Appendix A6.1
Transport Impact Assessment Report

Contents

Executive Summary

Introduction

The purpose of this document is to provide a comprehensive Transport Impact Assessment (TIA) of the proposed Ballymun / Finglas to City Centre Core Bus Corridor Scheme (hereafter referred to as the Proposed Scheme). TIA also informs Chapter 6 (Traffic & Transport) in Volume 2 of the Environmental Impact Assessment Report (EIAR) for the Proposed Scheme which will assess the impacts and significance of those impacts in relation to the receiving environment of the Proposed Scheme.

The aim of the Proposed Scheme is to provide enhanced walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor. The objectives of the BusConnects Dublin – Core Bus Corridor Infrastructure Works (hereafter referred to as the CBC Infrastructure Works), applicable to the traffic and transport assessment of the Proposed Scheme are to:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements;
- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable;
- Enhance the potential for walking by improving the pedestrian infrastructure on the corridor;
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets;
- Enable compact growth, regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of safe and efficient sustainable transport networks;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services; and
- Ensure that the public realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible.

The planning and design of the Proposed Scheme has been guided by these aims and objectives, with the need for the Proposed Scheme described in detail in Chapter 2 (Need for the Proposed Scheme) in Volume 2 of the EIAR.

In line with the above objectives, this TIA is focused on the concept of the 'movement of people' rather than the 'movement of vehicles'. The emphasis of the design philosophy is on maximising the capacity of the Proposed Scheme to move more people by sustainable modes whilst providing for the necessary movement of general traffic along it.

This TIA includes the comprehensive assessment impacts and benefits of the Proposed Scheme covering all transport modes for both the Construction and Operational Phases.

Scheme Description

The Proposed Scheme, as described in detail in in Chapter 4 (Proposed Scheme Description) in Volume 2 of the EIAR, has an overall length of approximately 11km and will be comprised of two main alignments in terms of the route it will follow, from Ballymun to the City Centre (the Ballymun Section) and from Finglas to Phibsborough (the Finglas Section).

The Ballymun Section of the Proposed Scheme will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4, and will be routed along the R108 on Ballymun Road, St. Mobhi Road, Botanic Road, Prospect Road, Phibsborough Road, Constitution Hill and R132 Church Street as far as R148 Arran Quay at the River Liffey on the western edge of Dublin City Centre. Priority for buses will be

provided along the entire route, consisting primarily of dedicated bus lanes in both directions, where feasible, with alternative measures proposed at particularly constrained locations such as at R108 St. Mobhi Road. A complementary cycle route along quiet streets is proposed along Royal Canal Bank in Phibsborough, which will extend southwards from the Royal Canal to Western Way, parallel a short distance to the east of R108 Phibsborough Road, and also through the Markets Area at the southern end of the Proposed Scheme.

The Finglas Section of the Proposed Scheme will commence on the R135 Finglas Road at the junction with R104 St. Margaret's Road and will be routed along the R135 Finglas Road as far as Hart's Corner in Phibsborough, where it will join the Ballymun Section of the Proposed Scheme. Priority for buses will be provided along the entire route, consisting of dedicated bus lanes in both directions. Continuous segregated cycle tracks will be provided from the Church Street Junction in Finglas to Hart's Corner. No cycle tracks are proposed along the Finglas Bypass at the northern end of the Proposed Scheme, where more suitable routes are available along local streets.

Moreover, pedestrian facilities will be upgraded and additional signalised crossings will be provided. In addition, urban realm works will be undertaken at key locations with higher quality materials, planting and street furniture provided to enhance the pedestrian experience.

Assessment Methodology

The assessment of the Proposed Scheme in relation to the baseline transport environment requires a qualitative assessment of changes to the transport environment, as well as quantitative analysis undertaken using a suite of multi-modal transport modelling tools which have been developed for the Proposed Scheme.

The qualitative assessments are as follows:

- Pedestrian Infrastructure: The changes to the quality of the pedestrian infrastructure as a result of the Proposed Scheme;
- Cycling Infrastructure: The changes to the quality of the cycling infrastructure as a result of the Proposed Scheme;
- Bus Infrastructure: The changes to the quality of the bus infrastructure because of the Proposed Scheme; and
- Parking / Loading: The changes to the availability of parking and loading because of the Proposed Scheme.

The quantitative assessments are as follows:

- People Movement: An assessment has been carried out to determine the potential impact that the Proposed Scheme will have on projected volume of people moving along the corridor by sustainable modes during the Operational Phase only;
- Bus Performance Indicators: The changes to the projected operational efficiency for buses as a result of the Proposed Scheme;
- General Traffic: The direct and indirect impacts on general traffic using the Proposed Scheme and surrounding road network; and
- Network-Wide Performance Indicators: The strategic changes to queuing, total travel times, total travel distance and average network speed.

The changes between the Do Minimum and Do Something scenarios have been presented in either a positive, negative or negligible / neutral magnitude of impacts as a result of the Proposed Scheme, dependant on the assessment topic. A high, medium, low or negligible rating has been applied to each impact assessment to determine the Magnitude of Impact. Where appropriate, the changes in conditions between the Do Minimum and Do Something scenarios are outlined using a Level of Service (LoS) approach. This concept allows a straightforward comparison of two differing scenarios using a series of metrics specifically developed for this purpose.

Baseline Environment

A detailed review of the existing traffic and transport conditions within the redline boundary of the Proposed Scheme has been undertaken, specifically for pedestrian, cycling, bus services and priority measures, general traffic and parking / loading facilities. The baseline conditions have been informed by several site visits of the local environment, comprehensive traffic surveys, and a desktop review of the most recent aerial photography.

Overall cycling infrastructure provision on the Ballymun corridor consists of 38% cycle priority outbound and 45% inbound. Along the Finglas corridor, current cycling infrastructure provision consists of 71% cycle priority outbound and 47% inbound cycle priority

For the purpose of describing the Proposed Scheme it has been split into the following seven sections:

- Section 1 – Ballymun Road from St. Margaret's Road to Griffith Avenue;
- Section 2 – St. Mobhi Road and Botanic Road from Griffith Avenue to Hart's Corner;
- Section 3 – Prospect Road, Phibsborough Road from Hart's Corner to Western Way;
- Section 4 - Constitution Hill and Church Street to Arran Quay;
- Section 5 – Finglas Road from St. Margaret's Road to Wellmount Road;
- Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road; and
- Section 7 – Finglas Road from Ballyboggan Road to Hart's Corner.

Section 1 of the Proposed Scheme is approximately 3km long and will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4. The Proposed Scheme will proceed along this route in a southern direction generally and will conclude at the junction of R108 Ballymun Road and R102 Griffith Avenue.

Section 2 of the Proposed Scheme will commence at the R108 St. Mobhi Road / R102 Griffith Avenue Junction and will extend for approximately 1.5km to Hart's Corner in Phibsborough, where it will meet the Finglas Section of the Proposed Scheme. A second local traffic (diversionary) route will be used to divert away from R108 St. Mobhi Road along Botanic Road, Glasnevin Hill, Old Finglas Road, Cremore Villas and R102 Griffith Avenue to re-join R108 Ballymun Road.

Section 3 of the Proposed Scheme will commence at the R108 Prospect Road / Lindsay Road Junction at the southern apex of Hart's Corner and will extend through Phibsborough over a length of approximately 1.2km to the R135 Western Way Junction.

Section 4 of the Proposed Scheme will commence at the R135 Western Way Junction and will extend along R108 Constitution Hill and R132 Church Street for approximately 1km southwards to the R148 Arran Quay Junction at the River Liffey, which will be the end of the Ballymun Proposed Scheme.

Section 5 of the Proposed Scheme will commence at the northern end at the junction of R135 Finglas Road with R104 St. Margaret's Road. Section 5 of the Proposed Scheme will extend in a south-eastern direction along the Finglas Bypass dual carriageway over a length of approximately 1.1km and will conclude at the Wellmount Road Junction on the southern edge of Finglas Village.

Section 6 of the Proposed Scheme will extend along R135 Finglas Road from the Wellmount Road Junction to the Ballyboggan Road Junction, over a length of approximately 1.6km.

Section 7 of the Proposed Scheme will extend along R135 Finglas Road for a distance of approximately 1.5km to Hart's Corner where it will meet the Ballymun Section of the Proposed Scheme (Section 2).

Potential Impacts

Construction Phase

The impacts during the Construction Phase are outlined in the below table. During the Construction Phase, the Proposed Scheme will have **Low Negative** and temporary impacts to pedestrian access and parking and loading whilst it will have **Medium Negative** and temporary impacts to cyclist and bus access. General traffic redistribution is not anticipated to be a significant issue during the Construction Phase, however there will be a requirement for some localised temporary road closures for short durations of the daytime and / or night-time. Therefore, the impact on general traffic redistribution is anticipated to be a **Medium Negative** and temporary impact. The impact of construction traffic is anticipated to result in a **Medium Negative** and temporary impact due to the low numbers of vehicles anticipated which are and below the thresholds set out in the Transport Assessments Guidelines.

Summary of Construction Phase Potential Impacts

Assessment Topic	Effect	Potential Impact
Pedestrian Access	Restrictions to pedestrians along Proposed Scheme.	Low Negative
Cycling Access	Restrictions to cyclists along Proposed Scheme.	Medium Negative
Bus Access	Restrictions to bus services and infrastructure along Proposed Scheme.	Medium Negative
Parking and Loading	Restrictions to parking and loading bays along Proposed Scheme.	Low Negative
General Traffic	Restrictions to general traffic along Proposed Scheme.	Medium Negative
	Additional construction traffic flows upon surrounding road network.	Medium Negative

Operational Phase

The Proposed Scheme will deliver positive impacts to quality in terms of people movement, bus network performance and pedestrian, cycling and bus infrastructure during the Operational Phase. These changes will help to provide an attractive alternative to the private car and promote a modal shift to walking, cycling and public transport, allowing for greater capacity along the corridor to facilitate the movement of people.

Although it is recognised that there will be some negative impacts for general traffic and parking / loading availability, the Proposed Scheme has been designed and outlined within this assessment to take cognisance of relevant traffic and transport guidelines. The assessment demonstrates that the Proposed Scheme can be readily utilised by sustainable modes and that the surrounding road network has the capacity to accommodate the associated traffic and transport impacts.

Accordingly, it is concluded that the Proposed Scheme will deliver benefits from a sustainable transport point of view and will not result in a significant deterioration to the existing traffic conditions on the local road network during the Operational Phase.

This TIA demonstrates that the Proposed Scheme will result in the following impacts:

- **Pedestrian Infrastructure:** The Proposed Scheme consists of measures to enhance the existing pedestrian infrastructure along the direct study area. A Level of Service (LoS) junction assessment was undertaken using a set of five criteria to determine the impact that the Proposed Scheme has for pedestrians. The results of the impacted junctions demonstrate that the LoS during the Do Minimum scenario consists of ratings predominantly ranging from C to F (with four junctions scoring B). During the Do Something scenario (i.e. following the development of the Proposed Scheme), the LoS consists of ratings predominantly ranging from A to B (with two junctions scoring C). Overall, the improvements to the quality of the pedestrian infrastructure will have a **Low Positive** impact along the Proposed Scheme;

- **Cycling Infrastructure:** The Proposed Scheme also consists of measures to enhance the existing cycling infrastructure along the direct study area. A LoS assessment was undertaken using an adapted version of the National Transport Authority (NTA) National Cycle Manual Quality of Service (QoS) Evaluation criteria. The results of the assessment demonstrate the LoS during the Do Minimum scenario consists predominantly of C and D ratings, with the exception of some A and B ratings along section of the Finglas Proposed Scheme. During the Do Something scenario, the LoS consists predominantly of A and B ratings, with the exception of a few C and D ratings. Overall, the improvements to the quality of the cycling infrastructure will have a **Low Positive** impact along the Proposed Scheme;
- **Bus Infrastructure:** The implementation of the Proposed Scheme will result in improvements in the quality of bus infrastructure provision along the direct study area. A qualitative impact assessment has been undertaken based on the provision of bus priority, pedestrian accessibility and changes to the bus stop facilities. Overall, the improvements to the quality of bus infrastructure will have a **Medium Positive** impact along the Proposed Scheme;
- **Parking and Loading:** A qualitative impact assessment has been undertaken of the Proposed Scheme impacts on the existing parking and loading. The results of the assessment demonstrate that the changes to the parking and loading provision will result in an overall loss of 70 parking and loading spaces. Overall, the changes to the quality of parking and loading spaces range from having a medium negative to low positive impact, which for the majority of the Proposed Scheme is **Negligible**;
- **People Movement:** Given the proposed amendments to the pedestrian, cycling, bus and parking / loading infrastructure outlined above, the Proposed Scheme will have greater capacity to facilitate movement of people travelling through the corridor. A quantitative impact assessment has been undertaken using outputs from the NTA's East Regional Model (ERM) and Local Area Model (LAM), comparing the Do Minimum and Do Something peak hour scenarios for each forecast year (Opening Year (2028) / Design Year (2043)). The results of the assessment demonstrate that there will be an increase in 23% and 26% of people travelling by sustainable modes through the Proposed Scheme during the 2028 AM and PM Peak Hours respectively. During the 2043 scenario there will be an increase in 30% and 42% of people travelling by sustainable modes through the Proposed Scheme during the AM and PM Peak Hours;

  The analysis also shows that there will be an increase in 7.8% and 8.4% of passengers boarding buses during the 2028 AM and PM Peak Hours respectively. During the 2043 scenario there will be an increase in 6.4% and 5.7% of passengers boarding buses during the AM and PM Peak Hours respectively. Overall, it is anticipated that the increases in people movement by sustainable modes and the reductions in car mode share along the direct study will have a **High Positive** impact;
- **Bus Network Performance Indicators:** The Proposed Scheme will also benefit from improvements to the capacity of the road network to cater for future bus services accessing the Proposed Scheme. A micro-simulation model assessment has been developed to extract network performance indicators of the bus operations along the 'end to end' corridor. The findings of the bus user assessment shows that the Proposed Scheme fully aligns with the aims and objectives of the CBC Infrastructure Works, to '*Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements*'.

  The significance of impact on bus users of the Proposed Scheme has been appraised using a qualitative assessment, taking the changes in journey time and journey reliability metrics presented above into consideration. The Proposed Scheme is considered to deliver a **Medium Positive** impact overall;
- **General Traffic Network Performance Indicators:** There will be an overall reduction in operational capacity for general traffic along the direct study area, given the proposed infrastructural changes to the existing road layout outlined above. This reduction in operational capacity for general traffic will create traffic redistribution from the Proposed Scheme onto the surrounding road network.

  The LAM Opening Year (2028) model results were used to identify the impact in traffic flows between the Do Minimum and Do Something scenarios. A reduction in general traffic flows along a road link has been described as a positive impact to the environment. The significance of the impact has been described in terms of the loss in traffic flows.

  An increase in general traffic flows along a road link has been described as a negative impact to the environment. Reference has been given to the Transport Infrastructure Ireland (TII) Traffic and

Transport Assessment Guidelines (TII 2014) as an indicator for best practice, to determine the key road links that require further traffic analysis due to the increase in traffic. Operational capacities were extracted from the LAM at the associated junctions of the key road links to identify the impact that the Proposed Scheme will have on the Volume / Capacity (V/C) ratios. The results are presented in terms of the significance of the impact to the V / C ratio for each junction based on its sensitivity and magnitude of impact.

The results of the assessment predict that the surrounding road network largely has the capacity to accommodate the redistributed general traffic as a result of the Proposed Scheme. The majority of assessed junctions that required further traffic analysis have V / C ratios that are broadly similar before and after the Proposed Scheme.

Overall, it is determined that there will be a **Low Negative** impact from the redistributed general traffic as a result of the Proposed Scheme. Given that the redistributed traffic will not lead to a significant deterioration of the operational capacity on the surrounding road network, no mitigation measures have been considered to alleviate the impact outside of the direct study area; and

- **Network Wide Performance Indicators:** Given the impacts to the traffic conditions outlined above, there will be a knock-on effect to the operational efficiency of the road network beyond the direct and indirect study areas. A quantitative impact assessment has been undertaken using outputs from the NTA's ERM and LAM to determine the conditions to queuing, travel times, travel distances and network speeds during the Do Minimum and Do Something scenarios. The results of the assessment demonstrate that the impacts to the network performance indicators range between -0.91% and 3.72%, therefore will have a **Low Negative** impact.

Cumulative Assessment

In general, total trip demand (combining all transport modes) will increase into the future in line with population and employment growth. A greater share of the demand will be by sustainable modes (public transport, walking, cycling).

