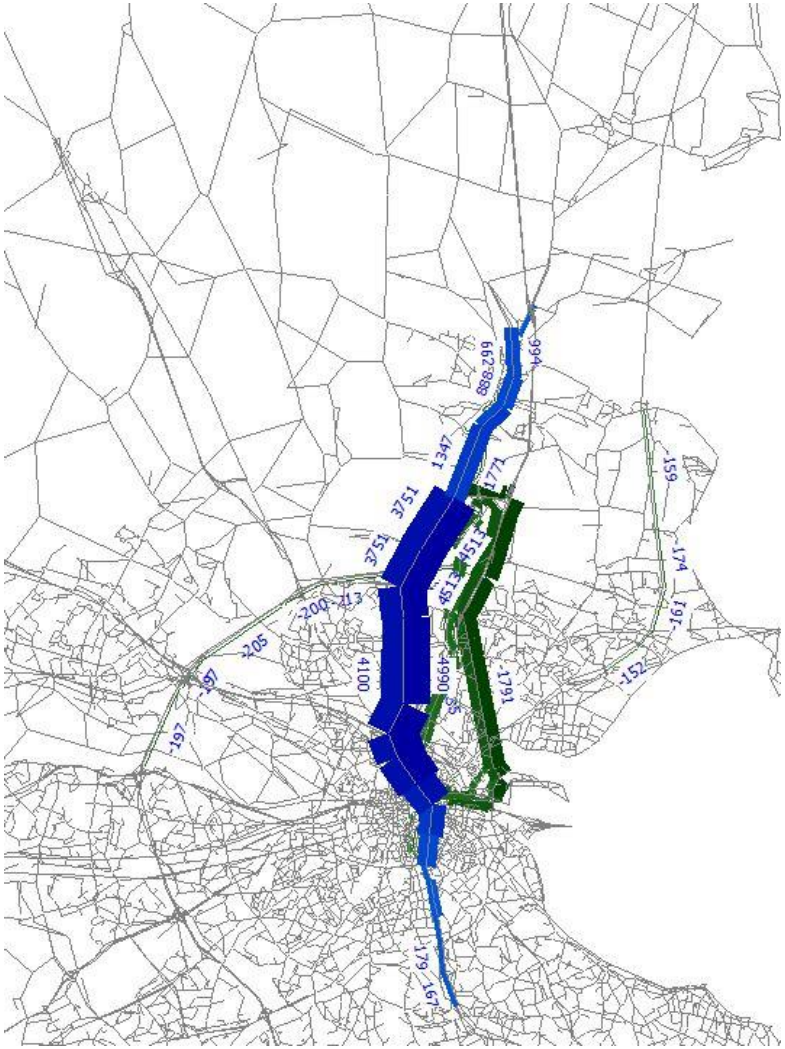
2045 Business Case Core Run – Bus Only – AM Peak Period



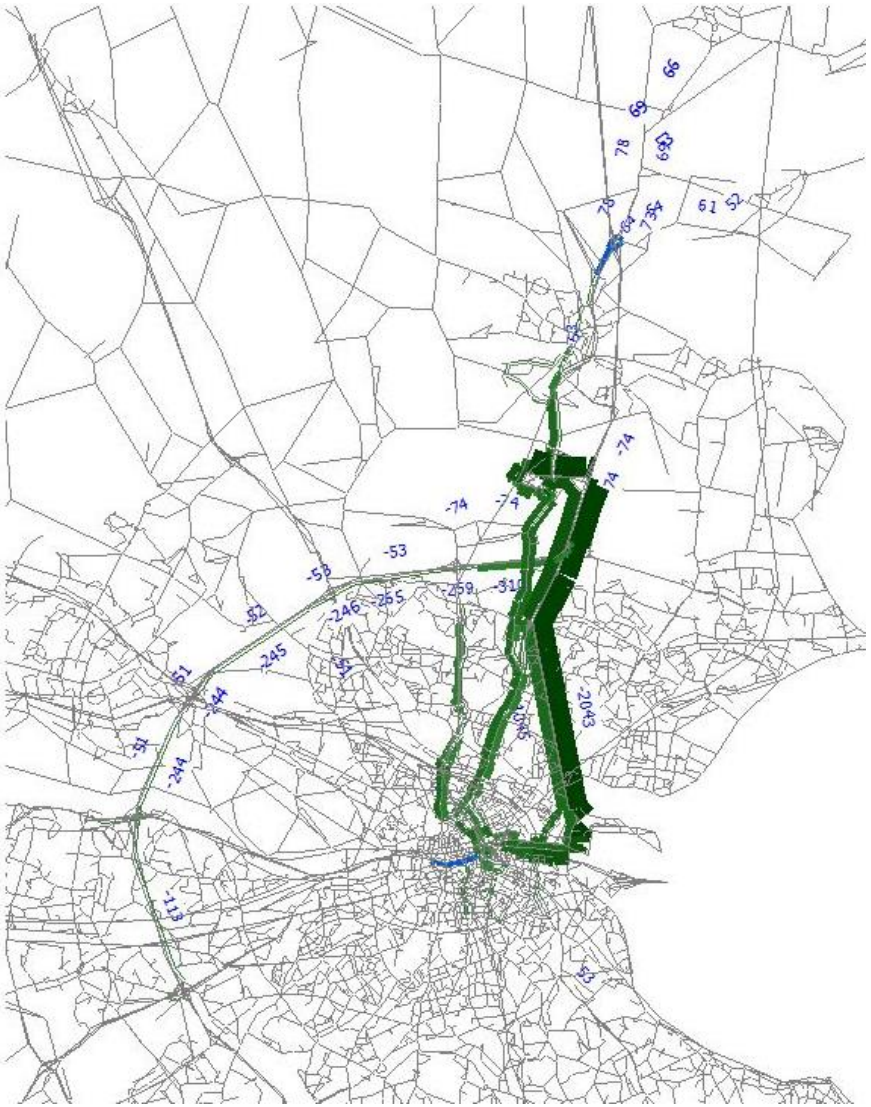
2045 Business Case Core Run – All Modes – AM Peak Period



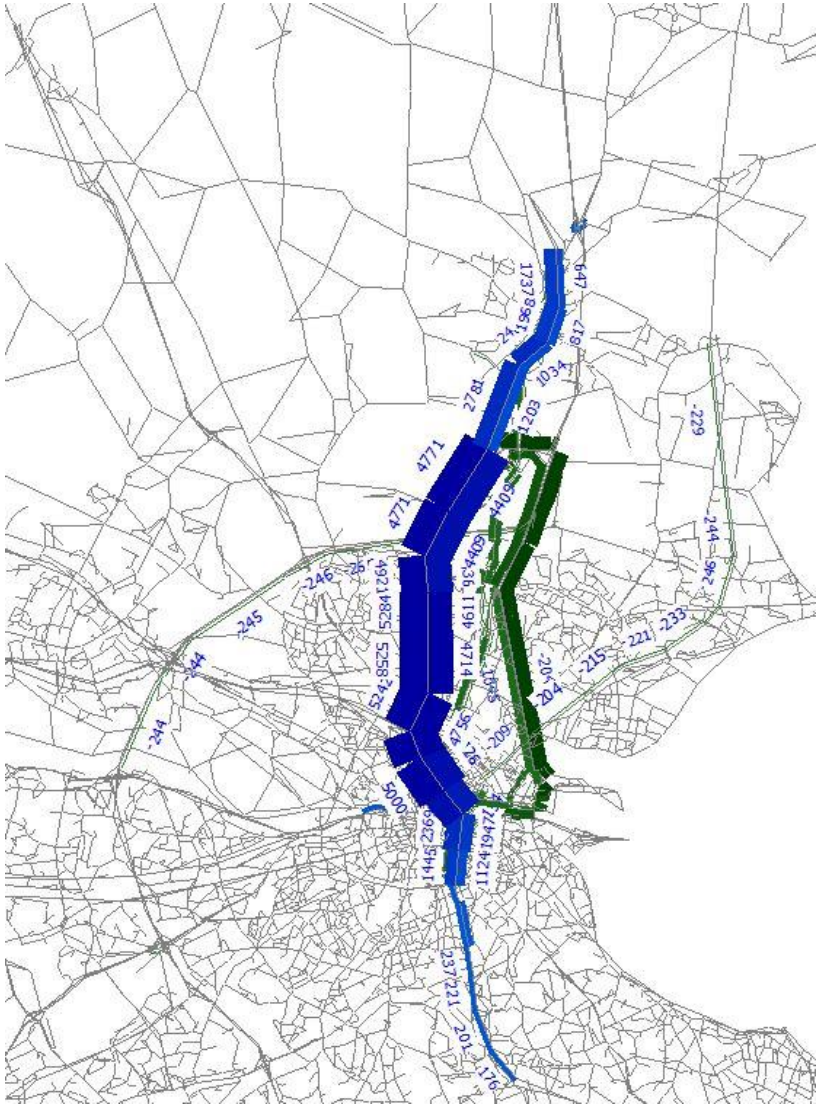
2045 Business Case Core Run – Bus Only – LT Peak Period



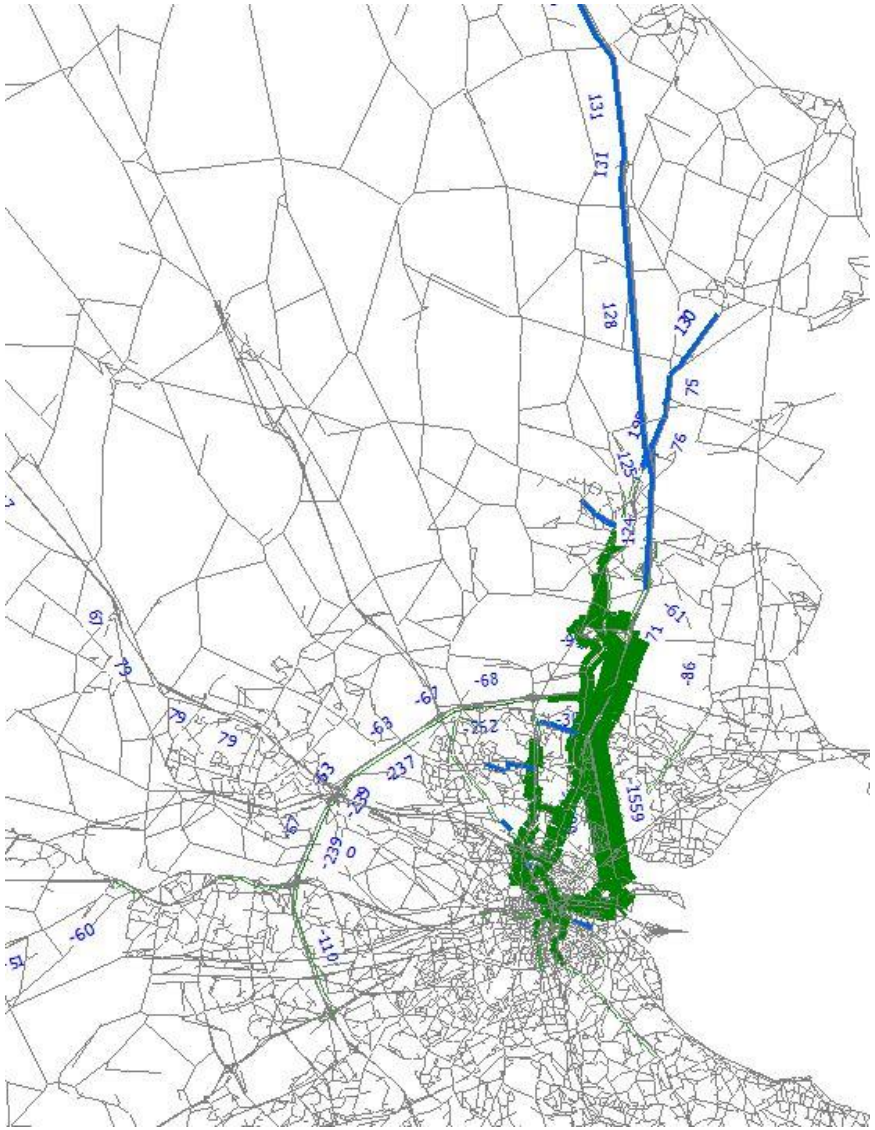
2045 Business Case Core Run – All Modes – LT Peak Period



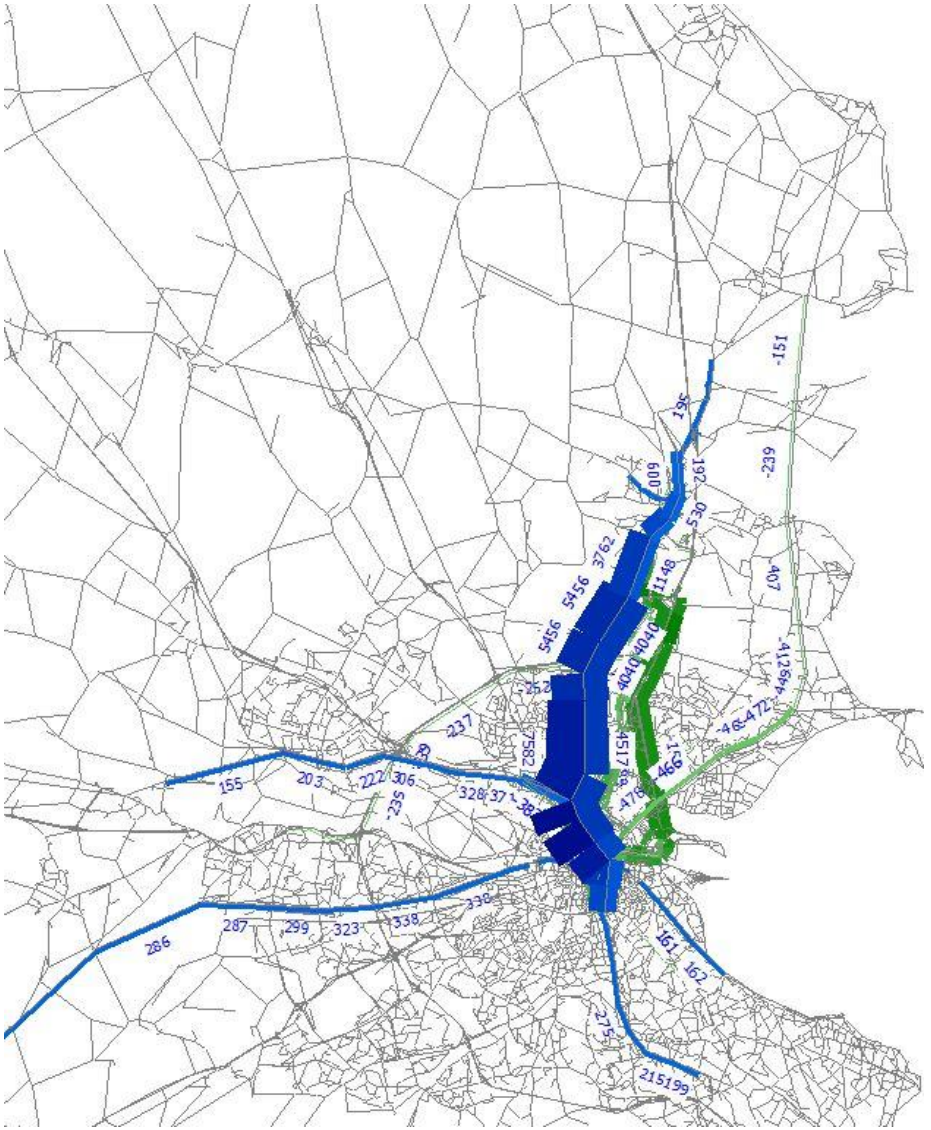
2045 Business Case Core Run – Bus Only – SR Peak Period



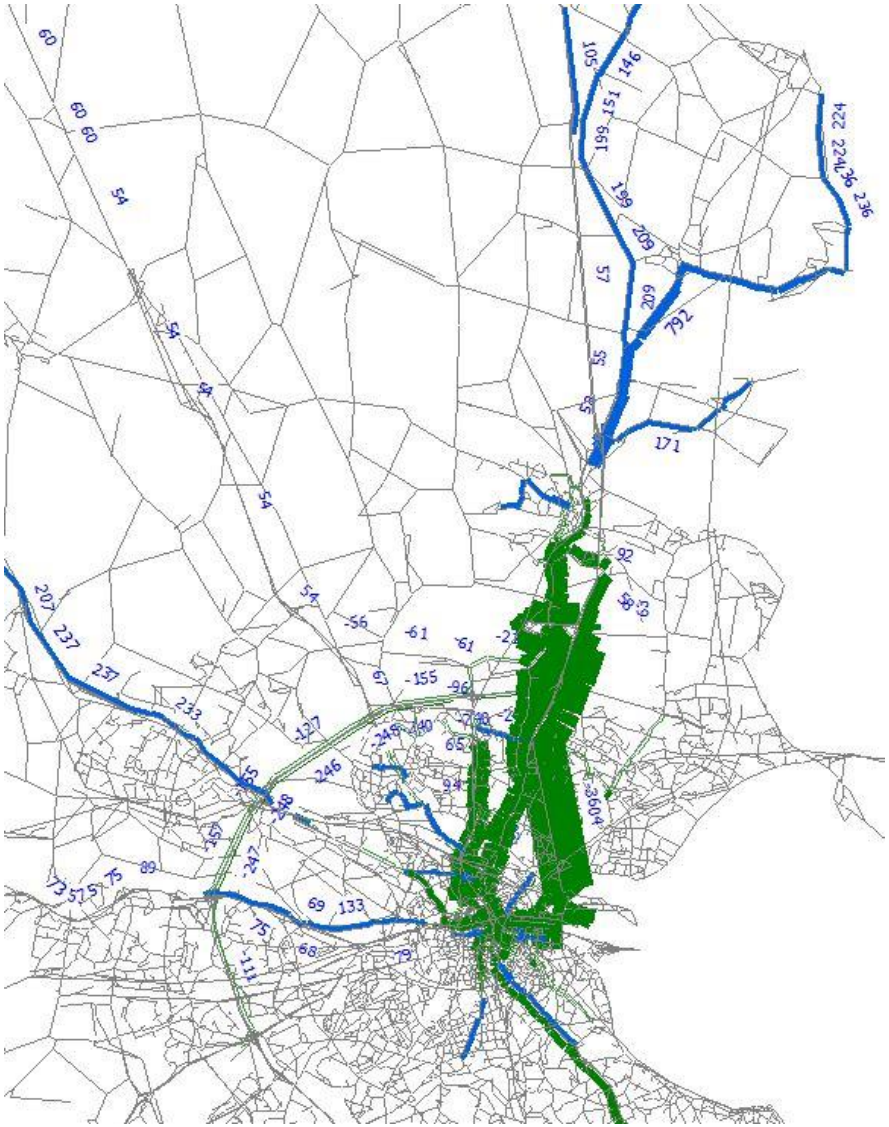
2045 Business Case Core Run – All Modes - SR Peak Period



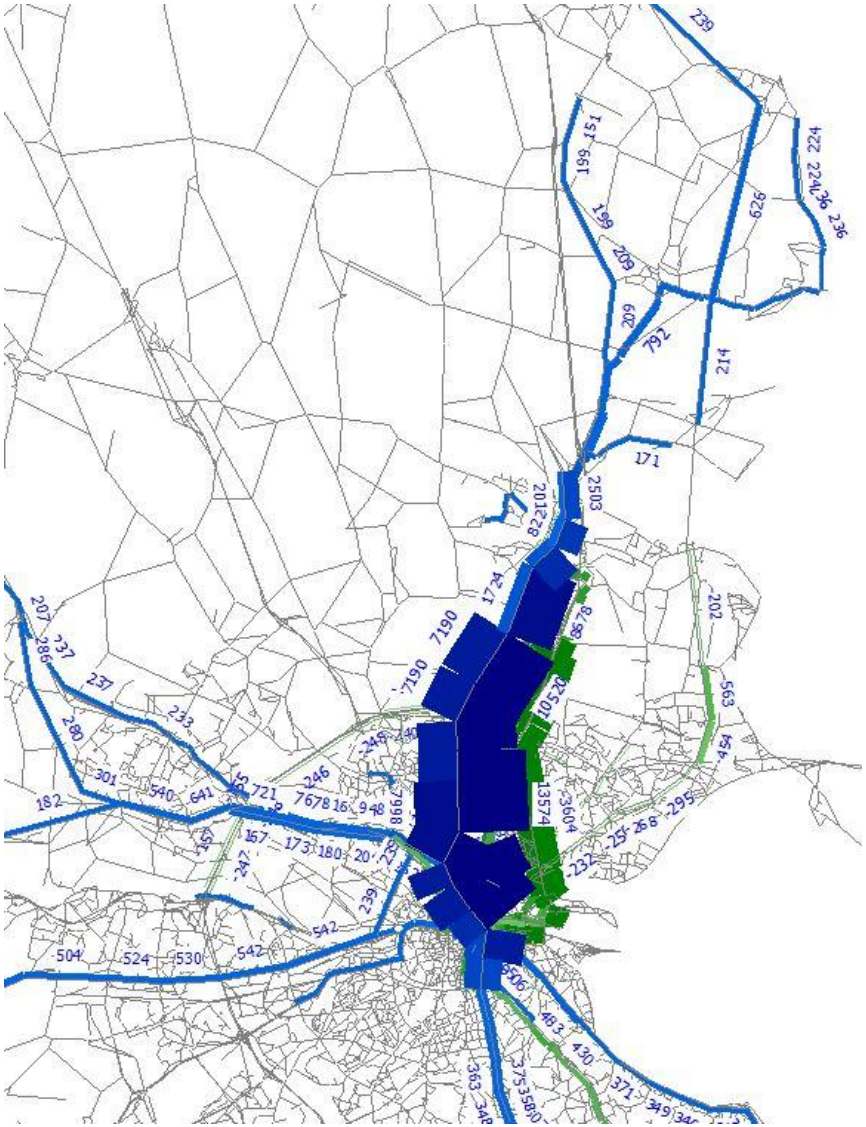
2045 Business Case Core Run – Bus Only – PM Peak Period



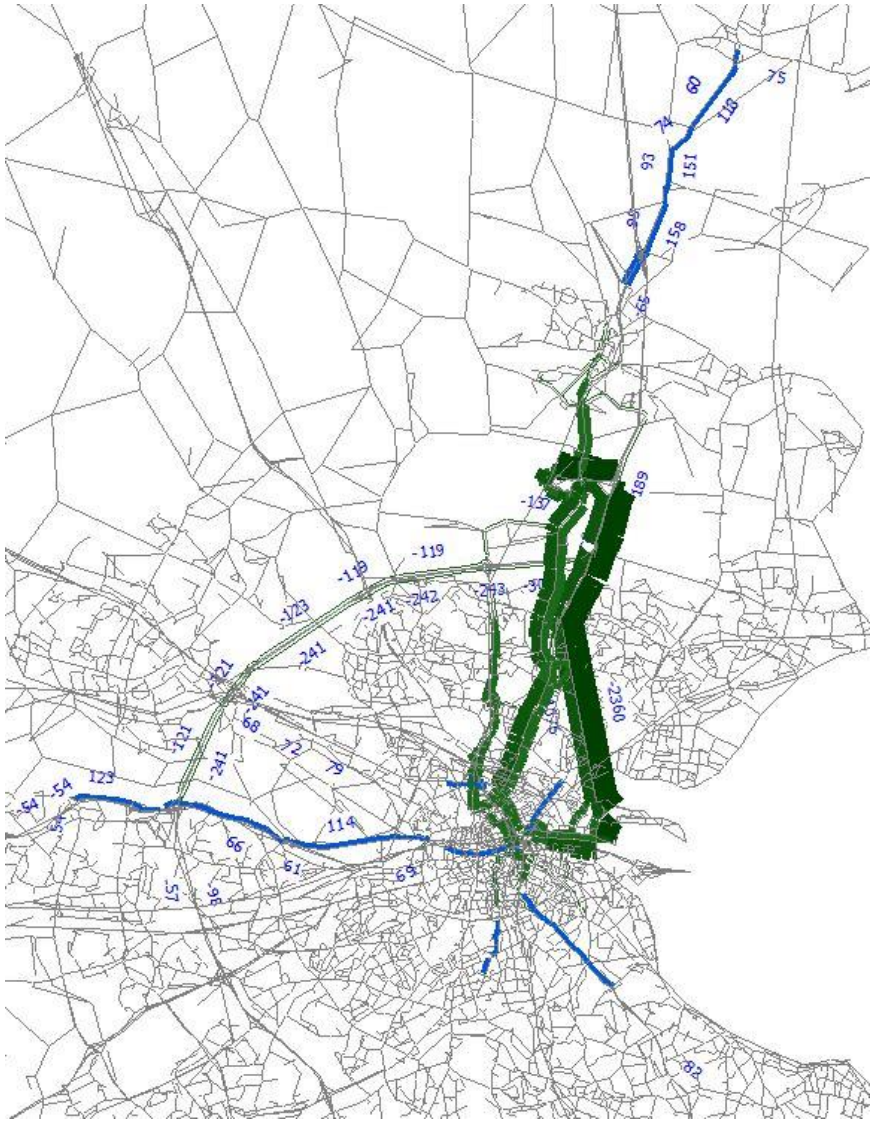
2045 Business Case Core Run – All Modes – PM Peak Period



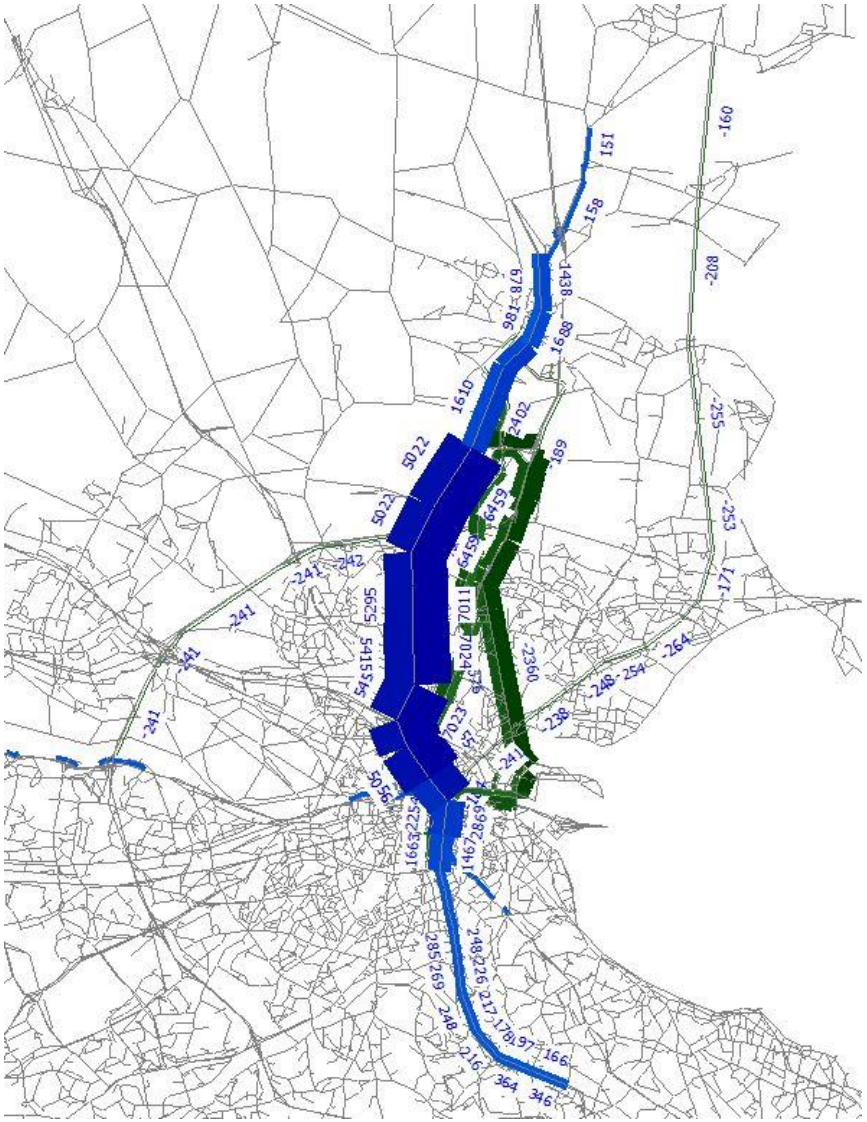
2060 Business Case Core Run – Bus Only – AM Peak Period



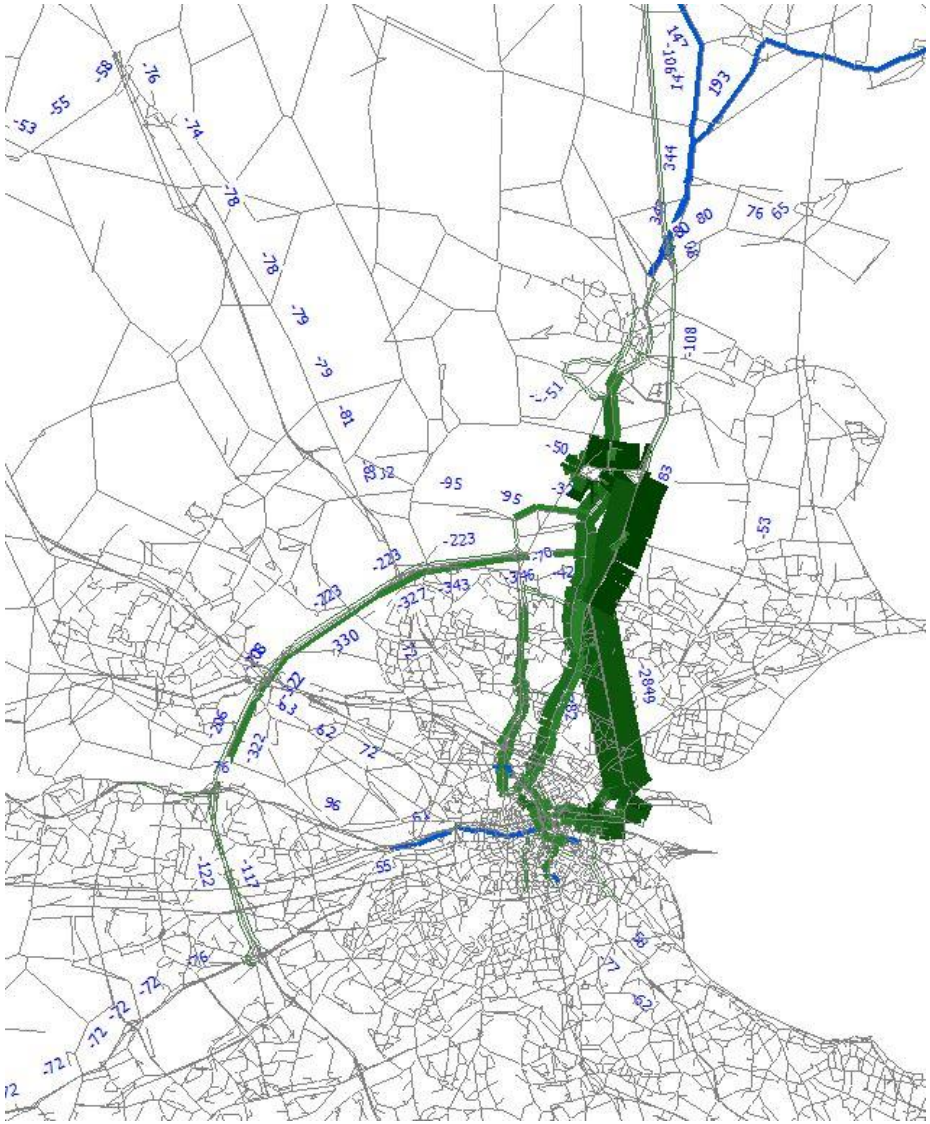
2060 Business Case Core Run – All Modes – AM Peak Period



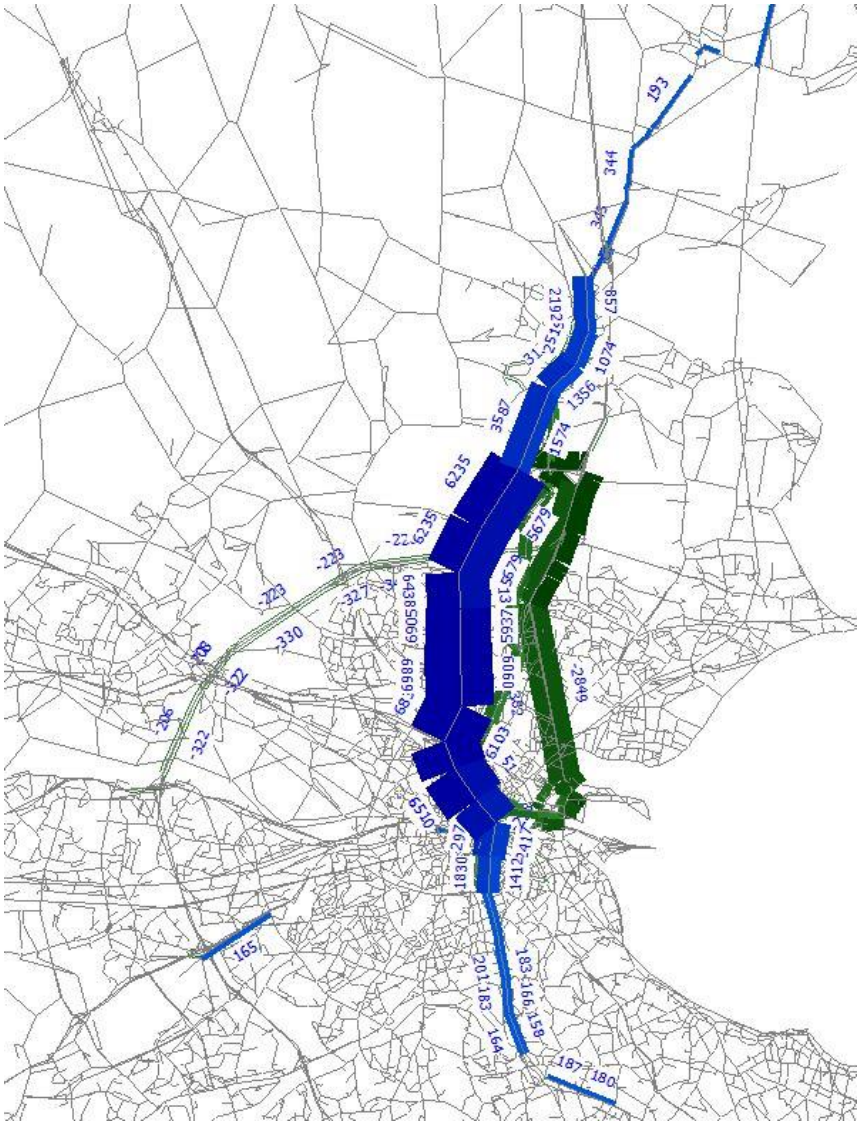
2060 Business Case Core Run – Bus Only – LT Peak Period



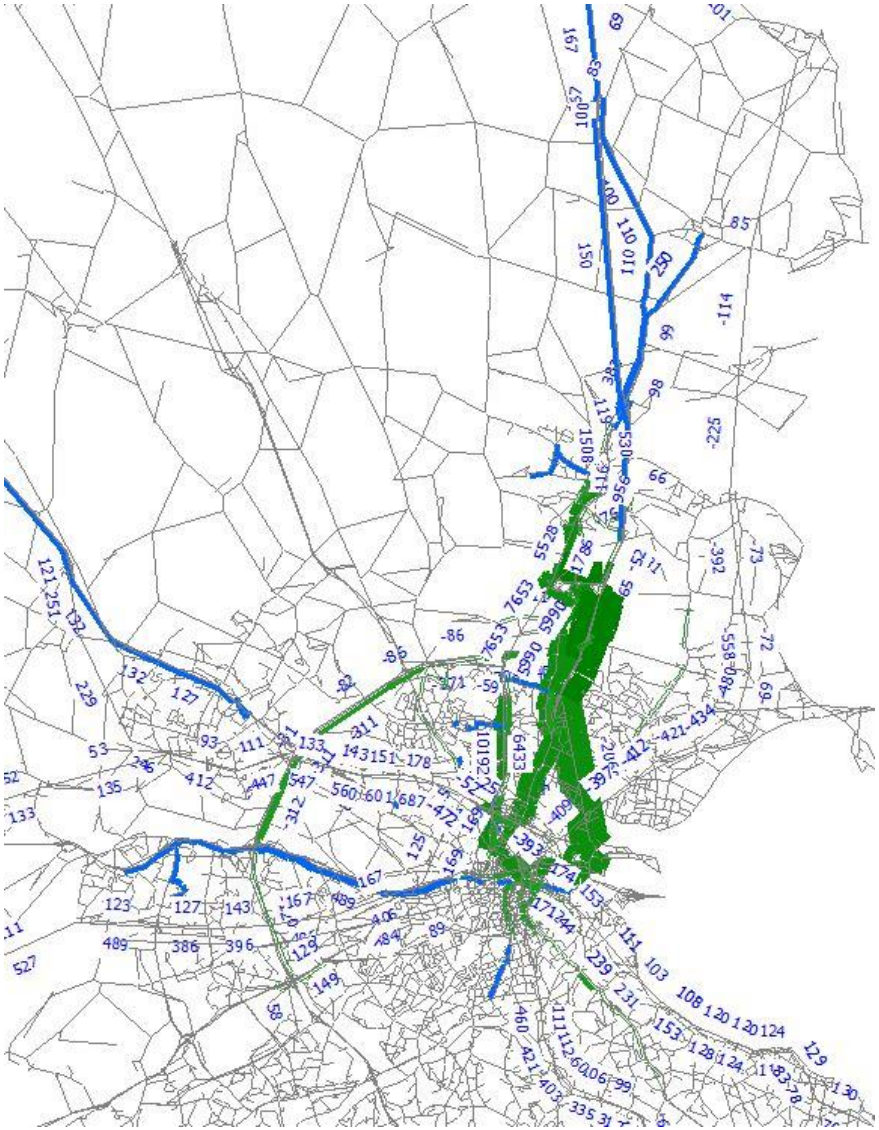
2060 Business Case Core Run – All Modes – LT Peak Period



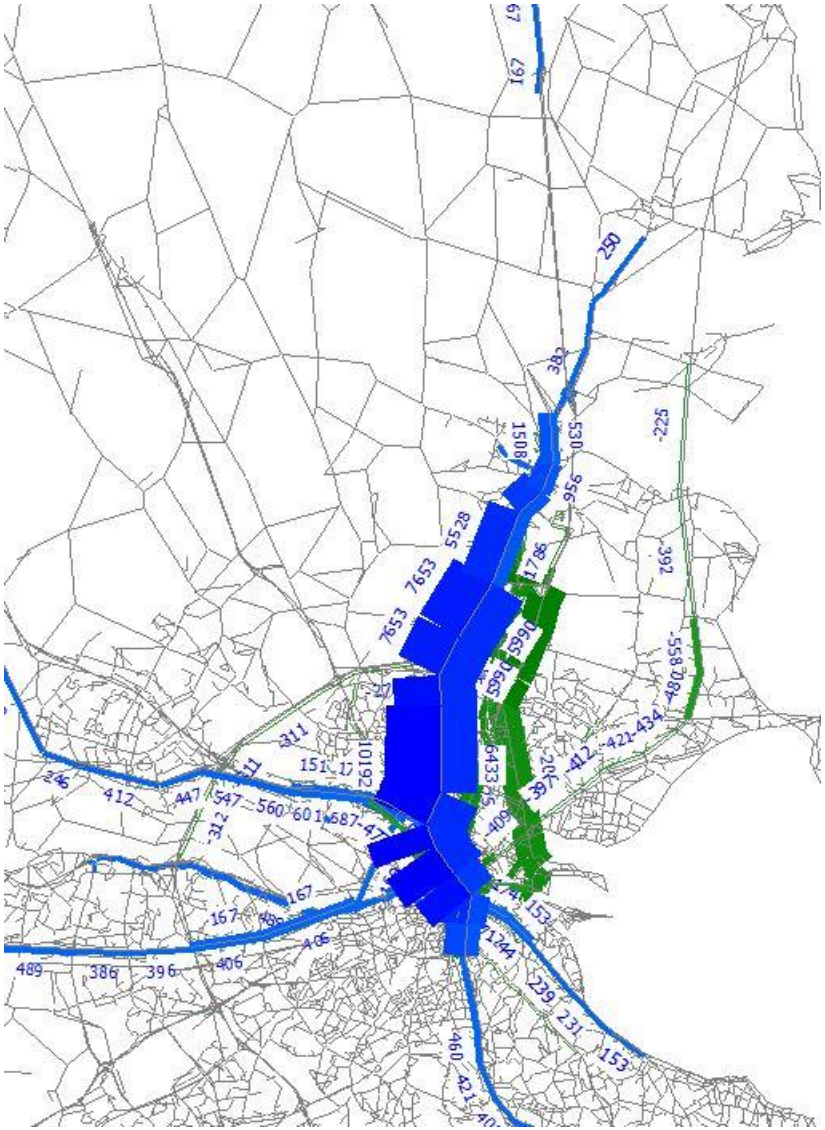
2060 Business Case Core Run – Bus Only – SR Peak Period



2060 Business Case Core Run – All Modes – SR Peak Period



2060 Business Case Core Run – Bus Only – PM Peak Period



2060 Business Case Core Run – All Modes – PM Peak Period

A.5 Journey Time Savings

Journey Time 2030 DS - 2030 DM Business Case AM Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	-0.2	-7.4	0.1	0.0	-11.7	-0.4	0.2	0.0	0.0	-0.8	-1.1	0.0	0.0	0.0	-26.1	0.9	-13.7
St Stephen's Green	0.1	0.0	0.1	-3.0	-10.9	0.0	-0.3	-14.1	-2.9	0.0	0.0	0.0	-2.2	-3.5	0.0	0.0	0.0	-33.0	-0.8	-13.1
College Street (Trinity)	0.0	0.0	0.0	0.1	-8.2	0.0	0.0	-10.7	-0.2	0.1	0.0	0.0	-0.1	-0.8	0.0	0.0	0.0	-27.0	5.4	-6.8
Glasnevin	-2.7	-9.0	-1.2	0.0	-0.1	-6.1	-9.0	2.2	-0.1	-16.6	0.5	0.5	-11.7	-0.8	-5.7	-6.5	-0.1	-29.2	-8.8	-24.0
DCU	-4.4	-9.7	-4.3	0.0	0.0	-10.0	0.0	0.0	0.0	-16.3	-3.5	-3.5	-13.2	-0.8	-22.8	-11.1	-0.1	-13.1	-12.4	-9.6
Rathgar Road	0.1	0.0	0.2	-5.7	-15.0	0.0	0.0	-18.6	-1.5	0.0	0.1	0.4	-6.3	-5.9	-0.8	-0.8	0.3	-34.8	-1.7	-20.8
Coolock	-0.1	-0.1	-0.2	-7.3	0.2	-0.3	0.0	0.0	-0.1	-1.2	0.1	-0.1	0.0	-0.8	0.0	0.0	-0.1	-0.8	0.1	0.1
Ballymun	-9.3	-14.7	-8.7	2.3	0.0	-15.6	-0.1	0.0	0.0	-20.6	-0.2	-0.2	-20.0	-0.8	-12.5	-15.7	-0.1	-10.9	-10.2	-7.9
Finglas	-0.2	-5.9	-0.4	0.9	-0.1	-0.8	-0.2	-0.1	0.0	-10.9	2.9	2.9	0.0	-0.7	1.4	0.3	0.4	-10.4	-10.8	-0.7
Sandyford	0.0	0.0	0.0	-8.6	-15.3	0.0	-1.2	-18.8	-2.7	0.0	0.0	0.0	-3.5	-6.7	-0.3	-0.3	0.2	-35.4	-2.4	-21.8
Tallaght	0.0	0.0	0.0	1.3	-6.6	0.0	0.0	-10.5	-1.1	0.1	0.0	0.0	0.0	1.0	0.0	0.0	0.0	-23.3	5.3	-15.3
Red Cow	0.0	0.0	0.0	1.2	-6.5	0.0	0.0	-10.5	0.4	0.2	0.0	0.0	0.0	1.0	0.0	0.0	0.0	-22.4	7.0	9.1
Blanchardstown	1.7	0.1	0.7	-12.1	-4.4	-1.2	0.0	-9.8	0.0	-1.6	0.0	0.1	0.0	-6.0	0.0	0.0	-0.1	-22.7	-1.9	-20.9
Ashbourne	-0.8	-0.8	-0.8	-0.8	-0.3	-0.8	-0.6	1.7	-0.8	-2.1	-0.1	-0.1	-9.0	0.0	-7.2	-9.0	5.1	-11.1	-13.0	4.1
Donabate	0.0	0.0	0.0	1.1	-14.1	0.9	0.0	-13.7	-16.7	-1.7	0.0	0.0	0.0	-17.8	0.0	0.0	0.0	1.0	0.4	-8.4
Balbriggan	-7.8	0.0	0.0	-15.5	-5.6	0.9	-7.8	-6.2	-6.3	-1.7	-7.8	-7.8	-7.8	0.2	0.0	0.0	-0.1	4.3	-9.6	2.2
Drogheda	0.0	0.0	0.0	-3.1	2.7	1.3	2.7	5.8	-11.3	-1.9	0.0	0.0	0.0	0.3	0.0	0.2	0.0	-8.9	0.0	1.6
Swords Pavilion	-16.3	-17.4	-7.3	-40.9	-17.1	-13.7	0.6	-17.0	-18.3	-19.6	-7.2	-7.1	-24.2	-31.8	0.4	6.5	-7.8	0.0	0.1	-8.5
Swords East	2.6	3.7	5.4	-14.4	-15.3	3.0	-1.4	-15.3	-16.6	-3.7	5.1	4.6	-7.2	-31.1	0.5	6.5	-5.5	-0.9	0.0	-5.0
Airport	-13.3	-11.5	-7.3	-25.3	-6.9	-20.7	0.1	-5.7	-7.0	-25.1	8.9	11.9	-19.7	-13.0	-2.0	5.9	-0.6	3.2	3.5	0.0