The analysis indicates that, with the 12 BusConnects Proposed Schemes in place, there will be a high positive impact on sustainable mode share. The Proposed Schemes will prevent any increase in private car traffic within the study area and will instead result in a reduction in car trips below 2020 levels.

In the Opening Year (2028) scenario, it is estimated that for people travelling within the 500m catchment area (including the City Centre), there will be a 12% increase in public transport trips, 2% decrease in general traffic trips (i.e. motorists) and a 14% increase in cycling trips in the AM Peak Hour and a 12% increase in public transport, 3% decrease in general traffic and a 12% increase in cycling trips each day. In the Design Year (2043) scenario, it is estimated that for people travelling within the 500m catchment area (including the City Centre), there will be an 11% increase in public transport trips, 4% decrease in general traffic trips (i.e. motorists) and a 15% increase in cycling trips in the morning peak period and a 9% increase in public transport, 5% decrease in general traffic and a 13% increase in cycling trips each day.

General traffic is seen to have much higher levels of reduction in 2043 than when compared to 2028 due to the increased level of non-bus public transport infrastructure (MetroLink, Luas extensions and DART+ from the Transport Strategy for the Greater Dublin Area (hereafter referred to as the GDA Transport Strategy) in tandem with the road capacity reduction measures as part of the Proposed Scheme leading to increased usage on all public transport modes.

The modelling outputs for the Opening Year (2028) scenario demonstrate that there is a high growth in bus patronage along all the Proposed Schemes in the AM Peak Hour. The bigger increases occur in the inbound direction on the Blanchardstown to City Centre, the Rathfarnham to City Centre and the Bray to City Centre Core Bus Corridor Schemes, where the loadings reach more than 2,000 additional passengers per hour compared to the Do Minimum scenario.

In the Opening Year (2028) AM Peak Hour scenario with the Proposed Schemes in place, there will be an estimated 10% more passenger boardings across all public transport services and 17% more boardings on bus services. In the Opening Year (2028) PM Peak Hour scenario with the Proposed Schemes in place, there will be

an estimated 11% increase in total passengers boarding public transport services and 18% more passengers boarding buses services.

In the Design Year (2043) AM and PM Peak Hour scenarios, increase in total passengers boarding all public transport services will be 9% respectively, and the increase in passengers boarding bus services will increase by 23% and 22%, respectively.

Overall, the Proposed Schemes are expected to deliver a **High Positive** impact to people movement by sustainable modes.

Summary and Conclusions

The Proposed Scheme comprises the development of improved bus priority along the entire route of both the Ballymun Section and the Finglas Section, in which the Ballymun Section commences on R108 Ballymun Road at the junction with St. Margaret's Road and continues along the R108 regional road before coming to an end at R148 Arran Quay on the northern bank of the River Liffey. The Finglas Section commences on R135 Finglas Road at the roundabout junction with R104 St. Margaret's Road before ultimately joining the Ballymun Section at Hart's Corner.

The design of the Proposed Scheme consists primarily of dedicated bus lanes in both directions, where feasible, with alternative measures proposed at particularly constrained locations. Furthermore, a mixture of cycle infrastructure facilities such as cycle tracks, cycle lanes and quiet street cycle routes in which local traffic and cyclists share priority on local carriageways, are proposed throughout the entire route in order to provide adequate cycle facilities in both directions.

During the Construction Phase, the Proposed Scheme will have Low Negative and temporary impacts to pedestrian and bus access and parking and loading whilst it will have Medium Negative and temporary impacts to cyclist access. General traffic redistribution is not anticipated to be a significant issue during the Construction Phase, however there will be a requirement for some localised temporary road closures for short durations of the daytime and / or night-time. Therefore, the impact on general traffic redistribution is anticipated to be a Medium Negative and temporary impact. The impact of construction traffic is anticipated to result in a Medium Negative and temporary impact due to the low numbers of vehicles anticipated which are and below the thresholds set out in the TII Transport Assessments Guidelines.

During the Operational Phase, the Proposed Scheme will deliver a positive impact in terms of people movement, bus network performance and pedestrian, cycling and bus infrastructure. These improvements will help to provide an attractive alternative to the private car and promote modal shift to walking, cycling and public transport, allowing for greater capacity along the corridor to facilitate the movement of people. Some negative impacts for general traffic and parking / loading availability may be anticipated. However, the Proposed Scheme has been designed and outlined within this assessment to take cognisance of relevant traffic and transport guidelines. The assessment demonstrates that the Proposed Scheme can be readily utilised by sustainable modes and that the surrounding road network has the capacity to accommodate the associated traffic and transport impacts.

Accordingly, it is concluded that the Proposed Scheme, when operational, will deliver benefits from a sustainable transport point of view and will not result in a significant deterioration to the existing traffic conditions on the local road network.

1. Introduction

This TIA presents a comprehensive review of the traffic and transport impacts associated with the Proposed Scheme, which has informed the production of Chapter 6 (Traffic & Transport) in Volume 2 of the EIAR. The TIA should be read in conjunction with the EIAR chapter and is included as Appendix A6.1 (Transport Impact Assessment Report) to the EIAR.

The Proposed Scheme, as described in detail in Chapter 4 (Proposed Scheme Description), will be 11km in length and will be comprised of two main alignments in terms of the route it will follow, from Ballymun to the City Centre (the Ballymun Section) and from Finglas to Phibsborough (the Finglas Section).

The Ballymun Section of the Proposed Scheme will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4, and will be routed along the R108 on Ballymun Road, St. Mobhi Road, Botanic Road, Prospect Road, Phibsborough Road, Constitution Hill and R132 Church Street as far as R148 Arran Quay at the River Liffey on the western edge of Dublin City Centre. Priority for buses will be provided along the entire route, consisting primarily of dedicated bus lanes in both directions, where feasible, with alternative measures proposed at particularly constrained locations such as at R108 St. Mobhi Road. A complementary cycle route along quiet streets is proposed along Royal Canal Bank in Phibsborough, which will extend southwards from the Royal Canal to Western Way, parallel a short distance to the east of R108 Phibsborough Road, and also through the Markets Area at the southern end of the Proposed Scheme.

The Finglas Section of the Proposed Scheme will commence on the R135 Finglas Road at the junction with R104 St. Margaret's Road and will be routed along the R135 Finglas Road as far as Hart's Corner in Phibsborough, where it will join the Ballymun Section of the Proposed Scheme. Priority for buses will be provided along the entire route, consisting of dedicated bus lanes in both directions. Continuous segregated cycle tracks will be provided from the Church Street Junction in Finglas to Hart's Corner. No cycle tracks are proposed along the Finglas Bypass at the northern end of the Proposed Scheme, where more suitable routes are available along local streets.

Table 1.1 summarises the changes which will be made to the existing transport environment along the corridor as a result of the Proposed Scheme.

Table 1.1: Summary of Changes as a Result of the Proposed Scheme

Features	Existing (km)	Proposed Scheme (km)
Bus Lanes		
Inbound	5.6	10.5
Outbound	5.2	9.6
Bus Priority through Traffic Management		
Inbound	0	0.4
Outbound	0	1.3
Bus Measures		
Total Bus Priority (both directions)	10.8	21.8
Proportion of Route with Bus Priority Measures	49%	100%
Cycle Facilities – Segregated		
Inbound	3.5	10
Outbound	4	10.2
Cyclist Facilities – Non-Segregated		
Inbound	2.6	0
Outbound	2.9	0
Cyclist Facilities		
Total Cyclist Facilities (both directions)	13	20.2 (+55%)
Proportion Segregated (including Quiet Street Treatment)	60%	93%
Other Features		
Number of Traffic Signal Controlled Junctions	40	41
Number of Signal Crossings	18	44 (+26)
Number of Private Properties (Residential and Commercial) with Land Acquisition	18 properties	

The Proposed Scheme is supported by a series of drawings which are contained in Volume 3 of the EIAR. The following drawings (listed in Table 1.2) should be read in conjunction with this TIA.

Table 1.2: List of Drawings

Drawing Series Number	Description
BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-9001	General Arrangement
BCIDD-ROT-GEO_CS-0304_XX_00-DR-CR-9001	Typical Cross Sections
BCIDD-ROT-TSM_GA-0304_XX_00-DR-CR-9001	Traffic Signs and Road Markings
BCIDD-ROT-TSM_SJ-0304_XX_00-DR-TR-9001	Junction System Design

1.1. Aim and Objectives of the Proposed Scheme

The aim of the Proposed Scheme is to provide enhanced walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor. The objectives of the CBC Infrastructure Works, applicable to the Traffic and Transport assessment of the Proposed Scheme are to:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements;
- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable;
- Enhance the potential for walking by improving the pedestrian infrastructure on the corridor;
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets;

- Enable compact growth, regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of safe and efficient sustainable transport networks;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services; and
- Ensure that the public realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible.

The planning and design of the Proposed Scheme has been guided by these aims and objectives.

1.1.1. People Movement

The aims and objectives outlined above are underpinned by the central concept and design philosophy of '***People Movement'.*** People Movement is the concept of the optimisation of roadway space and / or the prioritisation of the movement of people over the movement of vehicles along the route and through the junctions along the Proposed Scheme. The aim being the reduction of journey times and improvement in journey time reliability for higher person carrying capacity modes (bus, walking and cycling), which in turn provides significant efficiencies and benefits to users of the transport network and the environment.

A typical double-deck bus takes up the same road space as three standard cars but typically carries 50 to 100 times the number of passengers. On average, a typical double-deck bus carries approximately 60 to 70 passengers making the bus typically 20 times more efficient in providing people movement capacity within the equivalent spatial area of three cars. These efficiency gains can provide a significant reduction in road network congestion where the equivalent car capacity would require 50 or more vehicles based on average occupancy levels. Consequently, by prioritising the movement of bus over cars, significantly more people can be transported along the limited road space available. Similarly, cyclists and pedestrians require significantly less roadway space than general traffic users to move safely and efficiently along the route. Making space for improved pedestrian infrastructure and segregated cycle tracks can significantly benefit these sustainable modes and encourage greater use of these modes.

With regards to this traffic and transport chapter, People Movement is the key design philosophy and the Proposed Scheme impacts (both positive and negative) have been assessed on that basis.

1.1.2. Preliminary Design Guidelines

To support the 'People Movement' led approach to the design of the Proposed Scheme, the Preliminary Design Guidance Booklet for BusConnects Core Bus Corridors (PDGB) (NTA 2021) (refer to Appendix A4.1 in Volume 4 of the EIAR) was developed. This guidance document was prepared to ensure that a consistent design approach was taken across the various BusConnects Schemes and that the objectives of the project are achieved. A 'People Movement' led design involves the prioritisation of people movement, focusing on maximising the throughput of sustainable modes (i.e. walking, cycling and bus modes) in advance of the consideration and management of general vehicular traffic (private car) at junctions.

In support of this approach, a project specific People Movement at Signal Calculator (PMSC) was developed. The PMSC was applied at the initial design development stage, to provide an initial estimate of green time allocation for all movements at a typical junction, on the basis that sustainable mode movements should be accommodated foremost to maximise people movement with the remaining green time allocated to general traffic movements. The calculations were underpinned by:

- The number of buses required to be accommodated along the Proposed Scheme, as per the BusConnects Network Re-design proposals;
- The provision of a high Level of Service for cyclists at each junction along the Proposed Scheme; and
- The pedestrian crossing width and crossing timing requirements based on the provision of a high Level of Service for pedestrians at each junction along the Proposed Scheme.

The outputs of the calculator provided an initial estimate of the green times and vehicle capacity movements based on inputs and assumptions for each junction along the Proposed Scheme. The calculator provided an estimate of the People Movement for the junction in question (by mode) and was used to adjust proposals with a view to maximising the total person throughput at each junction along the Proposed Scheme during the iterative design process. Details on the development of junction designs along the Proposed Scheme are included in TIA Appendix 2 (Junction Design Report) in Volume 4 of this EIAR.

The People Movement Calculation and the identification of available general traffic capacity from this initial exercise was enhanced further by the Proposed Scheme Transport Models described in Section 4.3.

1.2. Iterative Design Process and Mitigation by Design

Throughout the development of the Preliminary Design for the Proposed Scheme there have been various design stages undertaken based on a common understanding of the maturity of the design at a given point in time. Part of this process, and the reason for developing a multi-tiered modelling framework (described in Section 4.3.1), was to ensure the environmental and transport impacts were mitigated to the greatest extent possible during design development and to enable information on potential impacts to be provided from the various Environmental Impact Assessment (EIA) and Transport Impact Assessment (TIA) disciplines back into the design process for consideration and inclusion in the proposals This resulted in mitigation being embedded into the design process by the consideration of potential environmental impacts throughout the Preliminary Design development. A multi-tiered modelling framework (described in Section 4.3.1) was developed to support this iterative design process.

Diagram 1.1 illustrates this process whereby the emerging design for the Proposed Scheme have been tested using the transport models as part the iteration. The transport models provided an understanding of the benefits and impacts of the proposals (mode share changes, traffic redistribution, bus performance etc.) with traffic flow information also informing other environmental disciplines (such as air quality, noise and vibration, climate etc.) which in turn allowed feedback of potential impacts into the design process to allow for changes and in turn mitigation to be embedded in the designs. The design process included physical changes (e.g., cycle lane widening) and adjustments to traffic signals including changes to staging, phasing and green times to limit traffic displacement to the greatest extent possible as well as traffic management arrangements and / or turn bans where appropriate. This ensured that any displaced traffic was kept to a minimum and was maintained on higher capacity roads, whilst continuing to meet scheme objectives along the Proposed Scheme.

The iterative process concluded when the design team were satisfied that the Proposed Scheme met its required objectives (maximising the people movement capacity of the Proposed Scheme) and that the environmental impacts and level of residual impacts were reduced to a minimum whilst ensuring the scheme objectives remained satisfied.

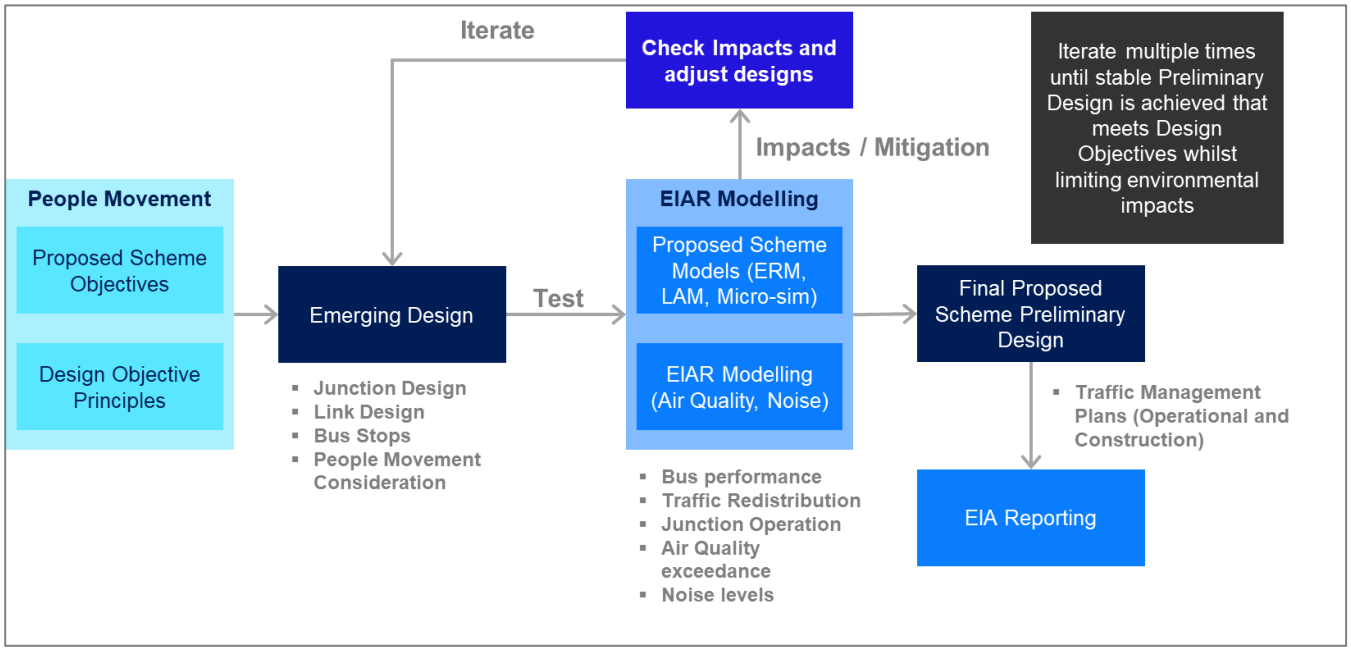

Diagram 1.1: Proposed Scheme Impact Assessment and Design Interaction

The impacts presented in this Chapter are based on the final Preliminary Design for the Proposed Scheme which includes the embedded mitigation developed as part of the iterative design process described above.