Journey Time 2030 DS - 2030 DM Business Case LT Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.6	-5.4	0.0	0.0	-9.5	0.3	0.0	0.0	0.0	0.0	-0.5	3.7	-0.5	-14.6	-24.3	2.7	-11.6
St Stephen's Green	0.0	0.0	0.0	-1.0	-7.9	0.0	0.0	-12.2	-0.1	0.0	0.0	0.0	0.0	-2.2	-0.8	-3.9	-19.1	-30.9	1.1	-12.4
College Street (Trinity)	0.0	0.0	0.0	1.3	-4.6	0.0	0.0	-9.5	0.1	0.0	0.0	0.0	0.0	-0.2	5.3	-0.2	-13.0	-18.0	2.2	-3.2
Glasnevin	-0.6	-6.8	1.1	0.0	-0.1	-0.4	-5.0	2.4	0.0	-13.1	0.8	0.8	-11.7	-0.2	-2.3	-22.8	-11.3	-27.6	-27.0	-18.7
DCU	-0.8	-5.4	-0.8	0.0	0.0	-6.4	0.0	0.0	0.0	-12.0	8.1	8.1	-17.6	0.0	-17.5	-12.4	4.9	-12.6	-11.9	-8.4
Rathgar Road	0.0	0.0	0.0	1.1	-13.0	0.0	0.0	-16.4	0.0	0.0	0.1	0.1	0.0	0.4	9.1	1.8	-9.2	-33.2	7.4	-17.9
Coolock	0.0	0.0	0.0	-1.8	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.3	0.0	0.0	0.0	25.7	-0.1	-14.7
Ballymun	-6.4	-11.6	-5.6	2.4	0.0	-12.2	0.0	0.0	0.0	-17.9	2.4	2.4	-8.1	0.0	-20.6	-16.3	-5.4	-10.3	-9.2	-6.8
Finglas	0.0	-1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.6	-0.6	-1.4	0.0	-0.1	-15.2	-17.9	-4.0	-9.2	-8.4	-5.4
Sandyford	0.0	0.0	0.0	-7.5	-13.3	0.0	-0.2	-16.9	-0.8	0.0	0.0	0.0	0.0	-5.7	0.6	-6.6	-17.7	-33.8	-5.0	-19.3
Tallaght	0.0	0.0	0.0	1.7	-4.6	0.0	0.0	-8.2	0.6	0.6	0.0	0.0	0.0	1.7	6.8	0.6	0.0	-23.7	6.8	-9.5
Red Cow	0.0	0.0	0.0	3.0	-4.4	0.0	0.0	-8.2	0.5	-3.5	0.0	0.0	0.0	1.9	6.8	0.6	0.0	-23.7	-20.3	17.4
Blanchardstown	-1.7	0.0	0.0	-11.7	-4.2	-0.8	0.0	-19.4	0.0	0.0	0.0	0.0	0.0	0.0	5.4	-0.1	1.9	-20.8	-20.1	-14.6
Ashbourne	1.0	1.0	1.0	1.0	2.0	1.3	2.3	3.5	1.0	0.3	1.7	1.7	0.0	0.0	-2.5	-0.4	0.0	4.7	7.8	12.9
Donabate	0.6	-1.7	0.9	-14.2	-9.7	7.5	0.0	-10.8	-10.9	-4.0	0.0	0.0	0.5	-1.5	0.0	0.0	0.0	0.4	0.4	-3.0
Balbriggan	0.0	-0.8	0.0	-13.1	-16.2	2.6	0.0	-22.9	-14.0	-6.6	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.5	0.5	0.4
Drogheda	0.0	0.0	0.0	-9.9	19.7	0.4	0.0	-9.5	-10.4	-0.9	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-16.8	-12.8	-0.2
Swords Pavilion	-13.7	-10.4	-4.6	-35.6	-13.4	-8.1	9.4	-13.9	-10.3	-37.7	-5.0	-4.9	-25.4	0.6	0.8	1.0	1.2	0.0	-1.4	-2.4
Swords East	3.4	-9.0	-3.4	-38.4	-16.4	-5.2	0.0	-18.4	-16.3	-21.1	-4.1	-2.9	-2.6	4.2	0.8	1.0	1.2	0.0	0.0	1.2
Airport	-13.0	-16.9	-11.4	-24.3	-6.4	-19.4	7.4	-5.0	-2.2	-26.4	12.5	19.3	-20.9	-0.1	-6.1	1.0	0.2	1.5	2.3	0.0

Journey Time 2030 DS - 2030 DM Business Case SR Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.2	-5.9	0.0	0.0	-10.7	-0.1	0.0	0.0	0.0	0.0	-0.2	4.8	0.1	-13.8	-30.0	1.2	-13.9
St Stephen's Green	0.0	0.0	0.0	-1.8	-9.1	0.0	0.2	-13.0	-1.3	0.0	0.0	0.0	0.0	-2.6	0.3	-0.3	-18.3	-31.8	0.0	-10.5
College Street (Trinity)	0.0	0.0	0.0	0.8	-6.2	0.0	0.0	-9.7	0.0	0.0	0.0	0.0	0.0	0.1	6.4	0.1	-12.1	-16.2	4.5	-10.8
Glasnevin	-1.1	-7.7	0.6	0.0	-0.1	-3.8	-5.1	2.3	0.0	-15.4	0.5	0.5	0.0	0.1	-1.0	-11.9	-14.0	-35.2	-27.9	-19.7
DCU	-2.0	-6.2	-2.3	0.0	0.0	-8.5	0.0	0.0	0.0	-12.8	7.1	7.1	0.1	0.1	-25.0	-14.7	16.8	-19.5	-18.4	-8.3
Rathgar Road	0.0	0.0	0.0	-1.3	-14.4	0.0	0.0	-18.6	0.0	0.0	-0.1	0.0	-0.1	-1.8	8.3	2.3	-10.2	-41.5	4.0	-22.5
Coolock	0.0	0.0	0.0	-1.8	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	0.0	0.6	0.6	0.1	0.2	26.4	-0.1	-15.9
Ballymun	-7.8	-12.9	-7.1	2.5	0.0	-14.5	0.0	0.0	0.0	-18.8	1.2	1.2	0.1	0.1	-43.7	-18.6	-7.5	-15.9	-15.3	-7.3
Finglas	0.0	-1.9	0.1	0.0	0.0	-0.2	0.0	0.0	0.0	-7.3	-1.4	-1.9	0.0	0.1	-12.4	-16.8	-4.0	-12.3	-11.8	-3.8
Sandyford	0.0	0.0	0.0	-8.2	-14.2	0.0	-0.6	-18.3	-2.7	0.0	0.0	0.0	-0.1	-6.3	1.6	-3.2	-17.0	-42.0	-3.3	-21.4
Tallaght	0.0	0.0	0.0	1.7	-5.4	0.0	0.1	-8.3	0.7	1.1	0.0	0.0	-0.1	2.3	5.0	0.1	0.2	-31.5	6.9	-11.3
Red Cow	0.0	0.0	0.0	3.3	-5.3	0.0	0.0	-6.7	0.8	0.0	0.0	0.0	-0.1	2.4	4.9	0.1	0.2	-9.4	5.3	14.6
Blanchardstown	0.0	0.0	0.0	-21.9	1.7	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	36.4	0.1	-20.6	1.5	-0.7	11.3
Ashbourne	0.1	0.1	0.1	0.1	0.9	0.1	1.1	2.8	0.0	-0.6	0.8	0.8	-0.1	0.0	-1.3	0.2	0.2	5.6	8.3	-3.4
Donabate	0.8	-1.3	1.0	-8.3	-13.2	7.0	0.0	-13.0	-10.6	-3.7	0.0	0.0	0.0	-12.7	0.0	0.0	0.0	0.4	0.4	-1.3
Balbriggan	0.0	-1.4	0.0	-11.8	-18.3	3.6	0.0	-25.4	-15.4	-6.5	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.2	0.4	0.3
Drogheda	0.0	0.0	0.0	-10.5	21.5	0.5	0.0	-11.5	-15.6	-1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-19.5	-15.2	0.0
Swords Pavilion	-12.8	-10.7	-4.9	-39.8	-15.8	-8.9	1.8	-15.7	-13.2	-29.0	-8.9	-5.2	-28.1	1.2	0.9	1.3	-8.4	0.0	0.0	-2.7
Swords East	2.7	-1.8	2.4	-13.6	-19.2	4.2	0.0	-16.6	-14.8	-7.3	7.9	7.9	-1.3	4.8	0.9	1.3	1.6	0.0	0.0	0.9
Airport	-15.4	-15.4	-6.5	-25.9	-7.3	-21.9	7.0	-4.6	-2.1	-28.9	3.8	16.9	-6.8	-2.0	-7.6	-0.6	-1.3	-0.2	0.9	0.0

Journey Time 2030 DS - 2030 DM Business Case PM Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	-0.2	-9.2	0.1	-0.3	-13.4	-1.1	0.1	0.0	0.0	-0.9	0.9	0.0	9.4	0.0	-19.5	-2.3	-13.8
St Stephen's Green	0.2	0.0	0.1	-2.1	-12.3	0.0	-0.2	-16.9	-6.0	0.0	0.0	0.0	-0.1	-0.4	0.0	0.0	0.0	-10.9	-2.0	-18.3
College Street (Trinity)	0.0	0.0	0.0	0.2	-9.2	0.1	-0.1	-13.8	-0.1	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	-12.9	4.8	-7.0
Glasnevin	-1.2	-7.4	-0.3	0.0	-0.2	-7.8	-23.4	1.5	-0.1	-14.8	0.2	0.2	-11.2	0.9	-6.4	0.6	-11.0	-35.0	-19.7	-21.3
DCU	-3.2	-7.1	-3.9	0.0	0.0	-9.3	0.0	0.0	-0.1	-13.7	5.8	5.8	-12.9	1.1	-11.1	-10.8	0.1	-18.0	-9.8	-9.3
Rathgar Road	0.2	0.0	0.1	-4.6	-17.5	0.0	-0.6	-20.9	-4.2	0.0	0.2	0.2	-7.4	1.6	-0.7	-0.4	-3.1	-21.2	3.0	-20.8
Coolock	0.0	0.0	0.0	-10.2	-0.3	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.8	0.0	9.4	0.0	0.2	0.2	-0.5
Ballymun	-8.5	-13.7	-7.9	2.5	0.0	-15.1	0.0	0.0	-0.1	-19.4	0.1	0.1	-11.4	1.1	-16.5	-14.9	-4.9	-14.2	-1.4	-7.4
Finglas	-0.8	-6.8	-0.5	0.0	-0.6	-6.7	-0.5	-0.6	0.0	-13.0	2.6	2.6	0.0	1.0	3.8	-8.4	18.0	-13.7	-11.7	-6.9
Sandyford	0.0	0.0	-0.2	-8.6	-17.2	-0.1	-2.5	-20.6	-6.4	0.0	0.0	0.0	-2.3	-3.6	-0.7	-0.7	-2.5	-17.4	-8.2	-21.5
Tallaght	0.0	0.0	0.0	3.5	-8.0	0.1	-0.1	-12.0	-0.2	0.3	0.0	0.0	0.0	2.9	0.0	9.4	0.0	-8.4	1.1	-10.8
Red Cow	0.0	0.0	0.0	3.2	-8.0	0.0	-0.4	-11.9	0.0	0.7	0.0	0.0	0.0	3.1	0.0	9.4	0.0	-8.4	1.4	7.4
Blanchardstown	1.6	0.0	0.7	-12.0	-3.6	-0.7	-0.1	-8.2	0.0	-1.8	-0.1	-0.1	0.0	0.0	0.0	9.4	0.0	-27.7	-6.6	-17.6
Ashbourne	0.1	0.1	0.0	0.1	0.3	0.0	0.8	2.9	0.1	-0.7	0.6	0.7	-7.0	0.0	-0.7	-0.6	0.2	9.2	12.4	-0.4
Donabate	0.0	0.0	0.0	-6.4	-8.1	1.0	-0.1	10.1	-4.3	-1.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.4	0.4	-24.5
Balbriggan	-0.7	0.1	0.0	-9.4	-14.2	0.3	-0.4	-21.1	-19.1	-8.1	1.9	1.7	0.1	0.4	0.0	0.0	0.0	0.3	6.4	0.4
Drogheda	-5.8	0.0	0.0	-13.6	21.7	-3.6	-9.2	-11.7	-21.9	-12.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-17.1	2.8	0.0
Swords Pavilion	-21.9	-21.5	-12.5	-39.8	-16.0	-21.7	1.4	-14.9	-12.1	-42.8	-12.4	14.1	-32.8	-2.1	1.1	3.7	-14.0	0.0	0.1	-2.9
Swords East	1.2	-1.9	3.2	-11.3	-0.6	-1.8	0.2	-0.3	2.6	-10.5	3.5	3.6	-1.8	-3.7	0.0	1.2	0.0	-0.1	0.0	0.7
Airport	-15.5	-14.0	-5.6	-21.4	-7.0	-23.2	2.0	-5.8	-3.0	-27.4	20.2	9.7	-21.5	10.9	-0.5	3.7	1.5	0.6	1.8	0.0

Journey Time 2045 DS - 2045 DM Business Case AM Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.0	-7.5	0.2	0.2	-12.1	0.3	0.2	0.0	0.0	-0.8	-1.1	0.0	0.0	0.0	-26.0	0.8	-23.0
St Stephen's Green	0.0	0.0	0.1	-2.9	-11.3	0.1	0.2	-14.5	-2.0	0.0	0.0	0.0	-2.2	-3.4	0.0	0.0	0.0	-32.7	-0.9	-14.3
College Street (Trinity)	0.0	0.0	0.0	0.2	-8.3	0.2	0.2	-12.7	0.4	0.1	0.0	0.0	-0.2	-0.9	0.0	0.0	0.0	-27.3	5.3	-8.7
Glasnevin	-3.8	-9.3	-2.1	0.0	-0.1	-6.4	-8.5	2.1	0.2	-16.8	0.4	0.4	-11.7	-0.9	-5.5	-8.7	0.1	-28.7	-14.1	-24.5
DCU	-4.8	-9.9	-4.7	0.1	0.0	-9.9	0.0	0.0	0.3	-16.5	-3.2	-3.2	-12.5	-1.3	-23.0	-15.4	-0.8	-13.5	-12.8	-9.7
Rathgar Road	0.1	0.1	0.2	-4.6	-15.6	0.0	0.3	-18.9	-0.4	0.0	0.2	0.5	-6.6	-5.8	-0.8	-2.9	0.0	-34.3	-1.8	-22.4
Coolock	0.3	0.3	0.2	-7.0	0.2	0.3	0.0	-0.1	0.2	-0.8	0.5	0.3	0.3	-1.0	0.3	0.3	-3.9	0.0	0.3	0.3
Ballymun	-9.3	-14.7	-8.6	2.4	0.0	-15.6	-0.5	0.0	0.3	-20.5	-0.2	-0.2	-21.5	-1.2	-12.4	-18.0	-0.8	-11.1	-10.4	-8.1
Finglas	0.2	-6.2	0.1	-1.0	0.0	-0.7	-0.6	0.0	0.0	-11.7	2.3	2.3	0.0	-1.1	-0.9	-15.5	7.9	-10.3	-11.2	-7.3
Sandyford	0.0	0.0	0.0	-8.2	-15.8	-0.1	-1.2	-18.7	-1.7	0.0	0.0	0.0	-4.1	-6.4	-0.4	-0.3	-0.1	-35.0	-2.3	-23.7
Tallaght	0.0	0.0	0.0	1.7	-6.3	-0.1	0.2	-10.4	1.9	0.1	0.0	0.0	0.2	1.2	0.0	0.0	0.0	-23.6	5.4	-18.5
Red Cow	0.0	0.0	0.0	1.6	-6.2	-0.1	0.2	-10.4	1.4	0.2	0.0	0.0	0.2	1.2	0.0	0.0	0.0	-22.5	7.1	1.8
Blanchardstown	1.6	0.0	0.7	-12.1	-3.5	-1.0	0.1	-8.4	0.0	-1.6	0.2	0.2	0.0	-2.1	0.0	0.0	0.0	-22.3	-2.0	-21.3
Ashbourne	-0.5	-0.5	-0.5	-0.5	-0.2	-0.5	0.0	1.7	-0.7	-2.0	0.3	0.3	-9.3	0.0	-6.9	-14.3	1.2	-18.4	-16.7	3.7
Donabate	5.5	0.0	0.0	7.3	-13.9	1.0	5.6	-14.1	-8.2	-1.8	5.5	5.5	5.5	-17.2	0.0	0.0	0.0	1.0	0.2	-9.1
Balbriggan	0.0	7.8	7.8	-7.7	6.8	8.8	0.2	-16.2	3.6	6.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.2	3.4	-0.3	2.0
Drogheda	0.0	0.0	0.0	-5.2	0.8	1.0	0.8	4.8	-12.9	-1.7	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	4.1	-0.3	1.1
Swords Pavilion	-15.4	-17.9	-7.7	-40.6	-17.4	-14.1	2.1	-17.3	-18.3	-20.0	-7.6	-7.5	-24.3	-33.3	0.7	0.3	-8.4	0.0	0.0	-9.3
Swords East	2.4	3.5	4.4	-14.6	-15.9	2.7	-0.4	-15.9	-16.9	-4.0	4.2	3.6	-7.4	-25.0	0.8	0.3	0.2	-0.3	0.0	-5.9
Airport	-13.7	-11.8	-7.8	-24.8	-6.9	-21.0	-0.3	-5.7	-6.7	-25.6	-3.6	13.0	-20.4	-14.0	-2.3	0.3	-0.2	3.1	3.5	0.0

Journey Time 2045 DS - 2045 DM Business Case LT Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.8	-5.2	0.0	0.1	-9.5	0.7	0.0	0.0	0.0	0.0	-0.1	3.8	-0.3	-14.2	-25.1	2.2	-15.6
St Stephen's Green	0.0	0.0	0.0	-0.9	-7.9	0.0	0.2	-12.2	0.2	0.0	0.0	0.0	0.0	-1.9	-0.7	-2.7	-18.7	-31.8	1.6	-16.0
College Street (Trinity)	0.0	0.0	0.0	1.4	-4.9	0.0	0.1	-9.4	0.5	0.0	0.0	0.0	0.0	0.2	5.4	-0.1	-12.5	-25.7	8.2	-7.3
Glasnevin	-0.6	-6.8	0.9	0.0	0.0	-1.1	-4.5	2.4	0.1	-13.1	0.8	0.8	-11.7	0.1	-2.2	-17.0	-20.2	-28.5	-27.9	-23.0
DCU	-0.7	-5.3	-0.7	0.0	0.0	-7.8	0.0	0.0	0.0	-12.0	8.1	8.1	-20.4	-0.2	-19.2	-16.0	18.0	-14.3	-13.5	-9.7
Rathgar Road	0.0	0.0	0.0	1.0	-13.0	0.0	0.2	-16.4	0.4	0.0	0.1	0.1	0.0	0.8	9.1	2.0	-8.9	-34.4	6.8	-21.9
Coolock	0.3	0.2	0.2	-1.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.1	0.3	-0.9	0.2	0.3	0.3	24.9	0.0	0.9
Ballymun	-6.3	-11.5	-5.5	2.4	0.0	-13.8	0.1	0.0	0.0	-17.8	2.4	2.4	-12.1	-0.2	-20.9	-18.8	-8.6	-12.2	-11.2	-8.1
Finglas	1.2	-1.1	0.3	0.2	0.0	0.3	0.0	0.0	0.0	-3.6	-0.3	-1.6	0.0	-0.1	-14.7	-19.9	-7.0	-10.9	-10.1	-6.6
Sandyford	0.0	0.0	-0.2	-7.4	-13.4	0.0	0.0	-16.9	-0.7	0.0	0.0	0.0	-0.2	-5.4	0.7	-6.1	-17.3	-34.6	-3.7	-23.9
Tallaght	0.0	0.0	0.0	1.9	-4.5	0.0	0.2	-8.4	0.9	0.5	0.0	0.0	0.0	2.1	6.4	0.4	0.0	-24.5	6.4	-14.0
Red Cow	0.0	0.0	0.0	3.1	-4.5	-0.1	0.2	-8.4	0.8	-3.1	0.0	0.0	0.0	2.3	6.4	0.4	0.0	-24.6	7.7	5.8
Blanchardstown	-1.6	0.3	0.3	-11.7	-2.2	-1.0	0.2	-19.2	0.0	-1.7	0.2	0.2	0.0	0.0	5.5	0.0	0.5	-21.6	-21.0	-19.2
Ashbourne	0.3	0.3	0.3	0.2	1.1	0.6	1.7	2.3	0.0	-0.5	1.0	1.0	-0.3	0.0	-6.7	0.4	-0.1	-1.7	1.0	7.9
Donabate	0.5	-1.6	0.7	-14.2	-11.8	7.3	0.1	-11.9	-10.7	-3.9	0.0	0.0	0.4	-6.8	0.0	0.0	0.0	0.4	0.4	-3.7
Balbriggan	0.0	-0.5	0.0	-12.7	-19.1	2.3	0.2	-25.8	-13.2	-6.0	0.0	0.0	0.0	0.3	0.0	0.0	0.5	0.5	0.5	0.5
Drogheda	0.0	0.0	0.0	-3.0	21.0	0.0	0.2	-13.5	-4.3	0.3	0.0	0.0	0.0	-0.2	0.0	0.7	0.0	-14.9	-9.4	-1.7
Swords Pavilion	-15.7	-10.9	-5.1	-35.1	-14.4	-13.6	9.4	-14.8	-11.6	-40.9	-5.5	-5.5	-25.4	-2.7	0.7	1.0	1.5	0.0	0.0	-2.9
Swords East	3.4	-9.2	-3.6	-39.5	-19.0	-4.8	0.0	-19.1	-16.7	-24.4	-4.1	-4.0	-4.9	0.9	0.7	1.0	1.5	0.0	0.0	0.6
Airport	-13.9	-17.8	-14.6	-25.0	-6.5	-20.4	6.8	-5.0	-1.8	-26.7	-5.8	17.6	-23.7	-2.6	-6.8	-0.9	-1.7	0.5	1.6	0.0

Journey Time 2045 DS - 2045 DM Business Case SR Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.3	-6.4	-1.0	0.1	-10.9	0.4	0.0	0.0	0.0	0.3	0.9	6.6	0.2	0.3	-31.9	0.8	-10.4
St Stephen's Green	0.0	0.0	0.0	-1.7	-9.3	0.0	0.8	-13.3	-2.0	0.0	0.0	0.0	0.3	-1.5	2.1	0.2	-15.1	-36.9	-0.4	-12.1
College Street (Trinity)	0.0	0.0	0.0	0.9	-6.5	0.0	0.1	-11.0	0.5	0.0	0.0	0.0	0.3	1.2	8.3	0.2	0.3	-23.5	6.4	-11.5
Glasnevin	-1.1	-7.8	0.5	0.0	-0.1	-4.5	-4.6	2.1	0.3	-15.3	0.5	0.5	-13.8	1.1	0.9	-5.8	4.7	-35.2	-38.9	-23.2
DCU	-1.9	-6.2	-2.3	0.0	0.0	-8.4	0.0	0.0	0.0	-12.8	7.0	7.0	0.4	1.0	-23.3	-13.7	18.2	-20.4	-19.5	-9.3
Rathgar Road	0.0	0.0	0.0	-1.3	-14.7	0.0	0.2	-18.8	0.4	0.0	0.1	0.0	0.3	-0.7	10.0	2.3	0.1	-42.2	3.5	-21.0
Coolock	0.3	0.3	0.3	-10.2	0.2	0.2	0.0	0.1	0.0	0.3	0.1	0.1	0.3	0.2	1.0	0.5	0.6	25.9	-0.1	0.8
Ballymun	-7.7	-13.0	-7.1	2.4	0.0	-14.4	0.0	0.0	0.0	-18.8	1.1	1.1	0.4	1.1	-42.8	-17.6	-6.2	-16.9	-16.4	-8.4
Finglas	0.1	-1.9	0.2	0.1	0.4	-1.1	0.3	0.3	0.0	-7.5	-1.3	-1.9	0.4	0.9	-10.7	-14.6	-1.9	-12.6	-12.1	-4.1
Sandyford	0.0	0.0	-0.1	-8.1	-14.5	0.0	-0.5	-18.5	-2.4	0.0	0.0	0.0	0.2	-5.2	3.5	0.1	-13.7	-42.0	-3.6	-20.9
Tallaght	0.0	0.0	0.0	1.8	-5.2	0.0	0.3	-9.4	1.0	-0.5	0.0	0.0	0.2	3.3	2.8	0.2	0.3	-32.3	6.6	-14.0
Red Cow	0.0	0.0	0.0	3.3	-5.1	-0.5	0.2	-9.1	1.1	-6.3	0.0	0.0	0.2	3.5	3.0	0.2	0.3	-32.2	6.6	9.9
Blanchardstown	0.2	0.2	0.2	-22.4	1.7	0.2	0.2	1.7	0.0	0.2	0.2	0.2	0.0	0.3	39.5	0.2	0.3	2.8	-0.1	10.8
Ashbourne	0.2	0.2	0.2	0.1	1.3	0.2	1.3	3.6	0.0	-0.5	0.9	0.9	-0.3	0.0	3.0	1.3	0.9	1.7	4.2	11.9
Donabate	0.7	-1.2	0.9	-8.3	-13.5	6.7	0.0	-13.3	-10.0	-3.7	0.0	0.0	0.5	-1.4	0.0	0.0	0.0	0.4	0.4	-1.6
Balbriggan	0.0	-1.1	0.0	-11.4	-18.5	3.6	0.2	-25.6	-13.8	-6.1	0.0	0.0	0.0	0.9	0.0	0.0	2.5	0.3	0.5	0.2
Drogheda	0.0	0.0	0.0	-9.9	21.2	0.0	0.2	-12.3	-14.5	-0.4	0.0	0.0	0.0	-0.1	0.0	0.5	0.0	-19.5	-15.2	-0.9
Swords Pavilion	-13.3	-11.3	-5.5	-37.6	-16.1	-12.4	1.8	-15.9	-13.3	-34.6	-11.0	-5.8	-47.2	3.1	2.5	3.4	-6.5	0.0	0.1	-2.8
Swords East	2.6	-1.0	3.1	-16.1	-19.5	3.7	0.1	-16.7	-14.9	-7.4	7.7	7.7	-1.5	6.7	2.5	3.4	4.4	0.0	0.0	0.8
Airport	-15.0	-16.4	-6.8	-25.7	-7.3	-22.5	6.0	-4.6	-2.0	-28.7	-6.9	15.3	-23.2	0.6	-5.0	3.4	1.1	-0.2	0.8	0.0

Journey Time 2045 DS - 2045 DM Business Case PM Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.0	-9.0	0.0	-0.2	-13.3	-0.5	0.2	0.0	0.0	-0.9	0.5	0.0	0.0	0.0	-18.7	-4.5	-18.3
St Stephen's Green	0.1	0.0	0.1	-1.9	-12.2	0.0	0.1	-16.9	-5.3	0.0	0.0	0.0	-0.1	-1.1	0.0	0.0	0.0	-14.8	-6.4	-22.9
College Street (Trinity)	0.0	0.0	0.0	0.4	-9.2	0.1	0.1	-13.7	0.4	0.1	0.0	0.0	0.2	1.2	0.0	0.0	0.0	-12.1	0.5	-8.2
Glasnevin	-1.4	-7.2	-0.1	0.0	-0.1	-7.5	-24.4	1.5	0.2	-15.0	0.3	0.3	-11.2	0.6	-6.5	-4.8	-9.1	-36.6	-20.7	-24.6
DCU	-3.2	-7.2	-4.0	0.1	0.0	-9.5	-0.1	0.0	0.5	-13.9	5.8	5.8	-13.0	-0.1	-10.8	-17.2	-1.5	-20.4	-12.6	-10.7
Rathgar Road	0.2	0.0	0.2	-4.4	-17.3	0.0	-0.7	-20.9	-3.4	0.0	-6.2	-6.7	-7.6	0.6	0.3	0.3	-0.8	-26.0	-1.4	-25.7
Coolock	0.3	0.4	0.4	-10.1	-0.3	0.5	0.0	0.0	0.5	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3	-0.1	0.0	-1.6
Ballymun	-8.6	-13.8	-8.5	2.6	0.0	-15.2	-0.4	0.0	0.5	-19.5	0.1	0.1	-11.2	-0.1	-16.5	-21.1	-8.3	-16.2	-3.7	-8.9
Finglas	-0.5	-6.5	-0.2	0.2	-0.1	-6.7	-0.3	-0.1	0.0	-13.1	2.9	2.8	0.0	0.3	3.9	-7.8	17.1	-15.9	-13.7	-8.6
Sandyford	-0.1	0.0	-0.2	-8.3	-17.0	-0.1	-2.2	-20.5	-5.5	0.0	-0.1	-0.1	-2.5	-5.5	-0.7	-0.7	-1.4	-21.8	-12.2	-25.9
Tallaght	0.0	0.0	0.0	7.2	-8.0	-3.0	0.2	-12.2	0.1	0.8	0.0	0.0	7.9	2.8	0.0	0.0	0.0	-11.9	-0.2	-15.3
Red Cow	0.0	0.0	0.0	3.4	-8.1	-0.2	-0.1	-12.1	0.3	1.2	0.0	0.0	-1.3	2.8	0.0	0.0	0.0	-11.9	1.2	10.8
Blanchardstown	1.6	0.0	0.7	-12.0	-3.5	-0.7	-0.1	-7.7	0.0	-1.9	0.1	0.1	0.0	1.1	0.0	0.0	0.0	-30.1	-7.3	-20.7
Ashbourne	0.3	0.3	0.3	0.2	1.0	0.2	1.2	3.3	0.0	-0.6	0.9	0.9	-6.8	0.0	-0.5	0.2	-0.2	4.1	7.2	14.1
Donabate	0.0	0.0	0.0	-6.3	-8.1	0.6	0.1	9.1	-3.2	-2.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2	0.2	-24.9
Balbriggan	-0.4	0.1	0.0	-9.0	-12.0	0.2	-0.2	-23.7	-17.4	-7.7	1.7	1.5	0.3	0.5	0.0	0.0	0.0	0.0	6.8	0.0
Drogheda	-5.1	0.0	0.0	-13.1	21.2	-3.6	-0.1	-13.5	-20.0	-11.5	0.0	0.0	0.0	-0.3	0.0	-0.1	0.0	-17.5	2.0	-0.5
Swords Pavilion	-23.7	-23.8	-14.8	-38.5	-16.3	-29.0	2.0	-15.4	-11.8	-47.9	-14.7	9.3	-31.1	-6.5	0.7	-0.5	-13.7	0.0	0.5	-3.2
Swords East	1.1	-2.4	2.6	-12.0	-1.1	-2.7	0.4	-0.6	3.1	-11.2	2.9	3.0	-2.3	-4.7	0.1	-0.5	0.1	-0.1	0.0	0.4
Airport	-15.8	-16.2	-6.1	-24.6	-7.1	-24.4	-0.7	-5.8	-2.1	-28.8	3.9	7.6	-21.2	6.9	-2.9	-0.5	-0.5	-0.3	1.9	0.0

Journey Time 2060 DS - 2060 DM Business Case AM Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.0	-7.9	0.0	0.4	-12.7	0.4	0.2	0.0	0.0	-0.9	-0.7	0.0	0.0	0.0	-27.5	-0.6	-22.8
St Stephen's Green	0.0	0.0	0.0	-2.8	-11.8	0.0	0.5	-14.9	-2.0	0.0	0.0	0.0	-2.3	-2.9	0.0	0.0	0.0	-33.4	-1.1	-16.3
College Street (Trinity)	0.0	0.0	0.0	0.3	-8.6	0.1	0.4	-13.0	0.5	0.1	0.0	0.0	-0.2	-0.4	0.0	0.0	0.0	-28.7	5.2	-10.8
Glasnevin	-4.1	-9.5	-3.2	0.0	0.0	-9.5	-7.9	2.0	0.3	-17.8	0.4	0.6	-11.7	-0.5	-4.9	-6.9	-7.3	-30.1	-10.7	-24.4
DCU	-5.4	-10.3	-5.3	0.1	0.0	-11.1	0.0	0.0	-0.1	-17.2	-3.2	-3.2	-12.6	-2.6	-23.0	-18.0	-2.1	-15.8	-15.6	-10.1
Rathgar Road	0.1	0.1	0.1	-4.6	-16.1	0.0	0.6	-19.4	-0.6	0.0	0.0	0.6	-6.9	-5.3	0.3	0.2	0.8	-34.3	-2.0	-24.2
Coolock	0.5	0.5	0.4	-6.8	-0.1	0.6	0.0	-0.7	-0.7	-1.0	0.7	0.6	0.5	-14.3	0.5	0.5	0.5	-0.3	0.4	-2.1
Ballymun	-9.6	-15.0	-8.9	2.6	0.0	-16.6	0.0	0.0	0.0	-20.8	-0.6	-0.6	-22.4	-2.3	-12.3	-22.2	-2.1	-12.5	-12.0	-8.2
Finglas	0.9	-4.1	1.1	2.1	0.0	-3.0	-0.1	0.0	0.0	-9.7	4.8	4.2	0.0	-0.8	0.5	-8.0	-10.5	-12.9	-13.6	-1.0
Sandyford	0.0	0.0	0.0	-7.7	-15.7	-0.1	-0.2	-18.4	-0.7	0.0	0.0	0.0	-4.6	-5.7	-0.3	-0.3	-0.1	-35.1	-2.3	-25.2
Tallaght	0.0	0.0	0.0	2.0	-5.9	0.0	0.4	-10.8	1.4	0.1	0.0	0.0	0.0	1.9	0.0	0.0	0.0	-24.4	6.1	-19.7
Red Cow	0.0	0.0	0.0	1.9	-5.8	0.0	0.4	-9.2	1.3	0.3	0.0	0.0	0.0	2.0	0.0	0.0	0.0	-23.1	7.3	-19.1
Blanchardstown	1.6	0.0	-0.4	-12.1	-2.6	-1.0	0.3	-8.2	0.0	-1.7	0.4	0.4	0.0	0.1	0.0	0.0	0.0	-23.7	-2.2	-21.3
Ashbourne	-2.7	-2.7	-2.7	-2.9	-2.5	-3.3	-1.8	-0.6	-3.2	-4.8	-1.8	-1.8	-18.0	0.0	-9.7	-16.4	23.6	-22.5	-18.5	3.1
Donabate	0.0	0.0	0.0	7.3	-6.8	1.1	0.3	-16.9	-7.8	-2.1	0.0	0.0	0.0	-17.3	0.0	0.0	0.0	-0.4	-1.1	-9.8
Balbriggan	0.0	0.0	0.0	-7.5	-6.1	1.1	0.3	-21.3	-4.1	-2.0	0.0	0.0	0.0	-0.9	0.0	0.0	-0.1	-7.9	-1.4	1.0
Drogheda	0.0	0.0	0.0	-5.8	2.0	1.1	2.0	4.6	-8.4	-1.8	-0.1	-0.1	0.0	-0.7	0.0	2.5	0.0	5.0	-1.4	1.8
Swords Pavilion	-19.3	-20.5	-11.6	-38.8	-15.4	-18.5	1.2	-15.7	-17.0	-23.7	-11.4	-11.4	-27.9	-33.5	0.6	0.8	-9.0	0.0	-0.1	-11.3
Swords East	1.5	2.6	7.8	-15.4	-14.2	1.6	-1.7	-14.3	-15.7	-4.9	5.9	5.6	-8.3	-24.6	0.7	0.9	0.6	-0.7	0.0	-6.4
Airport	-16.9	-9.7	-8.8	-29.0	-6.9	-27.7	0.2	-5.6	-7.0	-29.5	-5.4	17.5	-23.9	-18.0	-9.2	-1.1	-2.2	-0.4	1.0	0.0

Journey Time 2060 DS - 2060 DM Business Case LT Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connel Street	0.0	0.0	0.0	0.8	-5.4	0.8	0.4	-9.7	0.7	0.1	0.0	0.0	-0.1	-2.6	4.1	0.0	-12.2	-25.2	1.5	-22.1
St Stephen's Green	0.0	0.0	0.0	-1.0	-8.1	0.6	0.4	-12.5	0.0	0.0	0.0	0.0	-0.1	-4.4	-0.4	-1.1	-16.7	-32.0	0.9	-26.4
College Street (Trinity)	0.0	0.0	0.0	1.5	-4.8	0.8	0.4	-9.4	0.6	0.0	0.0	0.0	-0.1	-2.2	5.7	0.0	0.0	-25.9	7.5	-17.1
Glasnevin	-0.8	-7.0	0.9	0.0	0.0	-0.4	-4.7	2.4	0.0	-13.7	0.8	0.8	-11.7	-2.4	-1.9	-11.6	2.0	-28.5	-28.1	-25.7
DCU	-1.1	-6.0	-0.1	0.2	0.0	-7.5	-0.1	0.0	0.0	-12.3	-3.9	1.0	-16.8	-1.1	-20.5	-18.1	18.7	-14.9	-14.4	-10.3
Rathgar Road	-0.1	0.1	0.1	0.9	-13.4	0.0	0.4	-16.5	0.5	0.0	0.0	0.0	-0.1	-1.7	9.2	2.1	-0.2	-34.5	6.0	-31.5
Coolock	0.3	0.3	0.3	-10.1	0.0	1.0	0.0	0.0	0.1	0.2	0.1	0.2	0.4	-3.6	0.4	0.4	0.4	22.9	-0.1	-1.5
Ballymun	-6.4	-11.6	-5.6	2.7	0.1	-13.6	-2.1	0.0	0.1	-17.8	-3.0	2.4	-13.8	-1.0	-20.3	-21.2	-8.1	-12.7	-11.8	-8.9
Finglas	0.4	-1.5	0.4	0.2	-0.1	0.9	-2.4	-0.1	0.0	-8.7	-1.7	-1.7	0.1	-2.2	-14.4	-20.9	-8.8	-13.6	-12.9	-9.7
Sandyford	-0.1	0.0	-0.6	-7.4	-13.7	0.0	0.2	-17.0	-1.1	0.0	0.0	-0.1	-0.7	-7.9	0.9	-5.5	-15.4	-34.7	-4.4	-32.1
Tallaght	0.0	0.0	0.0	2.1	-3.2	-1.0	0.4	-6.9	1.0	-2.3	0.0	0.0	-0.1	-0.2	6.0	0.0	0.0	-24.6	5.7	-22.4
Red Cow	0.0	0.0	0.0	3.3	-3.2	-1.7	0.8	-7.0	1.0	-1.6	0.0	0.0	-0.1	0.1	5.9	0.0	0.0	-24.6	6.9	-11.0
Blanchardstown	-0.4	0.4	0.5	-11.7	-1.5	-0.9	0.4	-19.2	0.0	-2.9	0.5	0.5	0.0	0.1	5.8	0.0	1.0	-21.7	-18.3	-19.3
Ashbourne	1.4	1.4	1.4	1.2	2.2	2.4	3.1	3.6	1.0	0.5	2.1	2.1	-0.4	0.0	-6.2	0.5	-0.2	-14.6	-7.6	0.9
Donabate	0.5	-1.4	0.7	-14.0	-11.8	7.9	0.4	-12.0	-9.3	-3.9	0.0	0.0	0.4	-19.1	0.0	0.0	0.0	0.4	0.4	-5.8
Balbriggan	0.0	0.0	0.0	-11.5	-13.6	2.4	0.4	-4.4	-10.5	-4.9	0.0	0.0	0.0	0.5	0.0	0.0	0.6	0.5	0.7	-7.1
Drogheda	0.0	0.0	0.0	-8.0	25.7	0.6	0.4	6.7	2.0	0.3	0.0	0.0	0.0	-0.2	0.0	1.0	0.0	-13.2	-7.5	-6.9
Swords Pavilion	-16.7	-12.1	-6.4	-34.5	-15.1	-13.6	10.3	-15.5	-10.1	-40.8	-6.7	-6.7	-25.3	-2.9	0.7	0.9	1.5	0.0	0.0	-4.0
Swords East	2.4	-10.1	-4.6	-37.1	-17.8	-4.7	0.1	-18.0	-14.3	-22.6	-5.1	-5.0	-4.5	0.7	0.7	0.9	1.5	0.0	0.0	-0.4
Airport	-14.6	-19.1	-18.0	-26.8	-6.5	-20.0	6.7	-4.9	0.4	-27.8	-9.3	17.1	-24.8	-2.1	-6.2	1.0	-0.3	0.6	1.6	0.0

Journey Time 2060 DS - 2060 DM Business Case SR Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.4	-6.3	-1.3	0.5	-11.0	0.9	0.1	0.0	0.0	0.3	1.4	7.4	0.1	0.2	-32.2	0.3	-10.4
St Stephen's Green	-0.1	0.0	-0.1	-1.8	-9.4	-0.5	0.6	-13.5	-1.4	0.0	0.0	0.0	0.3	-1.1	3.0	0.1	-14.1	-36.4	-0.9	-12.1
College Street (Trinity)	0.0	0.0	0.0	0.9	-6.4	-0.5	0.5	-11.0	1.0	0.1	0.0	0.0	0.3	1.7	9.1	0.1	0.2	-22.2	5.9	-12.3
Glasnevin	-1.2	-7.9	0.5	0.0	0.2	-5.2	-3.8	2.4	0.8	-15.3	0.5	0.5	-15.6	1.8	1.7	-3.7	-13.3	-35.6	-38.8	-22.7
DCU	-2.2	-6.7	-1.7	0.2	0.0	-8.6	0.1	0.0	1.6	-12.9	0.4	0.4	-20.2	-11.4	-23.3	-12.5	16.6	-21.4	-19.6	-9.1
Rathgar Road	-0.1	0.1	0.1	-1.4	-15.0	0.0	0.6	-19.0	0.9	0.0	-0.3	-0.1	0.6	0.2	10.8	3.4	-2.4	-42.6	2.9	-19.9
Coolock	0.5	0.5	0.5	-10.9	0.1	-0.1	0.0	0.2	1.9	0.5	0.3	0.3	0.5	-0.5	0.2	0.6	0.6	25.4	0.4	5.3
Ballymun	-7.7	-12.9	-7.1	2.8	0.1	-14.5	-8.7	0.0	1.7	-18.8	1.2	1.2	1.7	-1.8	-42.4	-16.9	-6.1	-17.2	-16.4	-8.2
Finglas	0.3	-1.8	0.4	0.2	-0.8	-1.6	-1.2	-0.8	0.0	-8.0	-1.0	-1.7	0.1	1.0	-10.7	-14.7	-2.9	-14.0	-13.2	-5.0
Sandyford	-0.1	0.0	-0.5	-8.2	-14.8	0.0	-1.0	-18.6	-2.4	0.0	-0.1	-0.1	-0.1	-4.8	4.3	0.7	-12.7	-42.5	-4.2	-20.4
Tallaght	0.0	0.0	0.0	2.0	-5.4	-0.3	0.6	-9.6	1.6	5.7	0.0	0.0	0.3	4.2	6.1	0.1	0.1	-32.5	6.1	-14.3
Red Cow	0.0	0.0	0.0	3.6	-5.3	0.0	0.5	-9.4	1.7	-0.8	0.0	0.0	0.3	4.6	6.4	0.1	0.1	-32.4	6.2	4.3
Blanchardstown	0.2	0.5	0.5	-22.7	0.8	0.4	0.5	0.9	0.1	0.5	0.5	0.5	0.0	0.5	40.9	0.1	-0.8	2.9	-0.8	12.1
Ashbourne	-0.2	-0.2	-0.2	-0.4	-0.5	-1.1	1.1	0.9	-0.6	-1.1	0.3	0.2	0.0	0.0	-2.7	2.1	1.3	3.5	6.2	13.6
Donabate	0.7	-1.0	0.9	-8.1	-14.7	6.3	0.1	-12.8	-5.3	-3.6	0.0	0.0	0.5	-17.5	0.0	0.0	0.0	0.5	0.5	-3.1
Balbriggan	0.0	-0.7	0.0	-10.6	-18.0	3.5	0.5	-23.9	-8.5	-5.5	0.0	0.0	0.0	2.4	0.0	0.0	6.6	0.5	0.8	5.4
Drogheda	0.0	0.0	0.0	-9.3	37.1	-0.6	0.5	-4.2	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.8	0.0	-9.9	1.6	9.3
Swords Pavilion	-15.3	-12.2	-6.4	-37.1	-16.2	-15.7	2.3	-15.9	-8.9	-39.1	-13.0	-12.6	-49.3	1.3	3.0	3.8	-6.6	0.0	0.2	-2.7
Swords East	2.2	-0.9	3.2	-17.0	-18.3	2.8	0.3	-16.3	-11.1	-7.8	7.4	7.4	-1.8	4.9	3.2	3.8	-2.5	0.0	0.0	1.0
Airport	-16.0	-17.3	-7.5	-28.3	-7.5	-23.1	5.4	-4.7	2.3	-29.7	-10.7	16.3	-25.9	-1.2	-4.1	3.9	0.9	-0.2	0.8	0.0

Journey Time 2060 DS - 2060 DM Business Case PM Peak Period	O'Connell Street	St Stephen's Green	College Street (Trinity)	Glasnevin	DCU	Rathgar Road	Coolock	Ballymun	Finglas	Sandyford	Tallaght	Red Cow	Blanchardstown	Ashbourne	Donabate	Balbriggan	Drogheda	Swords Pavilion	Swords East	Airport
O'Connell Street	0.0	0.0	0.0	0.1	-8.6	-0.1	0.2	-12.9	-0.4	0.2	0.0	0.0	-0.9	1.5	0.0	0.0	0.0	-21.3	-5.4	-14.9
St Stephen's Green	0.0	0.0	0.1	-1.9	-11.7	0.1	0.5	-16.6	-5.2	0.0	0.0	0.0	-0.1	-1.0	0.0	0.0	0.0	-17.7	-9.0	-24.0
College Street (Trinity)	0.0	0.0	0.0	0.5	-8.7	0.4	0.5	-13.4	0.5	0.1	0.0	0.0	-0.1	1.0	0.0	0.0	0.0	-19.3	-2.0	-8.3
Glasnevin	-1.4	-7.3	-0.2	0.0	0.2	-7.7	-15.4	1.8	0.2	-15.3	0.1	0.5	-11.2	1.0	-4.2	-6.5	-6.5	-36.4	-28.0	-28.5
DCU	-3.6	-7.9	-3.5	0.2	0.0	-9.4	-0.4	0.0	-0.8	-14.6	-7.3	5.6	-10.8	-14.5	-11.0	-16.5	-6.9	-20.5	-16.6	-10.7
Rathgar Road	0.2	0.1	0.2	-4.4	-16.8	0.0	0.8	-20.4	-3.1	0.0	0.3	0.4	-7.8	1.7	-0.3	-0.3	-0.2	-28.1	-4.0	-27.1
Coolock	0.5	0.7	0.5	-10.2	-0.5	1.0	0.0	-0.6	-1.3	0.6	0.6	0.5	0.6	1.2	0.5	0.5	0.6	0.0	0.1	-1.3
Ballymun	-8.5	-13.8	-8.6	2.9	0.1	-15.1	-2.5	0.0	-0.7	-19.5	-7.0	-0.1	-10.5	-1.5	-16.8	-20.5	-7.8	-16.3	-15.5	-9.0
Finglas	-0.4	-6.5	-0.1	0.2	-0.1	-6.7	-0.5	-0.2	0.0	-13.3	3.0	3.0	0.0	0.6	11.1	-6.7	-14.6	-16.5	-15.7	-9.2
Sandyford	-0.1	0.0	-0.1	-8.2	-16.6	-0.1	-1.6	-20.0	-5.5	0.0	-0.1	-0.1	-2.9	-5.4	-0.6	-0.6	-0.6	-24.1	-14.1	-28.4
Tallaght	0.0	0.0	0.0	7.5	-7.8	-3.8	0.5	-12.1	0.4	0.8	0.0	0.0	-0.4	3.3	0.0	0.0	0.0	-13.8	-1.1	-16.8
Red Cow	0.0	0.0	0.0	3.7	-7.8	-0.2	0.2	-12.1	0.4	0.8	0.0	0.0	-0.5	3.3	0.0	0.0	0.0	-13.8	0.2	8.0
Blanchardstown	1.7	0.0	0.7	-12.0	-3.3	-0.7	1.9	-7.5	0.0	-2.2	-0.2	-0.2	0.0	0.6	0.0	0.0	0.0	-30.0	-7.7	-24.2
Ashbourne	0.4	0.4	0.4	0.2	1.3	0.4	1.9	3.7	0.1	-0.7	0.9	0.9	-6.9	0.0	-0.1	0.3	0.0	2.2	5.5	12.0
Donabate	0.0	0.0	0.0	-6.0	-8.0	0.8	0.5	-2.9	-2.7	-2.2	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.3	0.3	-25.1
Balbriggan	-0.2	0.1	0.0	-8.4	-12.7	0.8	0.3	-24.2	-15.5	-7.0	1.2	0.8	0.3	1.4	0.0	0.0	0.0	-0.2	6.7	0.0
Drogheda	0.0	0.0	0.0	-12.2	20.4	-1.4	0.1	-14.6	-17.7	-4.6	0.0	0.0	0.0	-0.4	0.0	0.1	0.0	-17.6	0.5	-1.3
Swords Pavilion	-34.7	-28.4	-19.1	-39.1	-18.5	-43.2	3.2	-16.2	-13.5	-48.6	-19.0	5.8	-31.8	-10.3	1.2	1.7	-12.5	0.0	0.9	-3.5
Swords East	0.3	-2.8	2.2	-12.4	-2.8	-3.1	0.1	-1.2	1.6	-11.6	2.6	2.6	-2.7	-4.1	0.1	-2.0	0.1	-0.1	0.0	0.1
Airport	-17.3	-18.8	-7.8	-27.6	-7.8	-26.3	1.1	-5.9	-3.2	-31.9	-5.1	10.0	-22.9	3.3	-1.9	1.7	0.2	-0.2	1.0	0.0

Transfers to/from MetroLink Stations

2030 Business Case Core Run - LT Peak Period								
Station	Transfers to MetroLink				Transfers from MetroLink			
	First Boarders	From Bus	From Rail/DART	From Luas	Final Destination	To Bus	To Rail/DART	To Luas
Estuary Park-and-Ride	682	187	-	-	474	123	-	-
Seatown	191	12	-	-	224	3	-	-
Swords Central	247	33	-	-	206	73	-	-
Fosterstown	204	55	-	-	177	9	-	-
Dublin Airport	1,978	73	-	-	1,683	36	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	158	5	-	-	127	16	-	-
Ballymun	365	25	-	-	257	26	-	-
Collins Avenue	260	44	-	-	268	91	-	-
Griffiths Park	95	0	-	-	119	1	-	-
Glasnevin	115	132	53	-	120	74	51	-
Mater	174	87	-	-	181	90	-	-
O Connell Street	287	86	-	245	348	14	-	364
Tara	417	323	159	1	632	425	178	0
SSG	420	6	-	-	592	263	-	-
Charlemont	320	295	-	361	389	136	-	324

2030 Business Case Core Run - SR Peak Period								
Station	Transfers to MetroLink				Transfers from MetroLink			
	First Boarders	From Bus	From Rail/DART	From Luas	Final Destination	To Bus	To Rail/DART	To Luas
Estuary Park-and-Ride	357	140	-	-	571	286	-	-
Seatown	193	5	-	-	286	7	-	-
Swords Central	193	28	-	-	331	153	-	-
Fosterstown	157	33	-	-	295	26	-	-
Dublin Airport	2,370	33	-	-	1,577	73	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	120	5	-	-	202	13	-	-
Ballymun	271	21	-	-	397	48	-	-
Collins Avenue	460	34	-	-	243	104	-	-
Griffiths Park	169	0	-	-	122	1	-	-
Glasnevin	102	104	43	-	134	120	79	-

Mater	186	87	-	-	185	86	-	-
O Connell Street	364	69	-	314	293	8	-	418
Tara	636	278	208	1	451	448	253	0
SSG	597	59	-	-	434	217	-	-
Charlemont	369	288	-	426	326	154	-	381

2030 Business Case Core Run - PM Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	461	112	-	-	1,756	351	-	-
Seatown	475	5	-	-	596	13	-	-
Swords Central	383	27	-	-	779	507	-	-
Fosterstown	266	57	-	-	668	203	-	-
Dublin Airport	2,722	64	-	-	1,438	148	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	217	16	-	-	505	64	-	-
Ballymun	366	27	-	-	998	228	-	-
Collins Avenue	800	61	-	-	604	281	-	-
Griffiths Park	287	0	-	-	288	3	-	-
Glasnevin	151	250	187	-	272	426	622	-
Mater	402	153	-	-	300	103	-	-
O Connell Street	880	93	-	355	317	14	-	396
Tara	1,565	592	357	2	417	762	462	0
SSG	1,772	86	-	-	383	331	-	-
Charlemont	1,025	442	-	809	514	240	-	475

2045 Business Case Core Run - AM Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	1,088	1,050	-	-	88	111	-	-
Seatown	1,198	158	-	-	540	4	-	-
Swords Central	1,328	251	-	-	403	69	-	-
Fosterstown	1,523	482	-	-	327	30	-	-
Dublin Airport	2,206	105	-	-	4,671	46	-	-
Dardistown and M50	-	-	-	-	-	-	-	-

Northwood	876	13	-	-	321	80	-	-
Ballymun	1,822	268	-	-	455	63	-	-
Collins Avenue	990	140	-	-	1,293	274	-	-
Griffiths Park	351	0	-	-	532	2	-	-
Glasnevin	342	912	1,094	-	265	186	260	-
Mater	379	263	-	-	566	166	-	-
O Connell Street	411	186	-	766	1,160	26	-	566
Tara	469	678	777	0	2,429	1,200	625	1
SSG	405	75	-	-	2,456	883	-	-
Charlemont	545	601	-	960	1,343	354	-	920

2045 Business Case Core Run - LT Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	747	247	-	-	497	165	-	-
Seatown	242	18	-	-	277	5	-	-
Swords Central	341	45	-	-	279	95	-	-
Fosterstown	257	77	-	-	221	12	-	-
Dublin Airport	2,966	88	-	-	2,670	46	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	226	6	-	-	176	21	-	-
Ballymun	521	32	-	-	350	32	-	-
Collins Avenue	304	59	-	-	320	120	-	-
Griffiths Park	119	0	-	-	151	1	-	-
Glasnevin	152	178	93	-	174	101	98	-
Mater	228	118	-	-	248	143	-	-
O Connell Street	379	140	-	412	470	20	-	534
Tara	559	499	227	2	826	613	247	0
SSG	507	9	-	-	727	343	-	-
Charlemont	405	397	-	495	500	170	-	442

2045 Business Case Core Run - SR Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	501	146	-	-	1,424	313	-	-

Seatown	289	7	-	-	347	10	-	-
Swords Central	312	33	-	-	422	199	-	-
Fosterstown	212	40	-	-	375	28	-	-
Dublin Airport	3,623	36	-	-	2,361	83	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	160	7	-	-	273	17	-	-
Ballymun	360	44	-	-	536	56	-	-
Collins Avenue	527	22	-	-	280	140	-	-
Griffiths Park	203	0	-	-	143	1	-	-
Glasnevin	137	131	73	-	160	155	137	-
Mater	260	117	-	-	230	126	-	-
O Connell Street	539	108	-	490	388	11	-	608
Tara	967	410	271	2	636	629	362	0
SSG	865	72	-	-	570	266	-	-
Charlemont	509	365	-	571	426	188	-	511

2045 Business Case Core Run - PM Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	69	123	-	-	185	415	-	-
Seatown	367	5	-	-	705	23	-	-
Swords Central	367	30	-	-	948	591	-	-
Fosterstown	257	65	-	-	818	215	-	-
Dublin Airport	3,234	59	-	-	1,926	169	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	264	13	-	-	652	75	-	-
Ballymun	471	29	-	-	1,355	254	-	-
Collins Avenue	835	63	-	-	676	312	-	-
Griffiths Park	318	0	-	-	325	4	-	-
Glasnevin	172	288	279	-	300	497	851	-
Mater	458	174	-	-	337	101	-	-
O Connell Street	914	119	-	465	338	16	-	527
Tara	1,599	669	424	2	427	872	570	1

SSG	1,757	95	-	-	364	345	-	-
Charlemont	1,171	508	-	928	562	267	-	572

2060 Business Case Core Run - AM Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	1,142	1,361	-	-	62	139	-	-
Seatown	1,449	234	-	-	696	5	-	-
Swords Central	1,825	387	-	-	674	95	-	-
Fosterstown	2,017	685	-	-	428	47	-	-
Dublin Airport	3,400	107	-	-	7,077	54	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	1,138	16	-	-	399	99	-	-
Ballymun	2,363	302	-	-	562	65	-	-
Collins Avenue	1,129	176	-	-	1,438	314	-	-
Griffiths Park	422	1	-	-	612	2	-	-
Glasnevin	412	1,109	1,724	-	320	227	412	-
Mater	493	305	-	-	725	216	-	-
O Connell Street	582	244	-	1,084	1,488	19	-	751
Tara	606	902	1,075	0	3,092	1,612	793	2
SSG	489	82	-	-	2,973	1,091	-	-
Charlemont	673	702	-	1,186	1,729	435	-	1,170

2060 Business Case Core Run - LT Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	1,158	280	-	-	471	207	-	-
Seatown	300	24	-	-	369	7	-	-
Swords Central	438	54	-	-	393	124	-	-
Fosterstown	311	94	-	-	280	14	-	-
Dublin Airport	4,465	100	-	-	3,871	49	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	307	8	-	-	237	29	-	-
Ballymun	688	39	-	-	457	40	-	-
Collins Avenue	354	72	-	-	370	162	-	-

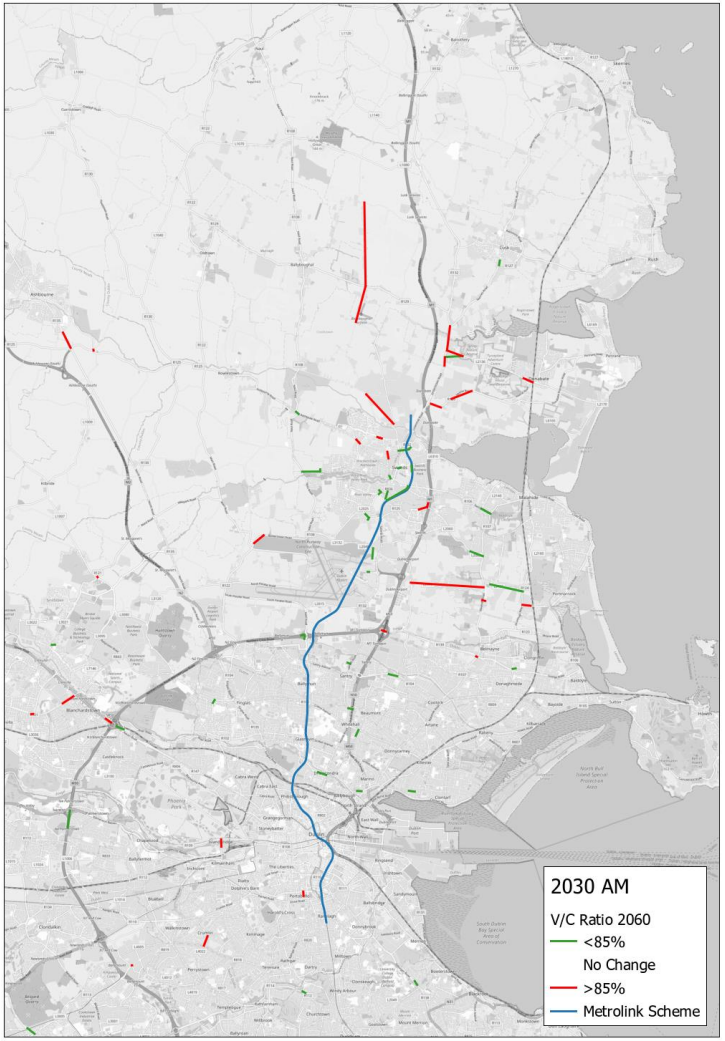
Griffiths Park	146	1	-	-	185	1	-	-
Glasnevin	190	231	150	-	228	147	171	-
Mater	289	161	-	-	334	212	-	-
O Connell Street	475	202	-	608	645	26	-	788
Tara	718	709	311	3	1,178	917	354	1
SSG	594	17	-	-	971	451	-	-
Charlemont	499	513	-	651	648	217	-	602

2060 Business Case Core Run - SR Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	687	170	-	-	1,711	481	-	-
Seatown	346	8	-	-	450	15	-	-
Swords Central	424	40	-	-	546	269	-	-
Fosterstown	265	52	-	-	498	35	-	-
Dublin Airport	4,727	31	-	-	3,168	133	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	209	7	-	-	362	23	-	-
Ballymun	467	53	-	-	698	65	-	-
Collins Avenue	603	29	-	-	331	142	-	-
Griffiths Park	246	1	-	-	172	1	-	-
Glasnevin	177	162	99	-	195	191	202	-
Mater	354	135	-	-	286	177	-	-
O Connell Street	704	157	-	684	513	20	-	794
Tara	1,313	552	343	4	836	830	464	1
SSG	1,075	91	-	-	709	317	-	-
Charlemont	649	454	-	727	534	230	-	648

2060 Business Case Core Run - PM Peak Period								
Station	**Transfers to MetroLink**				**Transfers from MetroLink**			
	First Boarders	**From Bus**	**From Rail/DART**	**From Luas**	**Final Destination**	**To Bus**	**To Rail/DART**	**To Luas**
Estuary Park-and-Ride	391	138	-	-	974	533	-	-
Seatown	553	6	-	-	955	19	-	-
Swords Central	640	39	-	-	1,328	761	-	-
Fosterstown	349	78	-	-	1,113	254	-	-

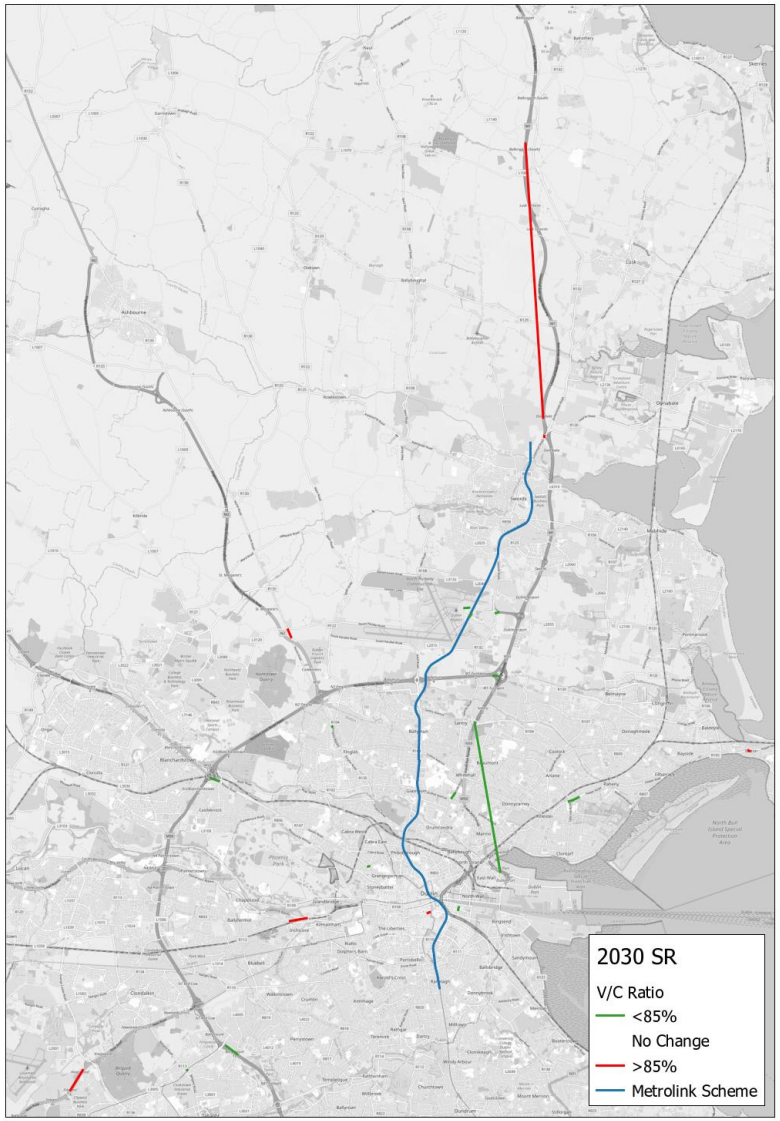
Dublin Airport	5,085	71	-	-	2,877	199	-	-
Dardistown and M50	-	-	-	-	-	-	-	-
Northwood	346	17	-	-	828	92	-	-
Ballymun	611	35	-	-	1,740	294	-	-
Collins Avenue	914	76	-	-	773	367	-	-
Griffiths Park	366	0	-	-	377	5	-	-
Glasnevin	204	355	404	-	357	632	1,324	-
Mater	572	207	-	-	419	117	-	-
O Connell Street	1,245	161	-	639	476	21	-	784
Tara	2,252	894	532	3	628	1,148	824	1
SSG	2,286	114	-	-	514	387	-	-
Charlemont	1,523	636	-	1,180	715	331	-	756

A.6 Volume Capacity Ratio

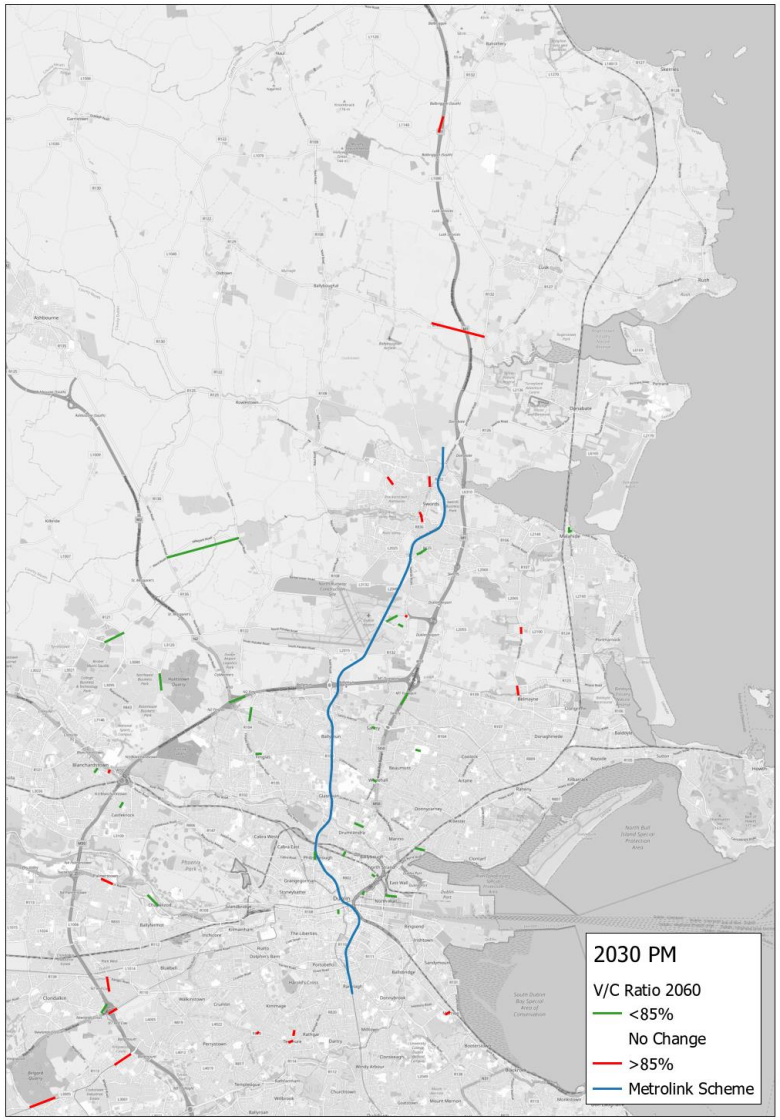


2030 Business Case Core Run – AM Peak Period

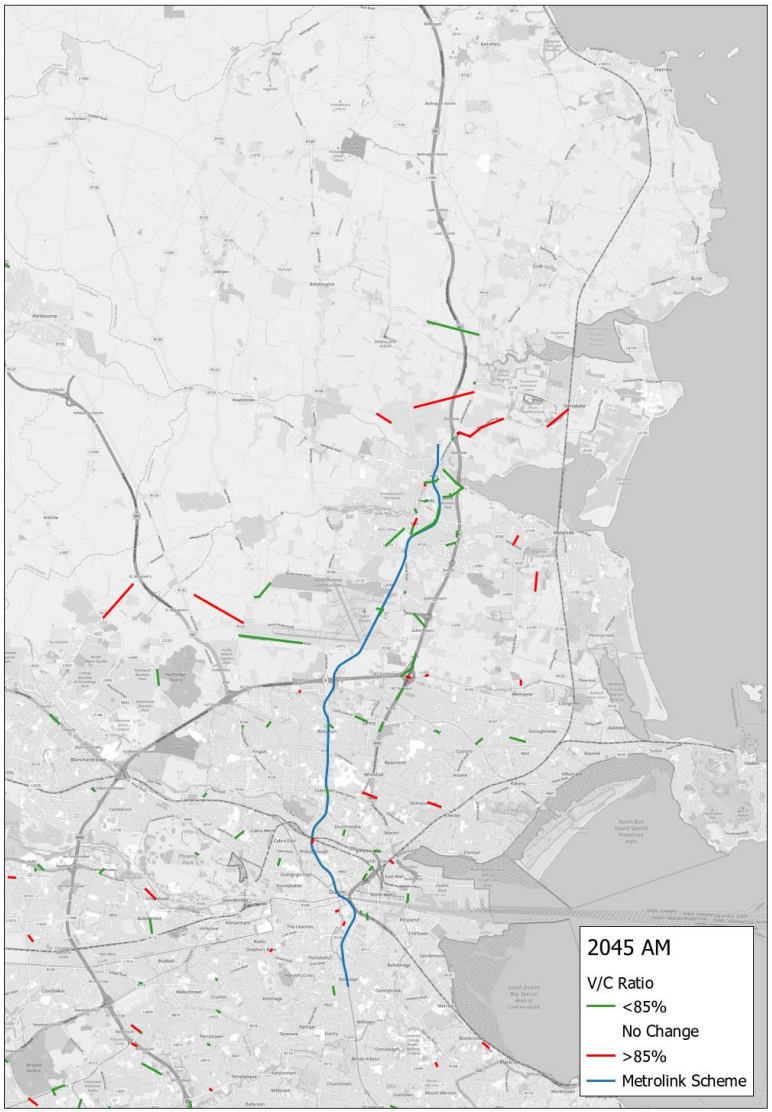
2030 Business Case Core Run – LT Peak Period



2030 Business Case Core Run – SR Peak Period

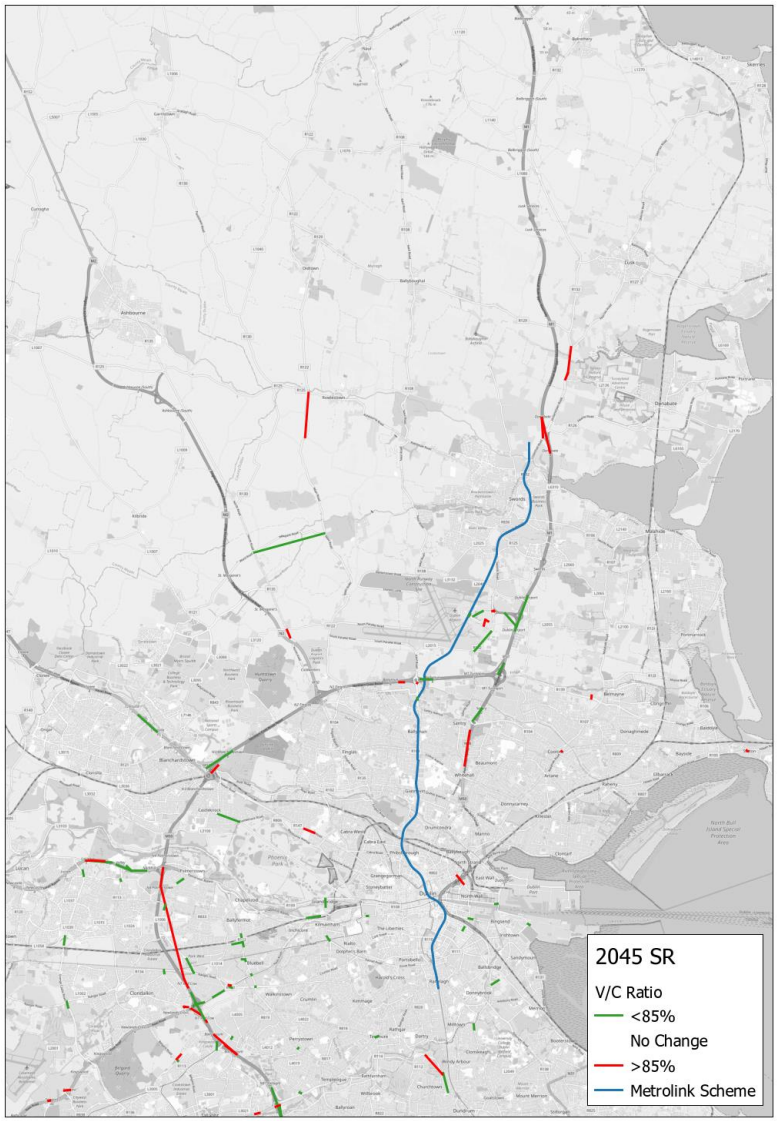


2030 Business Case Core Run – PM Peak Period

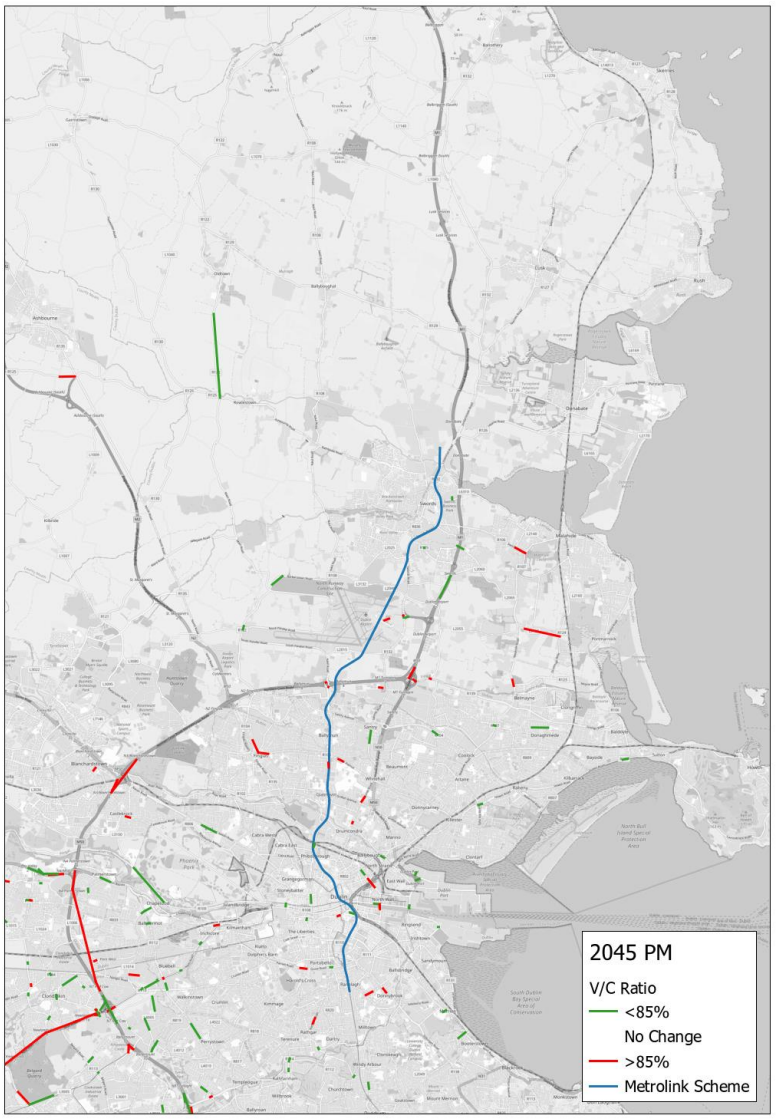


2045 Business Case Core Run – AM Peak Period

2045 Business Case Core Run – LT Peak Period



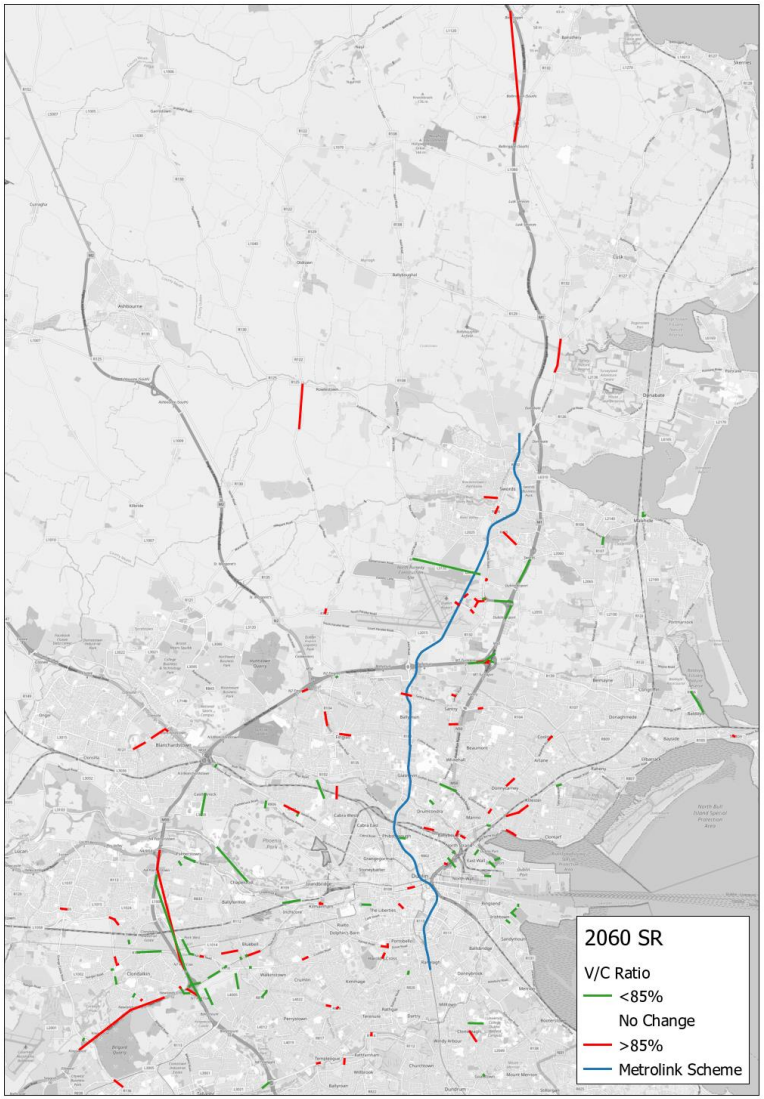
2045 Business Case Core Run – SR Peak Period



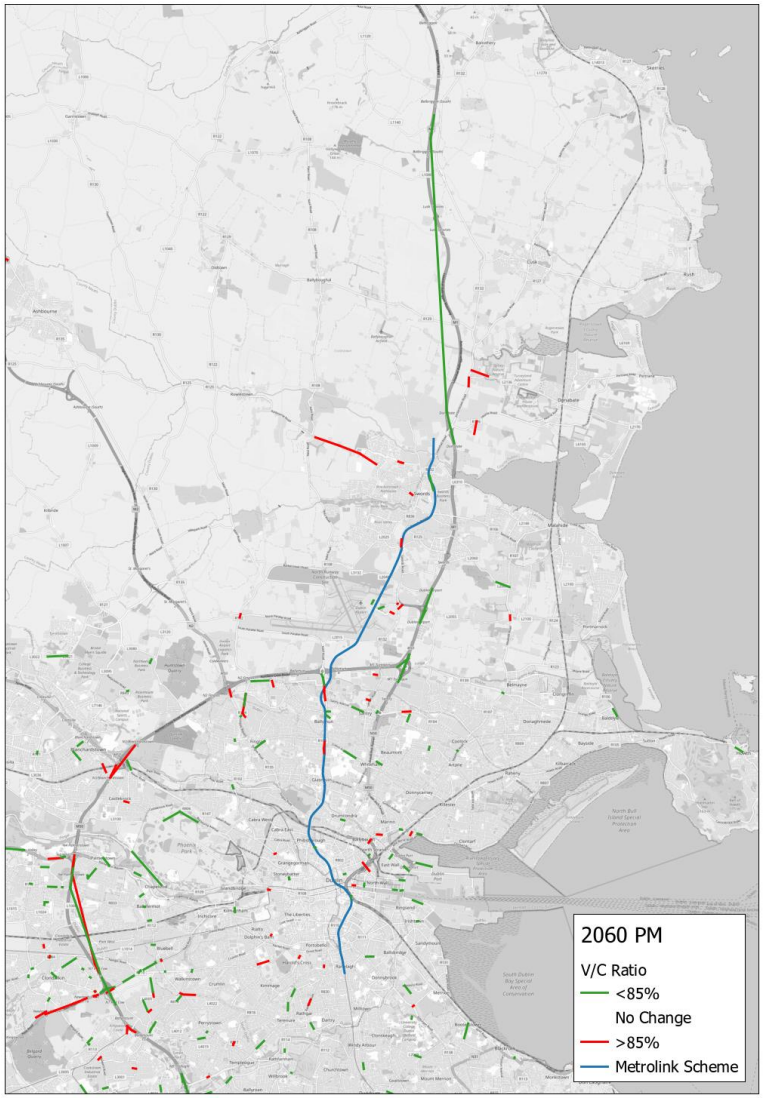
2045 Business Case Core Run – PM Peak Period

2060 Business Case Core Run – AM Peak Period

2060 Business Case Core Run – LT Peak Period

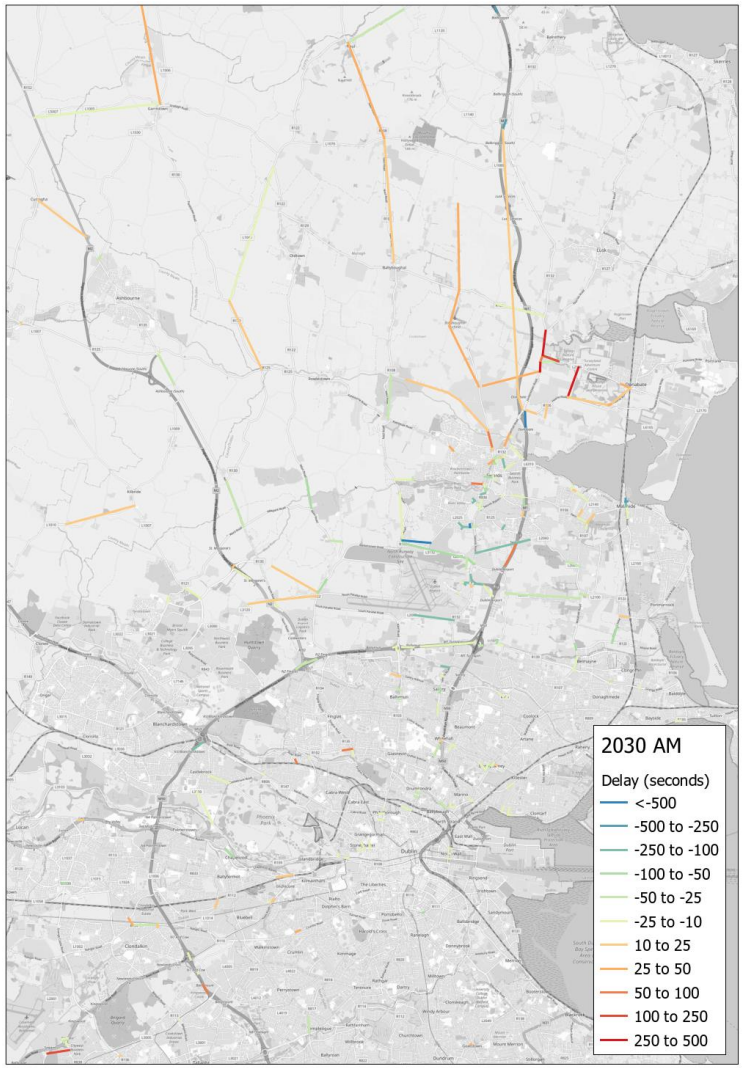


2060 Business Case Core Run – SR Peak Period



2060 Business Case Core Run – PM Peak Period

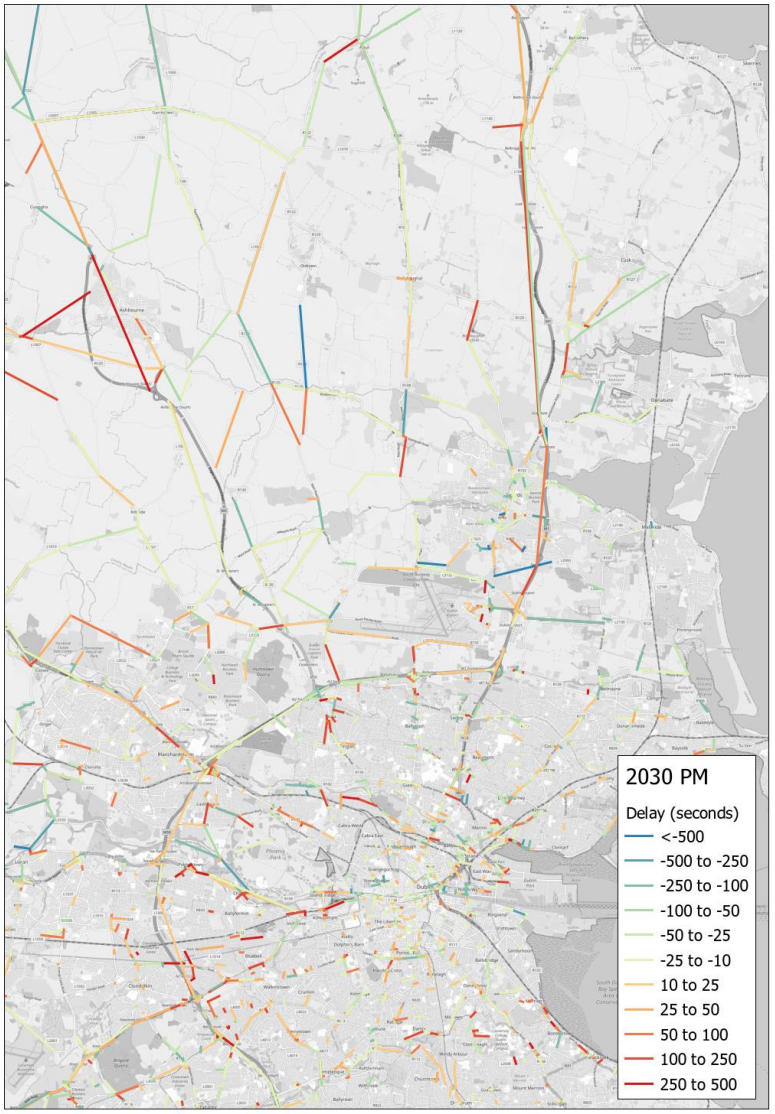
A.7 Delays



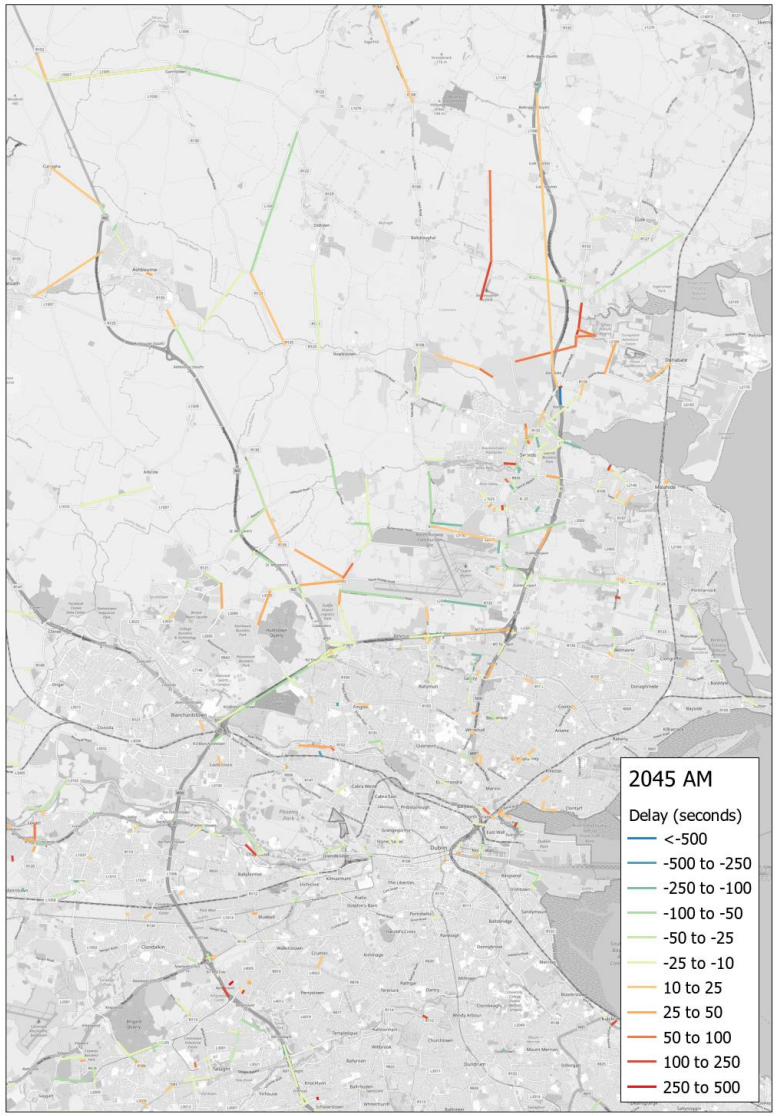
2030 Business Case Core Run – AM Peak Period