1.3. Purpose and Structure of This Report

This TIA includes the comprehensive assessment of impacts and benefits of the Proposed Scheme covering all transport modes for both Construction and Operational Phases. The TIA also informs Chapter 6 (Traffic & Transport) in Volume 2 of the EIAR for the Proposed Scheme which assesses the impacts and significance of those impacts in relation to the receiving transport environment of the Proposed Scheme.

The traffic and transport impact assessment has been undertaken in accordance with latest guidance, which includes the 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA 2022), the 'Traffic and Transport Assessment Guidelines' (TII 2014), the National Cycle Manual (NTA 2011) and the UK Design Manual for Roads and Bridges (DMRB) Environmental assessment and monitoring (formerly HA 205/08, HD 48/08, IAN 125/15, and IAN 133/10), LA104 Revision 1 (Highways England 2020).

The assessment of traffic and transport impacts and benefits of the Proposed Scheme considers the following transport receptors:

- Pedestrians / mobility impaired;
- Cyclists;
- Buses;
- General traffic; and
- On-street parking, off-street parking, loading, taxis.

In addition, the following modes of transport are considered as part of the modelling:

- Public Transport;
- Traffic including private car, taxis and goods vehicles;
- Walking; and
- Cycling.

The impact assessments have been carried out based on the following scenarios:

- **'Do Nothing'** – The 'Do Nothing' scenario represents the current baseline traffic and transport conditions of the direct and indirect study areas **without** the Proposed Scheme in place, which has been outlined in Section 5 (Baseline Environment). This scenario forms the reference case by which to compare the Proposed Scheme ('Do Something') for the qualitative assessments only;
- **'Do Minimum'** – The 'Do Minimum' scenario (Opening Year (2028), Design Year (2043)) represents the likely traffic and transport conditions of the direct and indirect study areas including for any transportation schemes which have taken place, been approved or are planned for implementation, **without** the Proposed Scheme in place. This scenario forms the reference case by which to compare the Proposed Scheme ('Do Something') for the quantitative assessments. Further detail on the Proposed Scheme and demand assumptions within this scenario are included further below in Section 6.1; and
- **'Do Something'** – The 'Do Something' scenario represents the likely traffic and transport conditions of the direct and indirect study areas including for any transportation schemes which have taken place, been approved or are planned for implementation, **with** the Proposed Scheme in place (i.e. the Do Minimum scenario with the addition of the Proposed Scheme). The Do Something scenario has been broken into two phases:
    - **Construction Phase (Construction Year (2024)) –** This phase represents the single worst-case period which will occur during the construction of the Proposed Scheme; and
    - **Operational Phase (Opening Year (2028), Design Year (2043)) –** This phase represents when the Proposed Scheme is fully operational.

The remaining structure of this TIA Report is set out as follows:

- **Chapter 2 – Study Area:** This chapter sets out both the direct and indirect study areas of the TIA;
- **Chapter 3 – Policy Context:** This chapter sets out the National, regional and local policy with which the proposed scheme should accord;
- **Chapter 4 – Assessment Methodology:** This chapter sets out the proposed method of assessment for the quantitative and qualitative perspectives;
- **Chapter 5 – Baseline Environment**: This chapter will set out the baseline conditions against which the Proposed Scheme has been assessed;
- **Chapter 6 – Potential Impacts:** This chapter provides an overview of the Proposed Scheme;
- **Chapter 7 - Cumulative Assessment:** This chapter provides an assessment of the cumulative impact of the Proposed Scheme in conjunction with the other eleven Proposed Schemes within the BusConnects Dublin – Core Bus Corridor Infrastructure Works;
- **Chapter 7 – Proposed Scheme Specific Assessment:** This chapter provides the assessment of the Proposed Scheme in both the Construction and the Operational Phase. It focusses on walking, cycling, bus, general traffic and parking and loading using the methods set out in Chapter 4. It considers both operational and construction scenarios;
- **Chapter 8 – Summary and Conclusions**: This chapter provides a summary of the TIA and the conclusions which can be drawn from it; and
- **Chapter 9** – **References**: contains the traffic and transport sources referred to within this chapter.

2. Study Area

The direct and indirect impacts have been considered with reference to the following study area extents (as shown in Diagram 2.1):

- **Direct Study Area** – The Proposed Scheme (i.e. the transport network within the red line boundary – the boundary of the physical works of the Proposed Scheme); and
- **Indirect Study Area** –This is the area of influence the Proposed Scheme has on changing traffic volumes above a defined threshold with reference to TII's Traffic and Transport Assessment Guidelines (TII 2014) (see Section 6.6.3.3 for further details on the threshold applied in relation to traffic volume changes used in the definition of the indirect study area).

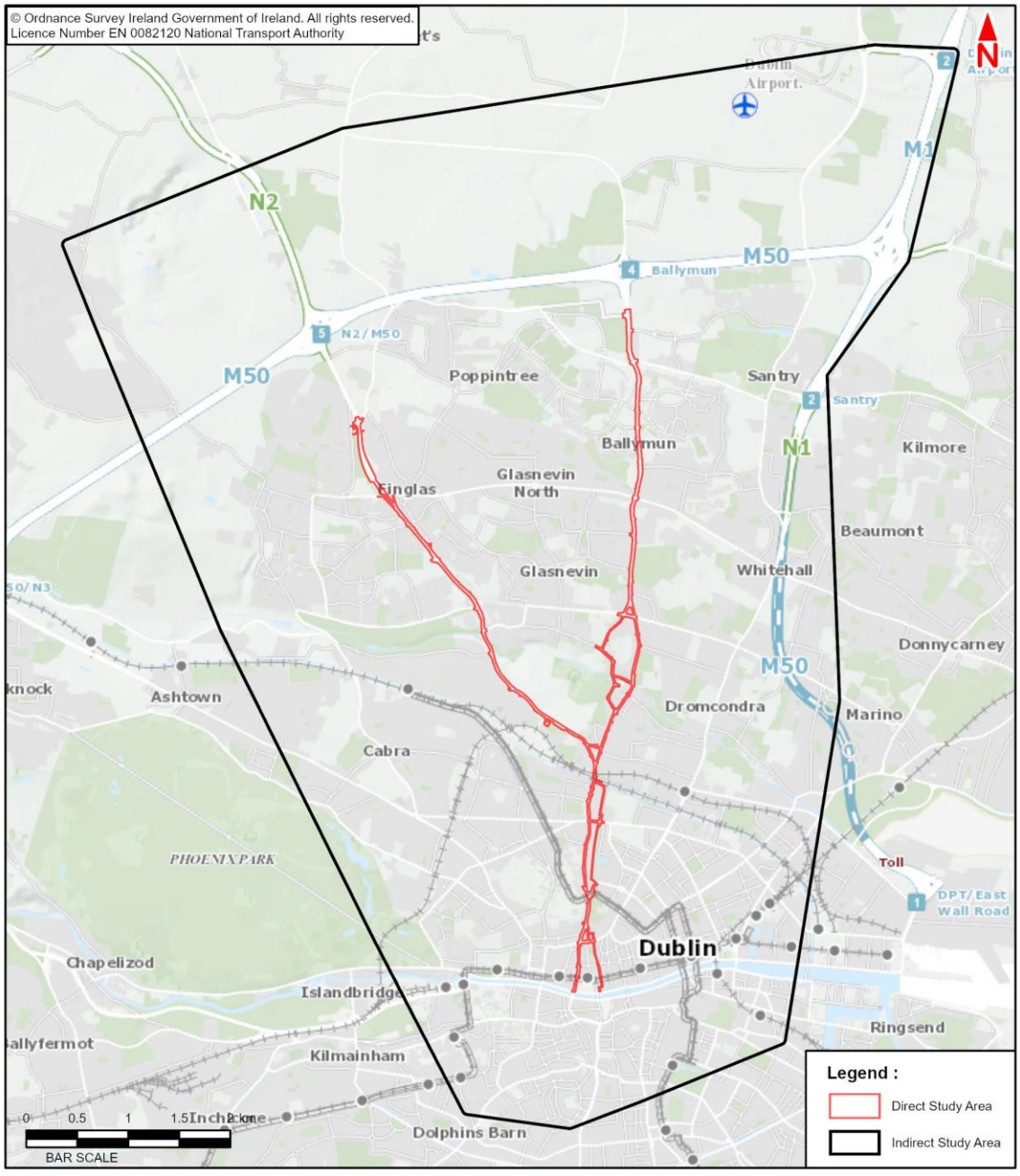

Diagram 2.1: Direct and Indirect Study Area Extents for the Traffic and Transport Chapter

3. Policy Context

This Chapter outlines the national, regional and local transport and planning policies applicable to the Proposed Scheme. Alignment of the Proposed Scheme with current planning policy at all levels is an important determining factor in planning decisions. Through this summary of policy, the following sections demonstrate that the Proposed Scheme has this alignment and thus is compliant with transport and planning policies.

3.1. National Guidelines

3.1.1. Traffic and Transport Assessment Guidelines

To determine the traffic and transport impact that the Proposed Scheme has in terms of an increase in general traffic flows on the direct and indirect study areas, a robust assessment has been undertaken, with reference to Transport Infrastructure Ireland's (TII) most recent Traffic and Transport Assessment Guidelines (TII 2014).

This document is considered best practice guidance for the assessment of transport impacts related to changes in traffic flows due to proposed developments and is an appropriate means of assessing the impact of general traffic trip redistribution on the surrounding road network.

According to Section 1.3 of the Traffic and Transport Assessment Guidelines (TII 2014):

> *'a Traffic and Transport Assessment is a comprehensive review of all the potential transport impacts of a proposed development or re-development, with an agreed plan to mitigate any adverse consequences'.*

The guidelines aim to provide a framework to promote an integrated approach to development, ensuring that proposals promote more efficient use of investment in transportation infrastructure which reduces travel demand and promotes road safety and sustainable travel. The document is considered best practice guidance for the assessment of transport impacts related to changes in traffic flows due to proposed developments and is generally an appropriate means of assessing the traffic and transport impact of additional trips on the surrounding road network.

3.1.2. Design Manual for Urban Roads and Streets

The Design Manual for Urban Roads and Streets (DMURS) (DTTS 2019) promotes an integrated street design approach within urban areas (i.e. cities, towns, and villages) focused on:

- Influence by the type of place in which the street is located; and
- Balancing the needs of all users.

A further aim of this Manual is to put well designed streets at the heart of sustainable communities to promote access by walking, cycling and public transport.

The principles, approaches and standards set out in this Manual apply to the design of all urban roads and streets (with a speed limit of 60 km/h or less), except: (a) Motorways (b) In exceptional circumstances, certain urban roads and streets with the written consent of Sanctioning Authorities.

The Manual is underpinned by a holistic design-led approach, predicated on a collaborative and consultative design process. There is specific recognition of the importance to create secure and connected places that work for all, characterised by creating new and existing streets as attractive places with high priority afforded to pedestrians and cyclists while balancing the need for appropriate vehicular access and movement.

To achieve a more place-based/integrated approach to road and street design, the following four core principles are promoted within the manual:

- Connected Networks - To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and with emphasis on more sustainable forms of transport;
- Multi-Functional Streets - The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment;
- Pedestrian Focus - The quality of the street is measured by the quality of the environment for the user hierarchy pedestrians considered first; and
- Multi-disciplinary Approach - Greater communication and co-operation between design professionals through the promotion of a plan-led, multidisciplinary approach to design.

3.1.3. Traffic Signs Manual

The Traffic Signs Manual (DTTS, 2019) promotes safety, health and welfare for road workers and users. The manual details the traffic signs which may be used on roads in Ireland, including sign layout, sign symbols, the circumstances in which they are required, and the associated rules for positioning them.

Of direct relevance to the assessment of traffic and transport impacts, Chapter 7 - Road Markings outlines the function of road markings, the legalities of road markings and the application of road markings on roads in Ireland. Chapter 8 - Temporary Traffic Measures and Signs for Roadworks outlines the application of temporary traffic management (TTM) at work sites on public roads; this chapter offers instructions and guidance to road users in relation to the use of TTM and outlines the signs to be used at roadworks.

3.1.4. Traffic Management Guidelines

The Traffic Management Guidelines (DTTS, 2019) provides guidance on a number of issues including, but not limited to, traffic planning, traffic calming and management, incorporation of speed restraint measures and the provision of suitably designed facilities for public transport users and vulnerable road users.

A core component of the Guidelines is rooted in decision making and balancing priorities, including those that are in conflict with one another. The Guidelines identifies common objectives to be addressed when managing the transport network:

- Environmental improvement;
- Congestion relief;
- Capacity improvement;
- Safety;
- Accessibility;
- Economic vitality; and
- Politics.

The Proposed Scheme has been designed and assessed with reference to the set of guidance documents listed throughout Section 3.1.

3.2. National Policy

3.2.1. National Planning Framework - Ireland 2040 Our Plan (NPF) (2018)

Project Ireland 2040 was launched by the Government in February 2018 and includes two elements:

- National Planning Framework - Ireland 2040 Our Plan (NPF) (2018); and
- National Development Plan (2018- 2027).

Project Ireland 2040 provides the framework for future development and investment in Ireland and is the overall Plan from which other, more detailed plans will take their lead, including city and county development plans and

regional strategies. The National Planning Framework (NPF) (Department of Housing, Local Government and Heritage, 2020) is a tool to assist the achievement of more effective regional development.

The NPF now represents the overarching national planning policy document, of direct relevance to the planning functions of regional and planning authorities, including An Bord Pleanála. The NPF is the successor to The National Spatial Strategy (NSS), published in November 2002 and has a statutory basis.

The NPF states that the key future growth enablers for Dublin include:

> *'...The development of an improved bus-based system, with better orbital connectivity and integration with other transport networks...'*
>
> *'...Delivery of the metropolitan cycle network set out in the Greater Dublin Area Cycle Network Plan inclusive of key commuter routes and urban greenways on the canal, river and coastal corridors.'*

It is a policy of the NPF (Objective 74) to secure the alignment of the NPF and the National Development Plan (NDP) through delivery of the National Strategic Outcomes. The BusConnects scheme is identified in National Strategic Outcome 4, 'Sustainable Mobility', which includes the delivery of:

> *'…key public transport objectives of the Transport Strategy for the Greater Dublin Area (2016-2035) by investing in projects such as New Metro Link, DART Expansion Programme, BusConnects in Dublin'.*

It also allows for the development of:

> *'a comprehensive network of safe cycling routes in metropolitan areas to address travel needs.'*

By enhancing travel by both public transport and active modes the Proposed Scheme accords with the National Planning Framework.

3.2.2. National Development Plan (NDP) (2018- 2027)

The National Development Plan (NDP) (2018- 2027) (Department of Public Expenditure and Reform, 2018) sets out the investment priorities that will underpin the implementation of the NPF, through a total investment of approximately €116 billion to ensure ongoing employment maintenance and creation, with appropriate regional development. This investment is also to provide clarity to the construction sector, allowing the industry to provide the capacity and capability required to deliver the Government's long-term investment plans.

The NDP illustrates the commitment to reforming how public investment is planned and delivered. This is being achieved through a shift to integrated regional investment plans, stronger co-ordination of sectoral strategies and more rigorous selection and appraisal of projects to secure value-for-money.

The NDP states that investment in public transport infrastructure will be accelerated to support the development of an integrated and sustainable national public transport system consistent with the NPF's National Strategic Outcomes of 'Sustainable Mobility' as well as 'Compact Growth'. It outlines that the programmes and underlying projects proposed for delivery during the period up to 2027 which includes the BusConnects scheme, as follows:

> *'Delivery of the full BusConnects programme for all of Ireland's cities (inclusive of ticketing systems, bus corridors, additional capacity, new bus stops and bus shelters etc.'*
>
> *'Delivery of comprehensive cycling and walking network for Ireland's cities.'*

The NDP promotes the BusConnects proposals, of which the Proposed Scheme forms part, and requires improvements cycles networks such as those included in the scheme. Therefore, the Proposed Scheme is aligned with the NDP.