2030 Business Case Core Run – LT Peak Period

2030 Business Case Core Run – SR Peak Period



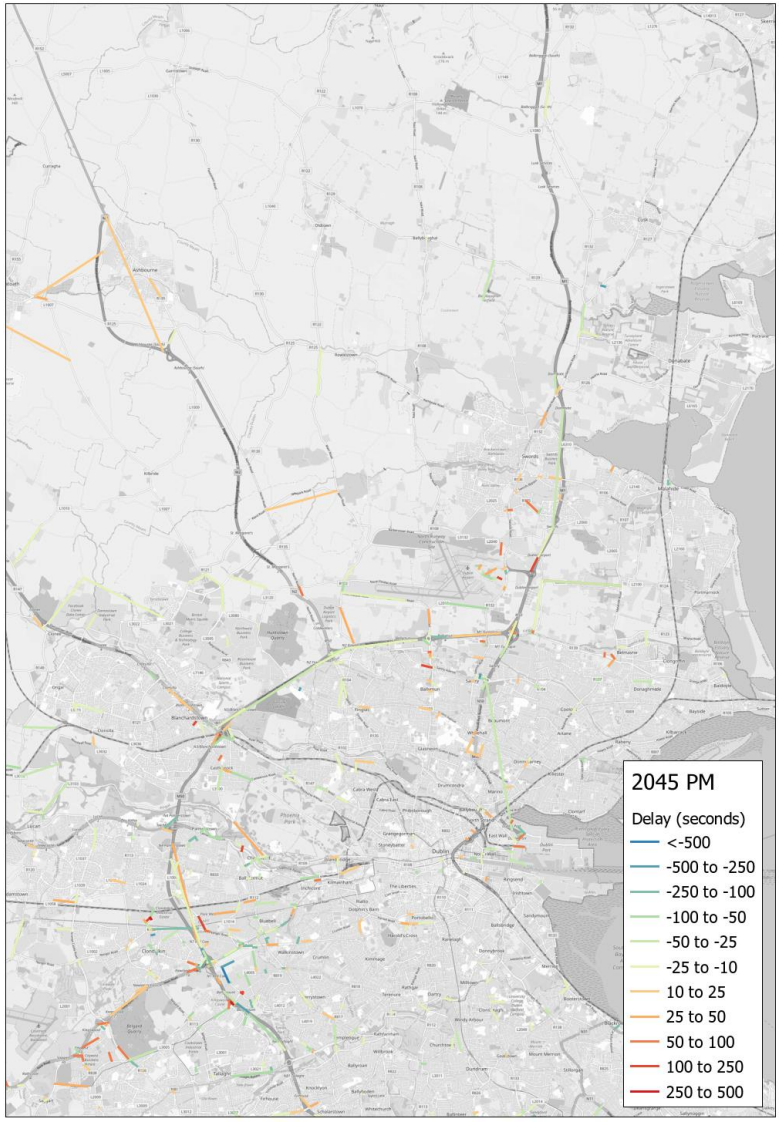
2030 Business Case Core Run – PM Peak Period



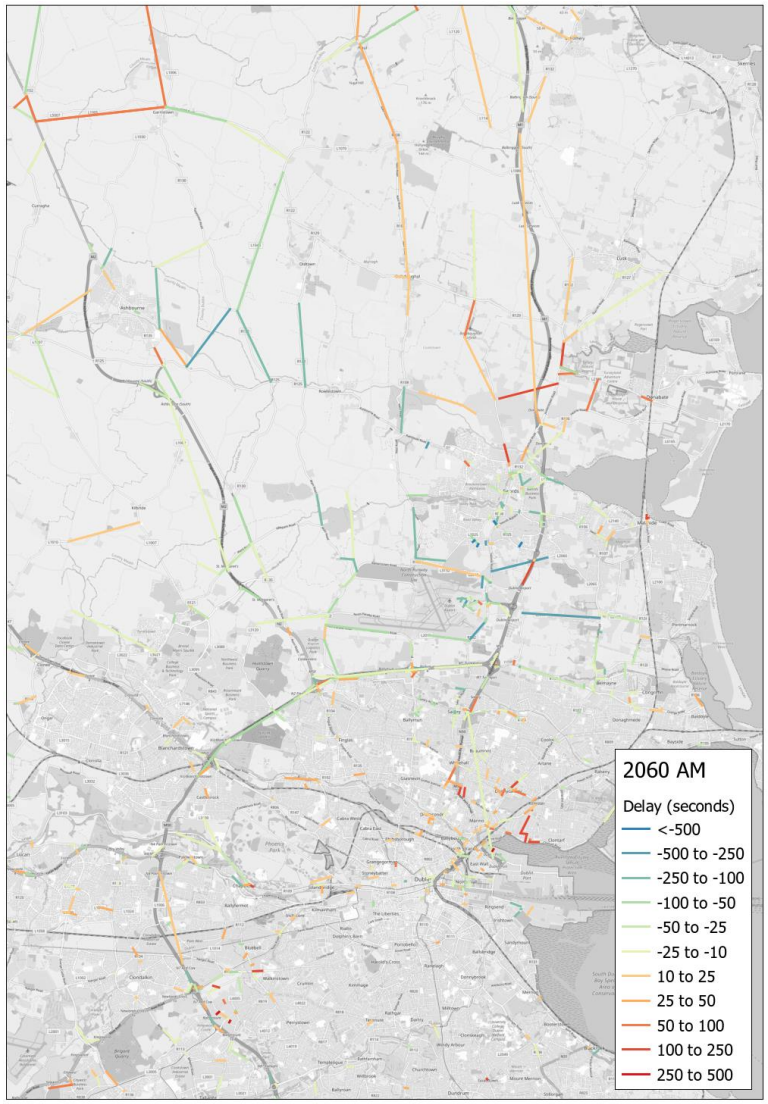
2045 Business Case Core Run – AM Peak Period

2045 Business Case Core Run – LT Peak Period

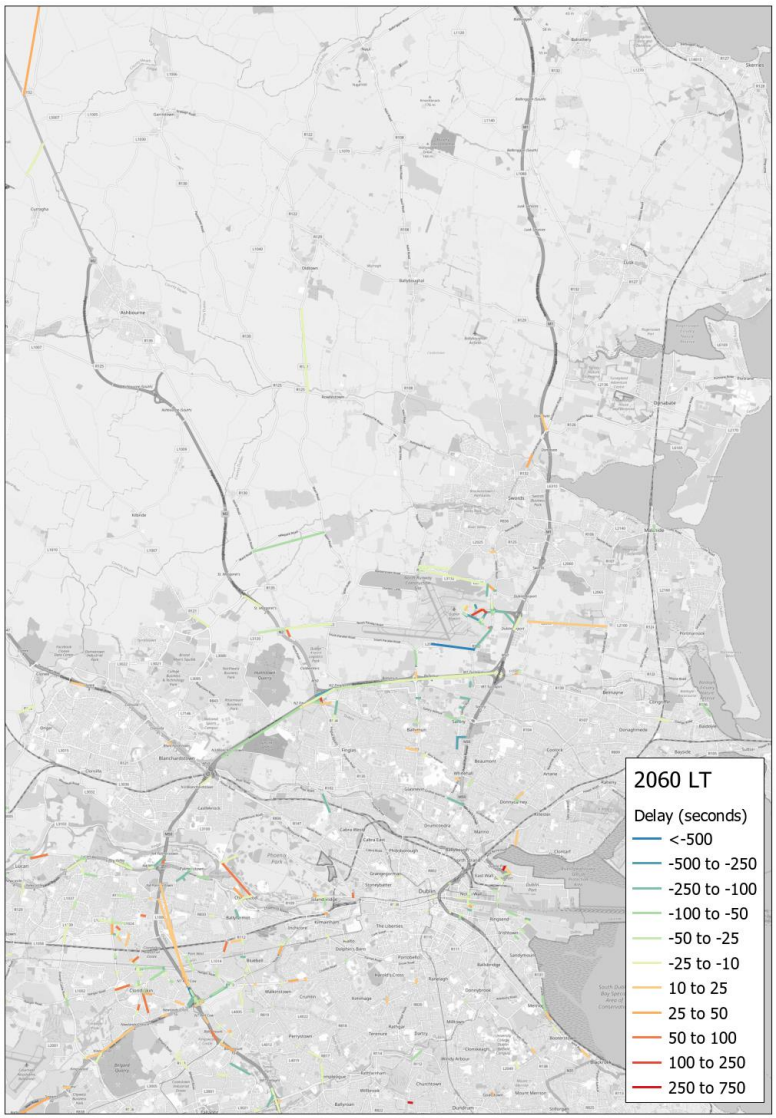
2045 Business Case Core Run – SR Peak Period



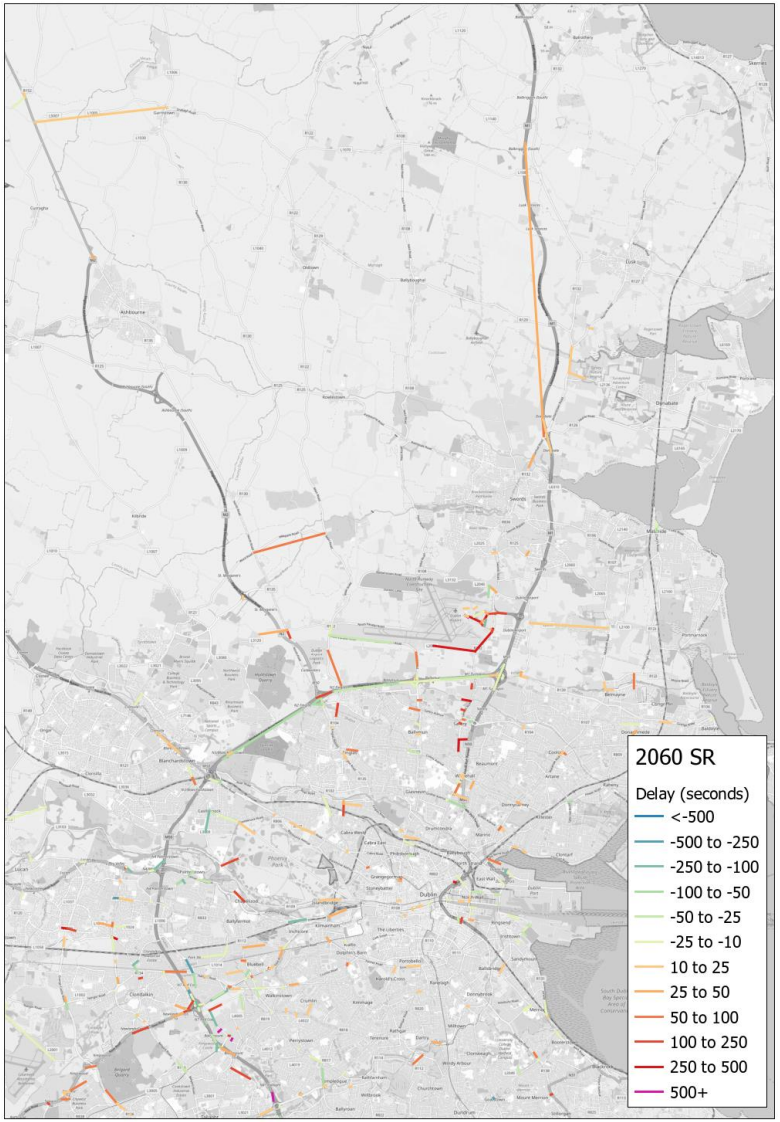
2045 Business Case Core Run – PM Peak Period



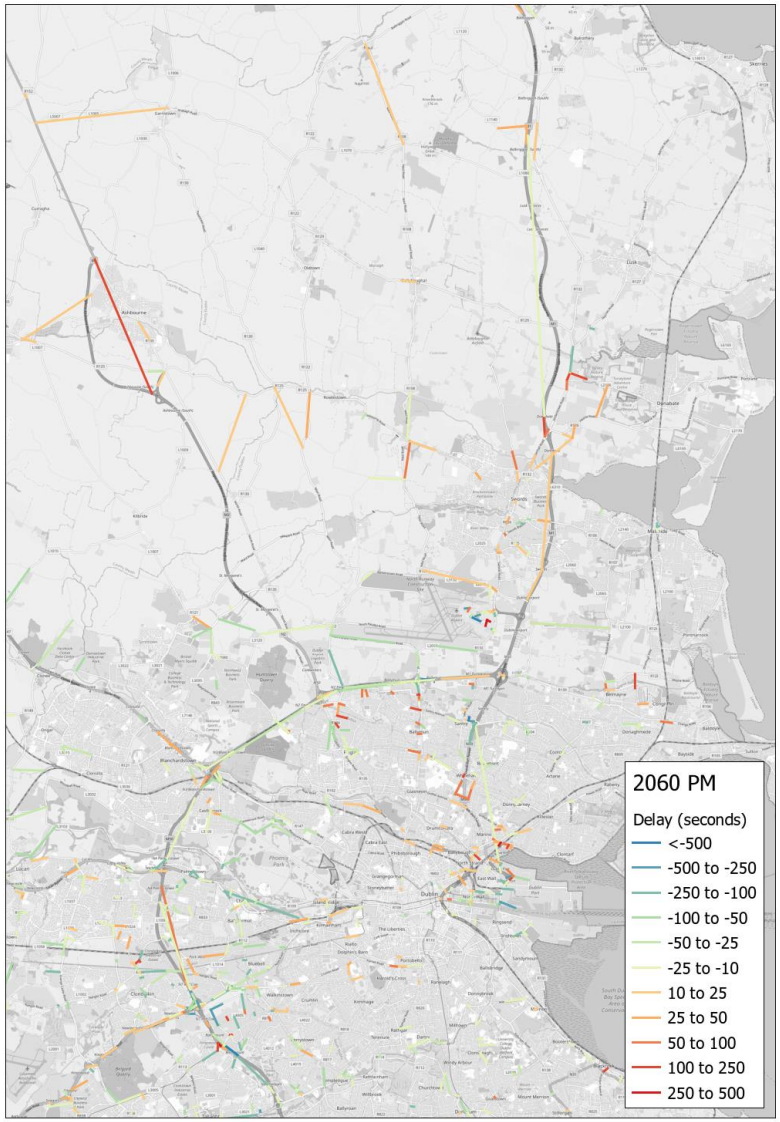
2060 Business Case Core Run – AM Peak Period



2060 Business Case Core Run – LT Peak Period



2060 Business Case Core Run – SR Peak Period



2060 Business Case Core Run – PM Peak Period

Appendix B. Modelling Results: Sensitivity Analysis

B.1 Slow Growth - Boardings, Alightings and Loading Profile

2030 Slow Growth - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1831	0	1831	940	0	940	1053	0	1053	2201	0	2201
St Stephen's Green	408	43	2196	414	8	1346	653	4	1702	1760	5	3955
Tara	1393	165	3423	829	48	2128	1080	49	2733	2284	313	5926
O'Connell Street	961	42	4342	560	15	2673	702	18	3416	1200	46	7079
Mater	327	151	4518	182	57	2798	211	77	3550	378	186	7271
Glasnevin	610	268	4860	142	103	2837	131	169	3512	302	835	6738
Griffith Park	50	281	4629	29	65	2801	77	78	3511	124	233	6629
Collins Avenue	136	731	4035	74	181	2694	248	232	3526	445	743	6331
Ballymun	155	330	3860	70	209	2555	58	347	3238	79	1032	5378
Northwood	107	244	3723	41	92	2504	34	152	3120	67	449	4996
Dardistown and M50	0	0	3723	0	0	2504	0	0	3120	0	0	4996
Dublin Airport	49	2753	1019	91	1517	1078	155	1476	1798	458	1366	4089
Fosterstown	25	262	781	26	149	956	32	287	1544	58	799	3348
Swords Central	18	273	526	34	232	758	41	441	1144	111	1198	2261
Seatown	3	353	177	23	183	598	48	247	945	177	535	1902
Estuary Park-and-Ride	0	177	0	0	598	0	0	945	0	0	1902	0
2030 Slow Growt - Southbound Direction												
Estuary Park-and-Ride	2689	0	2689	882	0	882	534	0	534	532	0	532
Seatown	1061	137	3614	174	36	1020	150	38	646	280	45	767
Swords Central	1247	116	4745	234	38	1216	174	25	795	262	34	995
Fosterstown	1585	56	6273	226	32	1411	155	21	929	255	27	1224
Dublin Airport	1569	713	7129	1828	88	3150	2105	75	2959	2136	123	3236
Dardistown and M50	0	0	7129	0	0	3150	0	0	2959	0	0	3236
Northwood	547	103	7573	115	45	3221	86	53	2992	159	99	3296
Ballymun	1363	104	8832	302	62	3461	223	79	3136	300	136	3460
Collins Avenue	889	689	9032	224	166	3518	235	106	3265	393	129	3724
Griffith Park	274	187	9119	65	51	3531	87	42	3309	157	54	3827
Glasnevin	1286	310	10096	147	133	3546	110	150	3270	268	440	3656
Mater	216	470	9842	69	201	3414	52	185	3137	157	210	3603
O'Connell Street	80	1432	8490	25	679	2760	27	670	2494	61	648	3016
Tara	124	3482	5132	35	1150	1645	33	1065	1462	114	1273	1858
St Stephen's Green	2	2970	2164	4	829	820	10	640	832	25	687	1195
Charlemont	0	2164	0	0	820	0	0	832	0	0	1195	0

2045 Slow Growth - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2015	0	2015	1182	0	1182	1332	0	1332	2451	0	2451
St Stephen's Green	452	44	2423	476	9	1649	881	4	2209	1746	5	4192
Tara	1649	185	3886	1100	56	2693	1491	56	3644	2388	340	6240
O'Connell Street	1170	44	5012	785	18	3460	996	20	4620	1320	49	7510
Mater	386	155	5244	241	74	3627	291	81	4829	439	192	7758
Glasnevin	779	279	5744	203	139	3691	186	187	4828	394	969	7183
Griffith Park	57	301	5500	37	72	3656	97	84	4842	143	256	7071
Collins Avenue	152	769	4882	90	204	3542	302	253	4891	499	806	6764
Ballymun	203	364	4722	94	264	3372	75	432	4534	103	1306	5560
Northwood	137	261	4598	55	116	3311	45	187	4393	79	549	5090
Dardistown and M50	0	0	4598	0	0	3311	0	0	4393	0	0	5090
Dublin Airport	65	3516	1148	129	2198	1242	278	2059	2611	281	1788	3583
Fosterstown	41	294	895	28	177	1093	53	341	2324	22	931	2674
Swords Central	26	330	590	39	294	837	93	536	1881	38	1401	1312
Seatown	4	413	180	25	226	636	95	300	1675	43	661	693
Estuary Park-and-Ride	0	180	0	0	636	0	0	1675	0	0	693	0
2045 Slow Growth - Southbound Direction												
Estuary Park-and-Ride	2234	0	2234	969	0	969	651	0	651	220	0	220
Seatown	1247	104	3377	218	32	1155	182	29	804	327	12	535
Swords Central	1465	111	4731	315	41	1430	224	29	1000	338	26	847
Fosterstown	1847	43	6535	284	37	1676	181	27	1154	285	23	1109
Dublin Airport	1797	751	7580	2231	111	3797	2571	86	3639	2413	77	3445
Dardistown and M50	0	0	7580	0	0	3797	0	0	3639	0	0	3445
Northwood	681	118	8143	153	58	3892	108	73	3674	182	119	3508
Ballymun	1719	128	9734	405	82	4215	278	106	3846	359	175	3692
Collins Avenue	943	782	9895	250	205	4260	256	130	3971	391	139	3944
Griffith Park	285	217	9963	72	64	4268	96	50	4017	166	60	4049
Glasnevin	1430	366	11028	179	186	4261	129	197	3949	288	529	3809
Mater	240	528	10740	77	273	4066	57	226	3780	159	217	3751
O'Connell Street	94	1553	9280	29	846	3249	29	828	2981	66	718	3099
Tara	143	3843	5581	44	1395	1898	40	1314	1707	131	1311	1918
St Stephen's Green	3	3144	2440	5	936	967	8	738	978	25	657	1287
Charlemont	0	2440	0	0	967	0	0	978	0	0	1287	0

2060 Slow Growth - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2337	0	2337	1449	0	1449	1654	0	1654	2978	0	2978
St Stephen's Green	524	56	2805	490	12	1927	1011	6	2660	2063	7	5034
Tara	2009	240	4575	1345	74	3198	1815	74	4400	2987	405	7616
O'Connell Street	1457	66	5966	1016	27	4187	1269	28	5642	1661	66	9212
Mater	458	179	6245	298	91	4394	372	99	5915	532	226	9518
Glasnevin	1016	311	6950	273	165	4502	252	226	5941	518	1195	8841
Griffith Park	72	322	6700	48	88	4462	121	97	5965	166	284	8723
Collins Avenue	183	824	6060	110	232	4340	332	292	6005	525	905	8343
Ballymun	267	411	5915	127	324	4142	98	540	5563	134	1610	6868
Northwood	180	295	5800	75	142	4075	59	237	5386	101	671	6298
Dardistown and M50	0	0	5800	0	0	4075	0	0	5386	0	0	6298
Dublin Airport	124	4528	1396	239	3019	1294	487	2771	3102	395	2393	4300
Fosterstown	51	356	1091	23	224	1093	52	443	2711	23	1180	3143
Swords Central	33	415	709	34	392	735	119	698	2132	36	1714	1466
Seatown	5	490	224	18	294	460	105	381	1856	28	840	653
Estuary Park-and-Ride	0	224	0	0	460	0	0	1856	0	0	653	0
2060 Slow Growth - Southbound Direction												
Estuary Park-and-Ride	2518	0	2518	503	0	503	706	0	706	209	0	209
Seatown	1536	120	3934	266	15	754	223	28	901	380	9	580
Swords Central	1778	155	5557	395	26	1124	285	31	1155	424	29	975
Fosterstown	2275	49	7782	342	26	1440	224	31	1349	343	33	1285
Dublin Airport	2620	1030	9372	3487	139	4788	3993	116	5225	3498	101	4682
Dardistown and M50	0	0	9372	0	0	4788	0	0	5225	0	0	4682
Northwood	850	149	10073	197	87	4898	136	111	5249	212	161	4733
Ballymun	2133	161	12044	513	118	5293	345	150	5444	434	233	4934
Collins Avenue	1060	834	12271	284	252	5324	279	188	5535	413	176	5171
Griffith Park	325	259	12336	85	82	5327	107	65	5577	179	76	5273
Glasnevin	1731	508	13560	216	287	5256	155	313	5420	330	735	4868
Mater	305	658	13206	95	361	4990	67	327	5160	180	264	4784
O'Connell Street	132	1943	11394	39	1102	3926	38	1166	4032	84	972	3895
Tara	195	4796	6793	63	1721	2268	55	1871	2216	169	1746	2318
St Stephen's Green	4	3774	3023	7	1029	1246	13	939	1291	43	773	1588
Charlemont	0	3023	0	0	1246	0	0	1291	0	0	1588	0

B.2 Low Frequency - Boardings, Alightings and Loading Profile

2030 Low Frequency - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1519	0	1519	841	0	841	961	0	961	1793	0	1793
St Stephen's Green	368	19	1868	358	3	1195	618	2	1577	1434	2	3226
Tara	1233	67	3035	707	23	1879	984	23	2538	1877	158	4945
O'Connell Street	859	16	3879	509	6	2381	659	7	3191	1038	18	5965
Mater	277	85	4070	162	34	2509	194	43	3341	342	104	6204
Glasnevin	547	190	4427	125	71	2563	119	115	3346	268	550	5922
Griffith Park	40	229	4238	23	49	2538	67	60	3354	107	191	5838
Collins Avenue	123	596	3765	67	144	2460	237	188	3402	425	637	5626
Ballymun	145	290	3620	66	179	2347	54	306	3149	74	959	4741
Northwood	102	212	3510	39	78	2308	33	130	3052	62	404	4399
Dardistown and M50	0	0	3510	0	0	2308	0	0	3052	0	0	4399
Dublin Airport	47	2670	887	90	1492	905	166	1453	1765	353	1324	3428
Fosterstown	19	228	678	21	127	799	37	254	1548	42	711	2760
Swords Central	13	241	450	28	210	617	52	399	1200	93	1058	1795
Seatown	2	314	139	16	167	466	57	226	1031	139	488	1446
Estuary Park-and-Ride	0	139	0	0	466	0	0	1031	0	0	1446	0
2030 Low Frequency - Southbound Direction												
Estuary Park-and-Ride	2231	0	2231	731	0	731	532	0	532	415	0	415
Seatown	998	121	3108	157	28	860	134	36	631	252	37	630
Swords Central	1097	106	4099	213	34	1039	159	25	764	240	26	844
Fosterstown	1454	36	5516	197	28	1208	135	20	879	223	20	1047
Dublin Airport	1527	641	6403	1867	83	2992	2128	71	2937	2000	103	2944
Dardistown and M50	0	0	6403	0	0	2992	0	0	2937	0	0	2944
Northwood	494	95	6802	99	44	3046	75	53	2958	132	92	2984
Ballymun	1265	94	7972	266	58	3255	197	75	3080	262	127	3118
Collins Avenue	763	660	8076	186	157	3284	195	102	3172	300	113	3305
Griffith Park	211	162	8125	50	45	3289	69	37	3204	128	46	3387
Glasnevin	874	276	8723	100	124	3264	78	143	3140	182	379	3190
Mater	117	419	8421	38	184	3118	29	171	2998	85	174	3100
O'Connell Street	33	1254	7200	11	631	2498	12	650	2361	27	578	2549
Tara	58	2891	4368	17	1018	1497	15	1000	1376	53	1045	1557
St Stephen's Green	1	2506	1863	2	751	747	5	613	768	8	590	975
Charlemont	0	1863	0	0	747	0	0	768	0	0	975	0

2045 Low Frequency - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1894	0	1894	1202	0	1202	1327	0	1327	2321	0	2321
St Stephen's Green	450	30	2314	474	6	1670	818	3	2142	1650	3	3968
Tara	1633	122	3825	1142	42	2770	1433	39	3535	2323	250	6041
O'Connell Street	1187	29	4984	847	13	3604	1015	14	4536	1322	33	7330
Mater	377	119	5242	247	58	3793	291	64	4763	436	148	7617
Glasnevin	808	241	5809	217	118	3891	188	164	4788	408	832	7194
Griffith Park	54	273	5590	38	68	3861	94	76	4806	135	232	7097
Collins Avenue	153	693	5050	96	185	3772	277	234	4850	485	761	6821
Ballymun	216	349	4917	102	256	3617	98	428	4520	107	1324	5604
Northwood	148	248	4816	61	112	3566	47	182	4386	82	548	5139
Dardistown and M50	0	0	4816	0	0	3566	0	0	4386	0	0	5139
Dublin Airport	82	3759	1139	167	2497	1235	338	2259	2464	303	1935	3507
Fosterstown	37	290	887	27	171	1091	49	349	2164	18	928	2597
Swords Central	24	329	581	37	308	821	87	556	1695	35	1382	1249
Seatown	3	408	177	23	234	609	83	310	1468	38	672	615
Estuary Park-and-Ride	0	177	0	0	609	0	0	1468	0	0	615	0
2045 Low Frequency - Southbound Direction												
Estuary Park-and-Ride	1927	0	1927	934	0	934	524	0	524	198	0	198
Seatown	1267	94	3100	221	28	1127	183	24	683	319	10	507
Swords Central	1415	102	4413	322	40	1409	229	24	887	340	23	824
Fosterstown	1833	33	6213	279	35	1653	180	24	1043	279	22	1080
Dublin Airport	2149	780	7582	2766	125	4293	3240	95	4188	2853	81	3851
Dardistown and M50	0	0	7582	0	0	4293	0	0	4188	0	0	3851
Northwood	681	124	8140	152	69	4377	106	87	4207	172	132	3892
Ballymun	1744	128	9755	407	90	4693	276	118	4365	351	187	4056
Collins Avenue	890	760	9885	235	215	4713	233	152	4446	352	145	4263
Griffith Park	255	204	9936	67	66	4715	87	52	4481	151	60	4354
Glasnevin	1211	387	10760	155	208	4662	112	240	4353	245	576	4022
Mater	178	527	10411	60	294	4429	44	255	4142	121	221	3922
O'Connell Street	63	1569	8905	21	940	3510	21	936	3226	45	782	3185
Tara	102	3651	5356	34	1519	2024	30	1449	1807	92	1375	1902
St Stephen's Green	2	2979	2378	3	994	1034	4	765	1046	15	662	1254
Charlemont	0	2378	0	0	1034	0	0	1046	0	0	1254	0

2060 Low Frequency - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2264	0	2264	1539	0	1539	1684	0	1684	2907	0	2907
St Stephen's Green	537	38	2762	527	9	2057	1016	4	2695	1985	5	4888
Tara	2128	169	4721	1503	56	3504	1888	54	4530	2994	310	7572
O'Connell Street	1565	36	6250	1178	17	4664	1356	19	5867	1717	42	9247
Mater	450	140	6560	325	78	4912	375	77	6165	538	170	9615
Glasnevin	1143	274	7429	322	154	5080	256	209	6211	571	1095	9091
Griffith Park	73	295	7208	51	82	5050	118	91	6239	161	260	8993
Collins Avenue	202	747	6663	121	216	4955	310	279	6270	522	850	8664
Ballymun	300	402	6561	144	324	4774	120	552	5838	148	1647	7165
Northwood	210	285	6486	88	142	4721	59	238	5659	111	673	6603
Dardistown and M50	0	0	6486	0	0	4721	0	0	5659	0	0	6603
Dublin Airport	178	5205	1459	291	3641	1370	519	3044	3134	421	2760	4264
Fosterstown	55	368	1146	22	220	1173	51	453	2732	19	1188	3094
Swords Central	34	458	721	33	429	776	140	716	2156	33	1717	1410
Seatown	4	514	211	16	315	478	105	395	1866	18	875	553
Estuary Park-and-Ride	0	211	0	0	478	0	0	1866	0	0	553	0
2060 Low Frequency - Southbound Direction												
Estuary Park-and-Ride	2330	0	2330	614	0	614	567	0	567	182	0	182
Seatown	1550	119	3761	282	17	879	229	23	773	397	6	573
Swords Central	1914	174	5501	424	27	1275	296	27	1042	464	30	1007
Fosterstown	2268	42	7727	354	25	1605	231	29	1245	347	34	1320
Dublin Airport	3087	1160	9655	4195	182	5618	4321	116	5450	4003	124	5199
Dardistown and M50	0	0	9655	0	0	5618	0	0	5450	0	0	5199
Northwood	862	163	10354	203	106	5716	138	117	5471	210	183	5226
Ballymun	2193	168	12379	533	131	6118	355	158	5668	435	260	5401
Collins Avenue	1003	833	12549	270	269	6119	259	188	5740	375	186	5590
Griffith Park	297	241	12605	80	85	6114	98	65	5773	162	78	5674
Glasnevin	1539	564	13581	199	347	5966	144	331	5586	283	846	5111
Mater	221	669	13132	77	406	5637	55	319	5322	138	271	4979
O'Connell Street	93	1991	11235	29	1269	4397	28	1230	4121	57	1084	3951
Tara	147	4767	6614	49	1956	2491	43	1924	2240	123	1781	2294
St Stephen's Green	2	3631	2986	4	1157	1337	7	928	1318	21	762	1553
Charlemont	0	2986	0	0	1337	0	0	1318	0	0	1553	0

B.3 Alternative Demand - Boardings, Alightings and Loading Profile

2030 Alternative Demand - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1716	0	1716	900	0	900	1006	0	1006	1961	0	1961
St Stephen's Green	387	36	2068	393	6	1287	631	4	1633	1400	5	3356
Tara	1320	143	3245	782	41	2028	1044	43	2634	1908	280	4984
O'Connell Street	912	37	4120	548	14	2562	691	17	3308	1043	39	5988
Mater	310	133	4296	172	51	2683	200	69	3440	341	160	6169
Glasnevin	545	259	4582	138	90	2731	126	146	3419	283	683	5769
Griffith Park	44	269	4356	28	61	2698	70	70	3419	110	197	5682
Collins Avenue	121	711	3766	72	172	2599	182	209	3392	343	629	5396
Ballymun	145	318	3594	72	207	2464	72	325	3138	73	922	4548
Northwood	98	233	3459	41	89	2416	34	139	3033	58	388	4218
Dardistown and M50	0	0	3459	0	0	2416	0	0	3033	0	0	4218
Dublin Airport	45	2529	975	88	1478	1026	138	1442	1729	311	1331	3198
Fosterstown	23	245	752	25	141	910	38	235	1531	42	633	2606
Swords Central	16	260	508	32	222	720	48	364	1216	89	990	1706
Seatown	3	342	170	20	179	561	62	218	1061	162	430	1438
Estuary Park-and-Ride	0	170	0	0	561	0	0	1061	0	0	1438	0
2030 Alternative Demand - Southbound Direction												
Estuary Park-and-Ride	2161	0	2161	858	0	858	626	0	626	437	0	437
Seatown	871	133	2899	159	34	983	148	44	730	275	44	668
Swords Central	987	96	3790	211	38	1155	172	28	874	258	30	896
Fosterstown	1281	46	5025	200	30	1326	151	23	1002	242	23	1116
Dublin Airport	1490	504	6010	1777	82	3021	2007	72	2937	1898	101	2913
Dardistown and M50	0	0	6010	0	0	3021	0	0	2937	0	0	2913
Northwood	478	89	6399	107	45	3084	86	52	2971	151	88	2976
Ballymun	1216	94	7522	293	63	3314	226	78	3119	295	127	3144
Collins Avenue	742	520	7744	201	152	3363	222	98	3243	370	114	3399
Griffith Park	229	167	7806	57	50	3370	84	40	3287	149	48	3501
Glasnevin	1054	287	8573	123	126	3368	105	141	3251	253	373	3381
Mater	190	413	8351	62	184	3245	50	178	3123	143	193	3332
O'Connell Street	69	1227	7192	23	661	2606	25	660	2488	57	600	2789
Tara	105	2957	4340	28	1064	1570	31	1066	1453	99	1165	1723
St Stephen's Green	2	2413	1930	4	793	781	9	648	814	21	643	1102
Charlemont	0	1930	0	0	781	0	0	814	0	0	1102	0

2045 Alternative Demand - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1975	0	1975	1163	0	1163	1267	0	1267	2374	0	2374
St Stephen's Green	448	37	2386	405	7	1561	676	4	1939	1677	5	4047
Tara	1690	164	3912	1024	52	2533	1245	54	3130	2440	308	6179
O'Connell Street	1176	40	5047	781	16	3298	902	19	4013	1366	42	7503
Mater	384	139	5292	235	61	3472	271	76	4209	427	166	7764
Glasnevin	776	272	5797	209	113	3567	181	169	4221	403	789	7378
Griffith Park	55	288	5564	37	69	3535	91	78	4234	131	217	7291
Collins Avenue	148	738	4973	93	193	3435	212	233	4213	408	683	7016
Ballymun	211	357	4827	103	264	3274	98	419	3891	104	1188	5933
Northwood	140	256	4710	59	114	3219	46	179	3757	80	486	5527
Dardistown and M50	0	0	4710	0	0	3219	0	0	3757	0	0	5527
Dublin Airport	93	3629	1174	163	2333	1049	256	2149	1864	608	1875	4260
Fosterstown	33	294	913	17	180	886	29	317	1577	52	823	3490
Swords Central	22	335	600	24	302	608	48	488	1136	179	1225	2444
Seatown	3	413	191	10	242	377	55	280	911	227	566	2105
Estuary Park-and-Ride	0	191	0	0	377	0	0	911	0	0	2105	0
2045 Alternative Demand - Southbound Direction												
Estuary Park-and-Ride	2782	0	2782	381	0	381	657	0	657	648	0	648
Seatown	1029	199	3612	204	7	578	187	52	792	330	61	917
Swords Central	1294	192	4713	292	22	848	233	36	989	341	43	1214
Fosterstown	1704	55	6363	253	14	1086	186	25	1150	285	32	1467
Dublin Airport	2132	951	7544	2651	118	3619	3023	116	4057	2795	179	4084
Dardistown and M50	0	0	7544	0	0	3619	0	0	4057	0	0	4084
Northwood	609	122	8030	147	66	3699	111	82	4086	179	129	4133
Ballymun	1565	128	9467	400	94	4006	292	118	4260	368	188	4314
Collins Avenue	784	621	9630	226	194	4038	240	141	4359	380	146	4548
Griffith Park	238	200	9668	65	63	4040	91	52	4398	158	61	4645
Glasnevin	1180	398	10450	152	201	3991	122	226	4294	277	577	4346
Mater	199	513	10136	69	258	3802	53	250	4098	146	237	4254
O'Connell Street	77	1539	8674	27	822	3007	28	919	3208	62	814	3502
Tara	125	3617	5182	43	1252	1798	39	1424	1823	117	1532	2087
St Stephen's Green	2	2843	2341	4	809	993	7	783	1047	22	773	1336
Charlemont	0	2341	0	0	993	0	0	1047	0	0	1336	0

2045 Alternative Demand - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1975	0	1975	1163	0	1163	1267	0	1267	2374	0	2374
St Stephen's Green	448	37	2386	405	7	1561	676	4	1939	1677	5	4047
Tara	1690	164	3912	1024	52	2533	1245	54	3130	2440	308	6179
O'Connell Street	1176	40	5047	781	16	3298	902	19	4013	1366	42	7503
Mater	384	139	5292	235	61	3472	271	76	4209	427	166	7764
Glasnevin	776	272	5797	209	113	3567	181	169	4221	403	789	7378
Griffith Park	55	288	5564	37	69	3535	91	78	4234	131	217	7291
Collins Avenue	148	738	4973	93	193	3435	212	233	4213	408	683	7016
Ballymun	211	357	4827	103	264	3274	98	419	3891	104	1188	5933
Northwood	140	256	4710	59	114	3219	46	179	3757	80	486	5527
Dardistown and M50	0	0	4710	0	0	3219	0	0	3757	0	0	5527
Dublin Airport	93	3629	1174	163	2333	1049	256	2149	1864	608	1875	4260
Fosterstown	33	294	913	17	180	886	29	317	1577	52	823	3490
Swords Central	22	335	600	24	302	608	48	488	1136	179	1225	2444
Seatown	3	413	191	10	242	377	55	280	911	227	566	2105
Estuary Park-and-Ride	0	191	0	0	377	0	0	911	0	0	2105	0
2045 Alternative Demand - Southbound Direction												
Estuary Park-and-Ride	2782	0	2782	381	0	381	657	0	657	648	0	648
Seatown	1029	199	3612	204	7	578	187	52	792	330	61	917
Swords Central	1294	192	4713	292	22	848	233	36	989	341	43	1214
Fosterstown	1704	55	6363	253	14	1086	186	25	1150	285	32	1467
Dublin Airport	2132	951	7544	2651	118	3619	3023	116	4057	2795	179	4084
Dardistown and M50	0	0	7544	0	0	3619	0	0	4057	0	0	4084
Northwood	609	122	8030	147	66	3699	111	82	4086	179	129	4133
Ballymun	1565	128	9467	400	94	4006	292	118	4260	368	188	4314
Collins Avenue	784	621	9630	226	194	4038	240	141	4359	380	146	4548
Griffith Park	238	200	9668	65	63	4040	91	52	4398	158	61	4645
Glasnevin	1180	398	10450	152	201	3991	122	226	4294	277	577	4346
Mater	199	513	10136	69	258	3802	53	250	4098	146	237	4254
O'Connell Street	77	1539	8674	27	822	3007	28	919	3208	62	814	3502
Tara	125	3617	5182	43	1252	1798	39	1424	1823	117	1532	2087
St Stephen's Green	2	2843	2341	4	809	993	7	783	1047	22	773	1336
Charlemont	0	2341	0	0	993	0	0	1047	0	0	1336	0

B.4 Enhanced Transport Network: National Development Plan - Boardings, Alightings and Loading Profile

2030 National Development Plan - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1882	0	1882	852	0	852	1017	0	1017	2279	0	2279
St Stephen's Green	675	12	2545	658	4	1506	1015	2	2029	2168	1	4446
Tara	1056	236	3365	751	80	2177	1009	88	2950	1749	391	5804
O'Connell Street	829	52	4142	473	18	2632	633	20	3563	1150	56	6898
Mater	250	130	4262	178	44	2766	207	57	3713	370	157	7110
Glasnevin	1074	259	5077	296	96	2966	283	203	3794	476	778	6809
Griffith Park	57	228	4906	31	60	2938	76	70	3800	120	224	6705
Collins Avenue	221	600	4527	118	196	2860	253	250	3803	418	821	6302
Ballymun	205	454	4279	89	248	2701	66	428	3441	101	1310	5093
Northwood	99	219	4159	33	81	2653	29	115	3355	63	303	4853
Dardistown and M50	0	0	4159	0	0	2653	0	0	3355	0	0	4853
Dublin Airport	70	3131	1099	94	1735	1012	171	1638	1889	384	1521	3715
Fosterstown	26	368	757	19	253	779	33	508	1413	47	1305	2457
Swords Central	18	300	475	25	230	574	47	343	1117	82	884	1655
Seatown	2	375	102	14	177	411	47	221	944	116	576	1195
Estuary Park-and-Ride	0	102	0	0	411	0	0	944	0	0	1195	0
2030 National Development Plan - Southbound Direction												
Estuary Park-and-Ride	1566	0	1566	636	0	636	512	0	512	413	0	413
Seatown	908	118	2355	152	25	763	150	30	632	291	29	676
Swords Central	1071	102	3324	227	28	962	186	22	796	286	21	941
Fosterstown	2074	45	5354	309	25	1246	229	18	1008	352	26	1267
Dublin Airport	1842	585	6612	2169	68	3347	2465	58	3415	2474	109	3632
Dardistown and M50	0	0	6612	0	0	3347	0	0	3415	0	0	3632
Northwood	499	76	7034	98	37	3408	80	43	3452	165	65	3732
Ballymun	1742	123	8653	358	86	3680	267	107	3613	401	170	3963
Collins Avenue	1165	624	9195	242	227	3696	256	171	3698	532	173	4321
Griffith Park	241	217	9220	49	64	3681	66	45	3718	120	64	4376
Glasnevin	724	641	9302	118	364	3435	100	443	3375	194	920	3650
Mater	184	448	9039	54	188	3302	43	173	3245	131	273	3508
O'Connell Street	104	1229	7914	19	554	2766	19	554	2710	69	514	3063
Tara	152	2891	5175	33	1087	1712	39	1101	1648	90	1191	1962
St Stephen's Green	1	2591	2586	2	711	1003	5	603	1050	13	590	1385
Charlemont	0	2586	0	0	1003	0	0	1050	0	0	1385	0

2045 National Development Plan - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2175	0	2175	1104	0	1104	1281	0	1281	2745	0	2745
St Stephen's Green	776	13	2938	789	4	1889	1160	3	2438	2570	1	5314
Tara	1386	275	4049	1048	99	2838	1241	107	3572	2257	433	7138
O'Connell Street	1064	58	5055	683	20	3500	814	22	4365	1457	61	8534
Mater	309	136	5228	244	50	3695	276	59	4581	440	166	8807
Glasnevin	1615	273	6570	498	118	4075	447	243	4786	656	959	8505
Griffith Park	72	243	6399	41	67	4049	95	75	4806	139	233	8411
Collins Avenue	275	651	6023	160	216	3993	315	268	4852	489	862	8038
Ballymun	305	507	5821	138	311	3820	101	531	4421	139	1621	6555
Northwood	154	241	5733	50	100	3770	40	145	4316	85	389	6251
Dardistown and M50	0	0	5733	0	0	3770	0	0	4316	0	0	6251
Dublin Airport	154	4497	1390	169	2789	1150	322	2464	2174	765	2114	4902
Fosterstown	39	443	985	18	311	857	28	630	1573	65	1539	3428
Swords Central	24	418	591	25	305	577	59	451	1181	184	1104	2507
Seatown	3	481	113	12	231	359	47	284	944	184	726	1965
Estuary Park-and-Ride	0	113	0	0	359	0	0	944	0	0	1965	0
2045 National Development Plan - Southbound Direction												
Estuary Park-and-Ride	2068	0	2068	578	0	578	519	0	519	667	0	667
Seatown	1166	169	3065	199	25	752	197	35	682	363	46	984
Swords Central	1353	207	4211	313	30	1035	250	26	905	394	38	1340
Fosterstown	2437	57	6590	382	23	1394	279	18	1166	413	38	1714
Dublin Airport	2591	1041	8141	3057	135	4315	3503	101	4568	3622	208	5127
Dardistown and M50	0	0	8141	0	0	4315	0	0	4568	0	0	5127
Northwood	636	100	8676	131	54	4392	99	66	4601	193	102	5219
Ballymun	2155	165	10666	474	124	4743	345	159	4786	487	250	5456
Collins Avenue	1219	745	11139	265	288	4720	279	209	4856	555	222	5788
Griffith Park	249	250	11139	55	76	4699	72	57	4871	127	80	5835
Glasnevin	933	845	11227	154	538	4315	115	676	4310	216	1362	4689
Mater	189	550	10866	59	252	4122	46	226	4129	135	330	4493
O'Connell Street	121	1489	9499	22	703	3441	21	716	3435	74	679	3889
Tara	186	3570	6115	45	1424	2062	47	1450	2032	104	1613	2379
St Stephen's Green	1	3008	3108	2	790	1275	5	717	1320	13	731	1661
Charlemont	0	3108	0	0	1275	0	0	1320	0	0	1661	0

B.5 Enhanced Transport Network: Greater Dublin Area Transport Strategy - Boardings, Alightings and Loading Profile

2045 Greater Dublin Area Transport Strategy - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1908	0	1908	1098	0	1098	1257	0	1257	2416	0	2416
St Stephen's Green	686	12	2582	768	4	1863	1148	2	2403	2193	1	4608
Tara	1591	206	3968	1357	89	3131	1740	98	4044	2394	415	6588
O'Connell Street	1083	42	5008	658	15	3774	832	17	4859	1361	47	7901
Mater	325	105	5228	238	42	3970	278	46	5090	494	124	8271
Glasnevin	668	131	5765	240	60	4150	220	88	5223	327	319	8279
Griffith Park	55	228	5591	35	57	4129	83	61	5244	138	204	8213
Collins Avenue	229	544	5276	146	169	4106	320	196	5368	462	699	7977
Ballymun	258	373	5162	133	281	3958	99	464	5003	140	1537	6579
Northwood	124	211	5074	50	97	3911	41	138	4907	83	378	6284
Dardistown and M50	0	0	5074	0	0	3911	0	0	4907	0	0	6284
Dublin Airport	115	3909	1279	190	2709	1392	352	2446	2812	286	2112	4458
Fosterstown	49	401	928	27	313	1106	49	662	2200	16	1819	2655
Swords Central	24	389	563	40	328	818	87	494	1793	13	1347	1321
Seatown	4	424	143	21	229	610	77	286	1584	4	744	581
Estuary Park-and-Ride	0	143	0	0	610	0	0	1584	0	0	581	0
2045 Greater Dublin Area Transport Strategy - Southbound Direction												
Estuary Park-and-Ride	2366	0	2366	933	0	933	527	0	527	134	0	134
Seatown	1326	84	3608	194	29	1098	185	20	693	323	2	455
Swords Central	1650	95	5163	332	38	1392	259	24	928	375	16	814
Fosterstown	2620	33	7749	392	35	1749	268	22	1174	384	25	1173
Dublin Airport	2427	663	9513	3010	112	4647	3549	78	4645	3020	77	4116
Dardistown and M50	0	0	9513	0	0	4647	0	0	4645	0	0	4116
Northwood	560	102	9971	127	56	4718	94	66	4673	171	83	4205
Ballymun	2094	177	11889	427	129	5017	304	161	4816	393	215	4383
Collins Avenue	1003	739	12153	194	281	4930	207	217	4807	365	174	4574
Griffith Park	224	251	12126	47	54	4923	69	43	4833	116	58	4632
Glasnevin	329	504	11951	59	278	4704	49	341	4541	85	679	4038
Mater	153	616	11488	50	248	4506	39	204	4376	105	234	3910
O'Connell Street	94	1639	9943	18	754	3770	16	746	3646	47	701	3255
Tara	208	4195	5956	44	1741	2072	43	1694	1996	84	1441	1899
St Stephen's Green	1	3004	2953	2	809	1266	4	675	1325	11	436	1474
Charlemont	0	2953	0	0	1266	0	0	1325	0	0	1474	0

2060 Greater Dublin Area Transport Strategy - Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2332	0	2332	1497	0	1497	1658	0	1658	2897	0	2897
St Stephen's Green	774	16	3090	939	6	2430	1423	3	3078	2448	1	5343
Tara	2300	270	5120	2044	120	4354	2445	133	5390	3089	506	7926
O'Connell Street	1336	53	6403	981	21	5314	1168	22	6536	1629	59	9495
Mater	389	123	6668	353	57	5611	394	56	6874	563	148	9910
Glasnevin	949	148	7469	450	77	5984	358	106	7127	434	417	9927
Griffith Park	73	242	7300	55	68	5971	107	70	7163	158	223	9863
Collins Avenue	322	583	7038	243	195	6019	389	225	7326	494	766	9591
Ballymun	366	426	6978	245	359	5905	160	597	6889	181	1854	7918
Northwood	185	241	6922	91	125	5871	67	182	6774	112	472	7558
Dardistown and M50	0	0	6922	0	0	5871	0	0	6774	0	0	7558
Dublin Airport	187	5496	1613	322	4693	1501	506	3893	3387	476	2880	5154
Fosterstown	77	498	1192	22	417	1106	56	837	2606	23	2094	3083
Swords Central	32	531	693	27	463	670	110	626	2090	20	1579	1523
Seatown	4	534	163	13	301	381	87	371	1806	5	911	618
Estuary Park-and-Ride	0	163	0	0	381	0	0	1806	0	0	618	0
2060 Greater Dublin Area Transport Strategy - Southbound Direction												
Estuary Park-and-Ride	2684	0	2684	501	0	501	661	0	661	145	0	145
Seatown	1584	100	4167	290	11	780	243	27	877	400	2	544
Swords Central	1881	141	5907	521	18	1282	351	32	1195	513	23	1034
Fosterstown	2996	41	8862	551	21	1812	338	31	1502	463	38	1459
Dublin Airport	3270	991	11141	4524	306	6030	4837	144	6195	4492	119	5832
Dardistown and M50	0	0	11141	0	0	6030	0	0	6195	0	0	5832
Northwood	713	130	11724	176	81	6125	123	91	6227	211	126	5917
Ballymun	2516	224	14016	568	188	6505	381	219	6389	469	321	6064
Collins Avenue	1067	759	14323	227	367	6365	226	247	6368	379	234	6209
Griffith Park	242	274	14291	56	68	6353	76	51	6393	125	73	6261
Glasnevin	423	645	14070	77	423	6007	60	510	5943	100	1014	5347
Mater	181	729	13521	64	343	5727	48	265	5726	122	307	5163
O'Connell Street	120	1952	11689	26	967	4786	22	984	4763	61	958	4265
Tara	227	5160	6756	63	2384	2464	59	2302	2521	115	1994	2387
St Stephen's Green	2	3297	3461	3	867	1600	5	848	1677	15	544	1858
Charlemont	0	3461	0	0	1600	0	0	1677	0	0	1858	0

B.6 Enhanced Transport Network: National Development Plan + Alternative Demand - Boardings, Alightings and Loading Profile

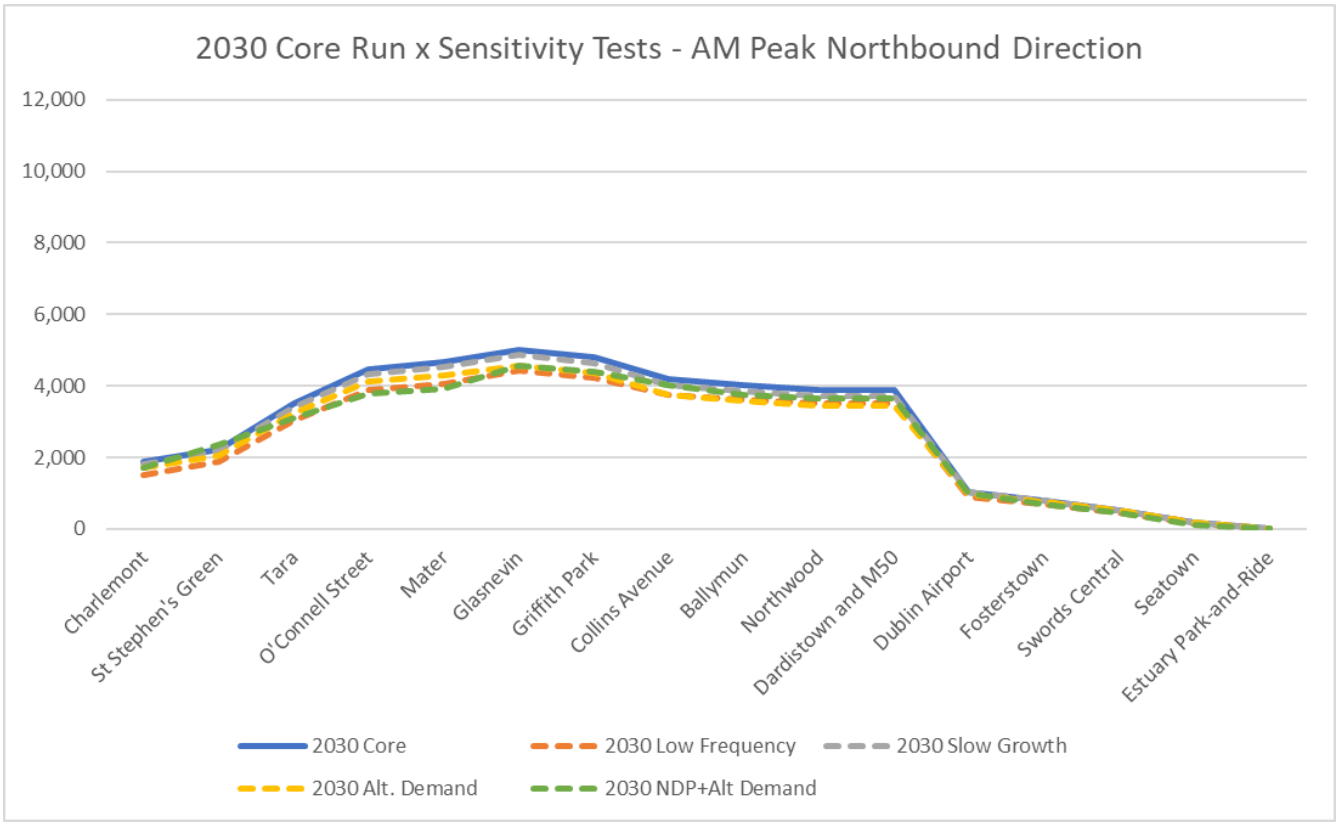
2030 National Development Plan + Alternative Demand Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1713	0	1713	807	0	807	926	0	926	2039	0	2039
St Stephen's Green	641	9	2345	629	4	1433	879	2	1803	1811	1	3849
Tara	942	197	3090	714	76	2071	891	80	2613	1499	353	4995
O'Connell Street	755	44	3802	449	17	2503	572	18	3166	996	49	5943
Mater	224	113	3913	169	42	2629	190	52	3304	327	136	6134
Glasnevin	891	249	4555	269	91	2808	261	176	3388	425	633	5925
Griffith Park	48	216	4387	30	57	2781	69	63	3394	107	188	5844
Collins Avenue	189	563	4013	111	188	2705	206	228	3372	319	709	5453
Ballymun	176	426	3763	86	241	2550	66	389	3049	88	1141	4400
Northwood	82	200	3646	31	77	2504	26	105	2970	52	263	4190
Dardistown and M50	0	0	3646	0	0	2504	0	0	2970	0	0	4190
Dublin Airport	61	2690	1017	76	1591	989	124	1518	1577	283	1386	3087
Fosterstown	21	337	701	19	237	771	29	426	1180	41	1055	2072
Swords Central	15	270	445	25	215	581	37	282	936	78	687	1464
Seatown	2	344	104	13	167	428	42	193	785	127	450	1141
Estuary Park-and-Ride	0	104	0	0	428	0	0	785	0	0	1141	0
2030 National Development Plan + Alternative Demand Southbound Direction												
Estuary Park-and-Ride	1297	0	1297	718	0	718	481	0	481	396	0	396
Seatown	707	112	1893	140	27	830	142	32	590	268	32	632
Swords Central	810	82	2621	206	30	1005	175	21	745	260	20	871
Fosterstown	1687	38	4271	286	24	1267	218	16	947	322	23	1171
Dublin Airport	1701	400	5571	1953	62	3158	2243	54	3136	2054	96	3128
Dardistown and M50	0	0	5571	0	0	3158	0	0	3136	0	0	3128
Northwood	424	63	5932	93	34	3218	73	39	3170	150	56	3222
Ballymun	1516	108	7339	348	79	3487	264	98	3336	380	147	3456
Collins Avenue	990	460	7869	230	197	3520	242	156	3422	495	150	3801
Griffith Park	199	198	7871	46	60	3506	63	42	3443	113	54	3860
Glasnevin	570	592	7848	109	324	3291	94	394	3143	180	735	3305
Mater	154	389	7614	52	174	3169	41	164	3020	120	242	3183
O'Connell Street	85	1044	6655	18	534	2653	17	514	2523	62	461	2784
Tara	128	2404	4379	31	1055	1629	37	1017	1543	76	1061	1799
St Stephen's Green	1	2097	2283	2	687	944	4	560	987	10	553	1255
Charlemont	0	2283	0	0	944	0	0	987	0	0	1255	0

2045 National Development Plan + Alternative Demand Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	1977	0	1977	1059	0	1059	1200	0	1200	2388	0	2388
St Stephen's Green	740	10	2708	778	4	1833	1078	3	2276	2004	1	4392
Tara	1232	229	3710	1023	91	2765	1178	95	3358	1742	390	5743
O'Connell Street	971	49	4633	663	19	3409	781	20	4119	1201	53	6892
Mater	282	119	4796	232	46	3595	262	54	4327	385	142	7134
Glasnevin	1299	252	5843	473	106	3963	434	204	4557	588	749	6974
Griffith Park	59	228	5674	41	63	3940	85	68	4575	124	197	6902
Collins Avenue	228	613	5289	163	205	3898	259	244	4589	392	734	6559
Ballymun	256	479	5066	137	299	3736	95	484	4200	123	1412	5270
Northwood	128	228	4965	51	96	3690	39	134	4104	70	335	5005
Dardistown and M50	0	0	4965	0	0	3690	0	0	4104	0	0	5005
Dublin Airport	127	3851	1241	202	2662	1231	270	2408	1967	384	1956	3433
Fosterstown	32	394	879	21	301	951	32	533	1466	32	1262	2203
Swords Central	20	361	539	30	315	666	51	389	1128	80	858	1425
Seatown	3	429	112	14	224	455	51	251	927	108	579	953
Estuary Park-and-Ride	0	112	0	0	455	0	0	927	0	0	953	0
2045 National Development Plan + Alternative Demand Southbound Direction												
Estuary Park-and-Ride	1314	0	1314	740	0	740	476	0	476	328	0	328
Seatown	947	117	2145	181	27	894	183	29	630	329	25	631
Swords Central	1058	102	3101	281	34	1141	238	22	846	348	21	958
Fosterstown	1920	33	4987	339	27	1453	263	17	1092	374	26	1306
Dublin Airport	2371	594	6764	3242	111	4584	3414	91	4415	3024	117	4214
Dardistown and M50	0	0	6764	0	0	4584	0	0	4415	0	0	4214
Northwood	545	84	7225	123	60	4647	95	65	4445	177	85	4305
Ballymun	1883	147	8962	450	136	4961	336	157	4624	462	217	4551
Collins Avenue	1018	563	9417	246	301	4906	261	206	4679	527	188	4890
Griffith Park	206	224	9399	50	75	4881	68	55	4692	119	68	4941
Glasnevin	701	770	9329	128	572	4437	108	644	4156	202	1090	4053
Mater	162	478	9014	55	249	4243	43	216	3983	123	298	3877
O'Connell Street	98	1239	7873	20	732	3531	19	691	3311	67	585	3359
Tara	152	2932	5093	38	1506	2064	43	1405	1949	88	1346	2100
St Stephen's Green	1	2388	2706	2	817	1249	4	684	1270	10	624	1486
Charlemont	0	2706	0	0	1249	0	0	1270	0	0	1486	0

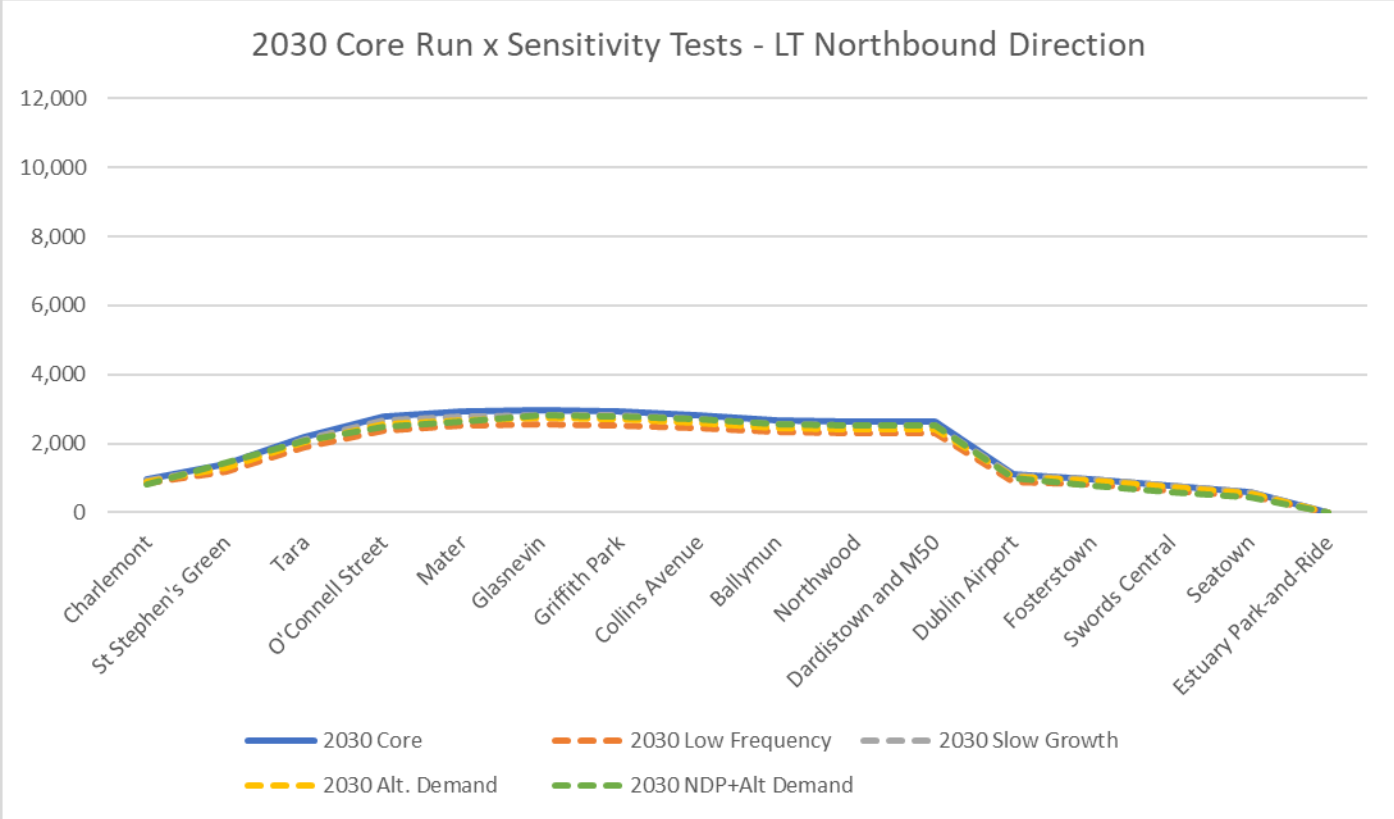
2060 National Development Plan + Alternative Demand Northbound Direction												
Station	**AM**			**LT**			**SR**			**PM**		
Station	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load	Boarding	Alighting	Load
Charlemont	2254	0	2254	1348	0	1348	1480	0	1480	2812	0	2812
St Stephen's Green	849	11	3092	965	4	2309	1252	3	2729	2442	1	5253
Tara	1544	267	4369	1398	106	3600	1448	112	4065	2275	426	7102
O'Connell Street	1179	54	5494	925	21	4504	998	22	5041	1542	57	8587
Mater	332	125	5701	311	51	4764	341	58	5324	453	151	8890
Glasnevin	1763	264	7200	815	124	5456	666	240	5750	779	883	8786
Griffith Park	74	236	7038	56	70	5443	106	74	5783	139	209	8716
Collins Avenue	295	628	6704	259	221	5480	333	263	5853	436	772	8379
Ballymun	343	523	6524	229	349	5360	144	573	5424	161	1656	6884
Northwood	178	249	6454	89	112	5336	63	162	5325	90	404	6570
Dardistown and M50	0	0	6454	0	0	5336	0	0	5325	0	0	6570
Dublin Airport	194	5177	1470	292	4276	1353	433	3519	2239	782	2600	4752
Fosterstown	41	465	1047	22	352	1023	30	646	1623	51	1442	3362
Swords Central	25	448	624	29	396	656	55	503	1175	181	1049	2494
Seatown	3	502	125	14	273	396	51	313	914	202	702	1994
Estuary Park-and-Ride	0	125	0	0	396	0	0	914	0	0	1994	0
2060 National Development Plan + Alternative Demand Southbound Direction												
Estuary Park-and-Ride	2096	0	2096	663	0	663	513	0	513	659	0	659
Seatown	1105	181	3020	243	31	875	226	37	702	381	50	989
Swords Central	1259	194	4085	402	36	1241	301	27	975	431	36	1384
Fosterstown	2329	47	6367	420	27	1633	314	18	1271	432	37	1778
Dublin Airport	3100	1005	8461	4278	296	5615	4682	155	5798	4116	234	5660
Dardistown and M50	0	0	8461	0	0	5615	0	0	5798	0	0	5660
Northwood	662	105	9018	154	79	5689	117	90	5826	202	117	5744
Ballymun	2210	185	11044	536	176	6049	395	212	6009	534	289	5990
Collins Avenue	1107	627	11523	261	361	5950	277	262	6024	534	235	6289
Griffith Park	220	255	11488	54	86	5918	71	67	6028	123	82	6329
Glasnevin	859	971	11376	154	770	5303	122	919	5231	223	1483	5069
Mater	171	583	10965	59	312	5050	46	275	5002	127	353	4844
O'Connell Street	112	1535	9541	23	871	4202	22	875	4149	73	746	4171
Tara	173	3676	6039	46	1817	2431	50	1811	2388	99	1747	2524
St Stephen's Green	1	2846	3194	2	918	1516	5	822	1572	11	784	1751
Charlemont	0	3194	0	0	1516	0	0	1572	0	0	1751	0

B.7 Business Case Core Runs x Sensitivity Analysis – Loading Profile

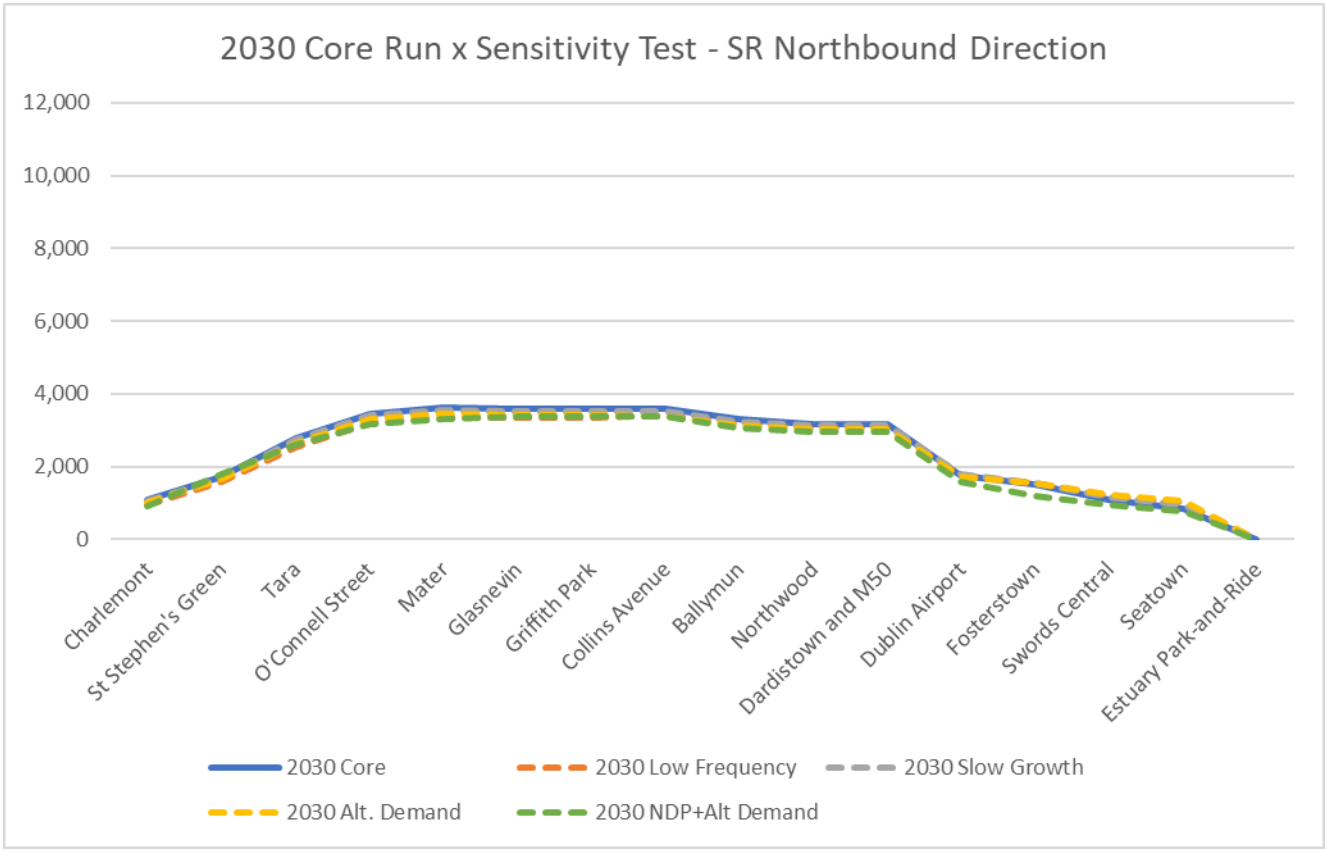
AM Peak Period					
Boarding -Northbound Direction	**2030 Business Case**	**2030 Low Frequency**	**2030 Slow Growth**	**2030 Alternative Demand**	**2030 NDP + Alternative Demand**
Charlemont	1,866	1,519	1,831	1,716	1,713
St Stephen's Green	2,239	1,868	2,196	2,068	2,345
Tara	3,513	3,035	3,423	3,245	3,090
O'Connell Street	4,467	3,879	4,342	4,120	3,802
Mater	4,655	4,070	4,518	4,296	3,913
Glasnevin	5,024	4,427	4,860	4,582	4,555
Griffith Park	4,791	4,238	4,629	4,356	4,387
Collins Avenue	4,197	3,765	4,035	3,766	4,013
Ballymun	4,027	3,620	3,860	3,594	3,763
Northwood	3,895	3,510	3,723	3,459	3,646
Dardistown and M50	3,895	3,510	3,723	3,459	3,646
Dublin Airport	1,046	887	1,019	975	1,017
Fosterstown	802	678	781	752	701
Swords Central	535	450	526	508	445
Seatown	173	139	177	170	104
Estuary Park-and-Ride	0	0	0	0	0



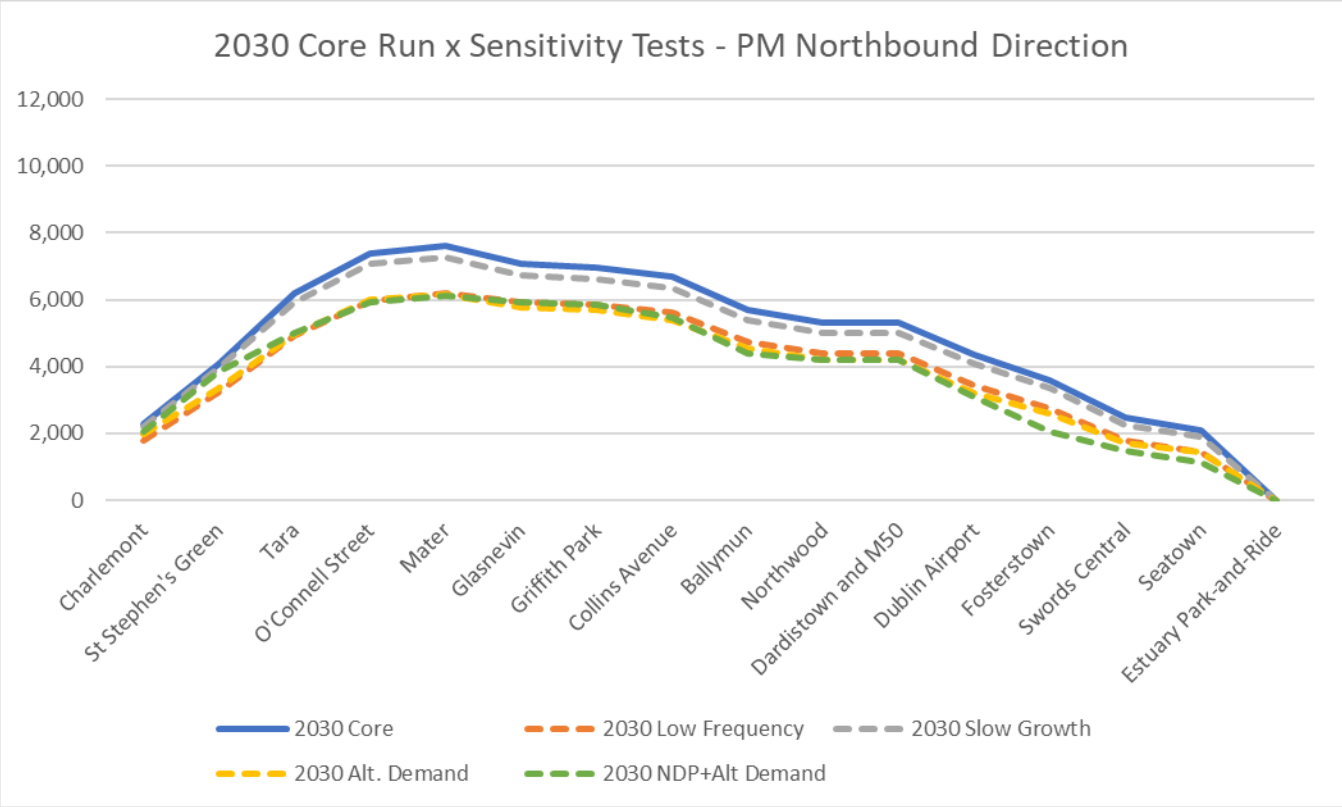
LT Peak Period					
Boarding- Northbound Direction	**2030 Business Case**	**2030 Low Frequency**	**2030 Slow Growth**	**2030 Alternative Demand**	**2030 NDP + Alternative Demand**
Estuary Park-and-Ride	976	841	940	900	807
Seatown	1,390	1,195	1,346	1,287	1,433
Swords Central	2,205	1,879	2,128	2,028	2,071
Fosterstown	2,782	2,381	2,673	2,562	2,503
Dublin Airport	2,914	2,509	2,798	2,683	2,629
Dardistown and M50	2,960	2,563	2,837	2,731	2,808
Northwood	2,924	2,538	2,801	2,698	2,781
Ballymun	2,817	2,460	2,694	2,599	2,705
Collins Avenue	2,674	2,347	2,555	2,464	2,550
Griffith Park	2,622	2,308	2,504	2,416	2,504
Glasnevin	2,622	2,308	2,504	2,416	2,504
Mater	1,099	905	1,078	1,026	989
O'Connell Street	972	799	956	910	771
Tara	765	617	758	720	581
St Stephen's Green	598	466	598	561	428
Charlemont	0	0	0	0	0



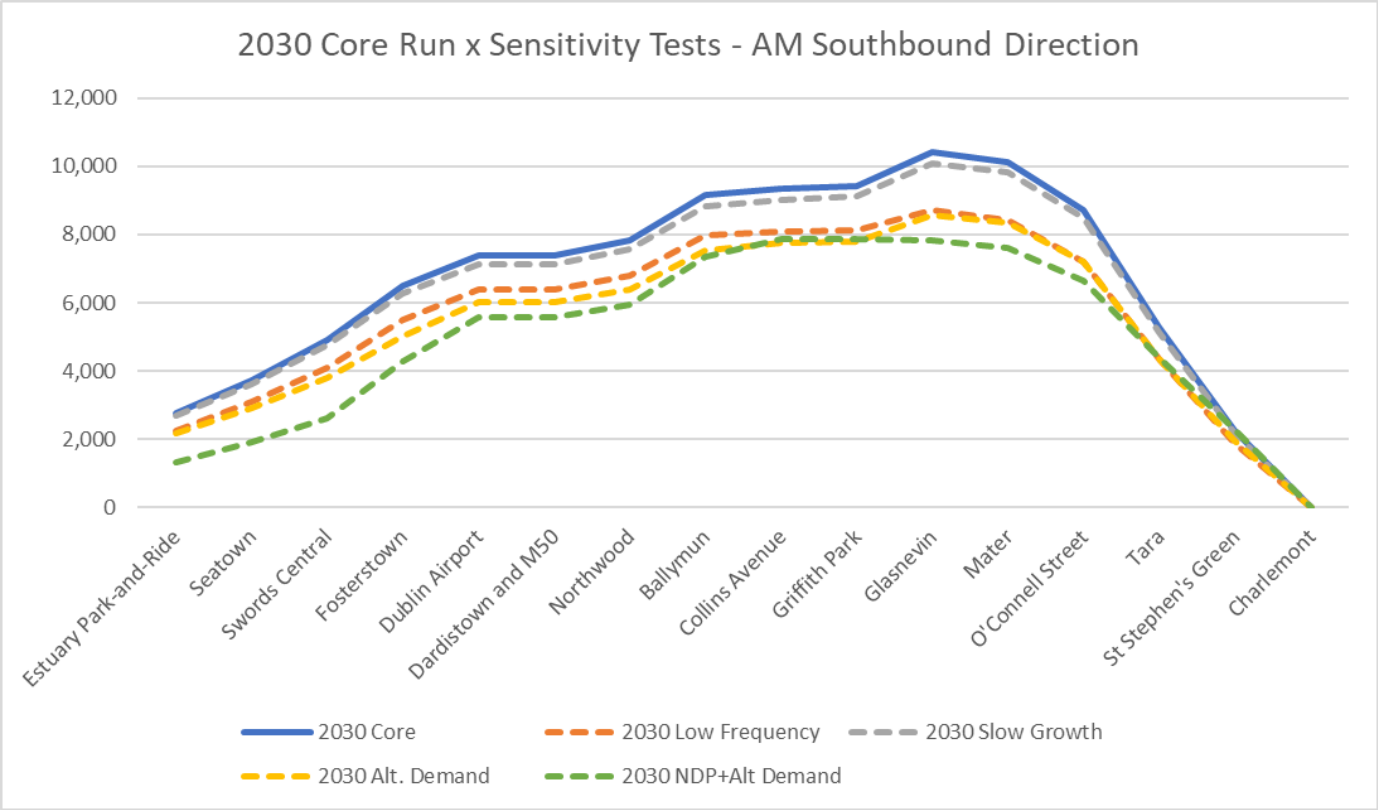
SR Peak Period					
Boarding -Northbound Direction	2030 Business Case	2030 Low Frequency	2030 Slow Growth	2030 Alternative Demand	2030 NDP + Alternative Demand
Charlemont	1,083	961	1,053	1,006	926
St Stephen's Green	1,724	1,577	1,702	1,633	1,803
Tara	2,763	2,538	2,733	2,634	2,613
O'Connell Street	3,464	3,191	3,416	3,308	3,166
Mater	3,606	3,341	3,550	3,440	3,304
Glasnevin	3,572	3,346	3,512	3,419	3,388
Griffith Park	3,574	3,354	3,511	3,419	3,394
Collins Avenue	3,594	3,402	3,526	3,392	3,372
Ballymun	3,294	3,149	3,238	3,138	3,049
Northwood	3,173	3,052	3,120	3,033	2,970
Dardistown and M50	3,173	3,052	3,120	3,033	2,970
Dublin Airport	1,764	1,765	1,798	1,729	1,577
Fosterstown	1,493	1,548	1,544	1,531	1,180
Swords Central	1,072	1,200	1,144	1,216	936
Seatown	857	1,031	945	1,061	785
Estuary Park-and-Ride	0	0	0	0	0



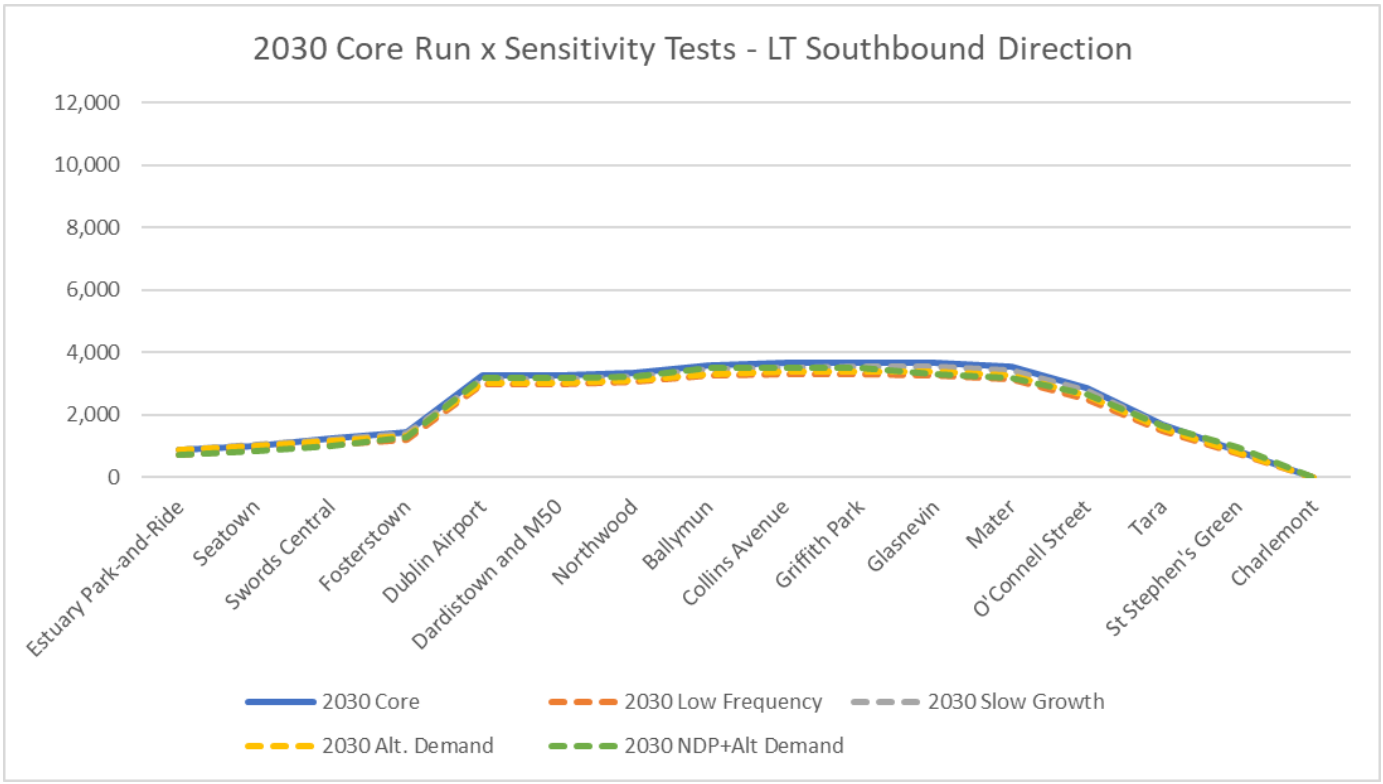
PM Peak Period					
Boarding -Northbound Direction	**2030 Business Case**	**2030 Low Frequency**	**2030 Slow Growth**	**2030 Alternative Demand**	**2030 NDP+ Alternative Demand**
Charlemont	2,276	1,793	2,201	1,961	2,039
St Stephen's Green	4,104	3,226	3,955	3,356	3,849
Tara	6,186	4,945	5,926	4,984	4,995
O'Connell Street	7,405	5,965	7,079	5,988	5,943
Mater	7,616	6,204	7,271	6,169	6,134
Glasnevin	7,082	5,922	6,738	5,769	5,925
Griffith Park	6,976	5,838	6,629	5,682	5,844
Collins Avenue	6,691	5,626	6,331	5,396	5,453
Ballymun	5,695	4,741	5,378	4,548	4,400
Northwood	5,301	4,399	4,996	4,218	4,190
Dardistown and M50	5,301	4,399	4,996	4,218	4,190
Dublin Airport	4,374	3,428	4,089	3,198	3,087
Fosterstown	3,594	2,760	3,348	2,606	2,072
Swords Central	2,477	1,795	2,261	1,706	1,464
Seatown	2,107	1,446	1,902	1,438	1,141
Estuary Park-and-Ride	0	0	0	0	0