3.2.3. Draft National Investment Framework for Transport in Ireland (NIFTI) (2021)

The draft National Investment Framework for Transport in Ireland (NIFTI) (Department of Transport, 2021) was recently published by the Department of Transport (DTTS) for public consultation in March 2021. The purpose of the NIFTI is to support the delivery of the Project Ireland 2040 NPF and NDP by providing a strategic framework for future transport investment that is aligned with their spatial objectives and the National Strategic Outcomes (NSOs). The NIFTI has been developed to ensure decision making in land transport investment enables the NPF, supports the Climate Action Plan, and promotes positive social, environmental, and economic outcomes throughout Ireland. NIFTI establishes four investment priorities and objectives, of which new projects must align with at least one:

- Decarbonisation;
- Protection and Renewal;
- Mobility of People and Goods in Urban Areas; and
- Enhanced Regional and Rural Connectivity.

The development of BusConnects is aligned with Project Ireland 2040, and by extension the NIFTI. The principle of the overall BusConnects programme aligns with at least three of the NIFTI investment priorities; protecting and renewing Dublin's public transport network, enabling better mobility for people across the Dublin City-region, and supporting the decarbonisation of Dublin's transport network.

3.2.4. Smarter Travel: A Sustainable Transport Future (2009 – 2020)

Smarter Travel: A Sustainable Transport Future (2009 – 2020) (DTTS, 2019) presents an overall policy framework for sustainable transport in Ireland. The policy sets out a vision, goals and targets to be achieved, and outlines 49 actions that form the basis for achieving a more sustainable transport future. The relevant parts of this policy to the BusConnects scheme are set out in Chapter 4 and 5, as follows:

> *Chapter 4: Actions to Encourage Smarter Travel: 'Action 4 - The delivery of public transport, cycling and promotion of more sustainable travel patterns generally in many existing urban centres can only be achieved through retrofitting. We will require local authorities to prepare plans to retrofit areas towards creating sustainable neighbourhoods so that walking and cycling can be the best options for local trips, for example to reach local facilities such as shops and schools.'*
>
> *Chapter 5: Actions to Deliver Alternative Ways of Travelling: 'Action 12 - Implement more radical bus priority and traffic management measures to improve the punctuality and reliability of bus services and to support more efficient use of bus fleets. This may involve making some urban streets car-free, creating tram-like priorities in others and making greater use of roads/hard shoulders by buses.'*

The Proposed Scheme will support these actions in providing improvements to pedestrian and cycle amenities along the proposed route, whilst also providing greater reliability for road-based public transport.

3.2.5. National Cycle Policy Framework

In support of the Smarter Travel Policy, the National Cycle Policy Framework (NCPF) (DTTS, 2009) was adopted by Government in 2009 and includes the following statements and commitments, as stated in the Executive Summary:

> *'The mission is to promote a strong cycling culture in Ireland. The vision is that all cities, towns, villages and rural areas will be bicycle friendly. Cycling will be a normal way to get about, especially for short trips. Cycling contributes to improved quality of life and quality of the public realm, a stronger economy and business environment, and an enhanced environment. A culture of cycling will have developed in Ireland to the extent that 10% of all trips will be by bike by 2020.'*

Objective 2 of the NCPF is to *'ensure that the urban road infrastructure (with the exception of motorways) is designed / retrofitted so as to be cyclist-friendly and that traffic management measures are also cyclist friendly.'* This involves junction treatment and traffic management, including combined bus and cycle priority measures.

The Proposed Scheme supports the objectives of the NCPF through the provision bus and cycle priority measures.

3.2.6. Statement of Strategy (2016 – 2019)

The Statement of Strategy (Department of Transport, Tourism and Sport (DTTS), 2019) is the DTTS's primary strategic plan and sets out the key priorities for the period 2016 – 2019. It details the Government's high-level goals and objectives, providing the framework for more detailed planning and individual performance management. The strategy mission is:

> *'to shape the safe and sustainable development of transport, tourism, and sport, to support economic growth and social progress.'*

DTTS's high level goal for land transport is:

> *'to best serve the needs of society and the economy through safe, sustainable and competitive transport networks and services.'*

This will be sought with an emphasis on:

- Safety;
- Enhancing services;
- Facilitating and promoting more sustainable forms of transport, including walking and cycling;
- Achieving value-for-money; and
- Promoting sound governance.

The Proposed Scheme will contribute to improved road safety through improvement works at key junctions and upgrades to the pedestrian and cyclist infrastructure along the proposed route. The Proposed Scheme will enhance bus, walking and cycling services which will, in turn, facilitate and promote travel by these modes.

3.2.7. Road Safety Strategy

The Road Safety Strategy (2013-2020) (Road Safety Authority (RSA), 2019) sets out targets to be achieved in terms of road safety in Ireland, with the primary target defined as follows:

> *'A reduction of road collision fatalities on Irish roads to 25 per million population or less by 2020 is required to close the gap between Ireland and the safest countries. This means reducing deaths from 162 in 2012 to 124 or fewer by 2020. A provisional target for the reduction of serious injuries by 30% from 472 (2011) to 330 or fewer by 2020 or 61 per million population has also been set.'*

The Strategy goes on to state that:

> *'…the attractiveness of walking depends strongly on the safety of the infrastructure provided. Collisions involving pedestrians account for 1 in 5 fatalities annually.'*

> *'…collisions involving cyclists account for 1 in 25 road deaths annually, and many collisions involving cyclists lead to serious head injuries.'*

The document sets out strategies for engineering and infrastructure that can effectively reduce collisions. The Proposed Scheme incorporates measures that will contribute to improving road safety in the form of upgrades to key junctions, and new / upgraded pedestrian and cycle infrastructure along the corridor.

3.2.8. Building on Recovery: Infrastructure and Capital Investment (2016-2021)

The Capital Plan (Department of Public Expenditure and Reform, 2015) presented the findings of a Government-wide review of infrastructure and capital investment policy and outlined the Government's commitment to ensuring that the country's stock of infrastructure is capable of facilitating economic growth. The plan identifies the need to improve public transport facilities noting:

> *'It is therefore essential that road, rail and public transport networks are developed and maintained to the standard required to ensure the safe and efficient movement of people and freight. In addition, getting people out of cars and onto public transport has a key role to play in reducing Ireland's carbon emissions, by providing a viable, less polluting alternative to car and road transport for many journeys.'*

The transport capital allocation in the plan is largely framed by the recommendations and priorities set out in the 2015 DTTS Strategic Investment Framework for Land Transport, which centre on:

- Maintaining and renewing the strategically important elements of the existing land transport system;
- Addressing urban congestion; and
- Maximise the contribution of land transport networks to our national development.

The Capital Plan key objective is to provide €3.6 billion of Public Transport Investment including further upgrading of Quality Bus Corridors. The Proposed Scheme is consistent with these recommendations, priorities and objectives as set out in the DTTS investment framework, and the Capital Plan.

3.2.9. The Sustainable Development Goals National Implementation Plan (2018 – 2020)

In September 2015, 'Transforming Our World, the 2030 Agenda for Sustainable Development (the 2030 Agenda)' was adopted by all 193 Members States of the United Nations (UN).

The 2030 Agenda aims to deliver a more sustainable, prosperous, and peaceful future for the entire world, and sets out a framework for how to achieve this by 2030. This framework is made up of 17 Sustainable Development Goals (SDGs) which cover the social, economic and environmental requirements for a sustainable future which are shown in Diagram 3.1.

Diagram 3.1 The 17 Sustainable Development Goals

The Sustainable Development Goals National Implementation Plan (Department of the Environment, Climate and Communications, 2018) is in direct response to the 2030 Agenda for Sustainable Development and provides a whole-of-government approach to implement the 17 Sustainable Development Goals (SDGs) above.

The Plan also sets out 19 specific actions to implement over the duration of this first SDG National Implementation Plan. The BusConnects scheme aligns with Goals 9 and 11 as they include the following targets:

> *'Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation: Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human wellbeing, with a focus on affordable and equitable access for all.'*
>
> *'Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.'*

The above goals align with the aim of the Proposed Scheme.

3.2.10. Climate Action Plan

The Climate Action Plan (Department of the Taoiseach, 2019) sets out the strategy of the Irish Government for tackling the climate change crisis and seeks to achieve a zero-carbon energy systems objective for Irish society and in the process, create a resilient, vibrant and sustainable country.

A central pillar of this plan is the role that transport can play in reducing our carbon footprint and improving air quality in our towns and cities. The plan acknowledges that the delivery of improved public transport will lead to a modal shift away from unsustainable transport choices and go a large way to the decarbonization challenge that lies ahead.

BusConnects, and improvements to the bus fleet, are identified in the Climate Action Plan as being a central component of this objective, as noted in the following actions which are extracted from the plan:

> *'Implement major sustainable-mobility projects such as DART Expansion, Metro Link, and the BusConnects Programme. BusConnects targets a 50% increase in bus passenger numbers over the lifetime of the project in our major cities.*
>
> *Expand sustainable-travel measures, including a comprehensive cycling and walking network for metropolitan areas of Ireland's cities, with a particular emphasis on safety of cyclists. We shall also expand greenways and develop over 200km of new cycling network under BusConnects.*
>
> *Establish a new fare structure in BusConnects which will encourage flexible use of an integrated public transport network. We committed to transition to Low-Emission Vehicles, including electric buses, for the urban public bus fleet, with no diesel-only purchases from 1 July 2019, and will set a roadmap for all public PSO urban bus fleets to become LEVs by 2035.'*

By enhancing public and active travel networks the Proposed Scheme will encourage the use of these modes and reduce reliance on private car. Therefore, the Proposed Scheme is aligned with the Climate Action Plan.

3.3. Regional Policy

3.3.1. Transport Strategy for the Greater Dublin Area (2016 – 2035)

The Transport Strategy for the Greater Dublin Area (2016 – 2035) (National Transport Agency (NTA), 2016) provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades.

The Strategy outlines that the GDA is heavily reliant on the bus network and the existing infrastructure is of varying standards and levels of continuity. It therefore identifies the Core Bus Network for the GDA which represents the

most important bus routes in the region; generally characterised by a high frequency of bus services, high passenger volumes and with significant trip attractors located along the route.

The GDA Transport Strategy states:

> *'In order to ensure an efficient, reliable and effective bus system, it is intended, as part of the Strategy, to develop the Core Bus network to achieve, as far as practicable, continuous priority for bus movement on the portions of the Core Bus Network within the Metropolitan Area.'*

The NTA has recently published an Issues Paper to commence the review of the Strategy. The purpose of the review is to assess the implementation of the current plan thus far and look to produce an updated Strategy setting out the framework for investment in transport infrastructure and services up to 2042. BusConnects is identified as a major project by the Issues Paper, stating that the BusConnects Core Bus Corridors element is due to go to planning in 2021.

To complement this Strategy, the NTA devised an Integrated Implementation Plan 2019-2024. It sets out an infrastructure investment programme, integrated service plan and actions to be undertaken by the NTA over the Plan period. A core element of this Plan relates to the delivery of the BusConnects programme.

3.3.2. Greater Dublin Area Cycle Network Plan

The Greater Dublin Area Cycle Network Plan (National Transport Authority (NTA), 2013) was adopted by the NTA in early 2014 following a period of consultation with the public and various stakeholders. This plan forms the strategy for the implementation of a high quality, integrated cycle network for the Greater Dublin Area. This involves the expansion of the urban cycle network from 500km to 2,480km comprising a mixture of cycle tracks and lanes, cycle ways and infrastructure-free cycle routes in low traffic environments. Within the urban network, this will consist of a series of routes categorised as follows:

- **Primary:** Main cycle arteries that cross the urban area and carry most cycle traffic – target quality of service (QoS) of two abreast + overtaking width = 2.5m;
- **Secondary:** Link between principle cycle routes and local zones – target QoS of single file + overtaking width = 1.75m; and
- **Feeder:** Cycle routes within local zones and/or connection from zones to the network levels above.

During the course of the analysis carried out to identify the preferred core bus corridors for the BusConnects scheme, the provision of these cycle routes was considered at all stages. Therefore, as part of the analysis, any upgrading of infrastructure to provide bus priority also provides cycling infrastructure, where practical, to the appropriate level and quality of service (as defined by the NTA National Cycle Manual) required for primary and secondary cycle routes.

By enhancing cycling facilities, the Proposed Scheme accords with the Greater Dublin Area Cycle Network Plan.

3.3.3. Regional Spatial and Economic Strategy for the Eastern and Midlands Region (2019-2031)

A Regional Spatial and Economic Strategy (RSES) is a strategic plan and investment framework to shape future growth and to better manage regional planning and economic development throughout the region.

The RSES (Eastern and Midland Regional Assembly, 2019) builds on the foundations of Government policy in Project Ireland 2040, which combines spatial planning with capital investment, and has been prepared from an extensive bottom up consultation process. It is an integrated cohesive policy document that provides a Spatial Strategy to manage future growth in the region. It identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives.

The region includes three subregions or Strategic Planning Areas (SPAs), namely the Midland, Eastern and Dublin SPAs, as shown in Diagram 3.2.

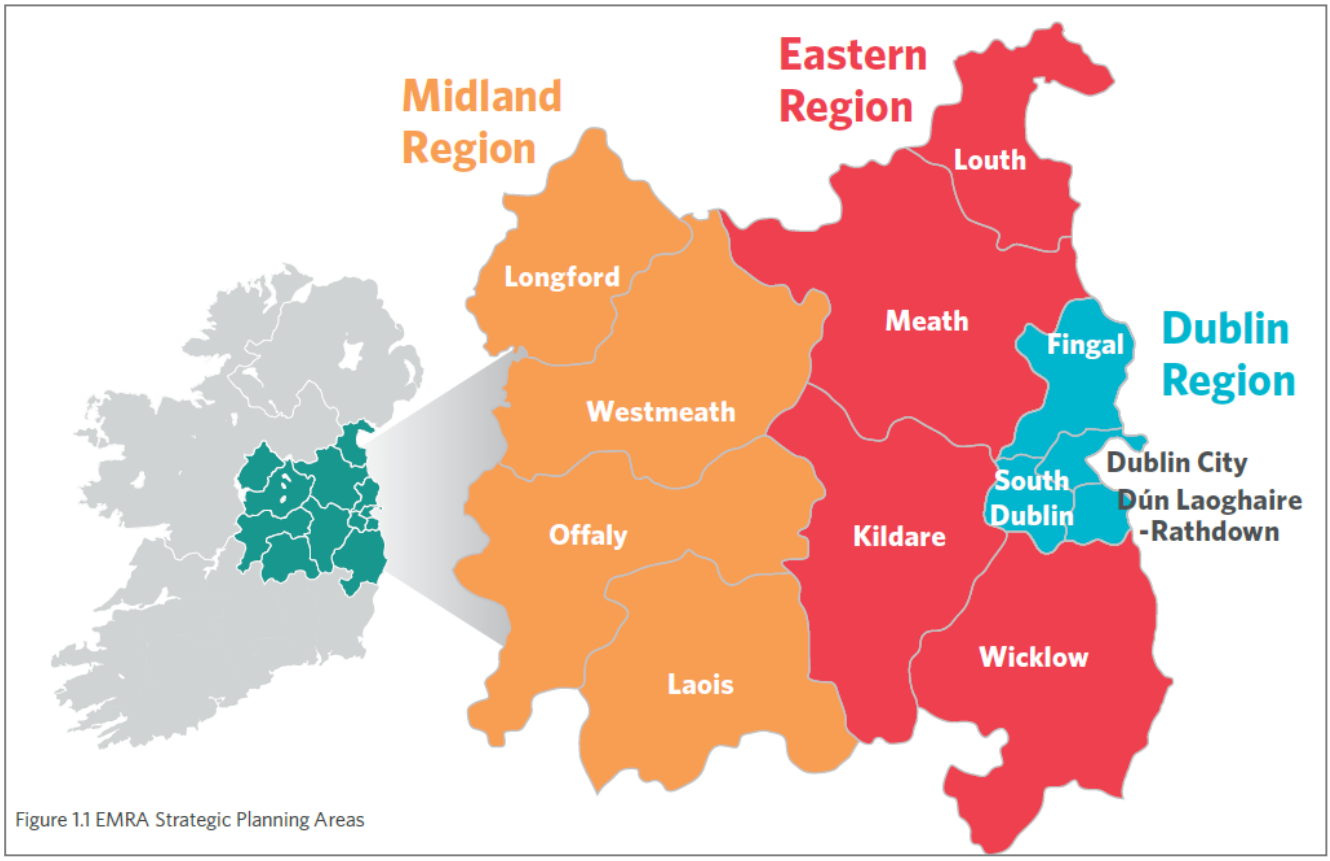

Diagram 3.2: RSES Planning Areas

Dublin City and suburbs is considered in the context of the Dublin Metropolitan Area Strategic Plan (MASP) and is dealt with in greater detail in Chapter 5 of the RSES. The principles underpinning the development of the MASP include the effective integration of transport planning with spatial planning policies, from regional down to local level and the alignment of associated transport and infrastructure investment priorities. The national policy in metropolitan areas is to increase sustainability through greater alignment of land use and transport.