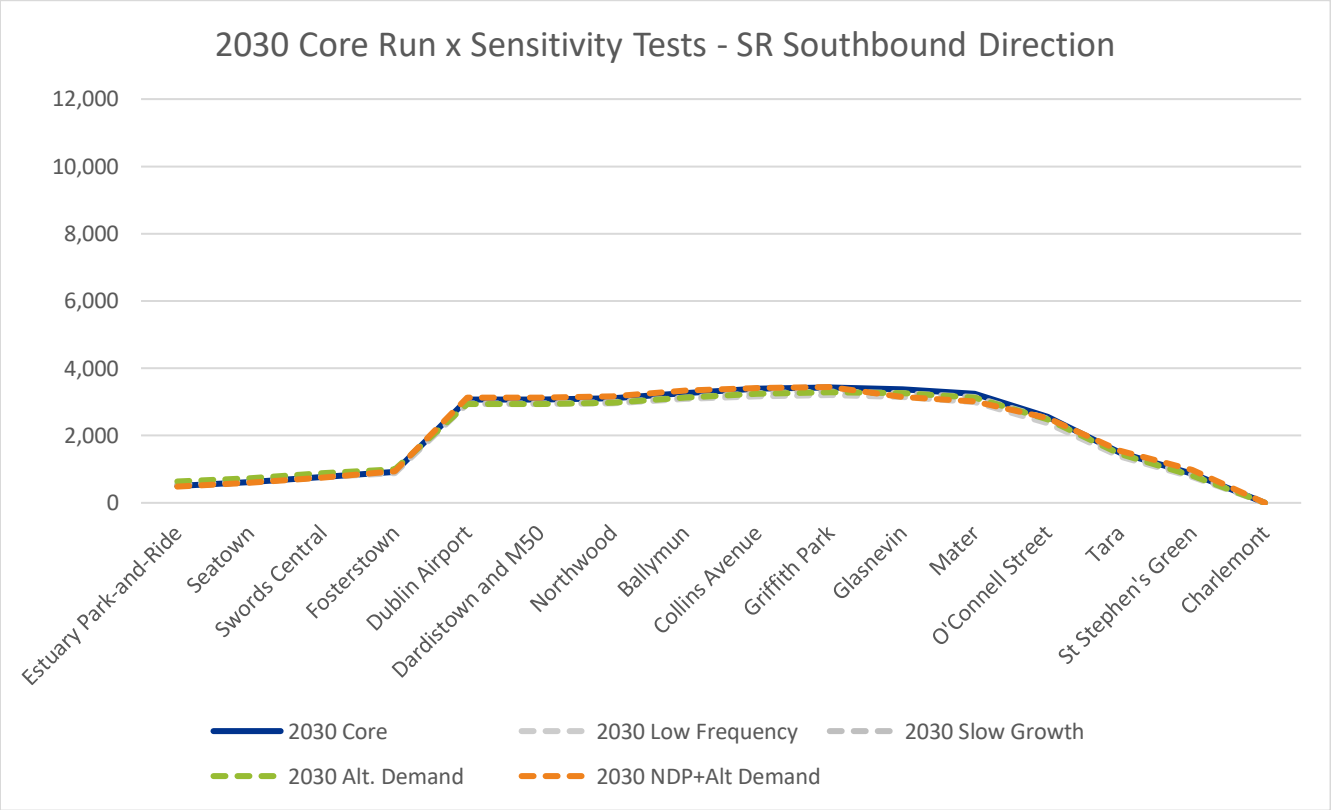
AM Peak Period					
Boarding -Southbound Direction	2030 Business Case	2030 Low Frequency	2030 Slow Growth	2030 Alternative Demand	2030 NDP+ Alternative Demand
Estuary Park-and-Ride	2,776	2,231	2,689	2,161	1,297
Seatown	3,736	3,108	3,614	2,899	1,893
Swords Central	4,901	4,099	4,745	3,790	2,621
Fosterstown	6,516	5,516	6,273	5,025	4,271
Dublin Airport	7,381	6,403	7,129	6,010	5,571
Dardistown and M50	7,381	6,403	7,129	6,010	5,571
Northwood	7,845	6,802	7,573	6,399	5,932
Ballymun	9,162	7,972	8,832	7,522	7,339
Collins Avenue	9,351	8,076	9,032	7,744	7,869
Griffith Park	9,434	8,125	9,119	7,806	7,871
Glasnevin	10,412	8,723	10,096	8,573	7,848
Mater	10,141	8,421	9,842	8,351	7,614
O'Connell Street	8,735	7,200	8,490	7,192	6,655
Tara	5,281	4,368	5,132	4,340	4,379
St Stephen's Green	2,232	1,863	2,164	1,930	2,283
Charlemont	0	0	0	0	0



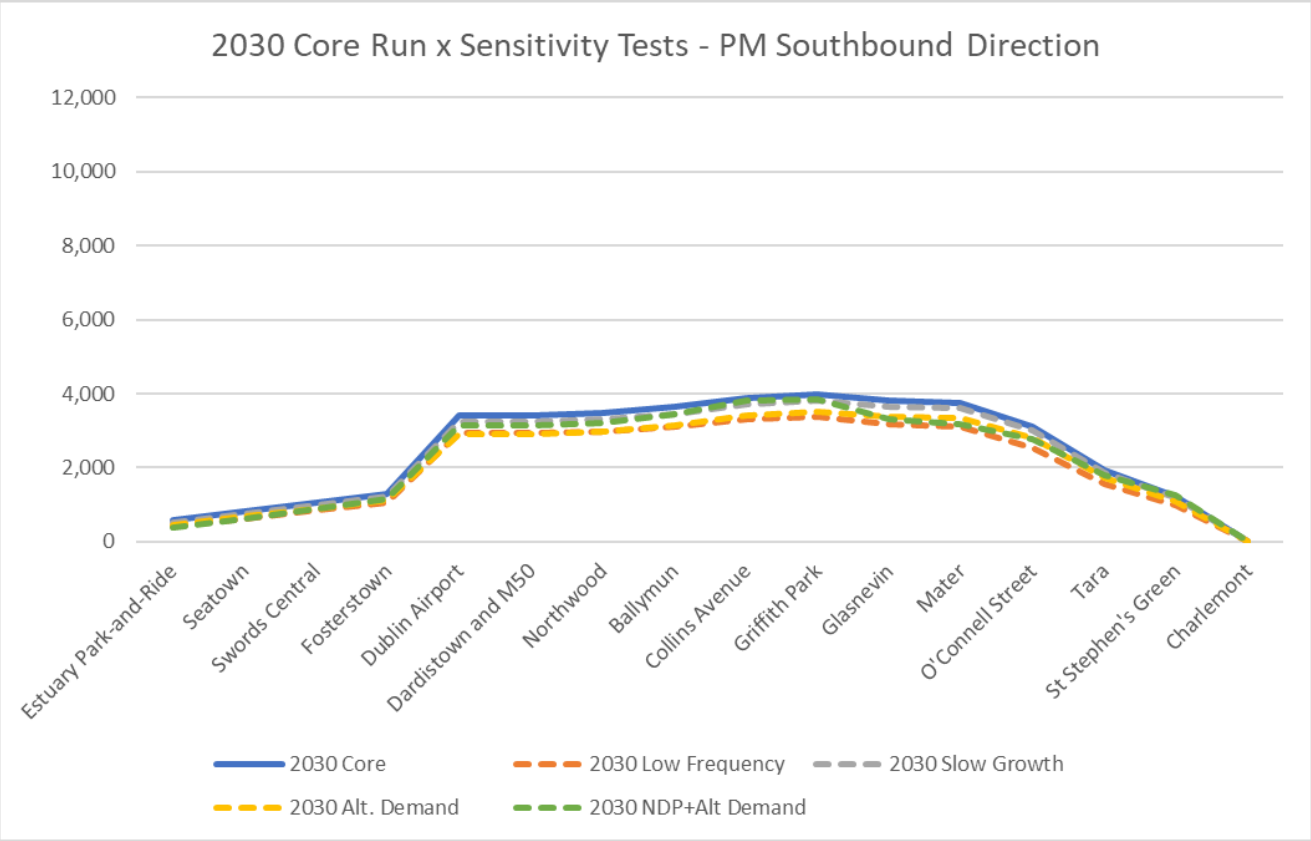
LT Peak Period					
Boarding -Southbound Direction	2030 Business Case	2030 Low Frequency	2030 Slow Growth	2030 Alternative Demand	2030 NDP+ Alternative Demand
Estuary Park-and-Ride	870	731	882	858	718
Seatown	1,013	860	1,020	983	830
Swords Central	1,221	1,039	1,216	1,155	1,005
Fosterstown	1,421	1,208	1,411	1,326	1,267
Dublin Airport	3,275	2,992	3,150	3,021	3,158
Dardistown and M50	3,275	2,992	3,150	3,021	3,158
Northwood	3,347	3,046	3,221	3,084	3,218
Ballymun	3,597	3,255	3,461	3,314	3,487
Collins Avenue	3,650	3,284	3,518	3,363	3,520
Griffith Park	3,662	3,289	3,531	3,370	3,506
Glasnevin	3,669	3,264	3,546	3,368	3,291
Mater	3,527	3,118	3,414	3,245	3,169
O'Connell Street	2,843	2,498	2,760	2,606	2,653
Tara	1,692	1,497	1,645	1,570	1,629
St Stephen's Green	850	747	820	781	944
Charlemont	0	0	0	0	0



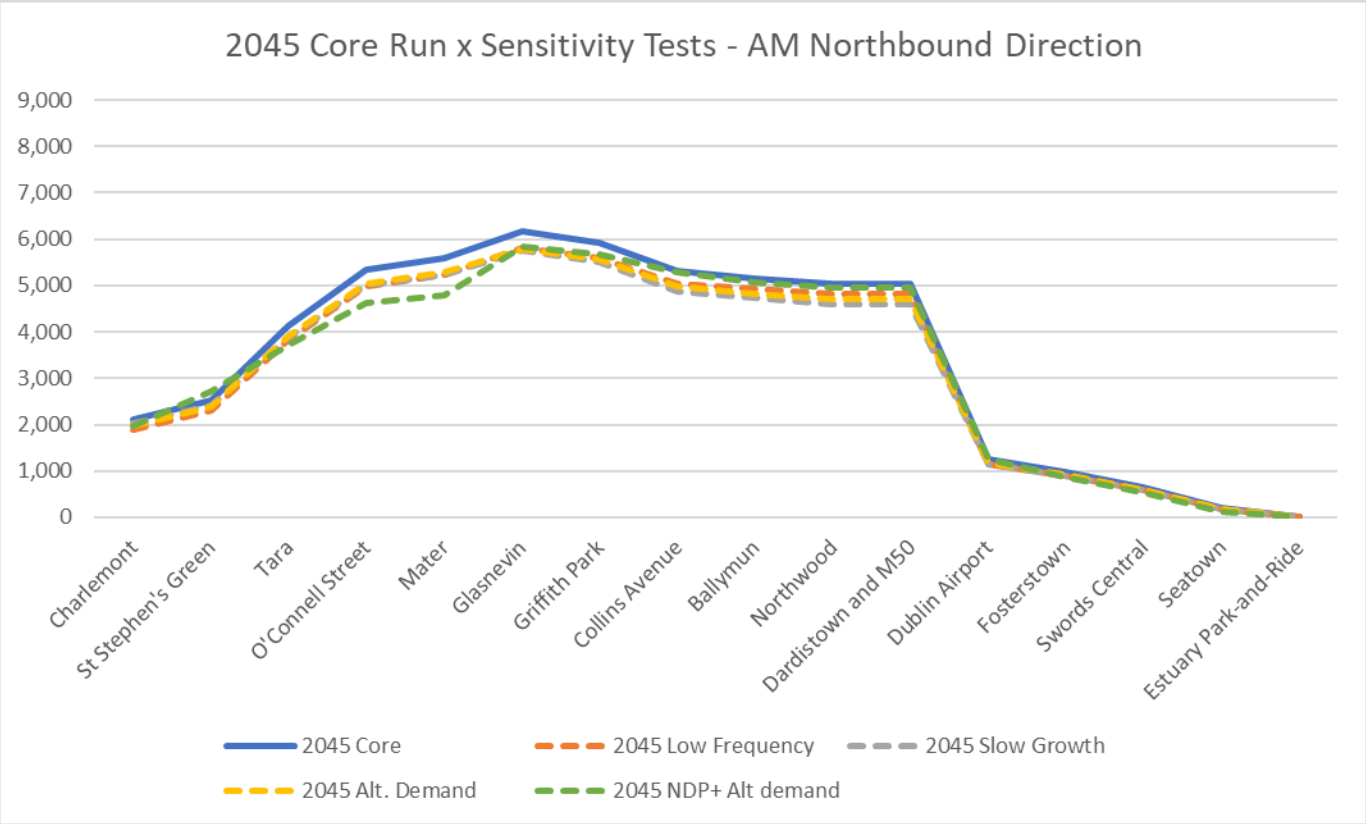
SR Peak Period					
Boarding -Southbound Direction	2030 Business Case	2030 Low Frequency	2030 Slow Growth	2030 Alternative Demand	2030 NDP + Alternative Demand
Estuary Park-and-Ride	497	532	534	626	481
Seatown	617	631	646	730	590
Swords Central	776	764	795	874	745
Fosterstown	916	879	929	1,002	947
Dublin Airport	3,078	2,937	2,959	2,937	3,136
Dardistown and M50	3,078	2,937	2,959	2,937	3,136
Northwood	3,110	2,958	2,992	2,971	3,170
Ballymun	3,258	3,080	3,136	3,119	3,336
Collins Avenue	3,385	3,172	3,265	3,243	3,422
Griffith Park	3,429	3,204	3,309	3,287	3,443
Glasnevin	3,380	3,140	3,270	3,251	3,143
Mater	3,239	2,998	3,137	3,123	3,020
O'Connell Street	2,566	2,361	2,494	2,488	2,523
Tara	1,498	1,376	1,462	1,453	1,543
St Stephen's Green	861	768	832	814	987
Charlemont	0	0	0	0	0



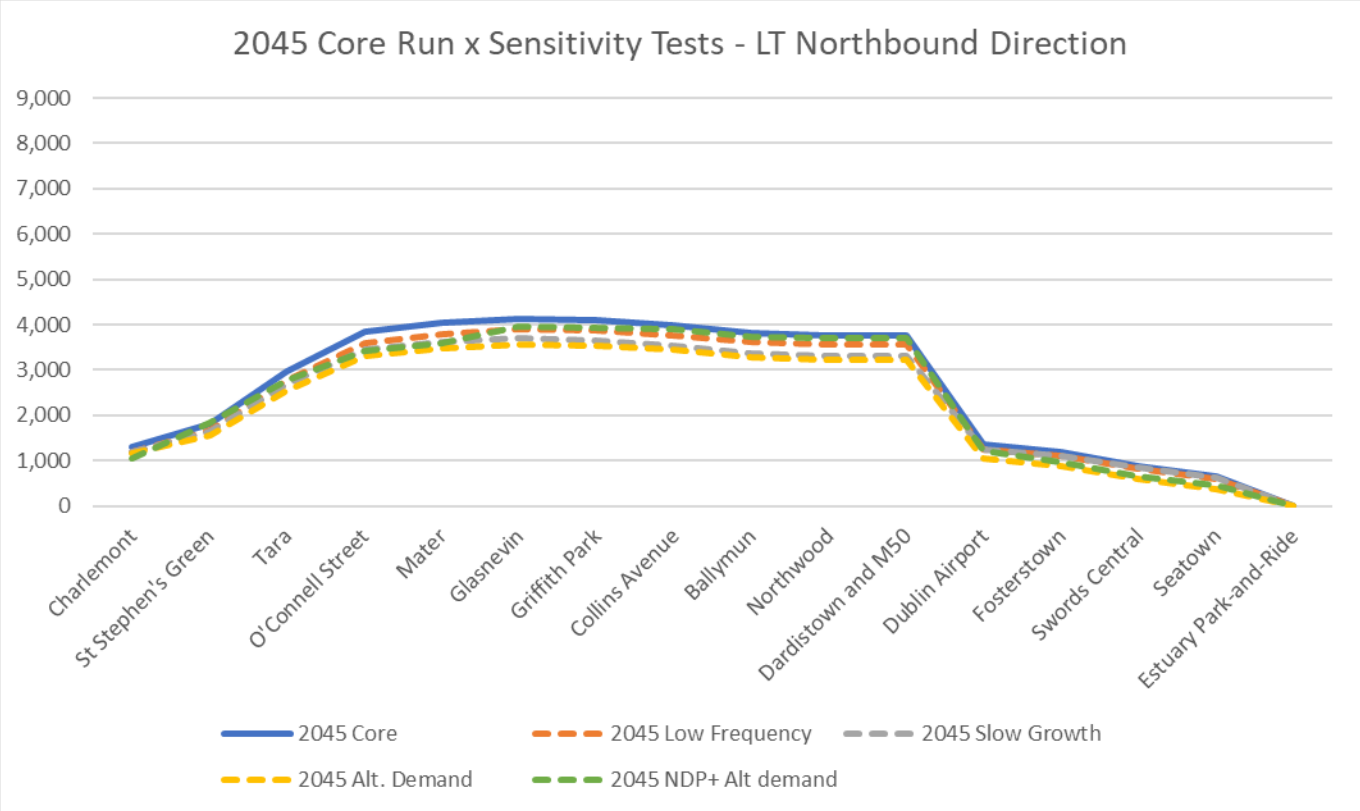
PM Peak Period					
Boarding -Southbound Direction	2030 Business Case	2030 Low Frequency	2030 Slow Growth	2030 Alternative Demand	2030 NDP+ Alternative Demand
Estuary Park-and-Ride	573	415	532	437	396
Seatown	814	630	767	668	632
Swords Central	1,054	844	995	896	871
Fosterstown	1,287	1,047	1,224	1,116	1,171
Dublin Airport	3,414	2,944	3,236	2,913	3,128
Dardistown and M50	3,414	2,944	3,236	2,913	3,128
Northwood	3,472	2,984	3,296	2,976	3,222
Ballymun	3,635	3,118	3,460	3,144	3,456
Collins Avenue	3,896	3,305	3,724	3,399	3,801
Griffith Park	3,999	3,387	3,827	3,501	3,860
Glasnevin	3,800	3,190	3,656	3,381	3,305
Mater	3,740	3,100	3,603	3,332	3,183
O'Connell Street	3,121	2,549	3,016	2,789	2,784
Tara	1,913	1,557	1,858	1,723	1,799
St Stephen's Green	1,229	975	1,195	1,102	1,255
Charlemont	0	0	0	0	0



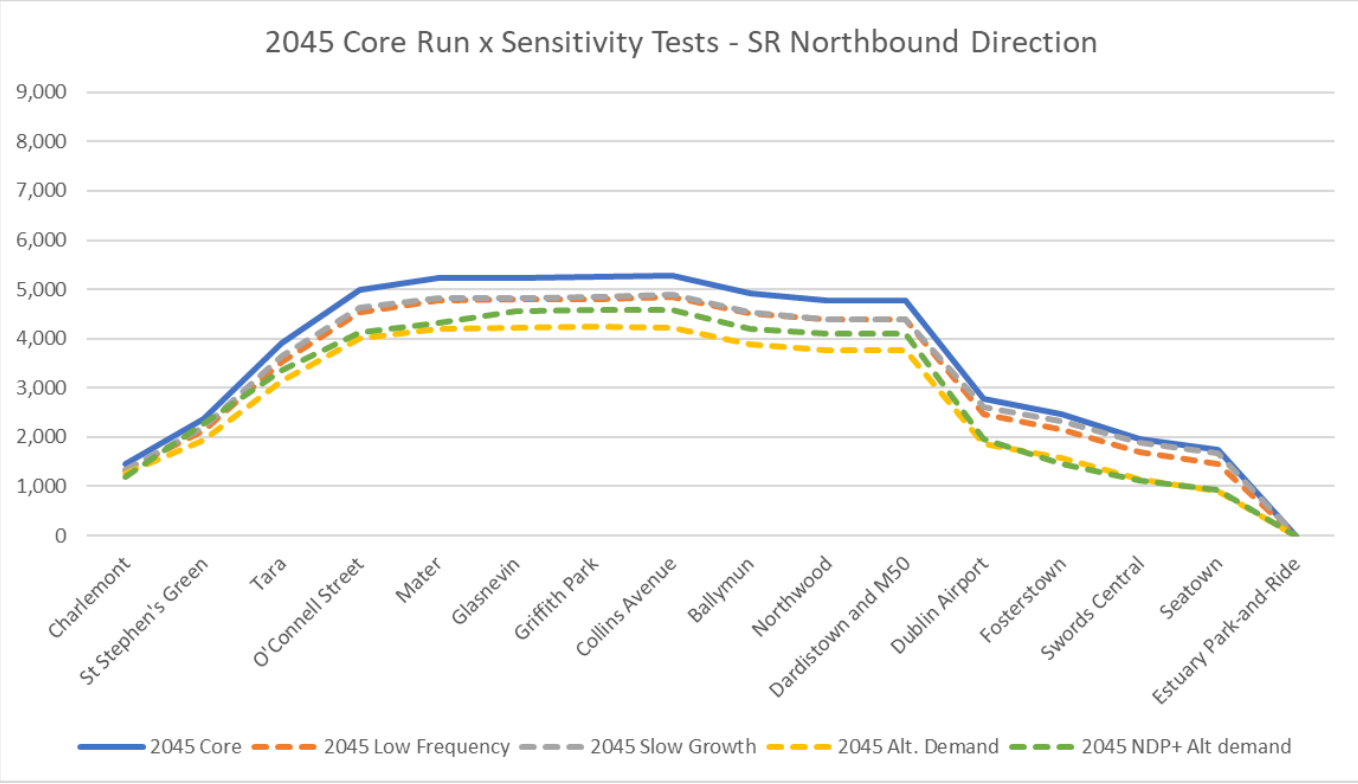
AM Peak Period					
Boarding -Northbound Direction	**2045 Business Case**	**2045 Low Frequency**	**2045 Slow Growth**	**2045 Alternative Demand**	**2045 NDP + Alternative Demand**
Charlemont	2,106	1,894	2,015	1,975	1,977
St Stephen's Green	2,537	2,314	2,423	2,386	2,708
Tara	4,117	3,825	3,886	3,912	3,710
O'Connell Street	5,338	4,984	5,012	5,047	4,633
Mater	5,586	5,242	5,244	5,292	4,796
Glasnevin	6,167	5,809	5,744	5,797	5,843
Griffith Park	5,924	5,590	5,500	5,564	5,674
Collins Avenue	5,311	5,050	4,882	4,973	5,289
Ballymun	5,162	4,917	4,722	4,827	5,066
Northwood	5,045	4,816	4,598	4,710	4,965
Dardistown and M50	5,045	4,816	4,598	4,710	4,965
Dublin Airport	1,243	1,139	1,148	1,174	1,241
Fosterstown	970	887	895	913	879
Swords Central	639	581	590	600	539
Seatown	199	177	180	191	112
Estuary Park-and-Ride	0	0	0	0	0



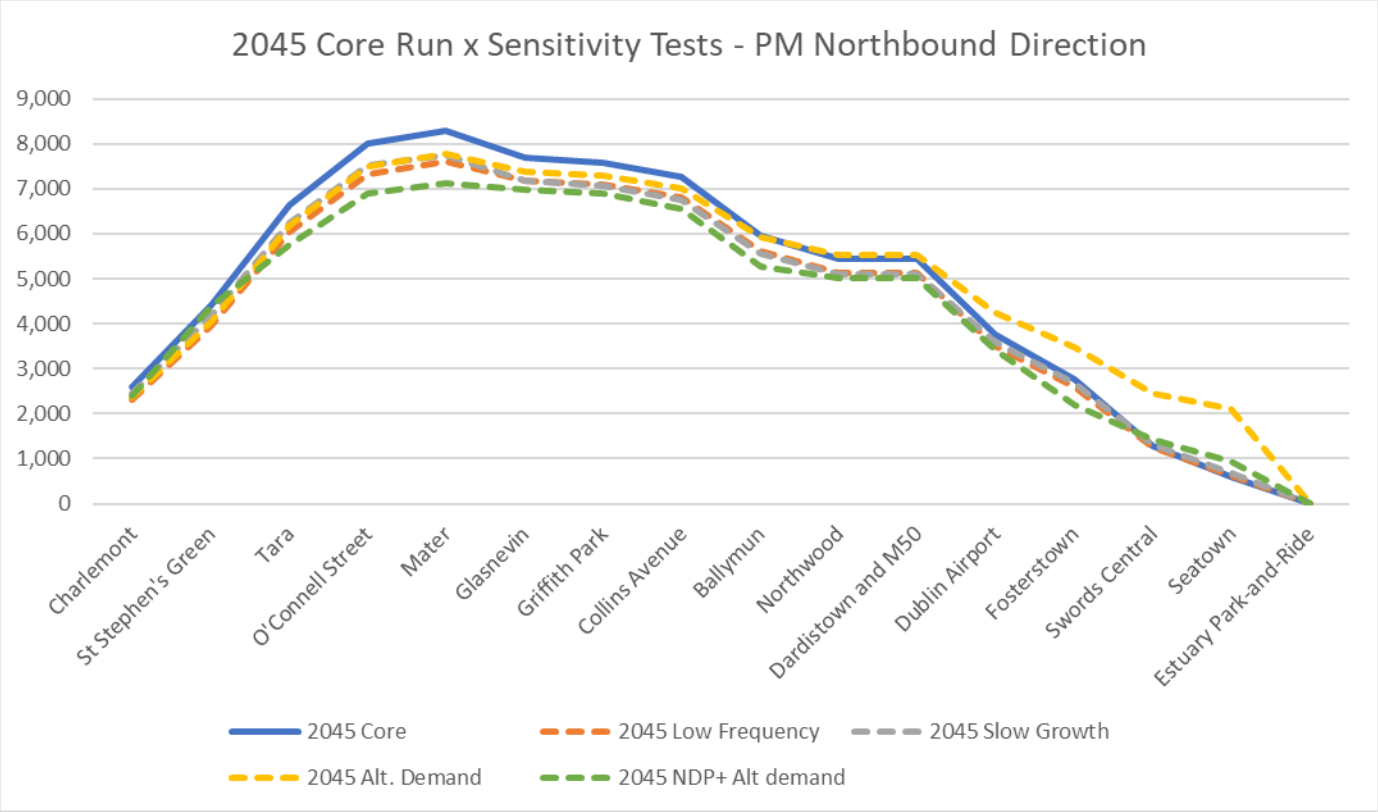
LT Peak Period					
Boarding- Northbound Direction	**2045 Business Case**	**2045 Low Frequency**	**2045 Slow Growth**	**2045 Alternative Demand**	**2045 NDP + Alternative Demand**
Estuary Park-and-Ride	1,297	1,202	1,182	1,163	1,059
Seatown	1,798	1,670	1,649	1,561	1,833
Swords Central	2,976	2,770	2,693	2,533	2,765
Fosterstown	3,856	3,604	3,460	3,298	3,409
Dublin Airport	4,045	3,793	3,627	3,472	3,595
Dardistown and M50	4,137	3,891	3,691	3,567	3,963
Northwood	4,100	3,861	3,656	3,535	3,940
Ballymun	3,990	3,772	3,542	3,435	3,898
Collins Avenue	3,813	3,617	3,372	3,274	3,736
Griffith Park	3,751	3,566	3,311	3,219	3,690
Glasnevin	3,751	3,566	3,311	3,219	3,690
Mater	1,347	1,235	1,242	1,049	1,231
O'Connell Street	1,182	1,091	1,093	886	951
Tara	889	821	837	608	666
St Stephen's Green	662	609	636	377	455
Charlemont	0	0	0	0	0



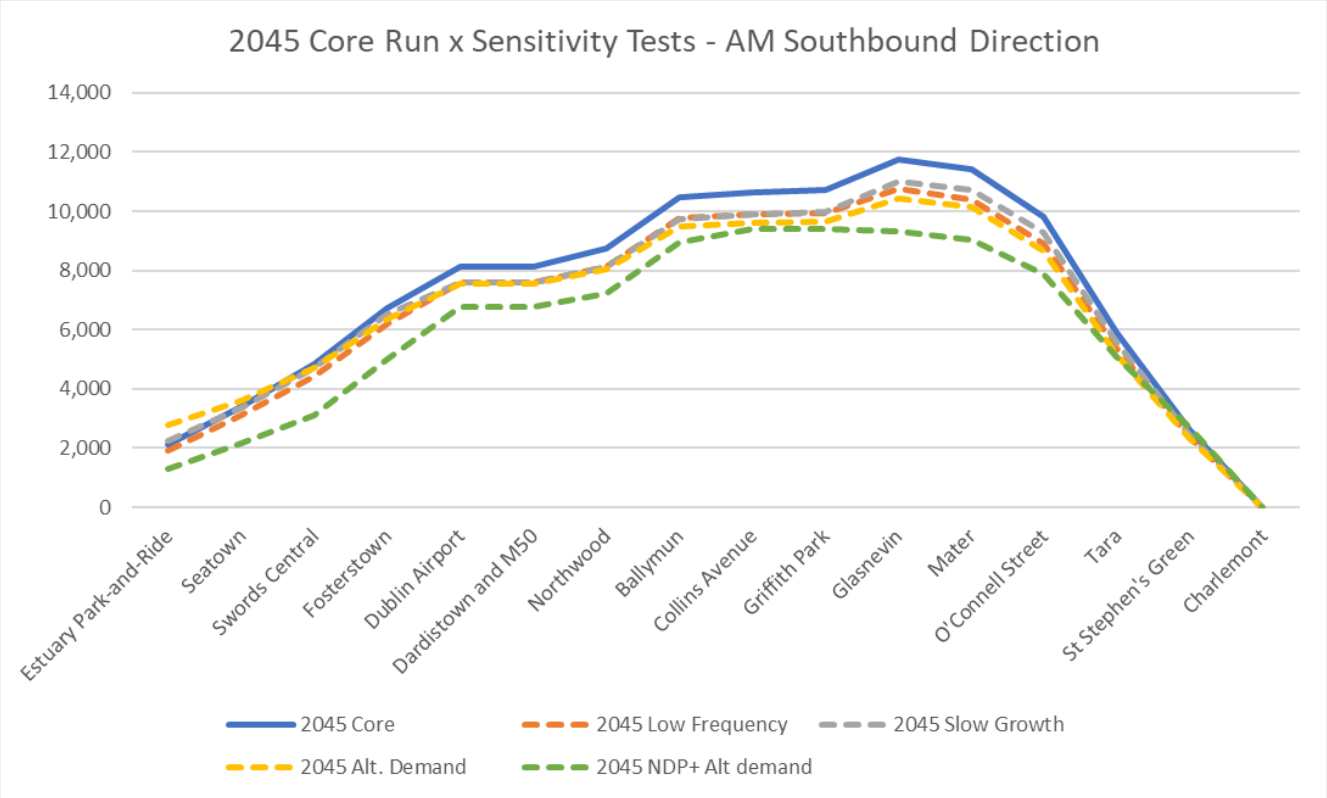
SR Peak Period					
Boarding -Northbound Direction	2045 Business Case	2045 Low Frequency	2045 Slow Growth	2045 Alternative Demand	2045 NDP + Alternative Demand
Charlemont	1,445	1,327	1,332	1,267	1,200
St Stephen's Green	2,369	2,142	2,209	1,939	2,276
Tara	3,915	3,535	3,644	3,130	3,358
O'Connell Street	5,000	4,536	4,620	4,013	4,119
Mater	5,234	4,763	4,829	4,209	4,327
Glasnevin	5,242	4,788	4,828	4,221	4,557
Griffith Park	5,258	4,806	4,842	4,234	4,575
Collins Avenue	5,284	4,850	4,891	4,213	4,589
Ballymun	4,921	4,520	4,534	3,891	4,200
Northwood	4,771	4,386	4,393	3,757	4,104
Dardistown and M50	4,771	4,386	4,393	3,757	4,104
Dublin Airport	2,781	2,464	2,611	1,864	1,967
Fosterstown	2,461	2,164	2,324	1,577	1,466
Swords Central	1,968	1,695	1,881	1,136	1,128
Seatown	1,737	1,468	1,675	911	927
Estuary Park-and-Ride	0	0	0	0	0



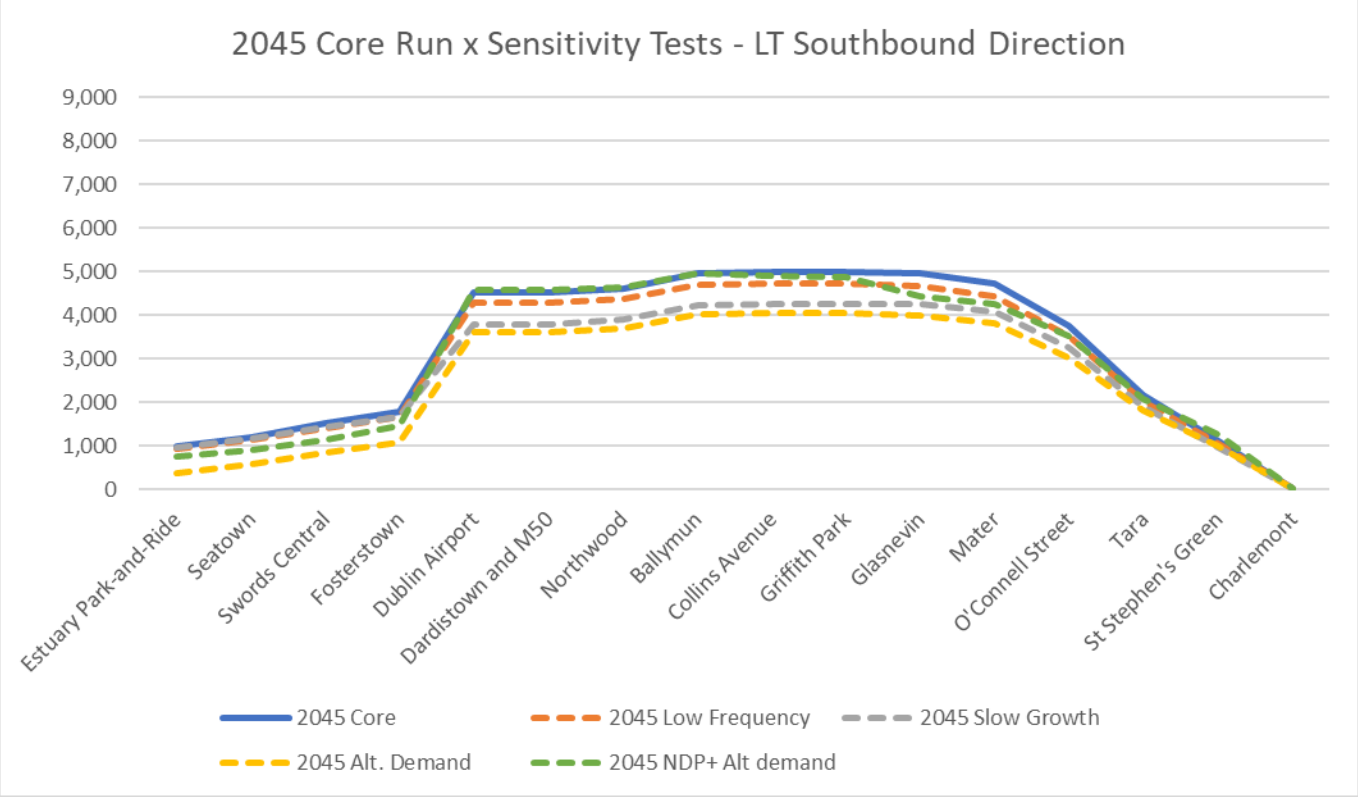
PM Peak Period					
Boarding -Northbound Direction	2045 Business Case	2045 Low Frequency	2045 Slow Growth	2045 Alternative Demand	2045 NDP+ Alternative Demand
Charlemont	2,606	2,321	2,451	2,374	2,388
St Stephen's Green	4,428	3,968	4,192	4,047	4,392
Tara	6,630	6,041	6,240	6,179	5,743
O'Connell Street	8,008	7,330	7,510	7,503	6,892
Mater	8,280	7,617	7,758	7,764	7,134
Glasnevin	7,695	7,194	7,183	7,378	6,974
Griffith Park	7,582	7,097	7,071	7,291	6,902
Collins Avenue	7,255	6,821	6,764	7,016	6,559
Ballymun	5,959	5,604	5,560	5,933	5,270
Northwood	5,456	5,139	5,090	5,527	5,005
Dardistown and M50	5,456	5,139	5,090	5,527	5,005
Dublin Airport	3,762	3,507	3,583	4,260	3,433
Fosterstown	2,775	2,597	2,674	3,490	2,203
Swords Central	1,293	1,249	1,312	2,444	1,425
Seatown	600	615	693	2,105	953
Estuary Park-and-Ride	0	0	0	0	0



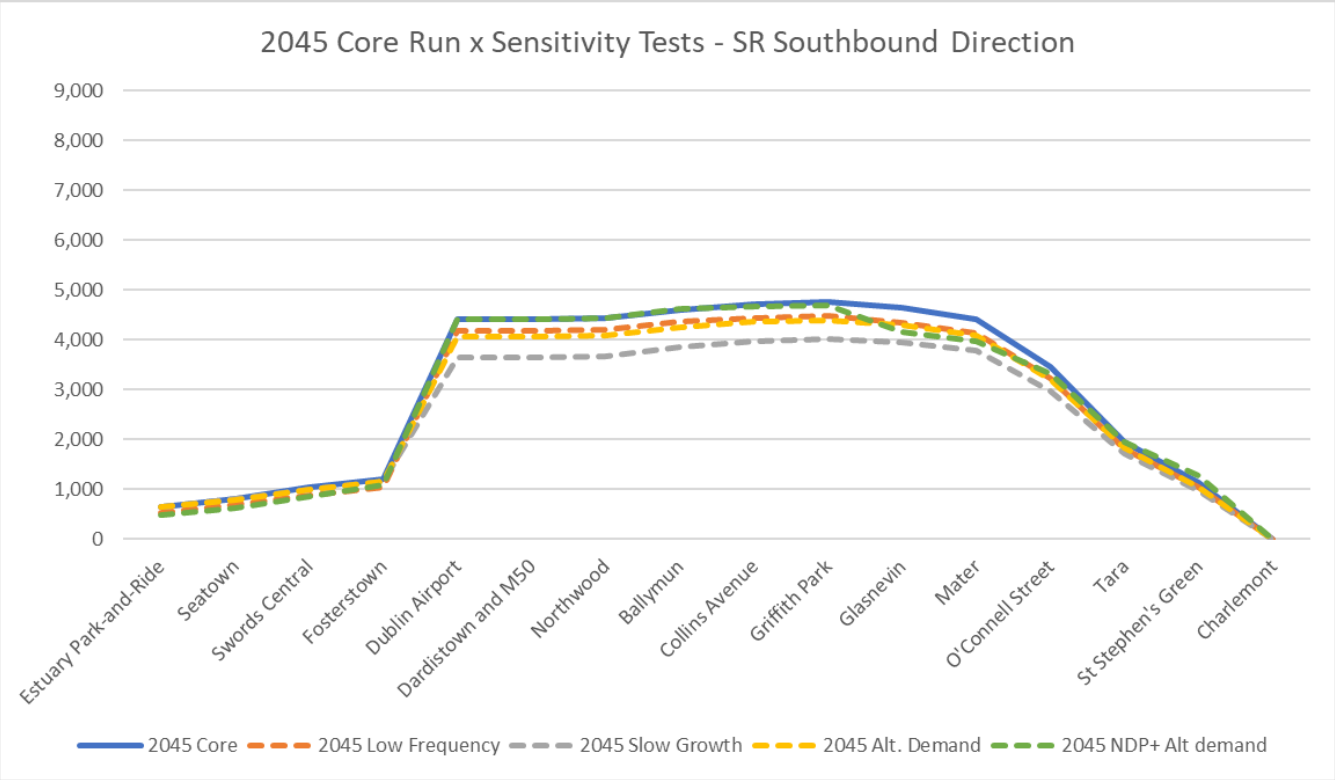
AM Peak Period					
Boarding -Southbound Direction	**2045 Business Case**	**2045 Low Frequency**	**2045 Slow Growth**	**2045 Alternative Demand**	**2045 NDP + Alternative Demand**
Estuary Park-and-Ride	2,138	1,927	2,234	2,782	1,314
Seatown	3,390	3,100	3,377	3,612	2,145
Swords Central	4,828	4,413	4,731	4,713	3,101
Fosterstown	6,749	6,213	6,535	6,363	4,987
Dublin Airport	8,146	7,582	7,580	7,544	6,764
Dardistown and M50	8,146	7,582	7,580	7,544	6,764
Northwood	8,751	8,140	8,143	8,030	7,225
Ballymun	10,472	9,755	9,734	9,467	8,962
Collins Avenue	10,649	9,885	9,895	9,630	9,417
Griffith Park	10,709	9,936	9,963	9,668	9,399
Glasnevin	11,765	10,760	11,028	10,450	9,329
Mater	11,428	10,411	10,740	10,136	9,014
O'Connell Street	9,817	8,905	9,280	8,674	7,873
Tara	5,907	5,356	5,581	5,182	5,093
St Stephen's Green	2,617	2,378	2,440	2,341	2,706
Charlemont	0	0	0	0	0



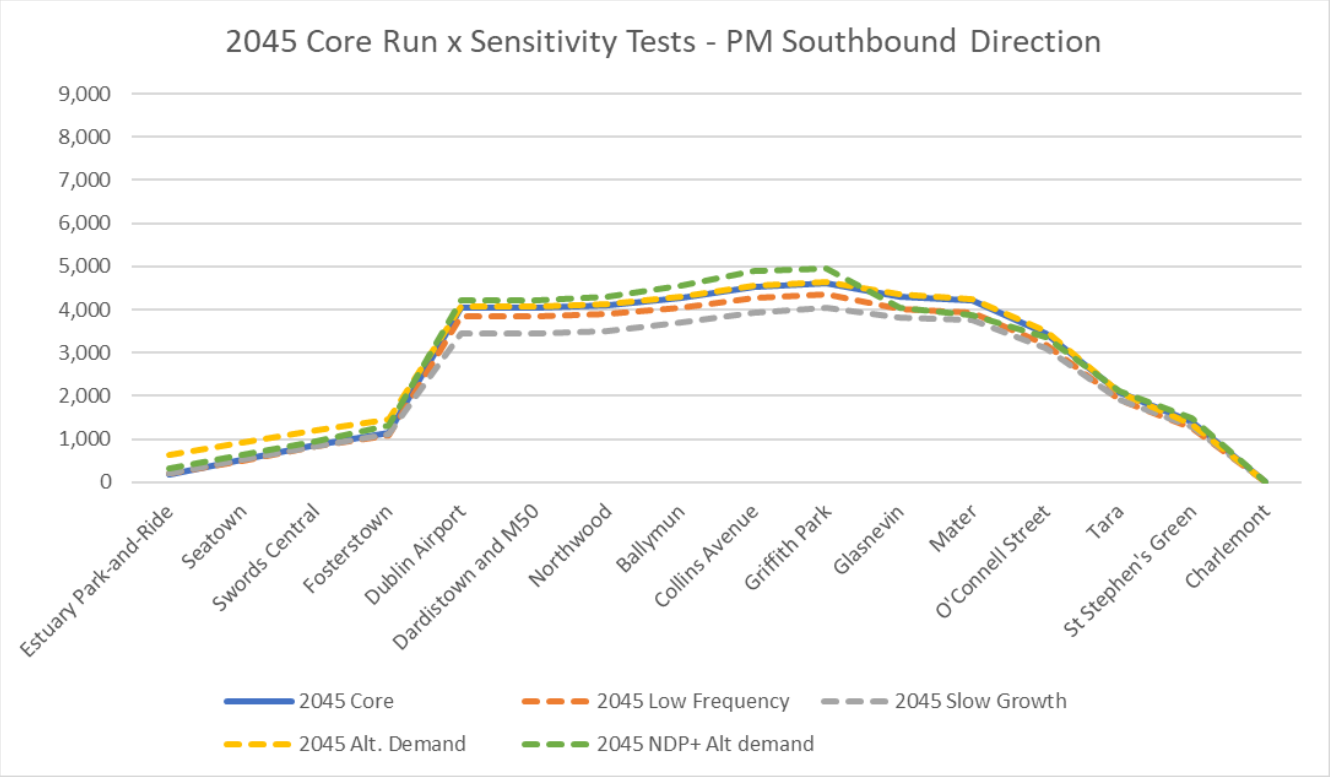
LT Peak Period					
Boarding -Southbound Direction	**2045 Business Case**	**2045 Low Frequency**	**2045 Slow Growth**	**2045 Alternative Demand**	**2045 NDP + Alternative Demand**
Estuary Park-and-Ride	994	934	969	381	740
Seatown	1,199	1,127	1,155	578	894
Swords Central	1,504	1,409	1,430	848	1,141
Fosterstown	1,771	1,653	1,676	1,086	1,453
Dublin Airport	4,513	4,293	3,797	3,619	4,584
Dardistown and M50	4,513	4,293	3,797	3,619	4,584
Northwood	4,610	4,377	3,892	3,699	4,647
Ballymun	4,957	4,693	4,215	4,006	4,961
Collins Avenue	4,990	4,713	4,260	4,038	4,906
Griffith Park	4,994	4,715	4,268	4,040	4,881
Glasnevin	4,952	4,662	4,261	3,991	4,437
Mater	4,717	4,429	4,066	3,802	4,243
O'Connell Street	3,744	3,510	3,249	3,007	3,531
Tara	2,166	2,024	1,898	1,798	2,064
St Stephen's Green	1,112	1,034	967	993	1,249
Charlemont	0	0	0	0	0



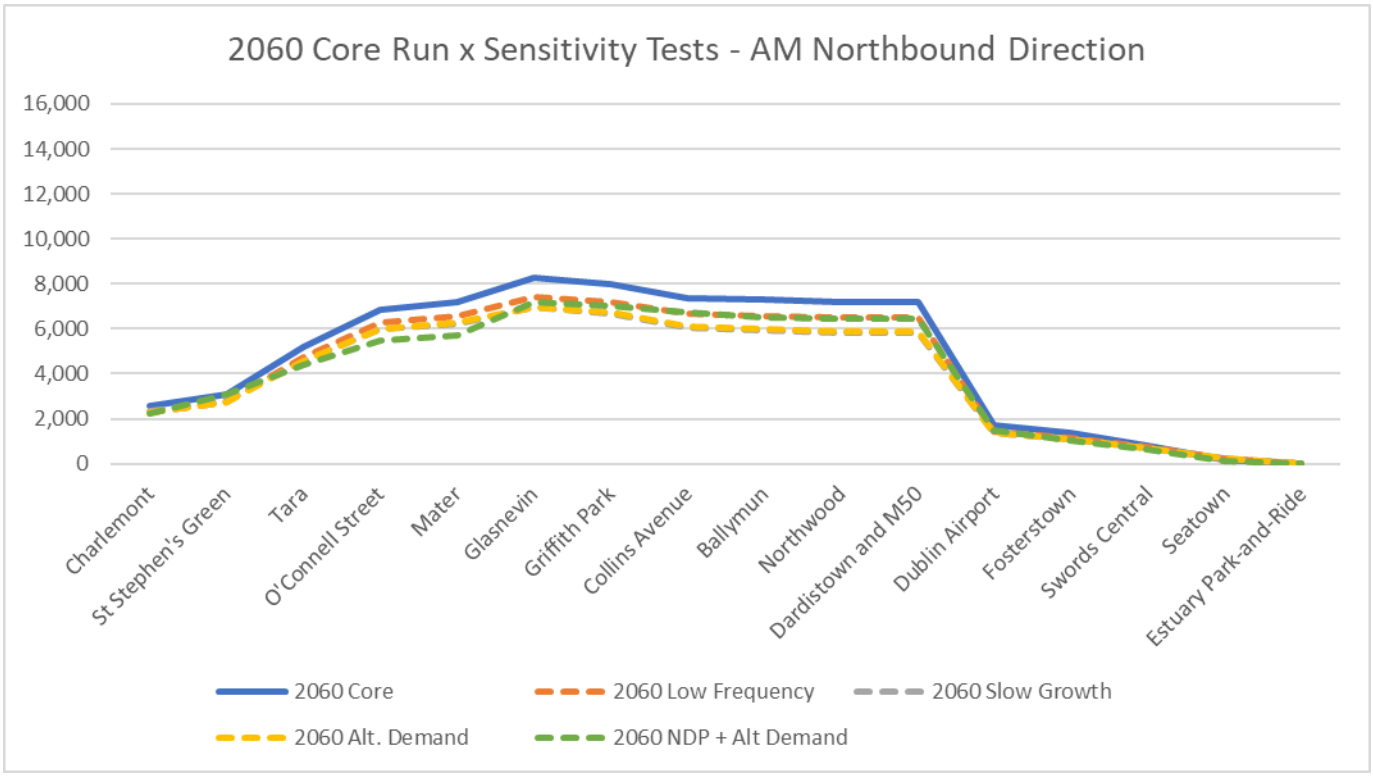
SR Peak Period					
Boarding -Southbound Direction	2045 Business Case	2045 Low Frequency	2045 Slow Growth	2045 Alternative Demand	2045 NDP + Alternative Demand
Estuary Park-and-Ride	647	524	651	657	476
Seatown	817	683	804	792	630
Swords Central	1,034	887	1,000	989	846
Fosterstown	1,203	1,043	1,154	1,150	1,092
Dublin Airport	4,409	4,188	3,639	4,057	4,415
Dardistown and M50	4,409	4,188	3,639	4,057	4,415
Northwood	4,436	4,207	3,674	4,086	4,445
Ballymun	4,611	4,365	3,846	4,260	4,624
Collins Avenue	4,714	4,446	3,971	4,359	4,679
Griffith Park	4,756	4,481	4,017	4,398	4,692
Glasnevin	4,638	4,353	3,949	4,294	4,156
Mater	4,426	4,142	3,780	4,098	3,983
O'Connell Street	3,471	3,226	2,981	3,208	3,311
Tara	1,947	1,807	1,707	1,823	1,949
St Stephen's Green	1,124	1,046	978	1,047	1,270
Charlemont	0	0	0	0	0



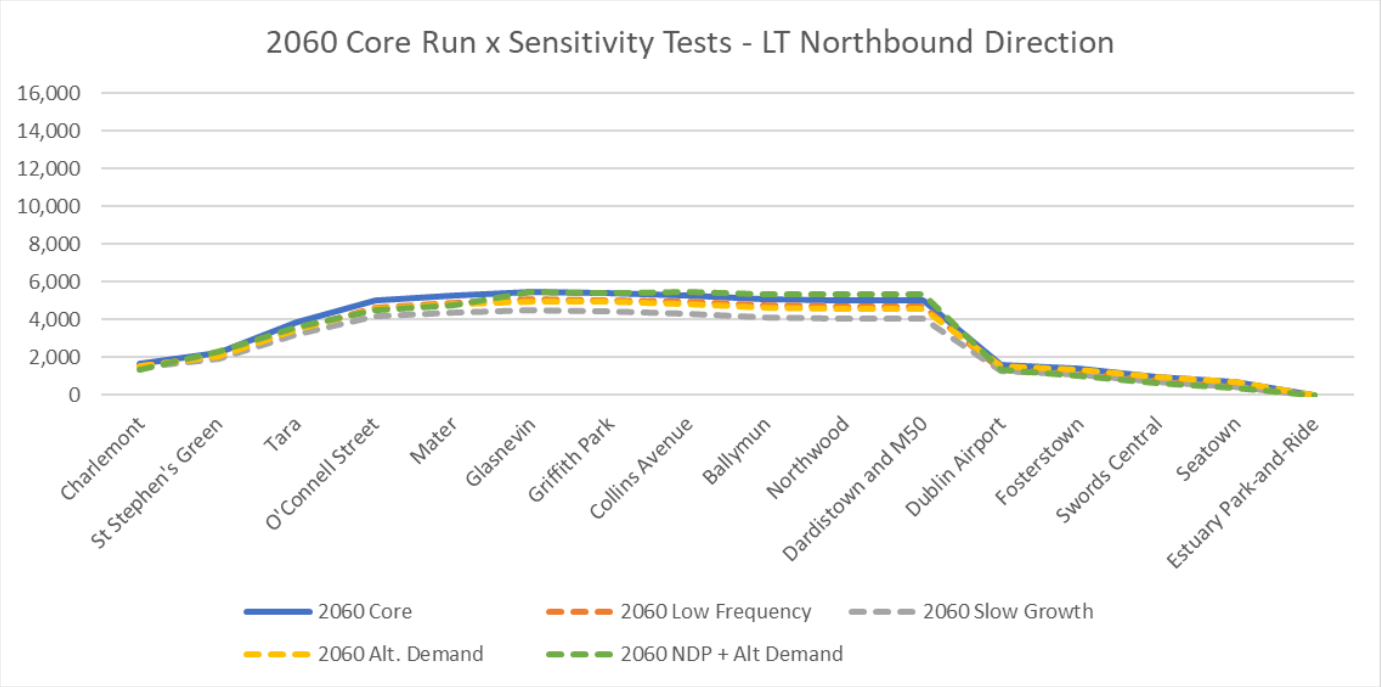
PM Peak Period					
Boarding -Southbound Direction	**2045 Business Case**	**2045 Low Frequency**	**2045 Slow Growth**	**2045 Alternative Demand**	**2045 NDP + Alternative Demand**
Estuary Park-and-Ride	192	198	220	648	328
Seatown	530	507	535	917	631
Swords Central	871	824	847	1,214	958
Fosterstown	1,148	1,080	1,109	1,467	1,306
Dublin Airport	4,040	3,851	3,445	4,084	4,214
Dardistown and M50	4,040	3,851	3,445	4,084	4,214
Northwood	4,093	3,892	3,508	4,133	4,305
Ballymun	4,279	4,056	3,692	4,314	4,551
Collins Avenue	4,517	4,263	3,944	4,548	4,890
Griffith Park	4,619	4,354	4,049	4,645	4,941
Glasnevin	4,295	4,022	3,809	4,346	4,053
Mater	4,218	3,922	3,751	4,254	3,877
O'Connell Street	3,457	3,185	3,099	3,502	3,359
Tara	2,080	1,902	1,918	2,087	2,100
St Stephen's Green	1,401	1,254	1,287	1,336	1,486
Charlemont	0	0	0	0	0



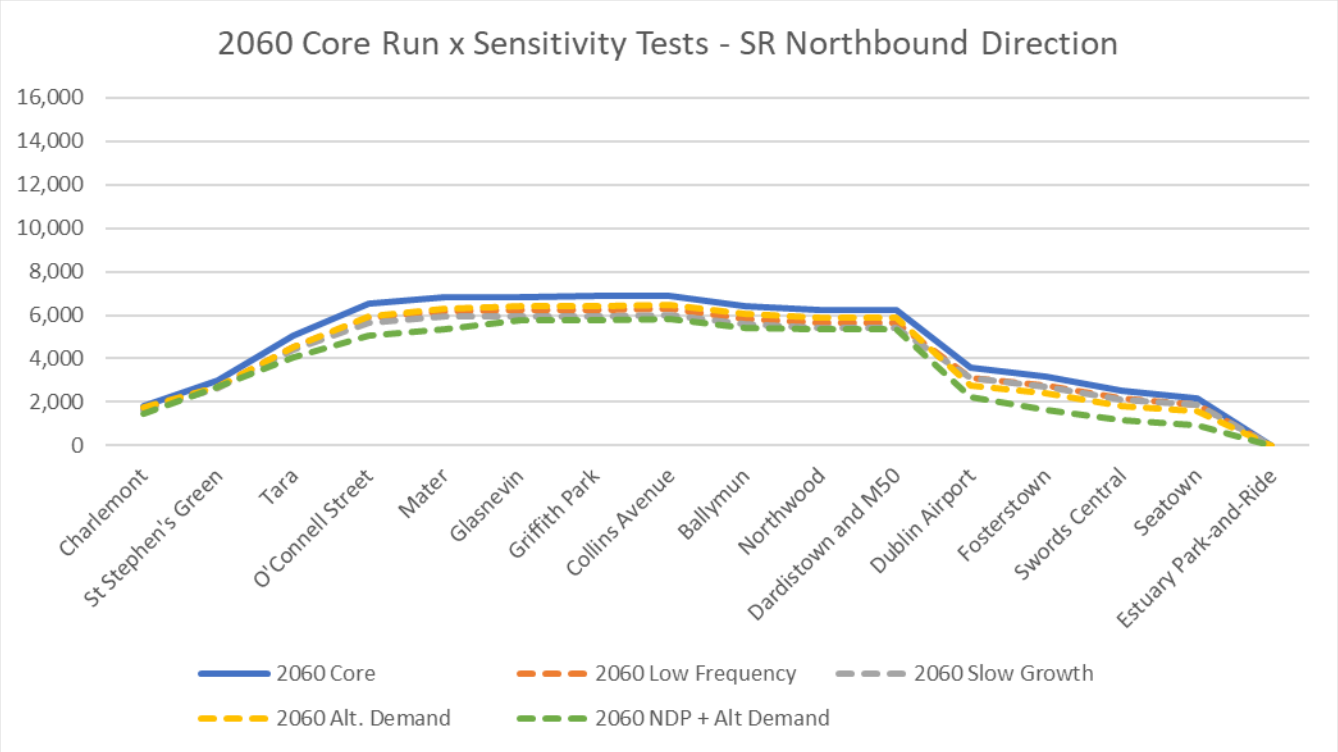
AM Peak Period					
Boarding -Northbound Direction	**2060 Business Case**	**2060 Low Frequency**	**2060 Slow Growth**	**2060 Alternative Demand**	**2060 NDP + Alternative Demand**
Charlemont	2,560	2,264	2,337	2,284	2,254
St Stephen's Green	3,069	2,762	2,805	2,757	3,092
Tara	5,169	4,721	4,575	4,573	4,369
O'Connell Street	6,869	6,250	5,966	5,969	5,494
Mater	7,187	6,560	6,245	6,264	5,701
Glasnevin	8,243	7,429	6,950	6,958	7,200
Griffith Park	7,998	7,208	6,700	6,719	7,038
Collins Avenue	7,375	6,663	6,060	6,108	6,704
Ballymun	7,274	6,561	5,915	5,974	6,524
Northwood	7,190	6,486	5,800	5,869	6,454
Dardistown and M50	7,190	6,486	5,800	5,869	6,454
Dublin Airport	1,724	1,459	1,396	1,383	1,470
Fosterstown	1,358	1,146	1,091	1,085	1,047
Swords Central	822	721	709	707	624
Seatown	201	211	224	219	125
Estuary Park-and-Ride	0	0	0	0	0



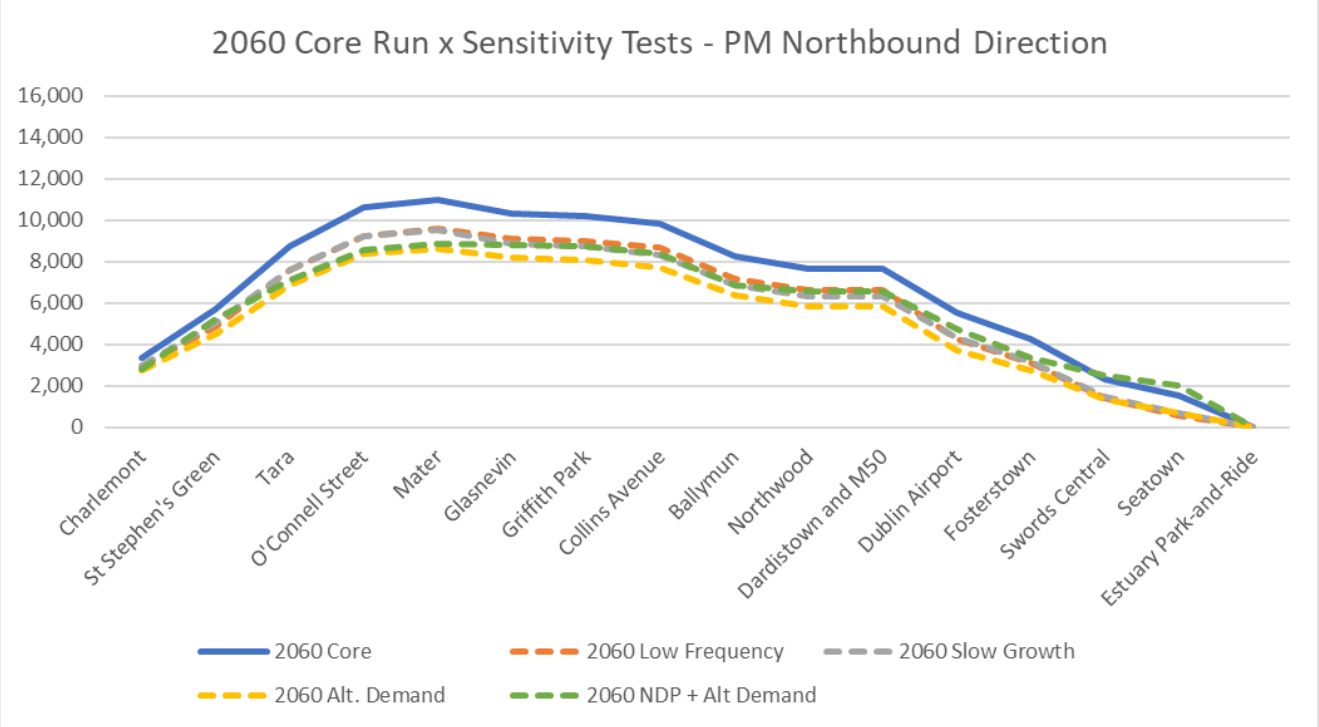
LT Peak Period					
Boarding-Northbound Direction	2060 Business Case	2060 Low Frequency	2060 Slow Growth	2060 Alternative Demand	2060 NDP + Alternative Demand
Estuary Park-and-Ride	1,663	1,539	1,449	1,517	1,348
Seatown	2,254	2,057	1,927	2,076	2,309
Swords Central	3,843	3,504	3,198	3,508	3,600
Fosterstown	5,056	4,664	4,187	4,600	4,504
Dublin Airport	5,303	4,912	4,394	4,828	4,764
Dardistown and M50	5,454	5,080	4,502	4,967	5,456
Northwood	5,415	5,050	4,462	4,934	5,443
Ballymun	5,295	4,955	4,340	4,824	5,480
Collins Avenue	5,088	4,774	4,142	4,633	5,360
Griffith Park	5,022	4,721	4,075	4,573	5,336
Glasnevin	5,022	4,721	4,075	4,573	5,336
Mater	1,610	1,370	1,294	1,538	1,353
O'Connell Street	1,394	1,173	1,093	1,348	1,023
Tara	981	776	735	990	656
St Stephen's Green	678	478	460	719	396
Charlemont	0	0	0	0	0



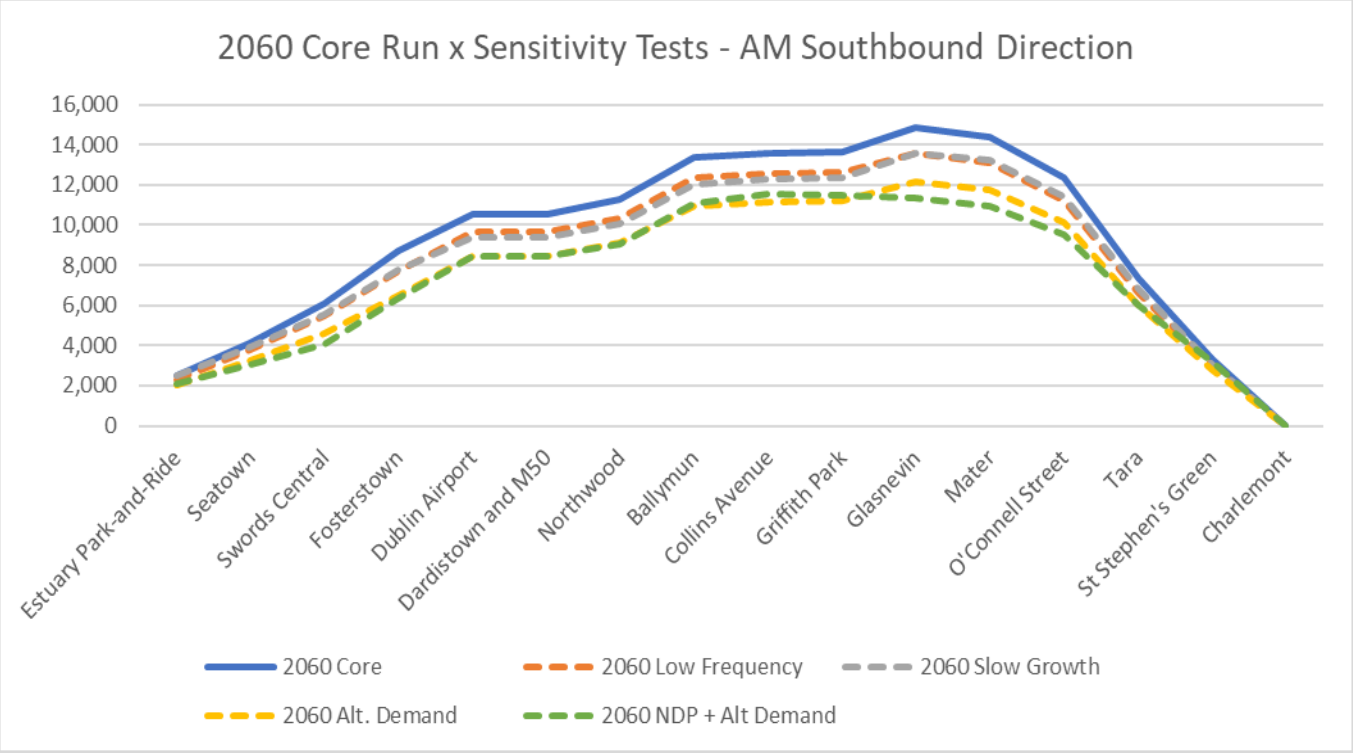
SR Peak Period					
Boarding -Northbound Direction	**2060 Business Case**	**2060 Low Frequency**	**2060 Slow Growth**	**2060 Alternative Demand**	**2060 NDP + Alternative Demand**
Charlemont	1,830	1,684	1,654	1,746	1,480
St Stephen's Green	2,976	2,695	2,660	2,707	2,729
Tara	5,042	4,530	4,400	4,553	4,065
O'Connell Street	6,510	5,867	5,642	5,945	5,041
Mater	6,821	6,165	5,915	6,281	5,324
Glasnevin	6,838	6,211	5,941	6,403	5,750
Griffith Park	6,869	6,239	5,965	6,437	5,783
Collins Avenue	6,905	6,270	6,005	6,459	5,853
Ballymun	6,438	5,838	5,563	6,052	5,424
Northwood	6,235	5,659	5,386	5,904	5,325
Dardistown and M50	6,235	5,659	5,386	5,904	5,325
Dublin Airport	3,587	3,134	3,102	2,755	2,239
Fosterstown	3,152	2,732	2,711	2,389	1,623
Swords Central	2,519	2,156	2,132	1,838	1,175
Seatown	2,192	1,866	1,856	1,578	914
Estuary Park-and-Ride	0	0	0	0	0



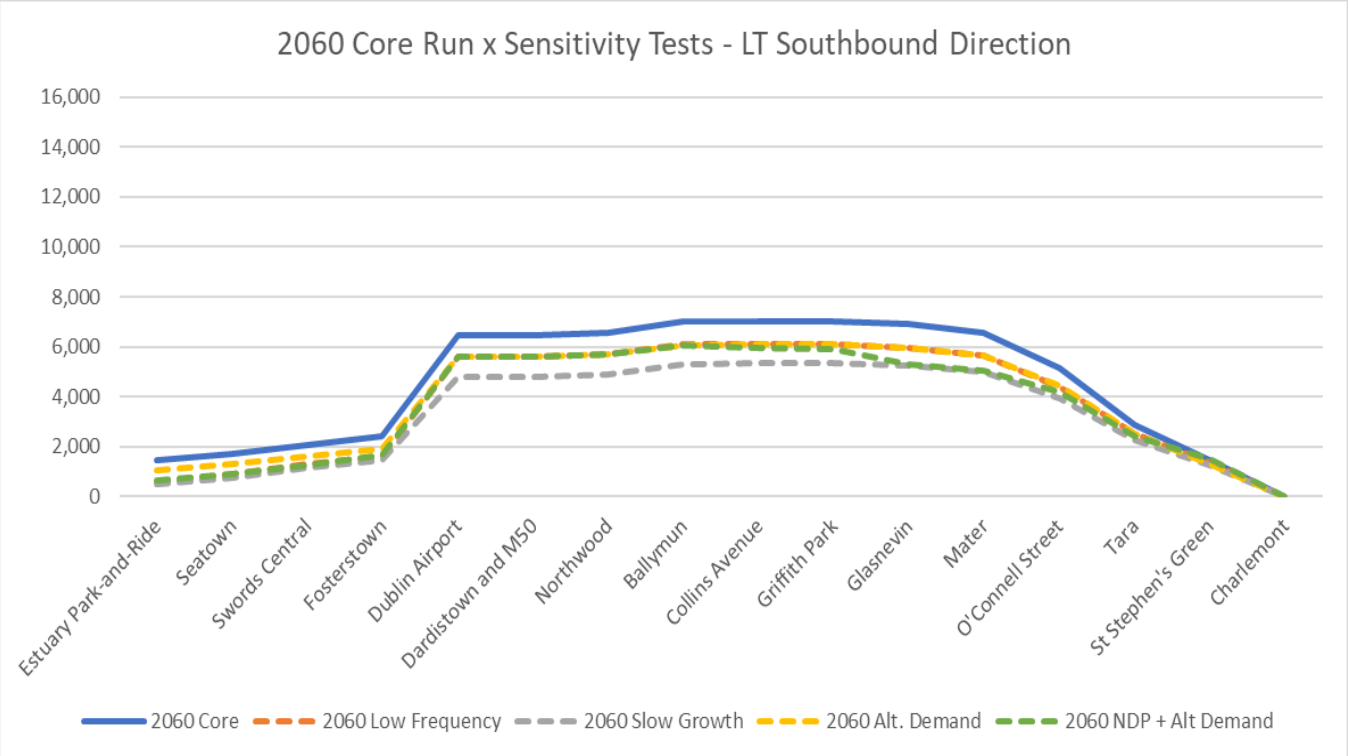
PM Peak Period					
Boarding -Northbound Direction	**2060 Business Case**	**2060 Low Frequency**	**2060 Slow Growth**	**2060 Alternative Demand**	**2060 NDP + Alternative Demand**
Charlemont	3,340	2,907	2,978	2,743	2,812
St Stephen's Green	5,689	4,888	5,034	4,496	5,253
Tara	8,751	7,572	7,616	6,844	7,102
O'Connell Street	10,641	9,247	9,212	8,350	8,587
Mater	11,006	9,615	9,518	8,647	8,890
Glasnevin	10,303	9,091	8,841	8,174	8,786
Griffith Park	10,192	8,993	8,723	8,081	8,716
Collins Avenue	9,830	8,664	8,343	7,731	8,379
Ballymun	8,246	7,165	6,868	6,377	6,884
Northwood	7,653	6,603	6,298	5,863	6,570
Dardistown and M50	7,653	6,603	6,298	5,863	6,570
Dublin Airport	5,528	4,264	4,300	3,719	4,752
Fosterstown	4,249	3,094	3,143	2,768	3,362
Swords Central	2,350	1,410	1,466	1,357	2,494
Seatown	1,508	553	653	699	1,994
Estuary Park-and-Ride	0	0	0	0	0



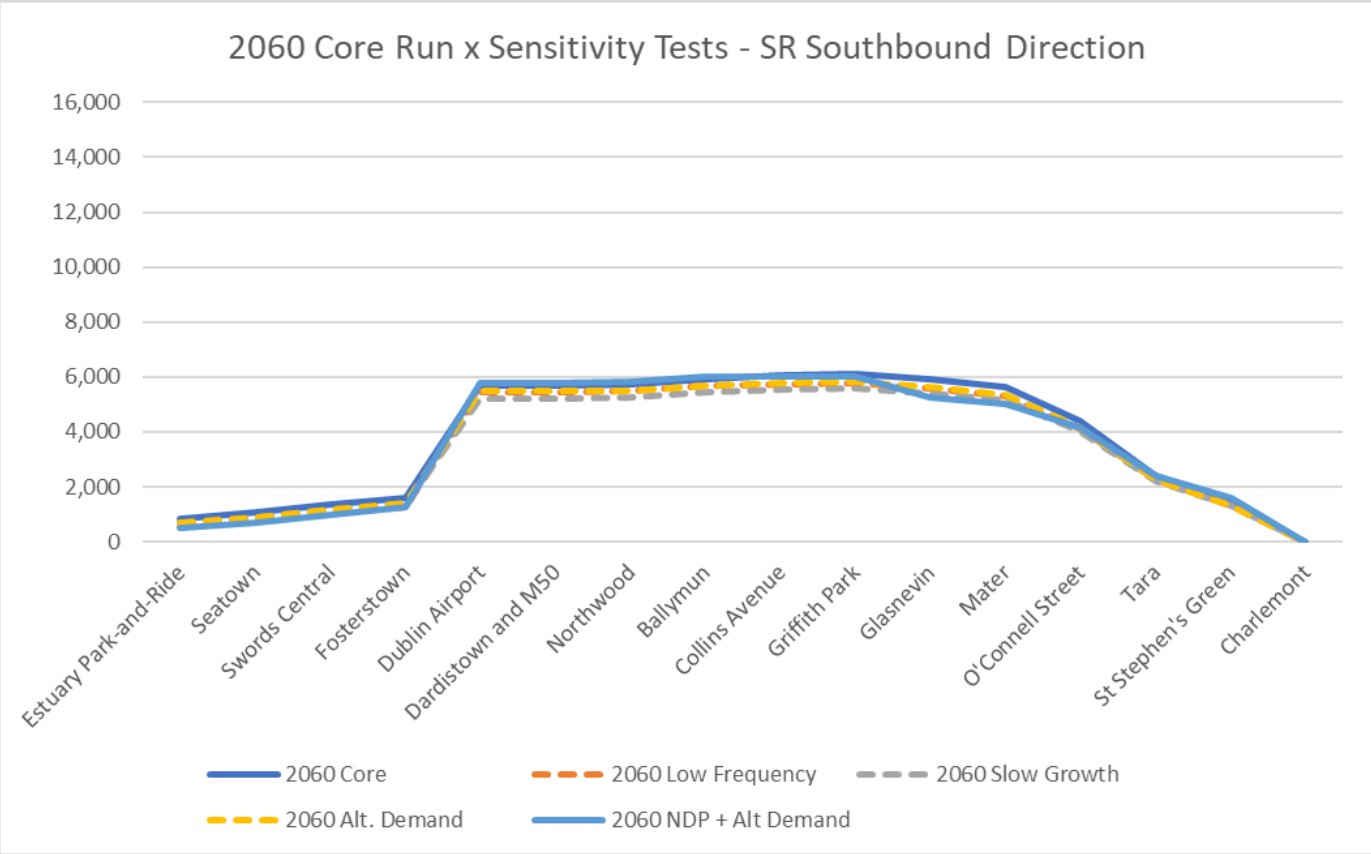
AM Peak Period					
Boarding -Southbound Direction	2060 Business Case	2060 Low Frequency	2060 Slow Growth	2060 Alternative Demand	2060 NDP + Alternative Demand
Estuary Park-and-Ride	2,503	2,330	2,518	2,031	2,096
Seatown	4,105	3,761	3,934	3,213	3,020
Swords Central	6,086	5,501	5,557	4,583	4,085
Fosterstown	8,678	7,727	7,782	6,486	6,367
Dublin Airport	10,520	9,655	9,372	8,456	8,461
Dardistown and M50	10,520	9,655	9,372	8,456	8,461
Northwood	11,259	10,354	10,073	9,093	9,018
Ballymun	13,398	12,379	12,044	10,909	11,044
Collins Avenue	13,574	12,549	12,271	11,144	11,523
Griffith Park	13,628	12,605	12,336	11,179	11,488
Glasnevin	14,859	13,581	13,560	12,123	11,376
Mater	14,398	13,132	13,206	11,771	10,965
O'Connell Street	12,350	11,235	11,394	10,114	9,541
Tara	7,334	6,614	6,793	6,001	6,039
St Stephen's Green	3,333	2,986	3,023	2,788	3,194
Charlemont	0	0	0	0	0



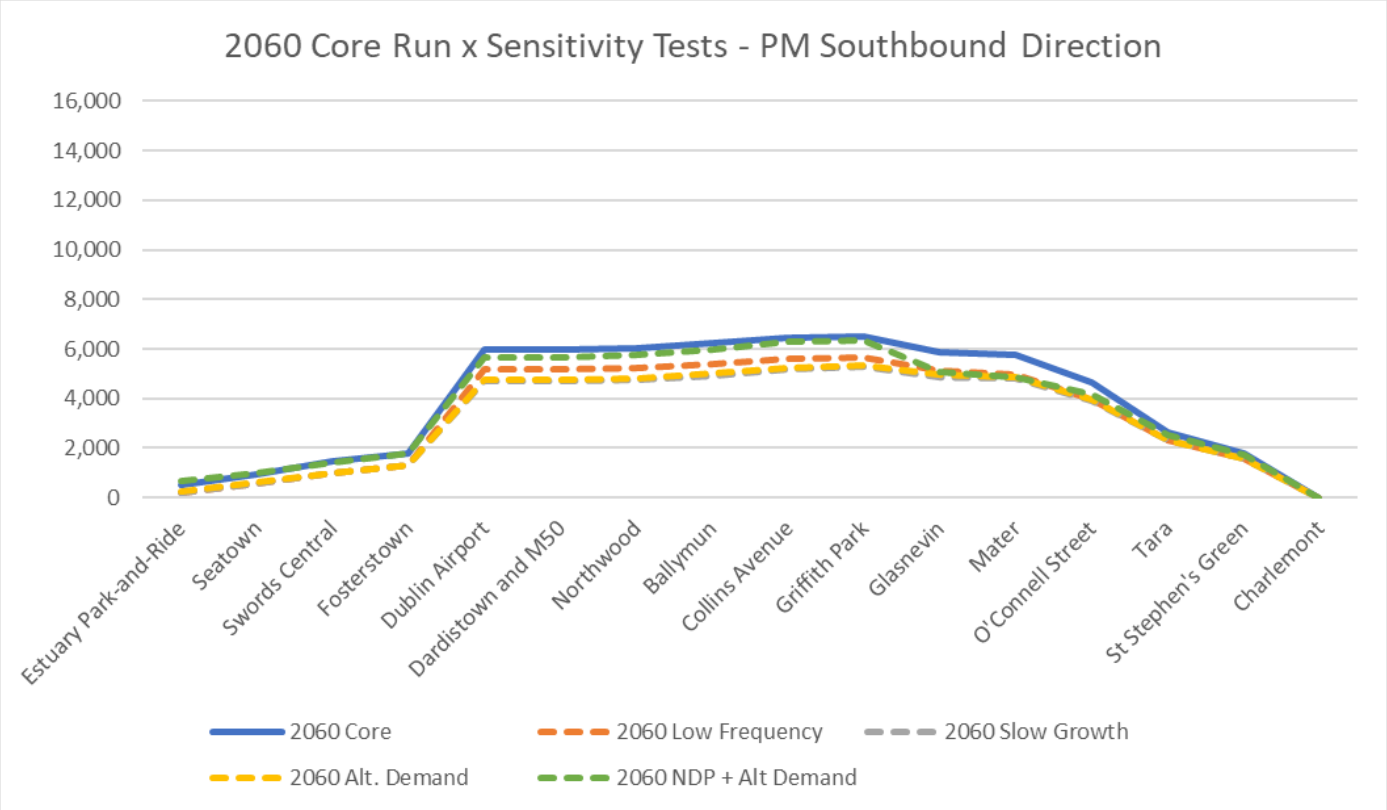
LT Peak Period					
Boarding -Southbound Direction	**2060 Business Case**	**2060 Low Frequency**	**2060 Slow Growth**	**2060 Alternative Demand**	**2060 NDP + Alternative Demand**
Estuary Park-and-Ride	1,438	614	503	1,071	663
Seatown	1,688	879	754	1,287	875
Swords Central	2,076	1,275	1,124	1,616	1,241
Fosterstown	2,402	1,605	1,440	1,884	1,633
Dublin Airport	6,459	5,618	4,788	5,583	5,615
Dardistown and M50	6,459	5,618	4,788	5,583	5,615
Northwood	6,575	5,716	4,898	5,679	5,689
Ballymun	7,011	6,118	5,293	6,069	6,049
Collins Avenue	7,024	6,119	5,324	6,090	5,950
Griffith Park	7,023	6,114	5,327	6,089	5,918
Glasnevin	6,897	5,966	5,256	5,972	5,303
Mater	6,555	5,637	4,990	5,668	5,050
O'Connell Street	5,167	4,397	3,926	4,455	4,202
Tara	2,869	2,491	2,268	2,524	2,431
St Stephen's Green	1,467	1,337	1,246	1,323	1,516
Charlemont	0	0	0	0	0



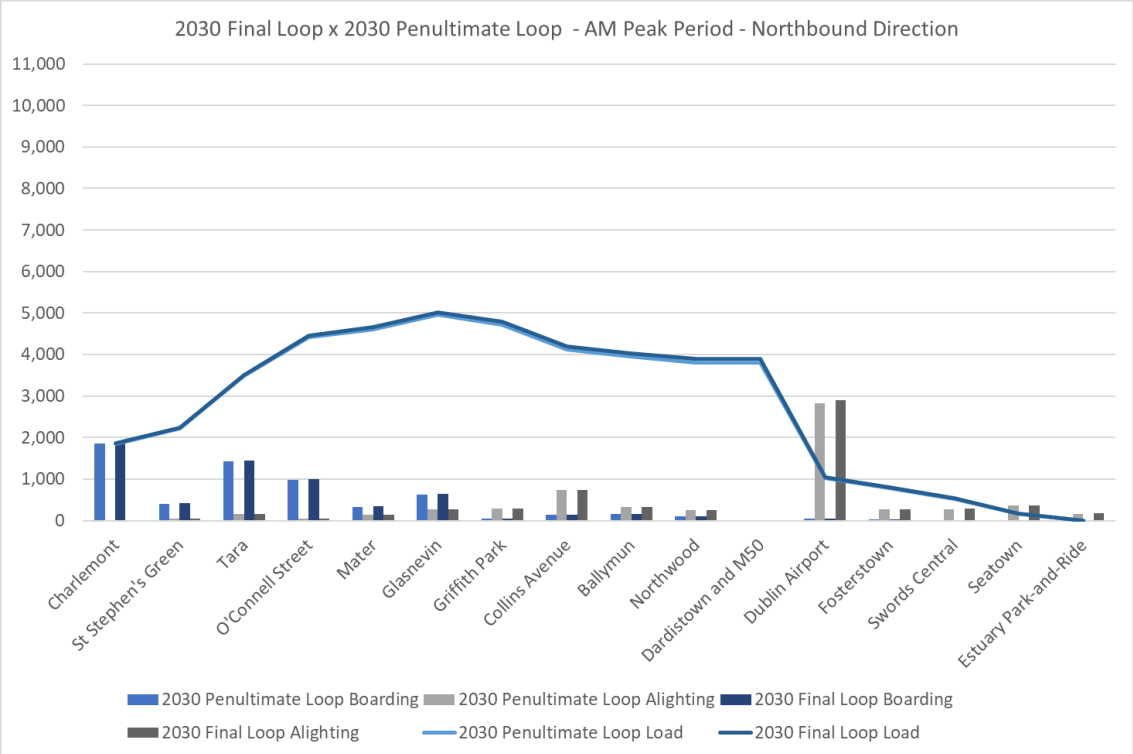
SR Peak Period					
Boarding -Southbound Direction	2060 Business Case	2060 Low Frequency	2060 Slow Growth	2060 Alternative Demand	3060 NDP + Alternative Demand
Estuary Park-and-Ride	857	567	706	674	513
Seatown	1,074	773	901	890	702
Swords Central	1,356	1,042	1,155	1,188	975
Fosterstown	1,574	1,245	1,349	1,388	1,271
Dublin Airport	5,679	5,450	5,225	5,488	5,798
Dardistown and M50	5,679	5,450	5,225	5,488	5,798
Northwood	5,713	5,471	5,249	5,506	5,826
Ballymun	5,937	5,668	5,444	5,703	6,009
Collins Avenue	6,060	5,740	5,535	5,770	6,024
Griffith Park	6,103	5,773	5,577	5,805	6,028
Glasnevin	5,936	5,586	5,420	5,618	5,231
Mater	5,651	5,322	5,160	5,336	5,002
O'Connell Street	4,402	4,121	4,032	4,153	4,149
Tara	2,417	2,240	2,216	2,266	2,388
St Stephen's Green	1,412	1,318	1,291	1,327	1,572
Charlemont	0	0	0	0	0