The RSES highlights the BusConnects scheme as a key transport infrastructure investment in the metropolitan area as set out in national policy. The MASP Sustainable Transport Regional Policy Objectives (RPO) are:

> *'RPO5.2: Support the delivery of key sustainable transport projects including Metrolink, DART and LUAS expansion programmes, BusConnects and the Greater Dublin Metropolitan Cycle Network and ensure that future development maximises the efficiency and protects the strategic capacity of the metropolitan area transport network, existing and planned.'*

> *'RPO 8.9: The RSES supports delivery of the bus projects…subject to the outcome of appropriate environmental assessment and the planning process.'*

Table 3.1: Extract from RSES RPO8.9 – Bus Projects for the Region

Extract from RSES RPO8.9 (Table 8.3: Bus Projects for the Region)
Core Bus Corridors comprising 16 radial routes and 3 orbital routes in Dublin
Regional Bus Corridors connecting the major regional settlements to Dublin
Dublin Metropolitan Bus Network Review
Network reviews for the largest settlements across EMRA, with a view to providing local bus services
Review of bus services between settlements
Review of local bus services throughout EMRA, including services to small towns and villages and the rural transport programme
New interchange and bus hub facilities
New fare structures
Enhances passenger information
Improvements to bus waiting facilities
Integrated time tabling of bus and rail into a coherent national and regional network

The RSES highlights the wider BusConnects proposals as a project, given that the Proposed Scheme fall within this it can be considered to be aligned with it.

3.3.4. Dublin City Council Development Plan (2016 – 2022)

The Dublin City Development Plan (CDP) (Dublin City Council, 2016) sets out policies and objectives to guide how and where development will take place in the city over the lifetime of the Plan. It provides an integrated, coherent spatial framework within the context of national policies to ensure the city is developed in an inclusive way which improves the quality of life for its citizens, whilst also being a more attractive place to visit and work. The entirety of the Proposed Scheme falls within the remit of the DCDP.

The vision for the city is:

> *'…within the next 25 to 30 years, Dublin will have an established international reputation as one of Europe's most sustainable, dynamic and resourceful city regions.'*

DCDP supports and encourages the uptake of sustainable travel modes to achieve a modal shift through various policies and objectives outlined in the Plan. Mobility and Transport Policy 2 (MT2) states that Dublin City Council (DCC) will:

> *'…promote modal shift from private car use towards increased use of more sustainable forms of transport such as cycling, walking and public transport, and to co-operate with the NTA, Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives.'*

Policy MT4 makes specific reference to the promotion and facilitation of improvements to the bus network in order to achieve strategic transport objectives.

Policy MT7 is to implement walking and cycling improvements at thoroughfares and junctions and develop new and safe routes. Policy MT11 is to promote improved permeability for both cyclists and pedestrians in existing urban areas. The BusConnects scheme incorporates upgrades to pedestrian and cycle infrastructure along the Proposed Scheme and at key junctions.

The Proposed Scheme incorporates upgrades to pedestrian and cycle infrastructure along the Proposed Scheme and at key junctions thus can be considered in alignment with the DCDP.

3.3.5. Dublin City Centre Transport Study

The National Transport Authority (NTA) and Dublin City Council (DCC) published a set of proposals to enhance overall movement in Dublin City Centre and to improve the attractiveness of the city centre for shoppers, tourists, workers, and residents.

The Transport Study (DCC and NTA, 2016) has been developed as an input into the Dublin City Development Plan (DCCDP) 2016-2022 and sets down a framework for how Dublin City's transport network can be redefined to cater for this increased demand, by better utilising the existing infrastructure available, and by moving towards a more sustainable and efficient use of the urban realm within the City Centre.

The key objectives of the Transport Strategy are to:

1) Protect the investment that has been, and continues to be made in public transport across the city;
2) Guarantee the future development potential of the City Centre, and improve confidence in the ability of the City Centre to be the key focus of future investment;
3) Increase the capacity, reliability and use of public transport into and within the City Centre;
4) Improve the quality of service for cycling and walking, with particular emphasis on the 'core' City Centre;
5) Ensure that the city develops in a way which will provide a better living and working environment for residents and visitors alike; and,
6) Provide an agreed framework for continued transport investment within the City Centre.

The Proposed Scheme directly contributes towards achieving objectives 3 and 4 of the Transport Strategy.

3.4. Local Policy

3.4.1. Ballymun Local Area Plan (2017)

Ballymun is a city neighbourhood located 6.5km north of Dublin city centre, just south of Junction 4 of the M50. The neighbourhood was originally conceived in the 1960s when high-rise blocks were constructed in response to a major housing crisis. A Ballymun Masterplan document was produced in 1998 for the purpose of a regeneration process, which was to be led by the development company, Ballymun Regeneration Limited (BRL).

The Ballymun Local Area Plan (LAP) was adopted on Friday the 27th of October 2017. It aims to safeguard the significant investment made in the area to date and ensure the regeneration is brought to a successful conclusion, by reviewing the progress made in implementing the aims and objectives of the Ballymun Masterplan and providing an updated strategy for the future development and management of the area to meet the needs of the existing and future population. The preparation of a LAP is identified as one of the objectives of the Dublin City Development Plan 2016 – 2022.

The Ballymun LAP covers an area of approx. 270 hectares. This includes the Shanliss and Oldtown residential estates to the east of Ballymun Road, and the Oakwood, Cedarwood, Pinewood and Willow Park residential estates to the west of Ballymun Road. Furthermore, an area north of the DCC boundary between St. Margaret's Road and the M50 forms a crucial contextual zone of the Ballymun LAP (referred to throughout the LAP as the 'M50 lands'), which although located within Finglas County Council, is mainly owned by DCC. The Ballymun LAP covers approx. 1.35km of the 'Ballymun to City Centre' Proposed Scheme along Ballymun Road between Santry Avenue and Collins Avenue Ext.

The vision of Ballymun as articulated through the Ballymun Masterplan and now translated into the Ballymun LAP is:

> *'To create a successful and sustainable new town; which provides for and supports a thriving local economy, which caters for people across all spectrums of their lifecycle in both their house type and*

tenure and where communities are supported by the appropriate social, supporting and cultural amenities.'

This vision has been filtered down to 10 key principles, and various aims and objectives set under the following headings:

- Economic Development and Employment;
- Movement;
- Urban Forms and Design;
- Housing and Tenure;
- Social and Community Infrastructure and Supports;
- Sports, Recreation and Open Space;
- Green Infrastructure and Biodiversity; and
- Drainage and Water.

Eight objectives are set under the movement heading, one of which is to 'facilitate the delivery of a core bus corridor through Ballymun as proposed in the NTA Transport Strategy.'

3.4.2. Grangegorman Planning Scheme (2012)

The government designated 28.69 hectares of land at Grangegorman as a Strategic Development Zone (SDZ) site in December 2010. SDZ sites are a concept introduced by the government to facilitate development deemed to be of economic or social importance to the state. Before development can be permitted in an SDZ, it is necessary that a Planning Scheme for the area is prepared by a development agency. In this case, the Grangegorman Planning Scheme has been prepared by the Grangegorman Development Agency (GDA).

The SDZ site is located to the west of Phibsborough Road and Constitution Hill (part of the 'Ballymun to City Centre' Proposed Scheme) within the district of Grangegorman approximately 1km from Dublin city centre. The SDZ site comprises primarily of St. Brendan's Hospital and its surrounding grounds, whilst in addition includes lands under the ownership of the Health Service Executive (HSE), the DCC Cleansing Depot owned by Dublin Institute of Technology (DIT), and a north-south public road, Grangegorman Lower, that dissects the site into two areas.

It's proposed that the SDZ site includes land uses for medical facilities, healthcare accommodation, DIT college buildings, student facilities, commercial facilities and open space for sports and recreation.

3.5. Legislation

There is no legislation specifically relevant to this TIA.

4. Assessment Methodology

This Chapter of the TIA details the methodologies used to assess the impacts of the Proposed Scheme on the receiving transport environment.

The assessment of the Proposed Scheme in relation to the baseline transport environment requires a qualitative assessment of changes to the transport environment, as well as a quantitative analysis undertaken using a suite of multi-modal transport modelling tools which have been developed for the Proposed Scheme.

The assessment of traffic and transport benefits and impacts of the Proposed Scheme requires an approach which can provide information on, for example, the mode share changes along the route, people movement by different modes of transport travelling along the corridor as well as traffic re-routing impacts on the surrounding road network. The approach requires an assessment of bus, pedestrian and cycle operations and bus reliability with a focus on the movement of people along the route.

The traffic and transport impact assessment has been undertaken in accordance with the 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA 2022), the 'Traffic and Transport Assessment Guidelines' (TII 2014), the National Cycle Manual (NTA 2011) and the UK Design Manual for Roads and Bridges (DMRB) Environmental assessment and monitoring (formerly HA 205/08, HD 48/08, IAN 125/15, and IAN 133/10), LA104 Revision 1 (Highways England 2020).

Where relevant a LoS has been derived for each mode of travel. The benefits of this approach are outlined subsequently.

4.1. Data Collection and Collation

The TIA has two distinct parts, qualitative methods which consider the physical changes to transport networks and quantitative methods which are based upon traffic modelling. The following sections describe the data collection and collation for each method of assessment.

4.1.1. Qualitative Assessment Data Collection

This Section discusses the data collection undertaken to inform the qualitative assessment metrics set out in Section 4.2 and Section 6.

4.1.1.1. Site Surveys

A walkover of the route of the Proposed Scheme was undertaken to ensure an up-to-date record of the existing environment was used to complete the qualitative assessment. The surveys focussed on the following aspects which are relevant to the assessment:

- Provision for the movement of pedestrians, cyclists and vehicles;
- Location of, and facilities at, bus stops; and
- Current parking and loading facilities.

These surveys were supplemented by specially commissioned aerial photography along the full length of the Proposed Scheme.

4.1.1.2. Mapping Data

Three sources of mapping data have been used to inform the analysis, Ordnance Survey Mapping (OSM), NavStreets and OpenStreet Map.

OSM is created by Ordnance Survey Ireland which provides detailed mapping for a variety of uses. For the TIA OSM has been used to establish accurate road naming and the location of physical highway features.

NavStreets is a street-level GIS dataset which covers the Republic of Ireland, including the Greater Dublin Area. Two sets of data from this dataset have been used to inform the EIAR:

- Road Network: Functional Class of each road link in the road network, which is a road type indicator, reflecting traffic speed and volume, as well as the importance and connectivity of the road. The Functional Class information has been used to help inform the metrics for identifying the sensitivities of roads in the indirect study area; and
- Points of Interest: NavStreets contains information on a wide range of 'points of Interest'. This has been referred to when identifying sensitive community receptors, such as schools, healthcare facilities, places of worship, retail clusters, etc, when determining how sensitive a particular location is to changes in terms of traffic and transport facilities.

OSM and NavStreets have been supplemented by OpenStreet Map which is an open-source database of geographic data (i.e. Points of Interest, Land Use and Places of Worship). This has been used to further identify community facilities and open spaces in proximity to the Proposed Scheme.

4.1.2. Quantitative Assessment Data Collection

The following Section provides an overview of the data collection exercise undertaken to facilitate the calibration and validation of the LAM, Proposed Scheme micro-simulation and junction models. Existing data sources were reviewed to identify available traffic counts and locate gaps in observed information across the model area. This review was used to define a specification for additional counts which were commissioned for the area. The combination of new commissioned counts, and existing available information, provided a comprehensive dataset for calibration and validation.

This Section discusses the data collection undertaken to inform the quantitative assessment metrics set out in Section 6. Further detail can be found in Appendix 1 (Transport Modelling Report) in Volume 4 of the EIAR.

4.1.2.1. Existing Data Review (Gap Analysis)

A review of existing traffic survey data available for the model area was undertaken from the following sources:

- NTA Traffic Count Database: A mixture of Automatic Traffic Counts (ATC) and Junction Turning Counts (JTC) from previous studies covering a range of years; and
- TII Automatic Traffic Counters (ATCs): Permanent TII ATCs located on national strategic roads across the network with data publicly available online.

The NTA, Dublin City Council and the other local authorities undertake periodic counts within their administrative areas in connection with their own local schemes. These surveys are conducted throughout the year and a limited set of data was available within the area of the Proposed Scheme.

Information on bus passenger volumes was already available and included in the modelling process as part of the ERM base model calibration and validation, which includes the annual canal and M50 cordon counts as well as ticketing data.

4.1.2.2. Commissioned Traffic Survey Data

Due to the scale of the Proposed Scheme, a full set of consistent up to date traffic counts for a neutral period (e.g. November / February when schools, colleges were in session) was completed for the Proposed Scheme. Traffic surveys were undertaken between January and February 2020 (Pre COVID- 19) with the surveyed counts were used as inputs to the model calibration and validation process of the strategic model and microsimulation model. The two types of counts used in the study are Junction Turning Counts (JTCs) and Automatic Traffic Counts (ATCs).

The various components of traffic have different characteristics in terms of operating costs, growth and occupancy. The surveys used the most common vehicle categories, as defined in the COBA (Cost Benefit Analysis) Manual:

- Cars: Including taxis, estate cars, 'people carriers' and other passenger vehicles (for example, minibuses and camper vans) with a gross vehicle weight of less than 3.5 tonnes, normally ones which can accommodate not more than 15 seats. Three-wheeled cars, motor invalid carriages, Land Rovers, Range Rovers and Jeeps and smaller ambulances are included. Cars towing caravans or trailers are counted as one vehicle unless included as a separate class;
- Light Goods Vehicles (LGV): Includes all goods vehicles up to 3.5 tonnes gross vehicle weight (goods vehicles over 3.5 tonnes have sideguards fitted between axles), including those towing a trailer or caravan. This includes all car delivery vans and those of the next larger carrying capacity such as transit vans. Included here are small pickup vans, three-wheeled goods vehicles, milk floats and pedestrian controlled motor vehicles. Most of this group is delivery vans of one type or another;
- Other Goods Vehicles (OGV 1): Includes all rigid vehicles over 3.5 tonnes gross vehicle weight with two or three axles. Also includes larger ambulances, tractors (without trailers), road rollers for tarmac pressing, box vans and similar large vans. A two or three axle motor tractive unit without a trailer is also included;
- Other Goods Vehicles (OGV 2): This category includes all rigid vehicles with four or more axles and all articulated vehicles. Also included in this class are OGV1 goods vehicles towing a caravan or trailer; and
- Buses and Coaches (PSV): Includes all public service vehicles and work buses with a gross vehicle weight of 3.5 tonnes or more, usually vehicles with more than 16 seats.

An overview of the commissioned data is provided in Table 4.1.

Table 4.1: Survey Overview

Survey Type	Company	Number	Date
JTC	IDASO LTD	23	Thursday 13/2/2020
ATC	IDASO LTD	8	Wednesday 5/2/2020 – Friday 13/2/2020

The JTCs are 24-hour counts broken down into 15-minute segments over a full day. All main junctions along the Proposed Scheme have been included and provide information on the volume, and types of vehicles, making turning movements at each location. This data is utilised within the models to ensure that the flow of vehicles through the main junctions on the network is being represented accurately.

The ATCs were taken for an entire week. The vehicle categories surveyed are motorcycles, cars, LGVs, OGV 1, OGV 2 and PSVs. The ATC data provides information on:

- The daily and weekly profile of traffic along the Proposed Scheme; and
- Busiest time periods and locations of highest traffic demand on the network.

Summary information related to the JTCs and ATCs collected for the Proposed Scheme is shown subsequently.

4.1.2.3. Road and Bus Journey Time Data

4.1.2.3.1 Bus Journey Time Data

Bus Journey time data for the Proposed Scheme was provided by the NTA from the Automatic Vehicle Location (AVL) dataset used to monitor bus performance. The data provides information on bus travel time and dwell times at existing bus stops and has been used to inform the development of the transport models used to assess the impacts of the Proposed Scheme.

4.1.2.3.2 TomTom Road Journey Time Data

Road Journey time data for the Proposed Scheme models has been sourced from TomTom, who calculate journey times using vehicle position data from GPS-enabled devices and provide this on a commercial basis to a number of different users. The NTA purchased a license to access the Custom Area Analysis dataset through the

TomTom TrafficStats portal. The NTA has an agreement with TomTom to provide travel time information covering six areas of Ireland and for certain categories of road.