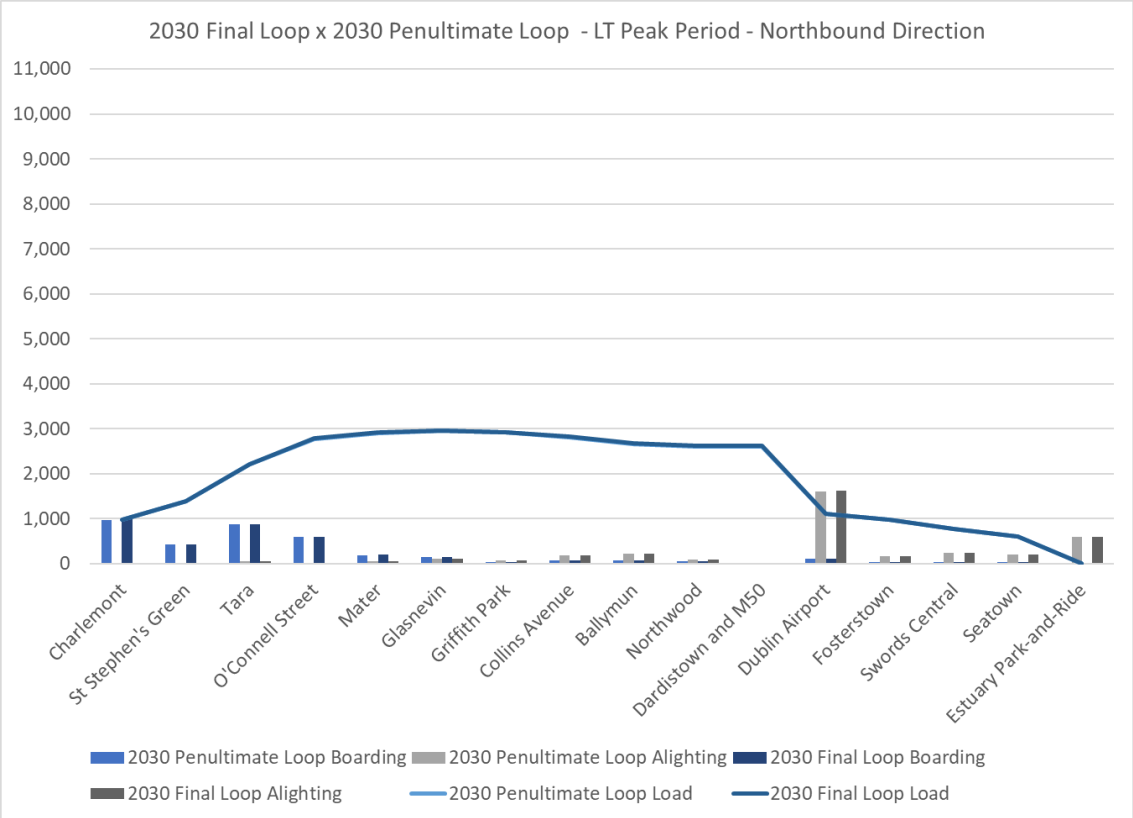


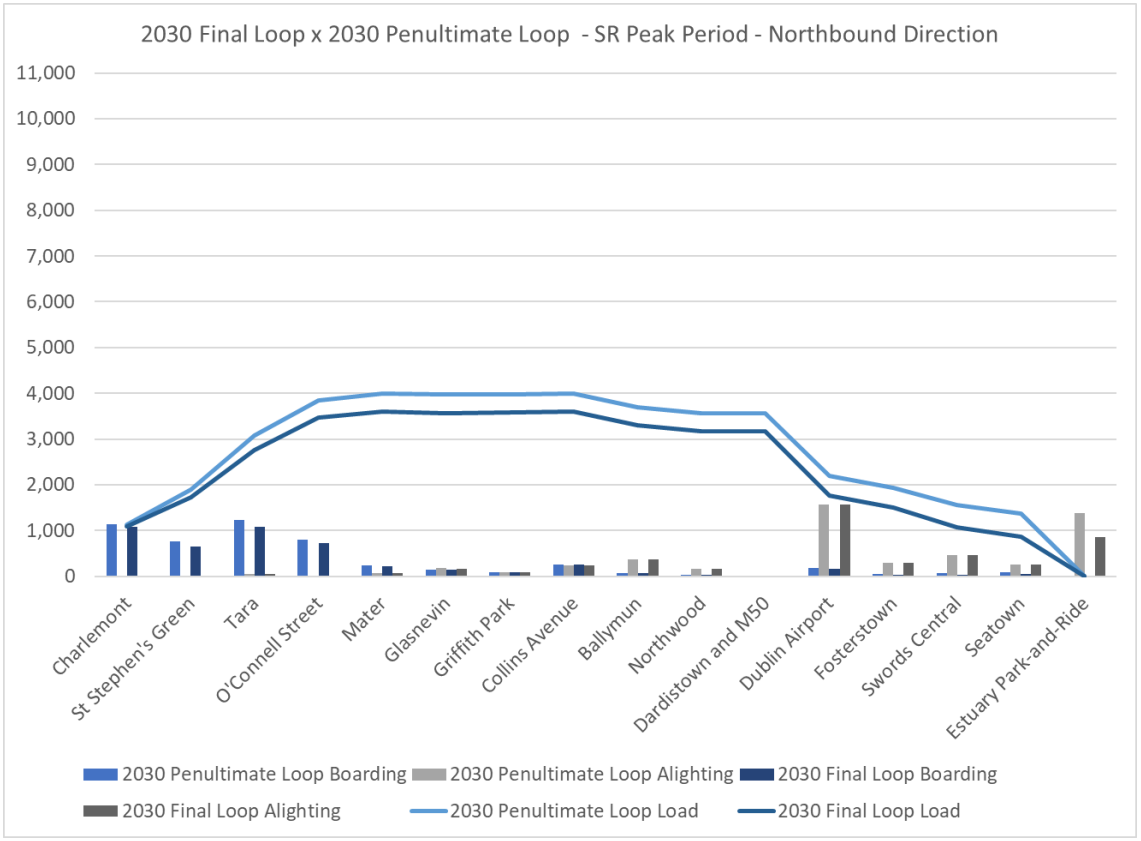
PM Peak Period					
Boarding - Southbound Direction	**2060 Business Case**	**2060 Low Frequency**	**2060 Slow Growth**	**2060 Alternative Demand**	**2060 NDP + Alternative Demand**
Estuary Park-and-Ride	530	182	209	231	659
Seatown	956	573	580	603	989
Swords Central	1,446	1,007	975	1,003	1,384
Fosterstown	1,786	1,320	1,285	1,310	1,778
Dublin Airport	5,990	5,199	4,682	4,771	5,660
Dardistown and M50	5,990	5,199	4,682	4,771	5,660
Northwood	6,026	5,226	4,733	4,821	5,744
Ballymun	6,221	5,401	4,934	5,028	5,990
Collins Avenue	6,433	5,590	5,171	5,249	6,289
Griffith Park	6,529	5,674	5,273	5,345	6,329
Glasnevin	5,880	5,111	4,868	4,942	5,069
Mater	5,758	4,979	4,784	4,838	4,844
O'Connell Street	4,634	3,951	3,895	3,934	4,171
Tara	2,652	2,294	2,318	2,324	2,524
St Stephen's Green	1,801	1,553	1,588	1,558	1,751
Charlemont	0	0	0	0	0



Appendix C. Model Assessment: Penultimate Loop Analysis






2030 Final Loop x 2030 Penultimate Loop - SR Peak Period - Northbound Direction
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Seatown
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2030 Final Loop Boarding
2030 Final Loop Alighting
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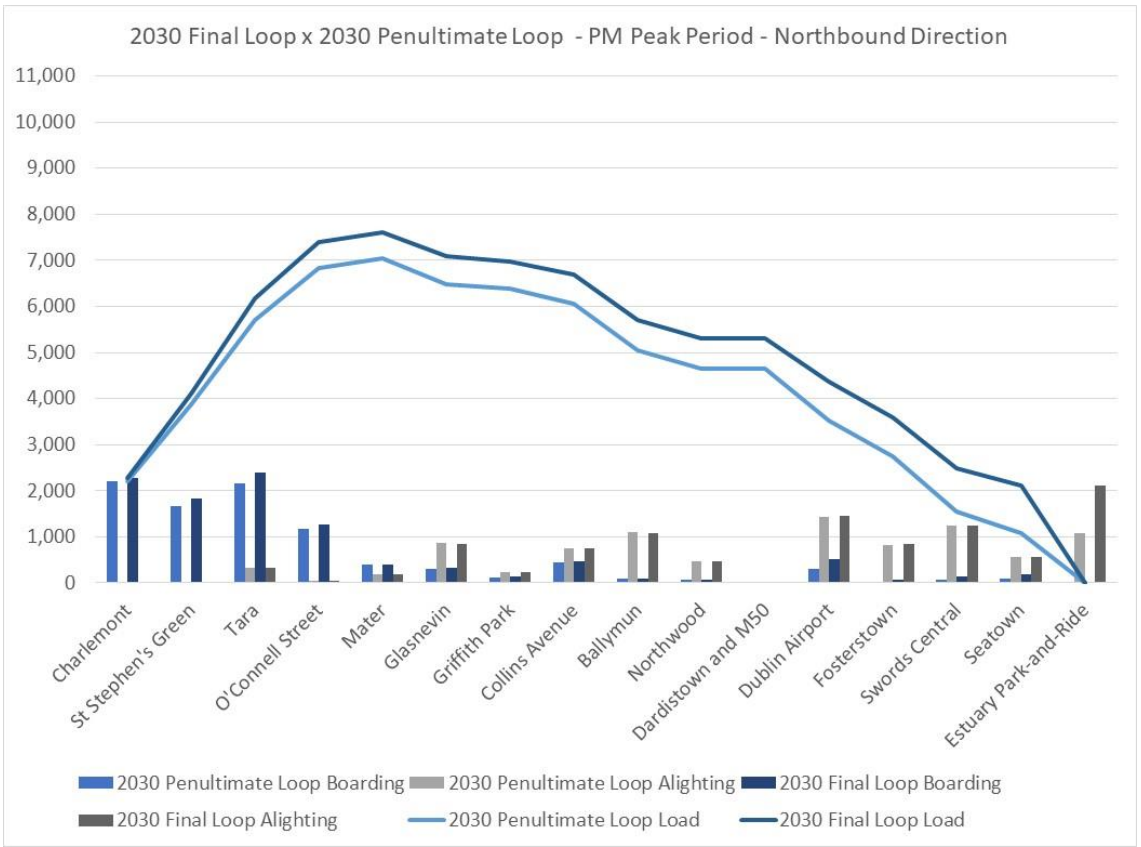
2030 Final Loop Load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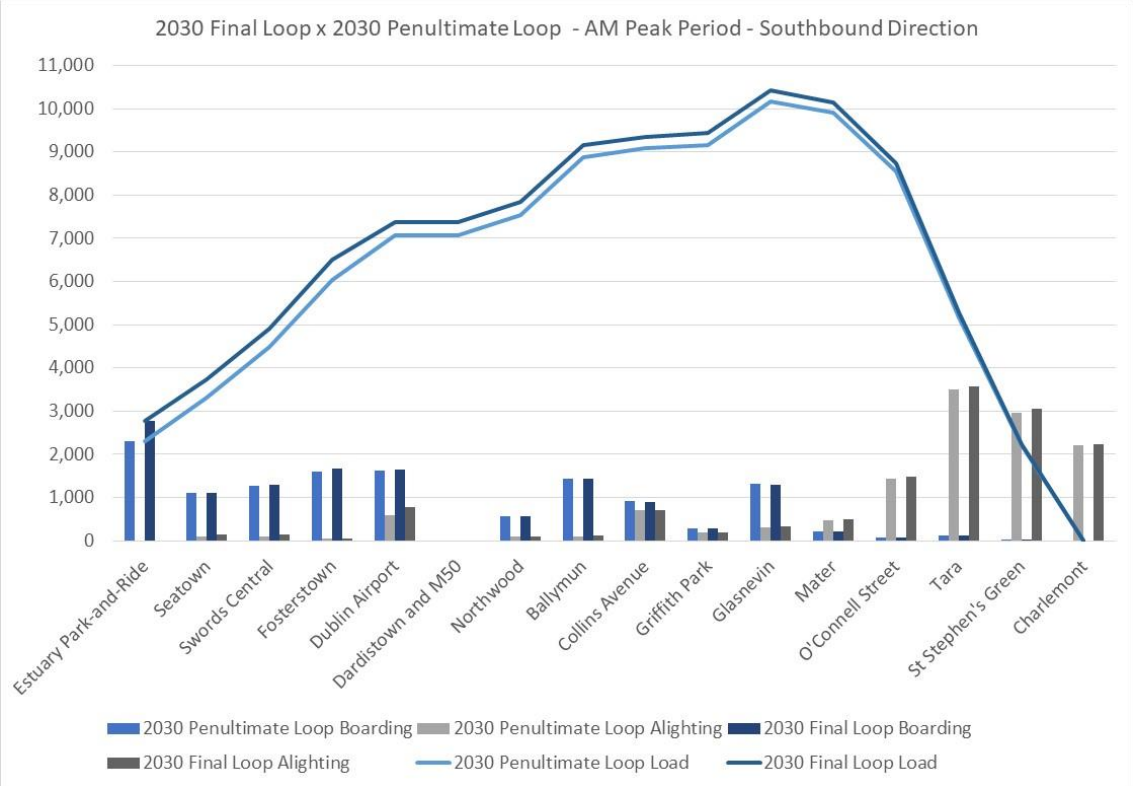
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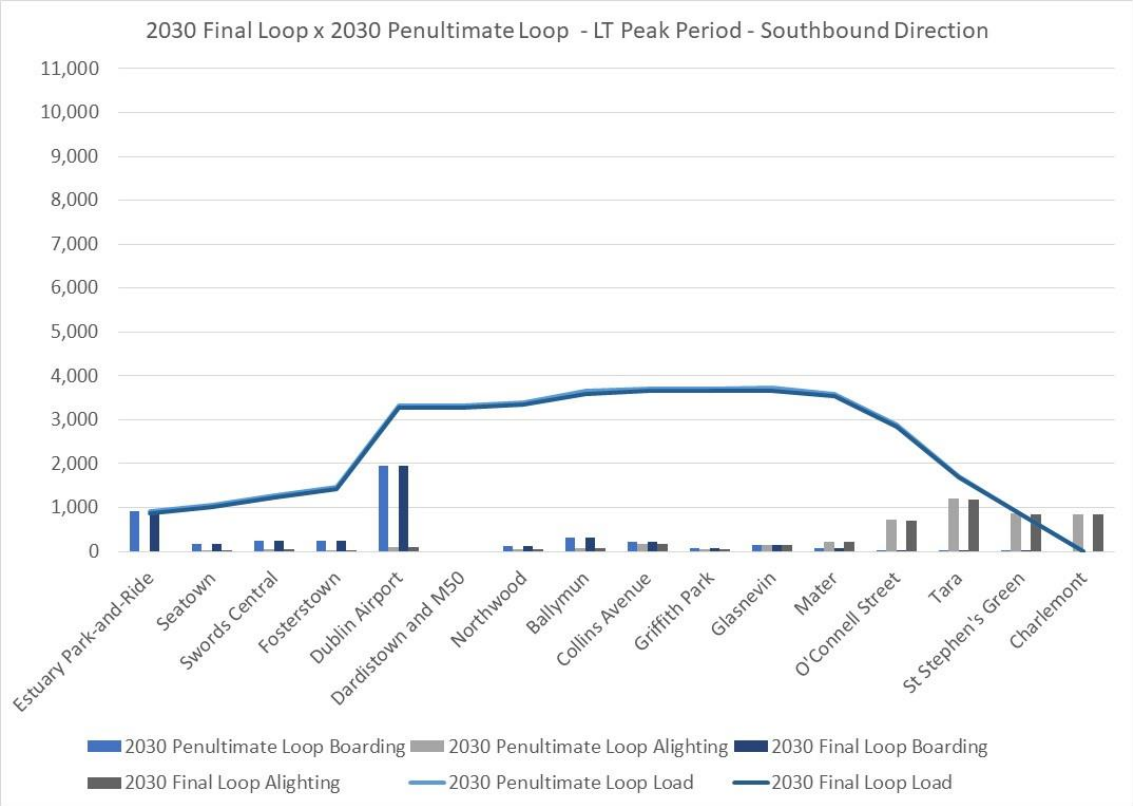
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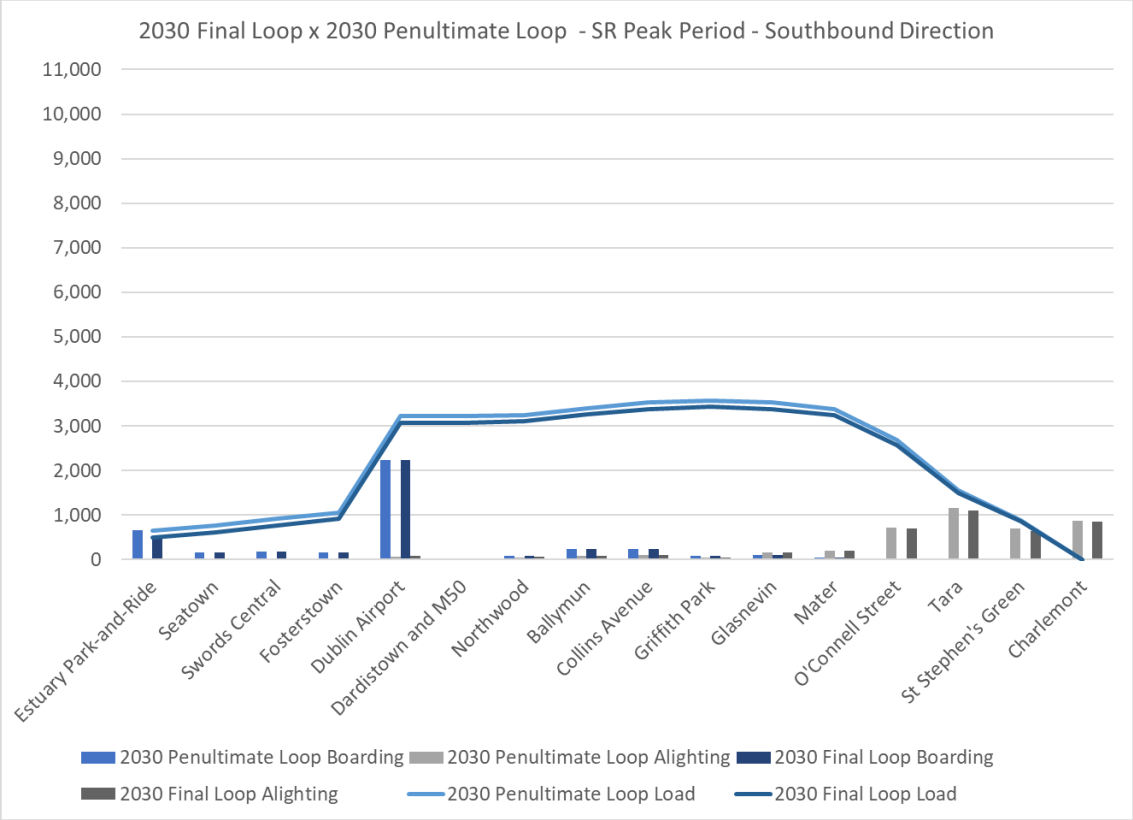
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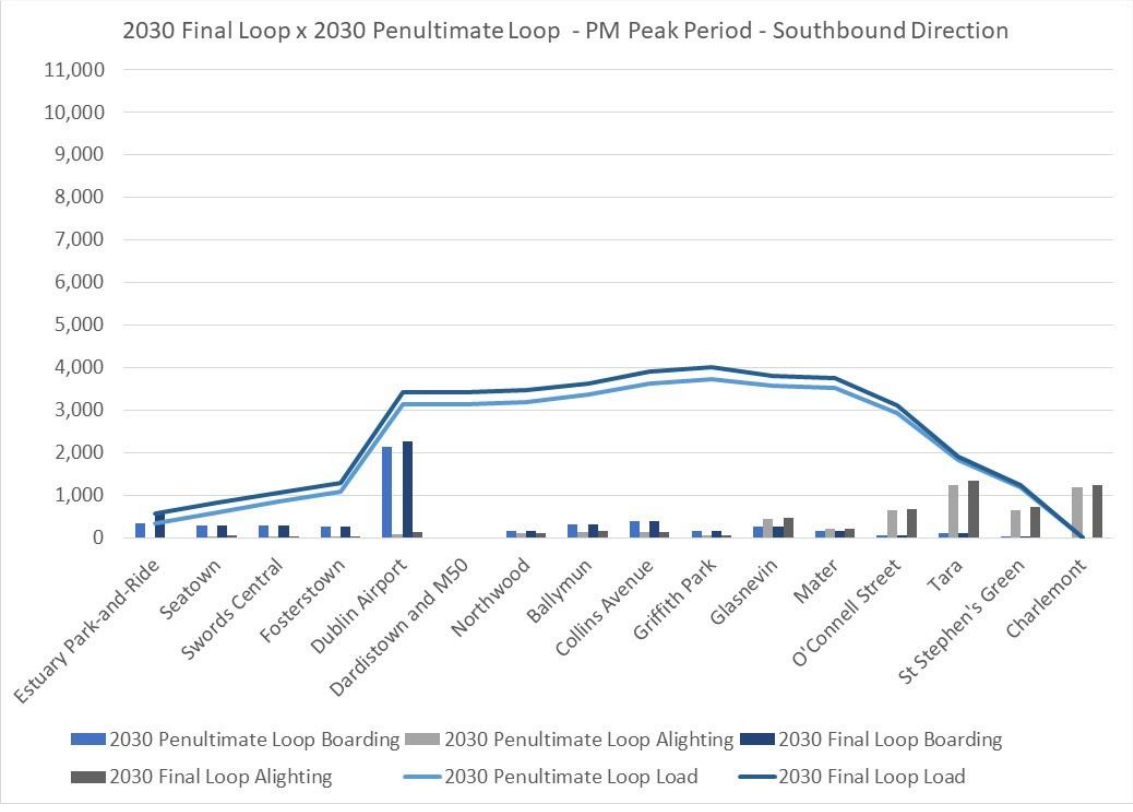
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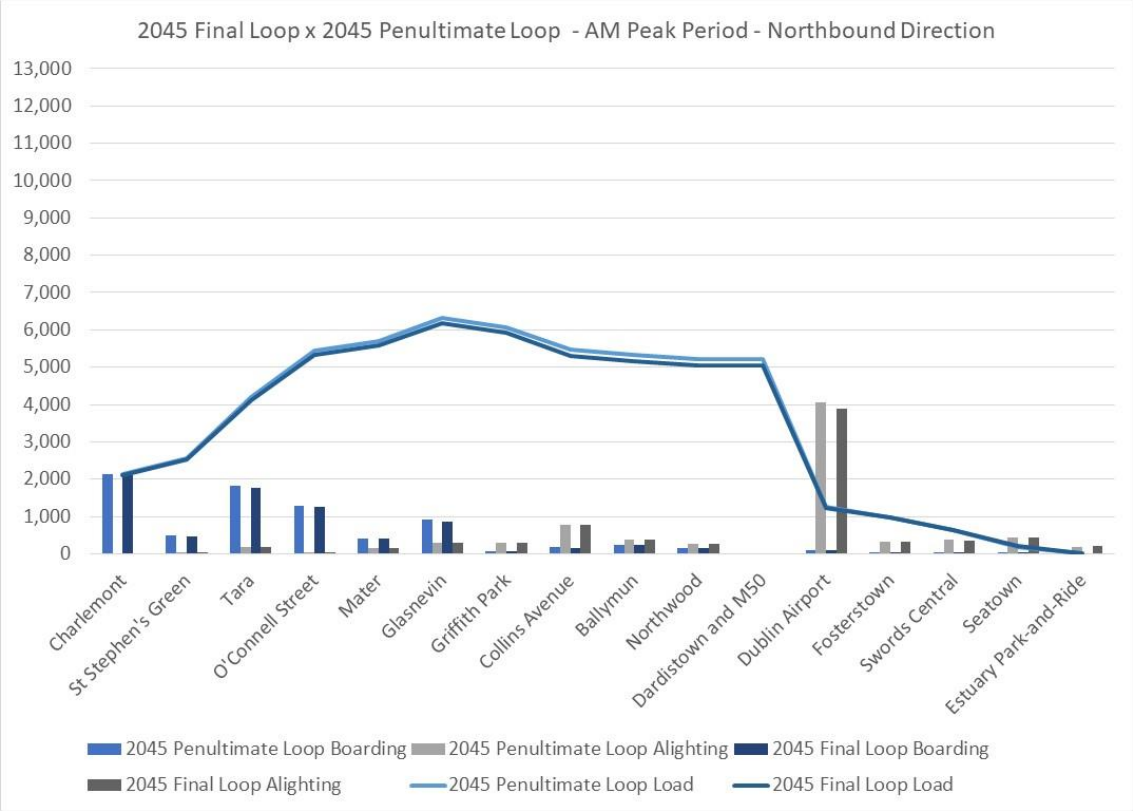
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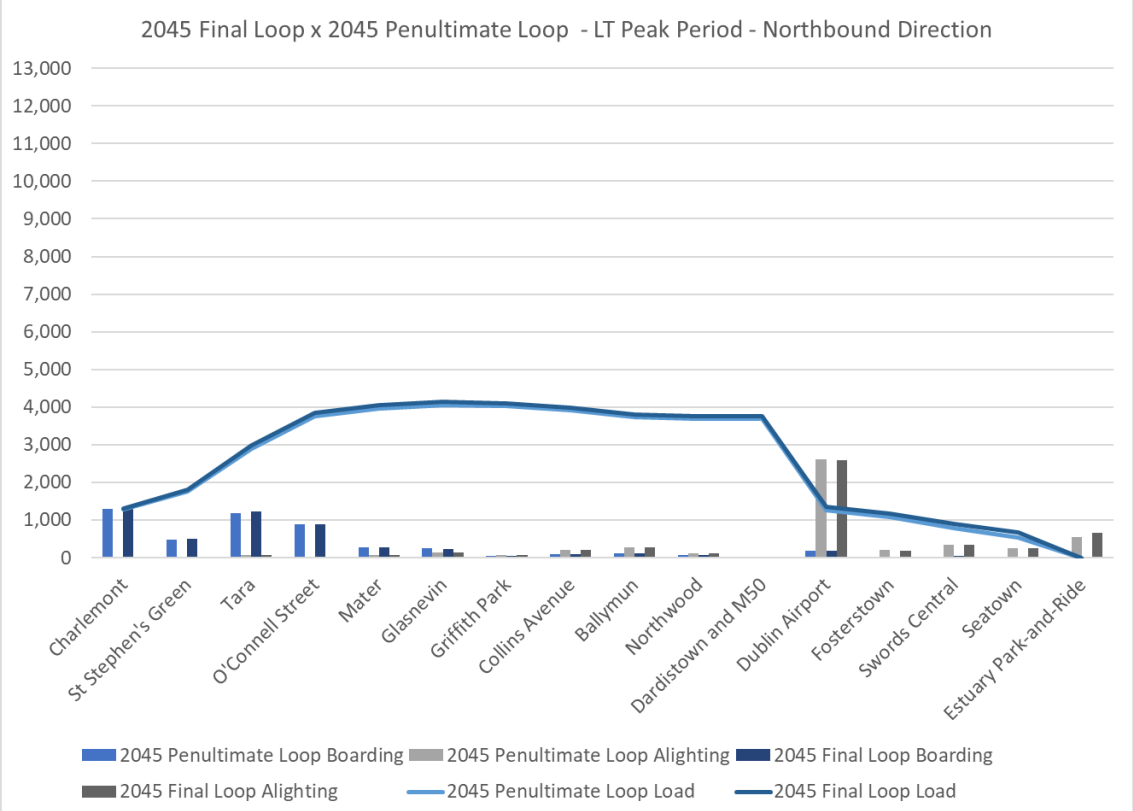
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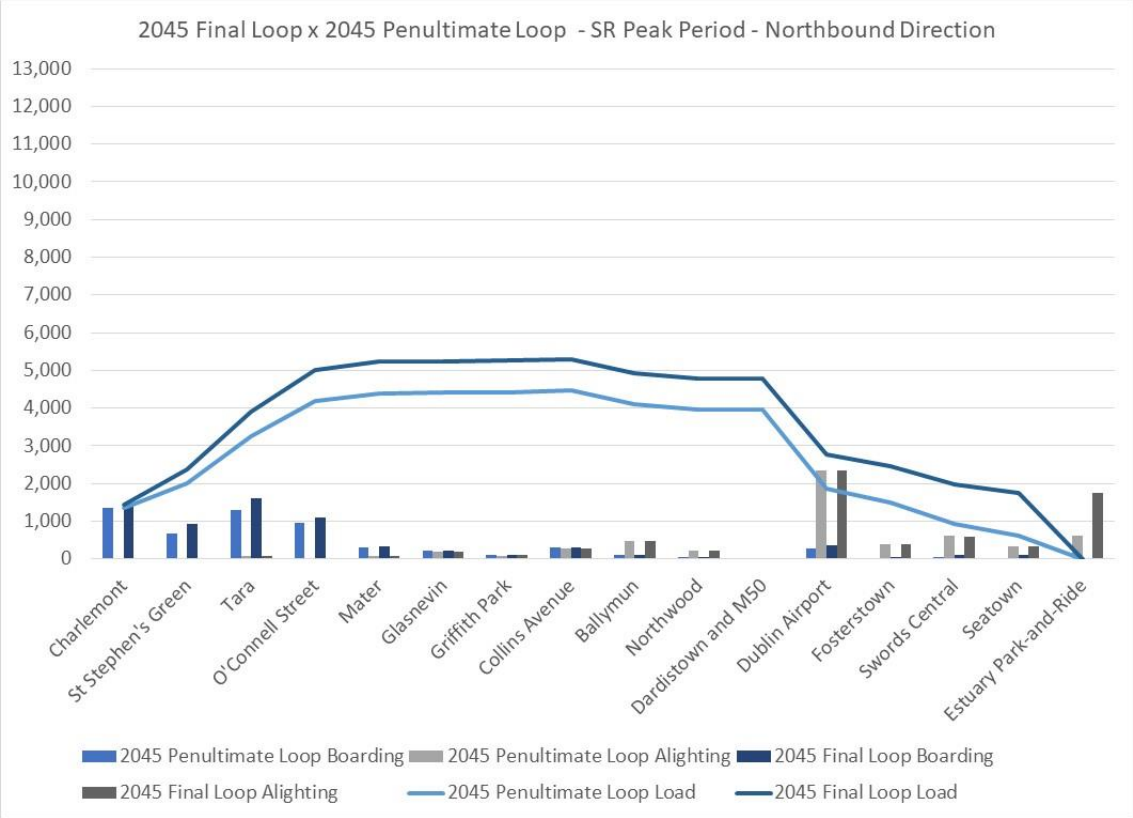
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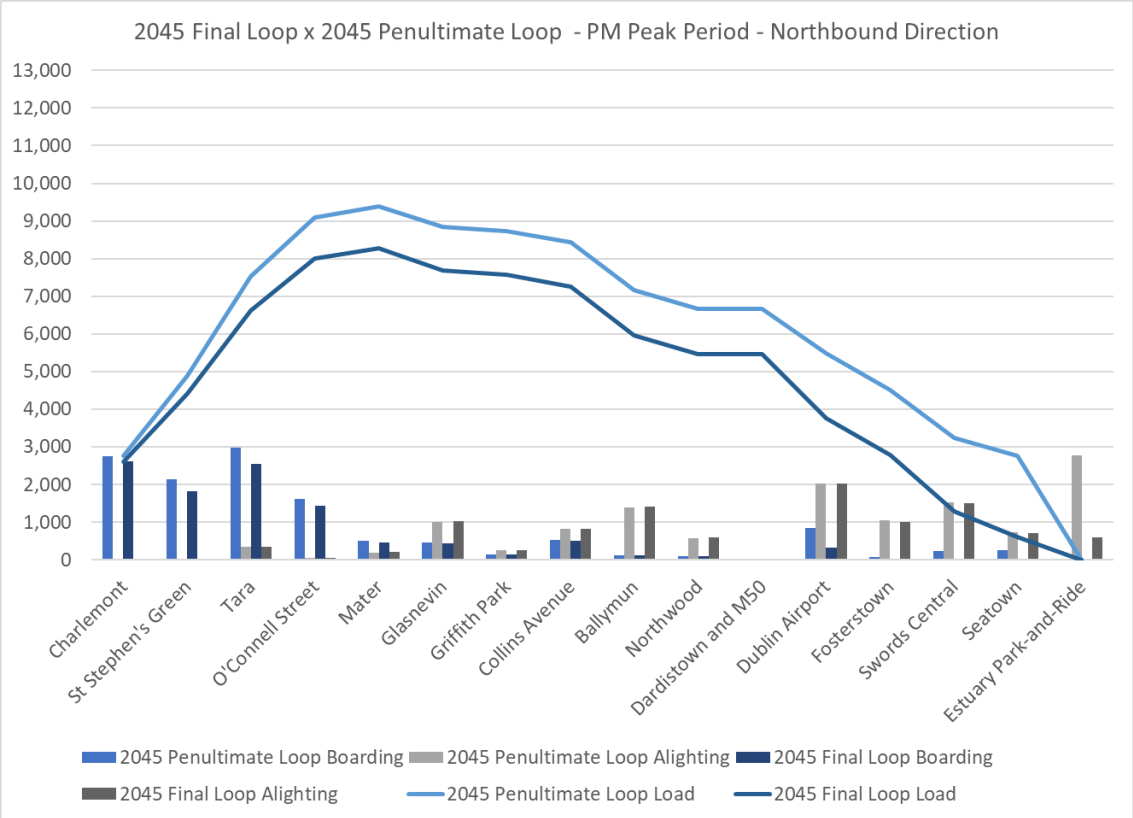
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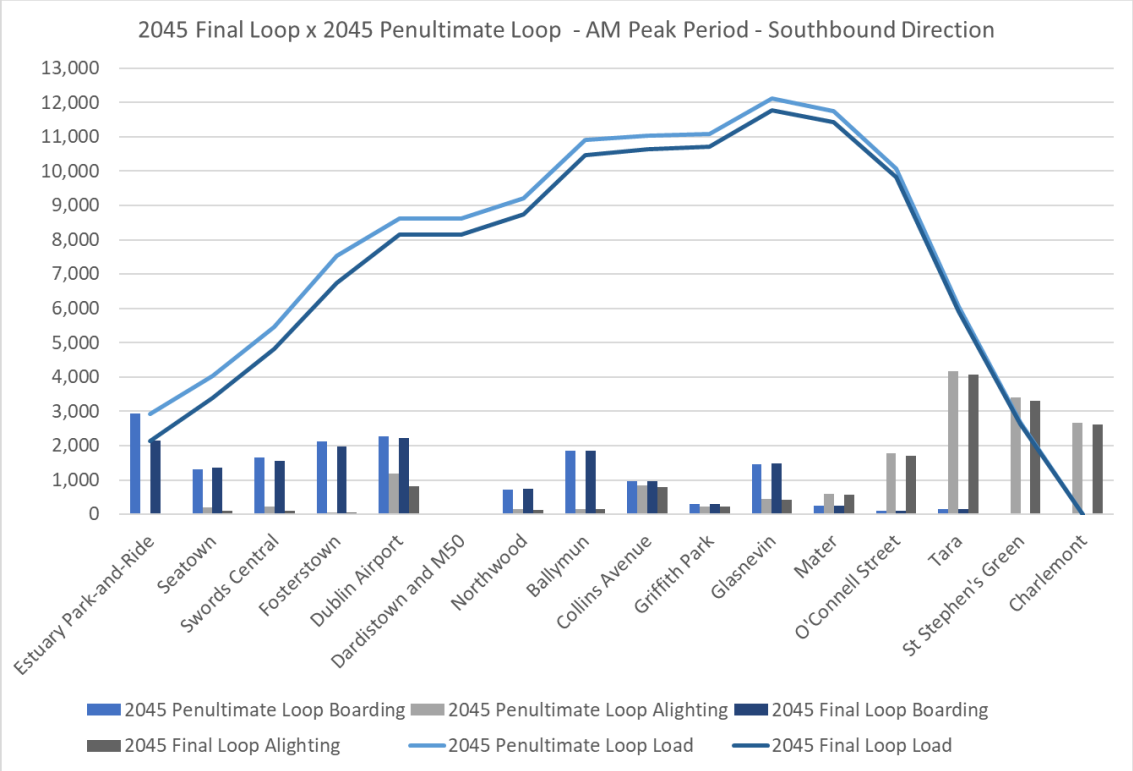
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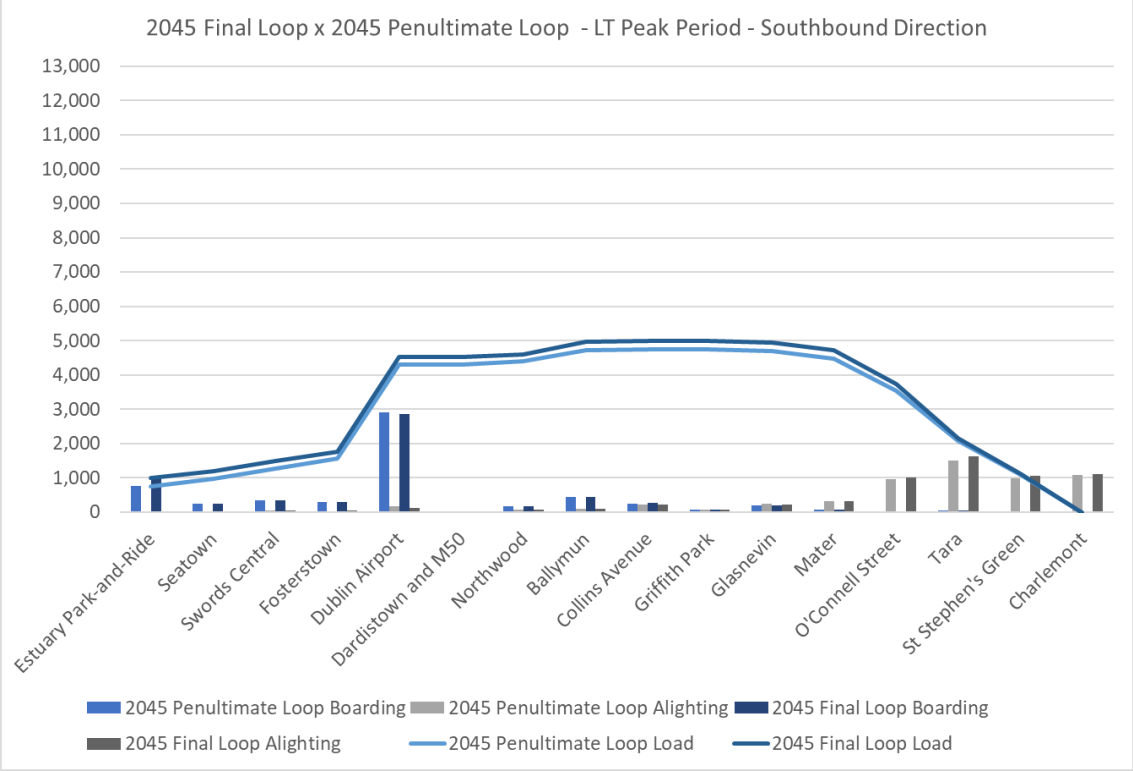
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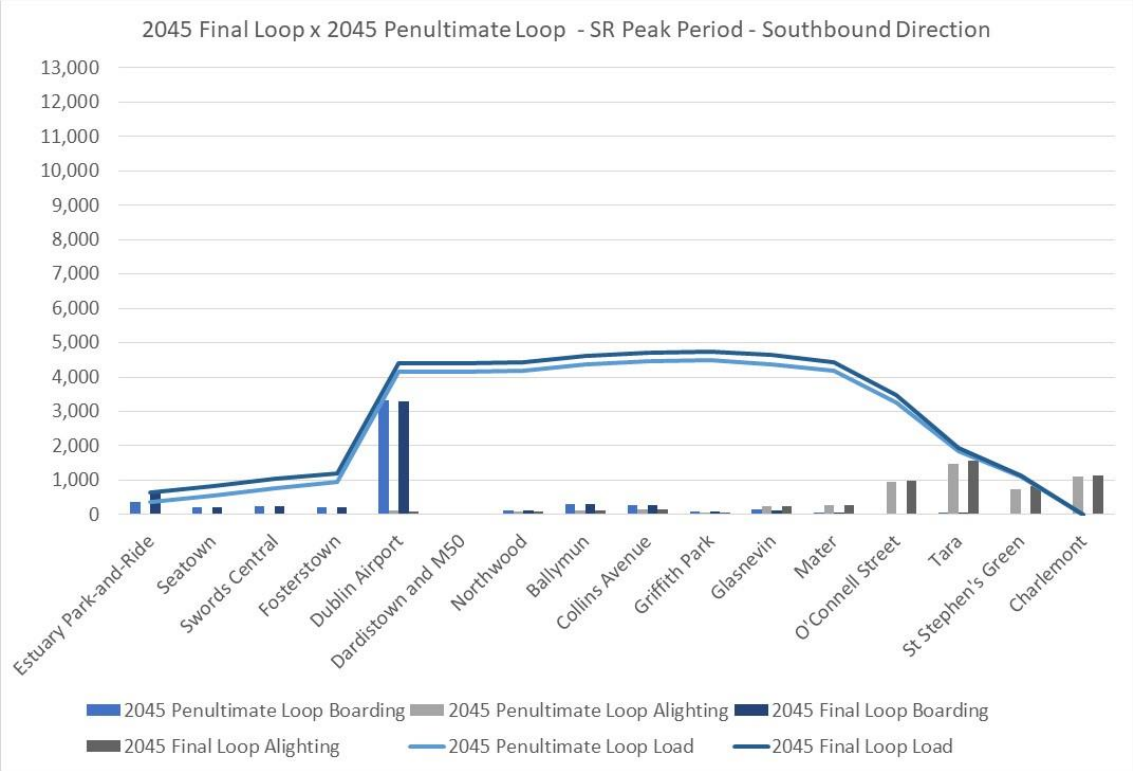
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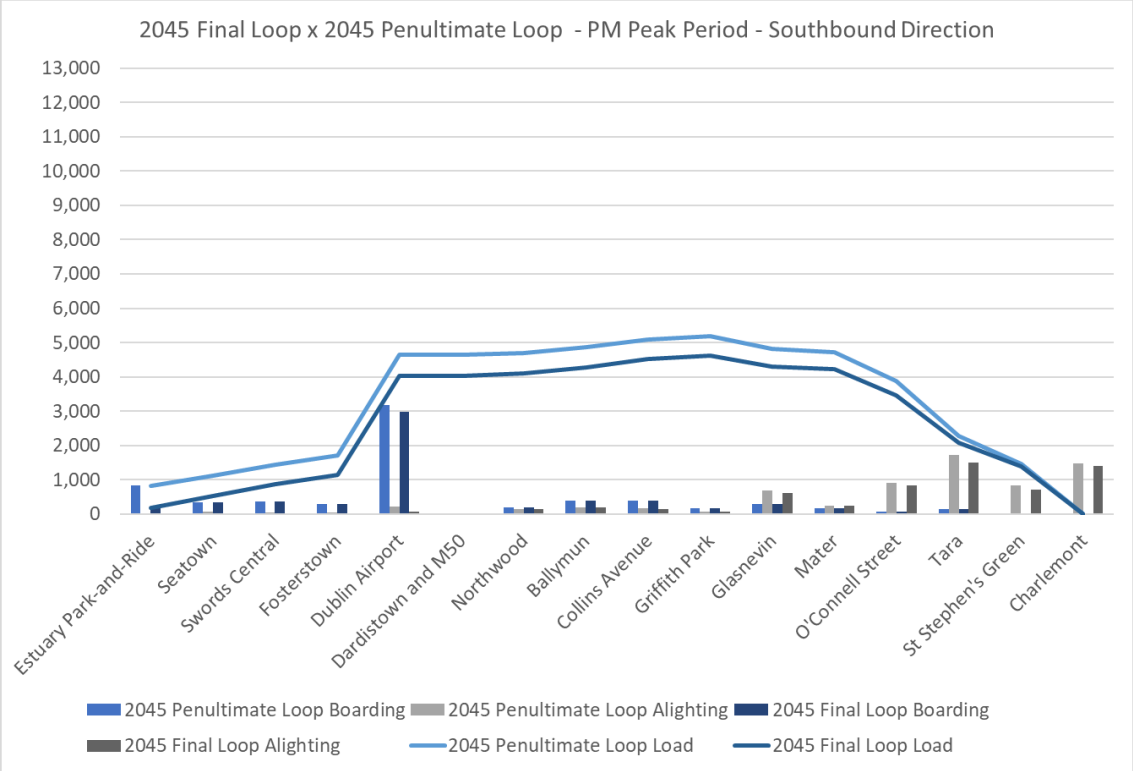
Fosterstown
Dublin Airport
Dardistown and M50
Northwood
Ballymun
Collins Avenue
Griffith Park
Glasnevin
Mater
O'Connell Street
Tara
St Stephen's Green
Charlemont
2045 Penultimate Loop Boarding
2045 Penultimate Loop Alighting
2045 Final Loop Boarding
2045 Final Loop Alighting
2045 Penultimate Loop Load
2045 Final Loop Load


2045 Final Loop x 2045 Penultimate Loop - PM Peak Period - Southbound Direction
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Estuary Park-and-Ride
Seatown
Swords Central
Fosterstown
Dublin Airport
Dardistown and M50
Northwood
Ballymun
Collins Avenue
Griffith Park
Glasnevin
Mater
O'Connell Street
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2045 Penultimate Loop Boarding
2045 Penultimate Loop Alighting
2045 Final Loop Boarding
2045 Final Loop Alighting
2045 Penultimate Loop Load
2045 Final Loop Load