Data is provided based on the area specified by the agreement; however, the date and time range of the data can be specified by the user. For the development of the strategic model and micro-simulation models the following query on the data was applied:

- 2019 weekdays (Monday to Thursday) from mid-January until end of November, excluding all bank holidays and days close to those dates.

The data is provided in the form of a GIS shapefile and accompanying travel time database file. The shapefile contains topographical details for each road segment, which is linked to the travel time database via a unique link ID. The database file then contains average and median travel time, average and median speed, the standard deviation for speed, the number of observations and percentile speeds ranging from 5 to 95 for each link.

4.1.2.3.3 TomTom Data Processing

In order to compare the journey times of specific links and routes between the TomTom data and the road assignment models developed for the Proposed Scheme, the two datasets were linked. After importing both the road assignment model and TomTom networks into the GIS environment, ensuring both datasets are in the same coordinate system, the selected routes were then be linked using a spatial join functionality.

Before applying the data to the models, it was checked to ensure that it was fit for purpose. The review included checks of the number of observations that form the TomTom average and median times and checks of travel times against Google Maps travel times.

The TomTom Custom Area Analysis dataset was processed to provide observed journey times against which the LAM and micro-simulation model could be validated along the Proposed Scheme.

4.1.2.3.4 TomTom Data Application

The processed journey time data was used to validate the LAM and the micro-simulation models at an end-to-end travel time level, with intermediate segment travel times used to inform the calibration of both models. Further information about the journey time validation process can be found in TIA Appendix 1 (Transport Modelling Report).

4.2. Appraisal Method for the Assessment of Impacts

4.2.1. Overview

This Section provides an overview of the methodologies that have been used to assess the potential traffic and transport impacts of the Proposed Scheme during both the Construction and Operational Phases. The assessments have been carried out as follows:

- Outlining the Assessment Topics; and
- Determining the Predicted Magnitude of Impacts.

Further detail on the assessment methodologies is provided in Section 6.

4.2.2. Outlining the Assessment Topics

The traffic and transportation impacts have been broken down into the following assessment topics for both the Construction and Operational Phases:

- The qualitative assessments are as follows:
  - **Pedestrian Infrastructure:** The changes to the quality of the pedestrian infrastructure as a result of the Proposed Scheme;

- **Cycling Infrastructure:** The changes to the quality of the cycling infrastructure as a result of the Proposed Scheme;
- **Bus Infrastructure:** The changes to the quality of the bus infrastructure as a result of the Proposed Scheme; and
- **Parking / Loading:** The changes to the availability of parking and loading as a result of the Proposed Scheme.

- The quantitative assessments are as follows:
  - **People Movements:** An assessment has been carried out to determine the potential impact that the Proposed Scheme will have on the projected volume of people moving along the Proposed Scheme by sustainable modes during the Operational Phase only;
  - **Bus Performance Indicators:** The changes to the projected operational efficiency for buses as a result of the Proposed Scheme;
  - **General Traffic:** The direct and indirect impacts that will occur for the general traffic conditions on the Proposed Scheme and surrounding road network; and
  - **Network-Wide Performance Indicators:** The strategic changes to queuing, total travel times, total travel distance and average network speed.

4.2.3. Determining the Predicted Magnitude of Impacts

The methodology used for determining the predicted magnitude of impacts has considered the traffic and transport conditions of the environment before and after the Proposed Scheme is in place.

The impact assessments have been carried out in relation to the following scenarios:

- **Do Minimum** – The 'Do Minimum' scenario (Opening Year (2028), Design Year (2043)) represents the likely traffic and transport conditions of the direct and indirect study areas including for any transportation schemes which have taken place, been approved or are planned for implementation, **without** the Proposed Scheme in place. This scenario forms the reference case by which to compare the Proposed Scheme ('Do Something') for the quantitative assessments; and
- **Do Something** – The 'Do Something' scenario represents the likely traffic and transport conditions of the direct and indirect study areas including for any transportation schemes which have taken place, been approved or are planned for implementation, **with** the Proposed Scheme in place (i.e. the Do Minimum scenario with the addition of the Proposed Scheme). The Do Something scenario has been broken into two phases:
  - **Construction Phase (Construction Year (2024)) –** This phase represents the single worst-case period which will occur during the construction of the Proposed Scheme; and
  - **Operational Phase (Opening Year (2028), Design Year (2043)) –** This phase represents when the Proposed Scheme is fully operational.

The assessment of changes between the Do Minimum and Do Something scenarios have been presented in either a positive, negative or neutral magnitude of impacts as a result of the Proposed Scheme, depending on the assessment topic. A high, medium, low or negligible rating has been applied to each impact assessment to determine the Magnitude of Impact. Refer to Section 6 for further information on the methodology in applying these ratings for each assessment.

4.2.3.1. Level of Service Impact Assessment

To outline the changes in conditions between the Do Minimum and Do Something scenarios a LoS approach has been developed for the impact assessments, where appropriate. This concept allows a straightforward comparison of two differing scenarios using a series of metrics specifically developed for this purpose.

The concept of LoS was originally developed in the United States' Transportation Research Board's (TRB) Highway Capacity Manual (TRB 2000). Under this concept, potential values for a performance measure are divided into six ranges, with each range assigned a letter grade ranging from 'A' (highest quality) to 'F' (lowest quality). LoS concepts are applied universally throughout the world, and have their basis in Highway Capacity

Manual and, particularly for bus network assessments, in the Transit Capacity and Quality of Service Manual (TRB 2003).

LoS concepts are not target based or rigid in their application and bespoke versions are developed to suit the particular receiving environment of the scheme under consideration or the particular user problems that the scheme and / or project is seeking to address. A mix of quantitative and qualitative indicators can be used and summarised as a LoS. The process enables integrated planning and decision making across all modes rather than any specific mode which can create a bias in the assessment process (e.g. focusing on car Volume over Capacity (V/C)). It is intended that the LoS framework for the Proposed Scheme will provide an easily understandable summary of the impact of each assessment topic, where applied.

4.3. Transport Modelling Methodology

A multi-tiered transport modelling approach has been developed. The NTA's ERM was the primary modelling tool and provided the overarching information on forecast travel demand for each mode of transport. The ERM was supported by other modelling tools which provide more granular level traffic information and allow for detailed and refined modelling at a local network and junction level. For this purpose, a cordoned (sub-set model) corridor-wide, road (motorised vehicle only) based LAM in combination with a multi-modal corridor micro-simulation model and local junction models have been used which work in tandem with the ERM.

Through the multi-tiered transport modelling approach, the following modes of transport have been considered:

- Public Transport including inter-urban rail, suburban rail, DART, light rail (Luas), bus, and MetroLink;
- Traffic including private car, taxis and goods vehicles;
- Walking; and
- Cycling.

Further detail on the modelling can be found in TIA Appendix 1 (Transport Modelling Report) in Volume 4 of the EIAR which details the model development, data inputs, calibration and validation and forecast model development for the suite of models used to support the assessment.

4.3.1. Proposed Scheme Transport Models

This Section sets out the various transport modelling tools that have been developed and used to inform the preparation of this TIA, and Chapter 6 (Traffic & Transport) in Volume 2 of the EIAR and has supported design decisions. The purpose of each tool is detailed and the use of the tool for each element of the Proposed Scheme is defined.

The modelling tools that have been developed do not work in isolation but instead work as a combined modelling system driven by the ERM as the primary source for multi-model demand and trip growth etc. which is passed from the ERM to the cordoned local area model, microsimulation models and junction models for the Proposed Scheme which have been refined and calibrated to represent local conditions to a greater level of detail then that contained within the ERM.

Importantly, no one tool can provide the full set of modelling data required to inform both the EIAR and TIA requirements and to support design iterations and decisions e.g. the ERM via the LAM has provided road traffic flow information (for example Annual Average Daily Traffic (AADT) and link speed data which has been used to inform Air Quality and Noise models).

The micro-simulation model is the most appropriate tool to provide the end-to-end bus journey times for the Proposed Scheme based on the detailed interaction of vehicle movements along the corridor. In addition, the LAM has been used directly for supporting design development decisions and to assist with an understanding of the implications of banned turns and potential trip redistribution away from the Proposed Scheme during both the Construction and Operational Phases.

4.3.1.1. Transport Modelling Hierarchy

There are four tiers of transport modelling which are used to assess the Proposed Scheme and these are detailed below and shown graphically in Diagram 4.1.

- **Tier 1 (Strategic Level):** The NTA's ERM is the primary tool which has been used to undertake the strategic modelling of the Proposed Scheme and has provided the strategic multi-modal demand outputs for the forecast years;
- **Tier 2 (Local Level):** A LAM has been developed to provide a more detailed understanding of traffic movement at a local level. The LAM is a subset model created from the ERM and contains a more refined road network model used to provide consistent road-based outputs to inform the TIA, EIA and junction design models. This includes information such as road network speed data and traffic redistribution impacts for the Operational Phase. The LAM also provides traffic flow information for the micro-simulation model and junction design models and has been used to support junction design and traffic management plan testing;
- **Tier 3 (Corridor Level):** A micro-simulation model of the full 'end to end' corridor has been developed for the Proposed Scheme. The primary role of the micro-simulation model has been to support the ongoing development of junction designs and traffic signal control strategies and to provide bus journey time information for the determination of benefits of the Proposed Scheme; and
- **Tier 4 (Junction Level):** Local junction models have been developed, for each junction along the Proposed Scheme to support local junction design development. These models are informed by the outputs from the above modelling tiers, as well as the junction designs which are, as discussed above, based on people movement prioritisation.

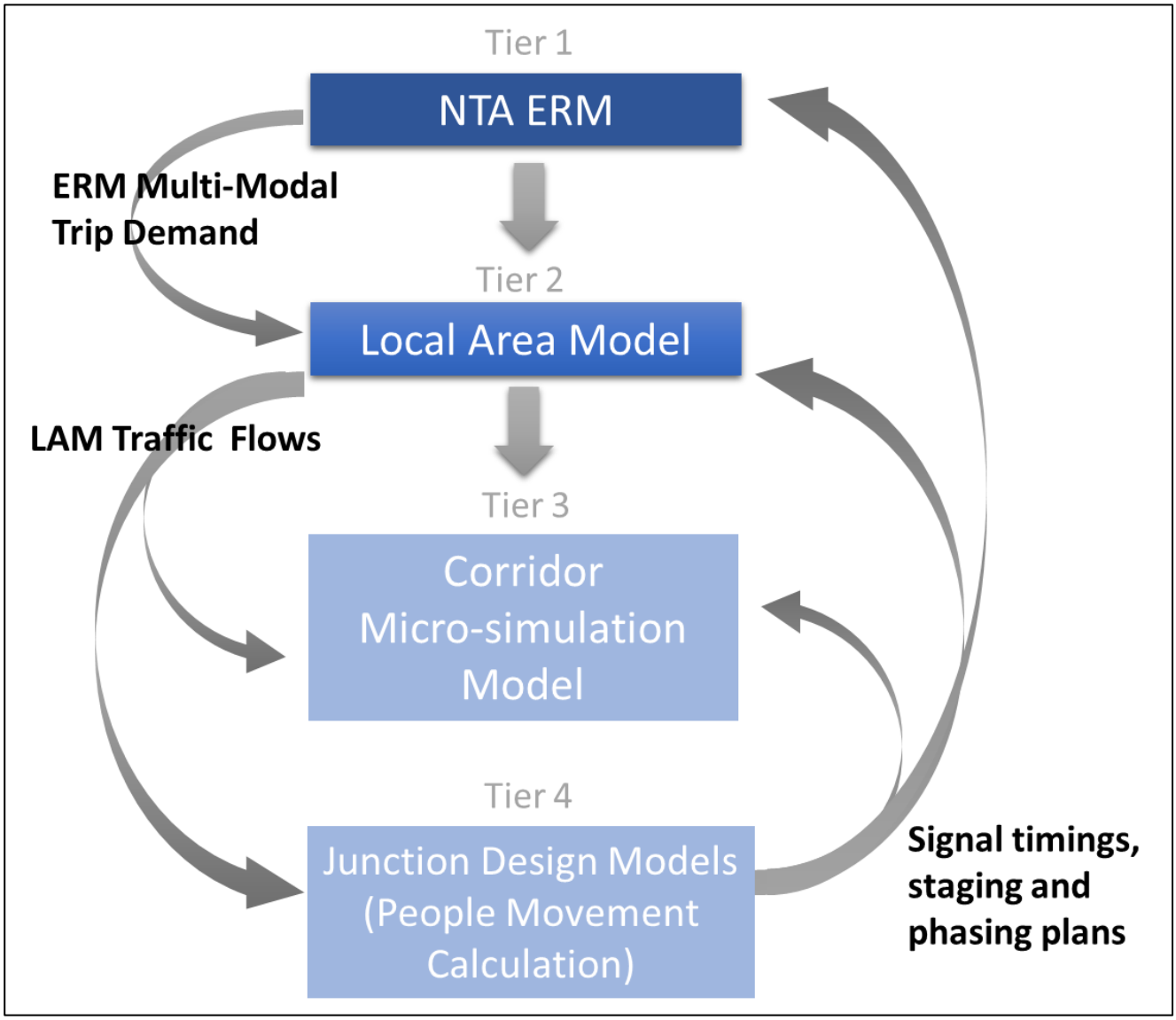

Diagram 4.1: Proposed Scheme Modelling Hierarchy

The purpose of each of the modelling tools is summarised in Table 4.2.

Table 4.2: Modelling Tool and Purpose

Tool	Purpose	Inputs
NTA ERM	Forecast Multi-Modal demand impacts Proposed Scheme including both area wide and corridor level Mode share Policy assessment (e.g. demand management) Donor Network for LAM	NTA Forecast Planning Data (2020,2028,2043) Future year Proposed Scheme information (Traffic signal plans and timings)
Local Area Model (LAM)	General Traffic Redistribution impacts Link Flows (AADTs) Link Speeds Junction turning flows Construction Strategy and Traffic Management measure testing Donor network for Proposed Scheme Micro-sim model	Traffic surveys Journey time data ERM forecast matrices Proposed Scheme designs Proposed Scheme Traffic signal plans and timings
Micro-simulation Model	Operational features Design validation Person delay measurement Bus journey times Queue formation Scheme visualisation	LAM demand matrices Proposed Scheme designs Proposed Scheme Traffic signal plans and timings
Junction Design Models / People Movement Calculation	Junction design tool Proposed Scheme signal plan and timing development People Movement Calculation	Junction Turning flows from LAM

The following sections describe in further detail each of the modelling tools used to inform this TIA and their role within the assessment of the Proposed Scheme.

4.3.1.2. NTA Regional Modelling System (RMS) and East Regional Model (ERM)

The ERM is part of the NTA's 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 focussed on the travel to-work areas for Dublin (represented by the aforementioned 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 2017 National Household Travel Survey[1] 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.

4.3.1.2.1 Purpose of the RMS

The NTA uses the RMS to help inform decisions required during strategy development and to assess schemes and policy interventions that are undertaken as part of its remit. 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. Examples of how the RMS can assist the NTA include testing new public transport schemes by representing the scheme in the assignment networks, testing demand management measures by, for example, changing the cost of parking or number of parking spaces within the regional model or testing the impacts of new land use by changing the planning data assumptions within the NDFM.

The RMS includes the 2016 Census/POWSCAR and 2017 National Household Travel Survey (NHTS) data sets and the NTA has included a range of improvements to the main model components where identified and implemented. These improvements include improving and making changes to such elements as the NDFM, development of the Long-Distance Model, updated zoning, networks, and parking modules; best-practice discrete choice modelling using the NHTS and POWSCAR datasets to estimate the parameters of the behavioural models, improved model runtimes, and general model functionality improvements.

4.3.1.2.2 RMS Components

The NTA RMS comprises of the following three main components, namely:

- The National Demand Forecasting Model (NDFM);
- 5 Regional Models (including the ERM); and
- A suite of Appraisal Modules.

The NDFM takes input attributes such as land-use data, population etc., and estimates the total quantity of daily travel demand produced by, and attracted to, each of the 18,641 Census Small Areas in Ireland.

The ERM is a strategic multi-modal transport model representing travel by all the primary surface modes – including, walking and cycling (active modes), and travel by car, bus, rail, tram, LGVs and HGV, and broadly covers the Leinster province of Ireland including the counties of Dublin, Wicklow, Kildare, Meath, Louth, Wexford, Carlow, Laois, Offaly, Westmeath, and Longford, plus Cavan and Monaghan.

The ERM is comprised of the following key elements:

- **Trip End Integration:** The Trip End Integration module converts the 24-hour trip ends output by the NDFM into the appropriate zone system and time period disaggregation for use in the Full Demand Model (FDM);
- **The Full Demand Model (FDM):** The FDM processes travel demand, carries out mode and destination choice, and outputs origin-destination travel matrices to the assignment models. The FDM and assignment models run iteratively until an equilibrium between travel demand and the cost of travel is achieved; and
- **Assignment Models:** The Road, Public Transport, and Active Modes assignment models receive the trip matrices produced by the FDM and assign them in their respective transport networks to determine route choice and the generalised cost for each origin and destination pair.

Destination and mode choice parameters within the ERM have been calibrated using two main sources: Census 2016 Place of Work, School or College - Census of Anonymised Records (2016 POWSCAR), and the Irish National Household Travel Survey (2017 NHTS).

4.3.1.2.3 The use of the ERM for the Proposed Scheme

The NTA's ERM is the most sophisticated modelling tool available for assessing complex multi modal movements within an urban context. This provides a consistent framework for transport assessments. The ERM is the ideal tool to use as a basis for the assessment of the Proposed Scheme and to estimate its multi-modal impact. In addition, it provides the platform to forecast future trip demand and distribution.

The NTA ERM is, therefore, the primary high-level modelling tool for the strategic transport assessment of the Proposed Scheme and provides the sole source of multi-modal forecast trip / person demand for each of the scenarios assessed. The ERM provides the strategic impacts and benefits of the Proposed Scheme and the outputs from the ERM provide key inputs to the TIA and EIAR.

4.3.1.3. Local Area Model (LAM)

To support the detailed assessment of the Proposed Scheme a more disaggregated urban area traffic model has been developed, as a cordoned model from the ERM, that incorporates the most up to date traffic survey data. The LAM provides an appropriate level of detail required to inform the various disciplines and levels of decision making within the Proposed Scheme Infrastructure Works (e.g., capturing the impact of redistribution of traffic on streets and roads not included within the strategic detail of the ERM). As such, a LAM has been developed to support the assessment of the Proposed Scheme.

The LAM is compatible with the ERM road network, being a direct extraction from the ERM road model, but with the addition of extra road network and zoning detail. The LAM is calibrated and validated with the most recent 2019 / 2020 traffic survey data and journey time information, which ensures that the model reflects 'on-the-ground' conditions for the Proposed Scheme in February 2020 (e.g. prior to COVID-19 restrictions).

The LAM which is a more refined version of the road network model component of the ERM has been used throughout the Proposed Scheme development to provide all road-based outputs to inform the TIA, EIA and junction design models (i.e. AADTs, road network speed data, traffic re-distribution impacts during construction and operation of the Proposed Scheme). The LAM also provides traffic flow information for the corridor micro-simulation models and junction design models.

4.3.1.3.1. Count Data for Calibration and Validation

A full set of consistent updated traffic counts for a neutral period was completed for the Proposed Scheme. Traffic surveys were undertaken in and February 2020 (Pre COVID- 19) with the surveyed counts used as inputs to the model calibration and validation process.

Private cars and taxis were aggregated as a single vehicle type for input to the LAM model. The OGV1 and OGV2 categories were also aggregated as HGVs. PSVs are modelled as fixed routes with a specific frequency in the model (as per timetabled services) and as such were not included in the model inputs. Separate input files were prepared for the following time periods.

- AM: 0800-0900;
- Lunch Time (LT): 1200-1300;
- School Run (SR): 1500-1600;
- PM: 1700-1800; and
- Off Peak (OP): 2000-2100.

The JTCs were merged into a 'flat format' database which permits the extraction of counts grouped by modelled hour (AM, LT, SR or PM) and modelled vehicle category (Car, LGV or HGV). Turn count records were given a unique movement identifier (AB, AC, AD etc). These identifiers were then associated with their respective nodes in the LAM. In some cases, there is a unique one-to-one relationship between the turn counts and the LAM network as shown in Diagram 4.2

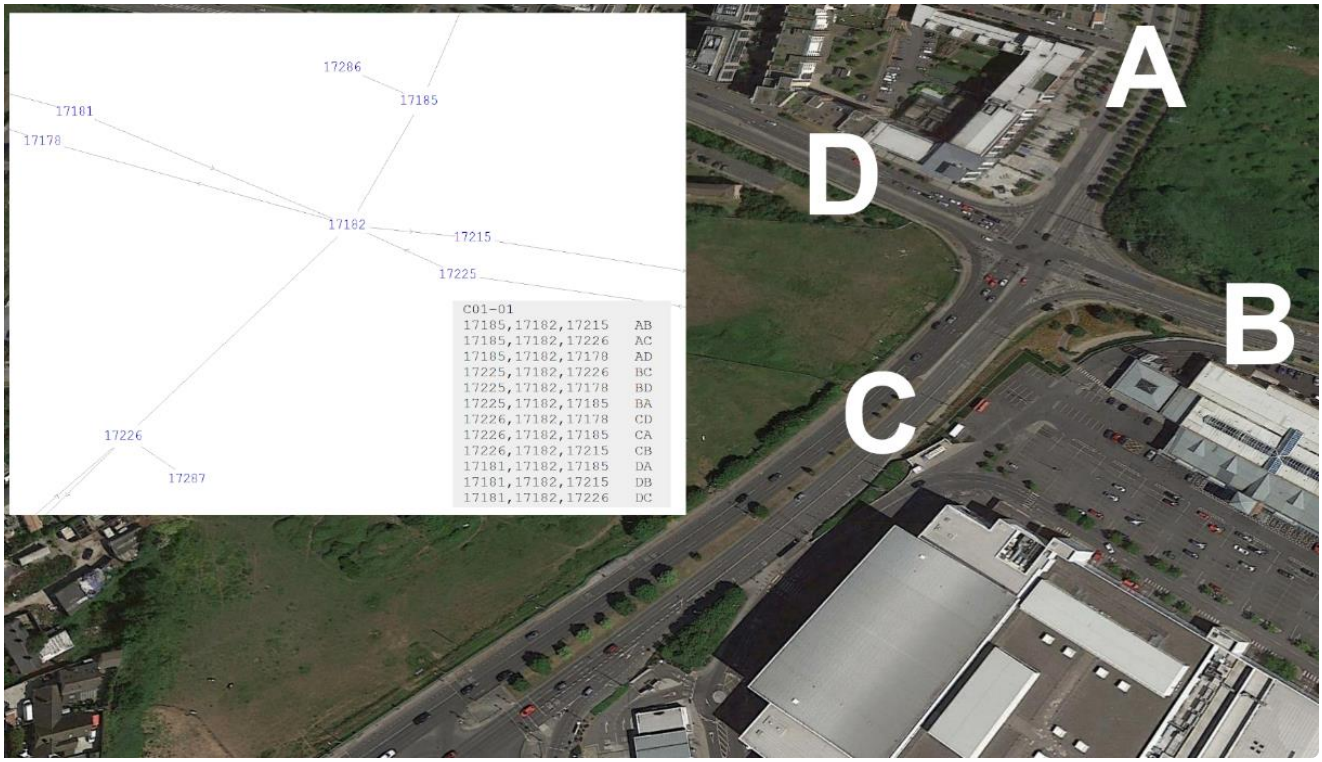

Diagram 4.2: Bus Connects LAM Node Matching (Junction C01-01)

The flows for complex junctions were obtained by combining certain turning movement flows, as shown in Diagram 4.3

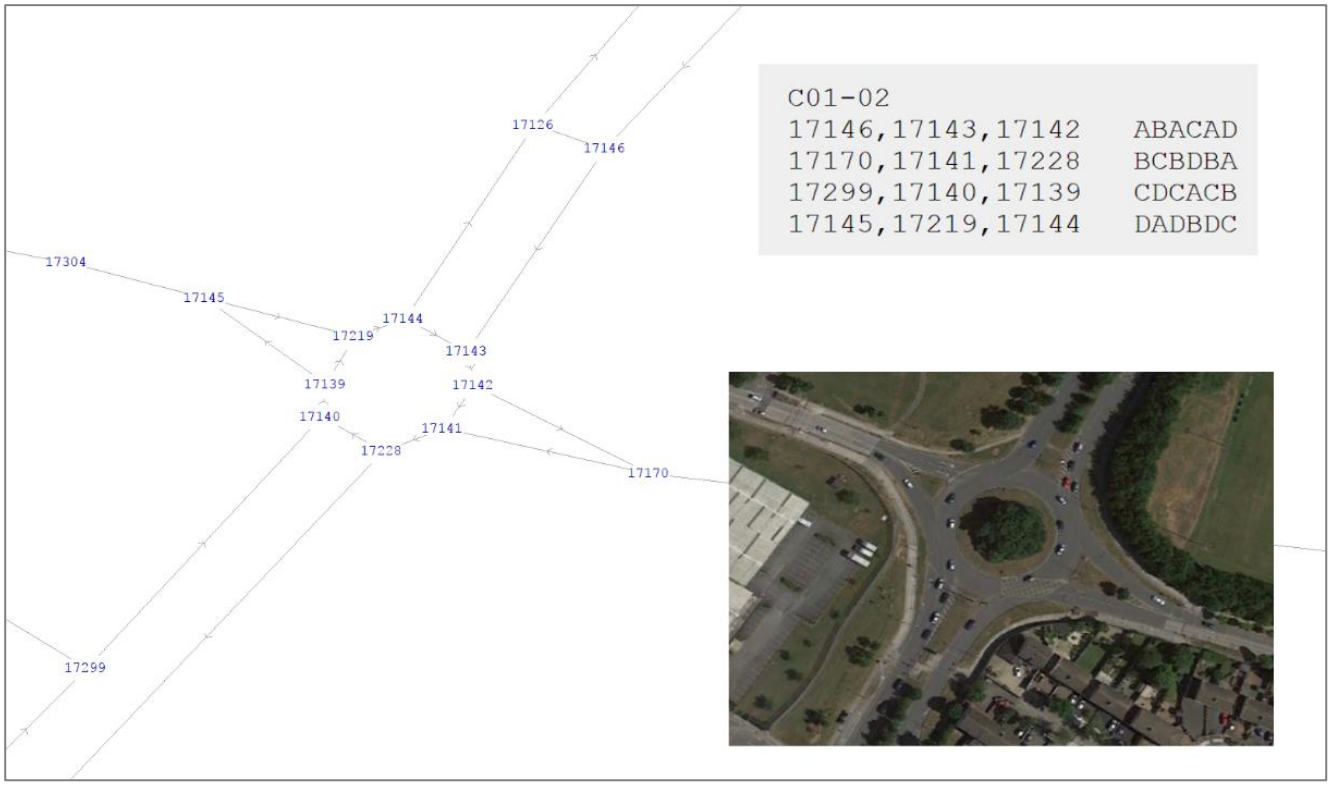

Diagram 4.3: Bus Connects LAM Node Matching (Junction C01-02)

4.3.1.4. Proposed Scheme Micro-Simulation Model

A micro-simulation model has been developed for the full continuous 'end-to-end' route of the Proposed Scheme. The 'end-to-end' corridor micro-simulation model has been developed to assist in the operational validation of the scheme designs and to provide visualisation of scheme operability along with its impacts and benefits.

The term 'end-to-end' refers to the point of model 'entry' (start of Proposed Scheme) to the point of model 'exit' (end of Proposed Scheme) rather than the actual bus service terminus points which, in most cases, lie outside of the modelled area. The modelling of the Proposed Scheme displays the differences in travel time for buses along the full length of the Proposed Scheme, including delay at individual locations.

The Proposed Scheme Micro-simulation model network is shown in Diagram 4.4.

Diagram 4.4: Proposed Scheme Microsimulation Model Network

4.3.1.4.1. Role of Corridor Micro-Simulation Models

The Proposed Scheme micro-simulation model has provided key information on end-to-end bus and car journey times along the Proposed Scheme. The Proposed Scheme micro-simulation model is supplied traffic flow information from the LAM and uses consistent information from the junction design models, in terms of signal plans, green times, staging, phasing and offsets. 3D Visualisations of sections of the Proposed Scheme have been developed based on the 2D models to help visualise and demonstrate the benefits and impacts of the scheme to stakeholders.

Overall, the Proposed Scheme micro-simulation model has provided key transport metric inputs to the TIA in terms of operational features, vehicle interaction, person level delay and bus journey time and reliability performance.

4.3.1.5. Junction Design Models

The fourth tier of modelling in the modelling hierarchy to support the assessment of the Proposed Scheme is the individual junction design models that have been developed for junctions along the Proposed Scheme. These junction design models are supplied with traffic flow information from the LAM and from the micro-simulation model for the Proposed Scheme. The LAM, Micro-simulation and local junction models contain consistent design, transport demand, signal phasing and staging information. Further information is contained in TIA Appendix 2 (Junction Design Report) in Volume 4 of the EIAR.

4.3.1.5.1. Role of Junction Design Models

The junction design models have been used to inform junction design considerations as part of the formulation of the Preliminary Design for the Proposed Scheme. The junction models have been developed for standalone junction assessments and for combinations of secondary (off-line to Proposed Scheme) junctions. The junction models have been used in combination with the Proposed Scheme micro-simulation model at 'hot-spot' locations for operational testing and 'proof of concept' development of the preferred design.

The junction design models are important supporting design tools for analysis of the design proposals and have informed the development of signal plans and phasing at junctions along the Proposed Scheme. The junction models have been used to inform the LAM and Proposed Scheme micro-simulation model, with information such as design amendments, signal plans and timings being fed back in the iterative process where appropriate.

As part an iterative process, the resultant scheme designs were then re-modelled in the ERM, LAM and micro-simulation models to understand the strategic and corridor specific issues and inform the preparation of the TIAs and EIARs and the planning submission for the Proposed Scheme.

5. Baseline Environment

This Section provides an overview of the existing traffic and transport conditions within the redline boundary of the Proposed Scheme. The baseline conditions have been informed by several site visits of the local environment, comprehensive traffic surveys, and a desktop review of the most recent aerial photography.

Currently the corridor consists of 32% segregated cycle priority inbound and 36% outbound.

5.1. Bus Journey Times

Bus services along the Proposed Scheme currently operate within a constrained and congested environment, with approximately 49% of the route benefiting from bus lanes. An examination of Automatic Vehicle Location (AVL, collected by the NTA) data indicates that the current standard deviation for journey time of buses on the corridor varies by up to 11 minutes, with predicted future traffic increases these issues are expected to be exacerbated. While impacting upon bus passengers, longer and less reliable bus services also require operators to use additional buses to maintain headways to fill gaps created in the timetable. Aligned to this, the remaining sections of unprioritised bus network can lead to bunching of buses which, in turn, means stops can become overcrowded, creating delays in boarding and alighting and the imbalanced use of bus capacity.

5.2. Traffic Count Data

5.2.1. Junction Turning Counts (JTCs)

Table 5.1 displays the JTCs collected for the Proposed Scheme, the locations of which are shown in Diagram 5.1. The results demonstrate that the busiest in the study area is the R108/M50 junction (53947 daily movements). The next busiest junctions are:

- North Circular Road (49008 daily movements);
- North Road / St Margaret's Road (48836 daily movements);
- St Margaret's Road (44163 daily movements); and
- Church Street / King Street (41230 daily movements).

Table 5.1: JTC Locations and Daily AM and PM Movements

Junction Identifier	Junction Name	Type	Daily Movements	AM Movements	PM Movements
3-1	R108/Santry Ave	Signals	38129	2882	2928
3-2	R108/Shangan Road	Priority	29220	2057	1982
3-3	Ballymun Road/Shanliss Road	Priority	31209	2456	2389
3-4	Ballymun Road/Collins Avenue	Signals	40214	3032	2862
3-5	Ballymun Road/Albert College	Priority	30445	2550	2286
3-6	Ballymun Road/St Pappin Road	Signals	32164	2738	2437
3-7	St Pappin Road	Signals	1221	74	94
3-8	Ballymun Road/DCU	Signals	31414	2527	2443
3-9	Ballymun Road/St. Canice's Road	Priority	30058	2445	2294
3-10	Ballymun Road/Hampstead Ave	Signals	29068	2406	2187
3-11	Ballymun Road/St Mobhi Road	Signals	32832	2731	2520
3-12	Ballymun Road/Griffith Ave	Signals	24175	2164	1955
3-13	St Mobhi Road/Griffith Ave	Signals	33550	2704	2468
3-14	St Mobhi Road/Stella Ave	Priority	19690	1434	1417
3-15	St Mobhi Road/Home Farm Road	Priority	20259	1486	1497
3-16	St Mobhi Road/Scoil Chaitríona	Signals	17124	1204	1217
3-17	R108/Na Fianna GAA	Priority	17267	1217	1252
3-18	R108/Scoil Mobhi	Priority	16408	1096	1227
3-19	St Mobhi Road/Whitehall College	Signals	16883	1180	1248
3-20	R108/Botanic Ave	Signals	21790	1528	1635
3-21	St Mobhi Road/Fairfield Road	Signals	18286	988	1508
3-22	Bóthar Bhaile Munna/Ballymun Road	Priority	4930	781	372
3-23	Ballymun Road/Church Ave	Priority	4721	740	342
3-24	Ballymun Road/Glasnevin Hill	Signals	14309	1449	1072
3-25	Glasnevin Hill/St Mobhi Dr	Signals	11560	996	944
3-26	Glasnevin Hill/Botanic Ave	Priority	10916	859	908
3-27	Botanic Road/Botanic Gardens Car Park	Priority	5837	453	518
3-28	Botanic Road/Prospect Way	Signals	27854	1617	1904
3-29	Prospect Ave/Prospect Way	Priority	18800	889	1325
3-30	Botanic Road/Lona Road	Priority	21396	1306	1411
3-31	Finglas Road/Prospect Way	Signals	31724	1645	2422
3-32	Finglas Road/Botanic Road	Signals	38976	2150	2864
3-33	Prospect Road/Whitworth Road	Signals	37501	2087	2643
3-35	Phibsborough Road/Enniskerry Road	Priority	27502	1660	1730
3-35	Phibsborough Road/Enniskerry Road	Priority	27502	1660	1730
3-36	Phibsborough Road/Royse Road	Priority	27599	1687	1796
3-37	Phibsborough Road/Devery Road	Signals	30493	1923	1971
3-38	Phibsborough Road/Unnamed Road	Priority	25054	1534	1484
3-39	Phibsborough Road/N Circular Road	Signals	49008	2870	2939

Junction Identifier	Junction Name	Type	Daily Movements	AM Movements	PM Movements
3-40	Royal Canal Bank/N Circular Road	Priority	28071	1755	1716
3-41	Phibsborough Road/Monck Pl	Priority	22515	1397	1400
3-42	Phibsborough Road/Western Way	Signals	24503	1497	1450
3-43	Royal Canal Bank/Geraldine St	Priority	725	86	40
3-44	Western Way/Royal Canal Bank	Priority	7219	461	438
3-45	Constitution Hill/Broadstone Road	Signals	23037	1427	1268
3-46	Church Street/Linenhall Terrace	Priority	21739	1501	1205
3-47	Coleraine St/Linenhall Terrace	Priority	1038	182	65
3-48	R108/Church Street	Signals	27194	1996	1421
3-49	Church Street/King St N	Signals	41230	2659	2388
3-50	Coleraine St/King St N	Priority	27040	1819	1637
3-51	R132/Mary's Ln	Priority	26416	1654	1476
3-52	Church St/Inns Quay	Signals	40595	2806	2154
3-53	King Street/Beresford St	Priority	27487	1691	1671
3-56	R108/M50	Priority	53947	4051	4264
3-57	R108/St Margaret Road	Signals	44163	3309	3593
3-58	R108/Unnamed Road	Signals	40114	3134	3196
3-59	Tolka Estate/Old Finglas Road	Signals	15102	1379	1254
3-60	Tolka Estate/Griffith Avenue	Priority	8090	986	697
3-61	Ballygall Rd E/Griffith Avenue	Signals	16586	1721	1325
4-1	North Road/St Margaret's Road	Priority	48836	3357	3667
4-2	Finglas Road/Mellowes Road	Signals	16775	1206	1139
4-3	Finglas Road/Church St	Priority	29499	1854	2021
4-4	Finglas Road/Wellmount Road	Priority	34277	2440	2400
4-4A	Finglas Road/Wellmount Road	Priority	30829	2277	2106
4-5	Finglas Road/Finglas PIace	Priority	30692	2127	2047
4-6	Finglas Road/Glenhill Road	Priority	31471	1918	2064
4-7	Finglas Road/Ardmore Lodge	Signals	26077	1638	1636
4-8	Finglas Road/Tolka Valley Road	Signals	31699	2240	2106
4-9	Finglas Road/Old Finglas Road	Signals	37195	2648	2650
4-10	Finglas Road/Ballyboggan Road	Signals	32948	2149	2344
4-11	Finglas Road/Slaney Road	Signals	27990	1487	1897
4-12	Finglas Road/The Willows	Priority	23803	1253	1645
4-13	Finglas Road/Claremont Cres	Priority	24047	1274	1656
4-14	Finglas Road/Cemetery Exit	Priority	23075	1201	1604
4-15	Finglas Road/Cemetery Exit	Priority	22303	1145	1536
4-16	Finglas Road/St Vincent's School	Priority	22309	1116	1537

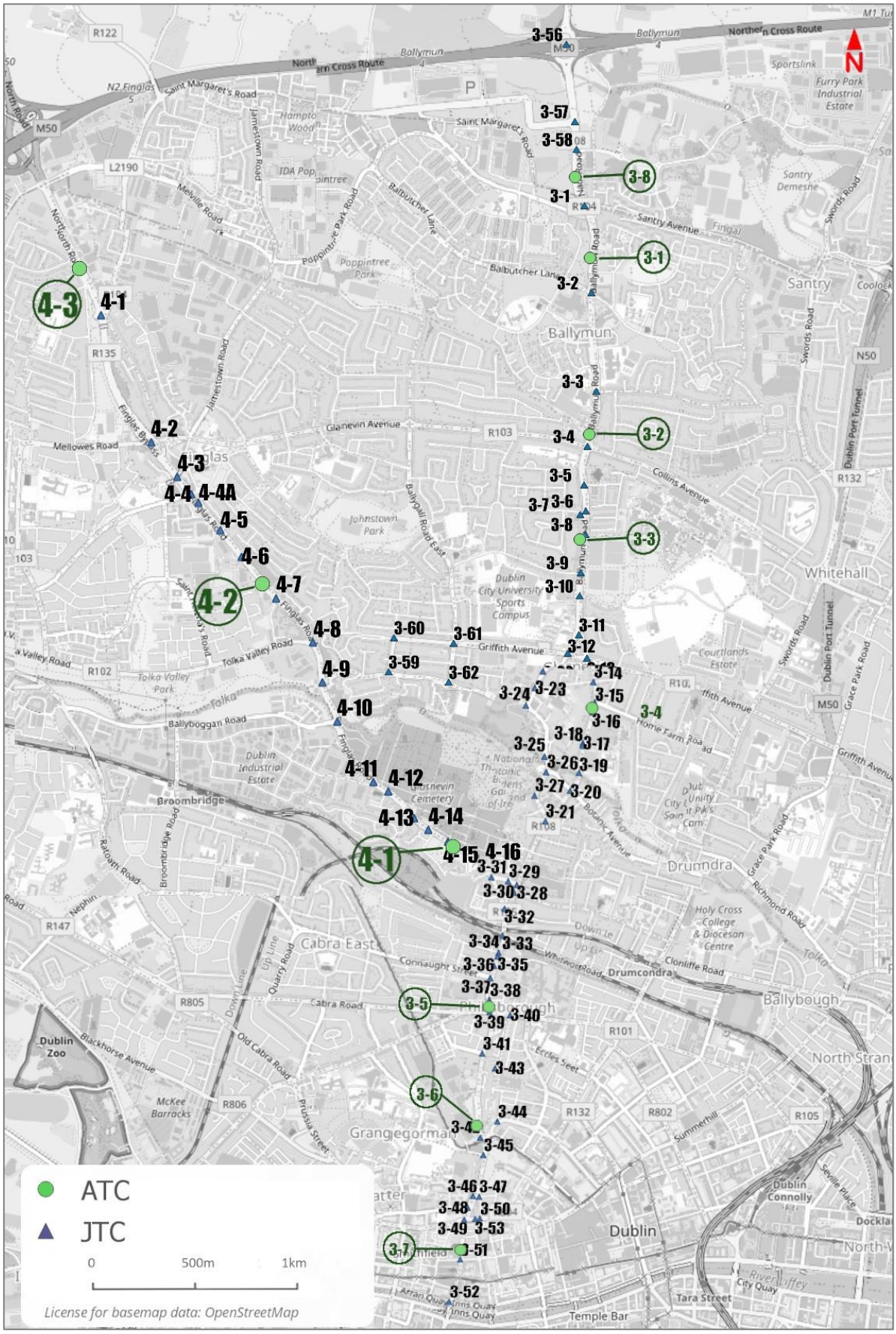

Diagram 5.1: ATC and JTC Traffic Count Locations

5.2.2. Automatic Turning Counts (ATCs)

Table 5.2 displays the ATCs collected for the Proposed Scheme, the locations of which are shown in Diagram 5.1. The highest ATC daily flows are on R135 North Road (north of R104 St. Margaret's Road). Some ATC counts did not have reliable counts for a full week and were excluded from the dataset.

Table 5.2: ATC Locations and Daily AM and PM Movements

ATC Identifier	ATC Location	Direction	Daily movements	AM Movements	PM Movements
3.1A	Ballymun Road south of Santry Avenue	Northbound	9680	520	712
3.1B		Southbound	10855	778	684
3.2A	Ballymun Road north of Collins Avenue	Northbound	10745	672	805
3.2B		Southbound	12317	897	786
3.3A	Ballymun Road at Albert College	Northbound	13227	860	1081
3.3B		Southbound	13588	1110	917
3.4A	Mobhi Road south of Home Farm Road	Northbound	6186	273	515
3.4B		Southbound	8345	564	506
3.5A	Phibsborough Road north of North Circular Road	Northbound	0	0	0
3.5B		Southbound	0	0	0
3.6A	Phibsborough Road north of North Circular Road	Northbound	10483	512	571
3.6B		Southbound	8480	512	402
3.7A	Church Street north of Church Avenue	Northbound	0	0	0
3.7B		Southbound	0	0	0
3.8A	Naul Road north of Santry Avenue	Northbound	13288	736	1178
3.8B		Southbound	13374	1075	902
4-1A	Finglas Road at Glasnevin Cemetery	Southbound	12899	622	966
4-1B		Northbound	excluded	excluded	excluded
4-2A	Finglas Road north of Tolka Road	Southbound	excluded	excluded	excluded
4-2B		Northbound	excluded	excluded	excluded
4-3A	North Road north of St Margaret's Road	Southbound	16172	1155	1173
4-3B		Northbound	17535	1150	1346

5.3. Baseline Conditions

5.3.1. Overview

In describing the baseline conditions, the Proposed Scheme has been divided into seven sections in accordance with the proposed design. The seven sections are outlined as follows:

- Section 1: Ballymun Road from St. Margaret's Road to Griffith Avenue;
- Section 2: St. Mobhi Road, Botanic Road and Diversionary Route from Griffith Avenue to Hart's Corner;
- Section 3: Prospect Road and Phibsborough Road from Hart's Corner to Western Way;
- Section 4: Constitution Hill, Church Street Upper and Church Street from Western Way to Arran Quay;
- Section 5: Finglas Road from St. Margaret's Road to Wellmount Road;
- Section 6: Finglas Road from Wellmount Road to Ballyboggan Road; and
- Section 7: Finglas Road from Ballyboggan Road to Hart's Corner.

5.3.2. Section 1 – Ballymun Road from St Margaret's Road to Griffith Avenue

This Section outlines the baseline environment for walking, cycling, bus services, general traffic and parking / loading facilities along Section 1 of the Proposed Scheme from St. Margaret's Road to R102 Griffith Avenue.

This section of the Proposed Scheme will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4. It continues along this route in a southerly direction generally concluding at the junction of R108 Ballymun Road and R102 Griffith Avenue.

5.3.2.1. Pedestrian Infrastructure

The walking facilities along Section 1 of the Proposed Scheme include reasonably wide, well-lit footpaths on both sides of the R108 Ballymun Road between St Margaret's Road and R102 Griffith Avenue. Along the majority of Section 1 the footpaths range from approximately 2.0m wide to 4.0m wide. The exception to this is a 275m stretch between Gateway Avenue and Shanliss Road (outside Trinity Comprehensive School) where the width of the footpath to the east of R108 Ballymun Road is over 5.0m.

Both the eastern and western footpaths of R108 Ballymun Road between St Margaret's Road and R104 Santry Avenue (approximately 500m) are positioned alongside cycle tracks, in which cyclists and pedestrians are separated by a solid white line.

There are several controlled pedestrian crossings along Section 1 of the Proposed Scheme which benefit from tactile paving and dropped kerbs and can be found at the following locations:

- The three-arm R108 Ballymun Road / St Margaret's Road signalised junction provides indirect signalised pedestrian crossing on each arm of the junction. Staggered crossings with pedestrian refuge islands and guard rails are visible on each arm of the junction;
- The three-arm R108 Ballymun Road / Northwood Avenue signalised junction provides two indirect signalised pedestrian crossings on the eastern and southern arms. Both crossings are staggered and include pedestrian refuge islands;
- The four-arm R108 Ballymun Road / R104 Santry Avenue / R104 Balbutcher Lane signalised junction provides a direct signalised pedestrian crossing on the western arm, and two indirect staggered signalised pedestrian crossings on the southern and eastern arms, in which guard rails and pedestrian refuge islands are present;
- A pelican pedestrian crossing across R108 Ballymun Road south of R108 Ballymun Road / R104 Santry Avenue / R104 Balbutcher Lane. Pedestrian cross in two stages using the central reservation between the carriageways as a refuge pedestrian island. The central reservation does not include any guard rails;
- The four-arm R108 Ballymun Road / Shangan Road / Balbutcher Lane signalised junction provides two indirect signalised pedestrian crossings on the northern and southern arms, and two direct signalised pedestrian crossings on the eastern and western arms. The crossings on the northern and southern arms are staggered, include a central reservation and guard rails. The crossings on the northern and southern arms are also upon raised tables;
- A staggered pelican pedestrian crossing across R108 Ballymun Road approx. 25m north of Silloge Road. Pedestrians cross in two stages using the central reservation between the carriageway as a refuge pedestrian island. Guard rails are present;
- The three-arm R108 Ballymun Road / Gateway Crescent signalised junction provides two indirect signalised pedestrian crossings on the northern and southern arms, as well as a direct signalised pedestrian crossing on the western arm. The indirect crossings are both staggered and include central reservations with guard rails. The crossings on the northern and southern arms are also upon raised tables;
- A pelican pedestrian crossing across R108 Ballymun Road immediately south of Gateway Avenue. Pedestrians cross in two stages using the central reservation between the carriageways as a refuge pedestrian island. Guard rails are present;
- The four-arm R108 Ballymun Road / R103 Collins Avenue Ext / R103 Glasnevin Avenue signalised junction provides three indirect signalised pedestrian crossings on the northern, eastern and southern arms, whilst a direct signalised pedestrian crossing is provided on the western arm. The indirect crossings are all staggered, include pedestrian refuge island and guard rails;
- A staggered pelican pedestrian crossing across R108 Ballymun Road outside the 'Our Lady of Victories Boys National School'. Pedestrians cross in two stages using the central reservation between the carriageways as refuge pedestrian island. Guard rails are present;

- The three-arm R108 Ballymun Road / St Pappin Road signalised junction provides a signalised indirect pedestrian crossing on the northern arm and a direct signalised crossing on the western arm. The indirect crossing is staggered and includes a central reservations with guard rails;
- A staggered pelican pedestrian crossing across R108 Ballymun Road next to the entrance to the DCU Glasnevin Campus. Pedestrians cross in two stages using the central reservation between the carriageways as a pedestrian refuge island. Guard rails are present;
- A staggered pelican pedestrian crossing across R108 Ballymun Road south of the DCU Sports Ground. Pedestrians cross in two stages using the central reservation between the carriageways as a pedestrian refuge island. Guard rails are present;
- The three-arm R108 Ballymun Road / St. Mobhi Road signalised junction provides a staggered signalised crossing across R108 Ballymun via a central pedestrian refuge area. A signalised crossing is also available between the central pedestrian refuge area and the triangular island to the north of R102 Griffith Avenue;
- The four-arm R102 St. Mobhi Road / R102 Griffith Avenue / R108 St. Mobhi Road signalised junction provides a direct signalised pedestrian crossing across the eastern arm, whilst indirect signalised pedestrian crossings are provided across the northern and western arms via a large traffic island; and
- The four-arm R102 Ballymun Road / R102 Griffith Avenue / Ballymun Road signalised junction provides signalised pedestrian crossings on all arms. Direct crossings are provided on the northern, southern and western arms whilst an indirect crossing is provided on the eastern arm.

Uncontrolled crossings across priority junctions at side roads benefit from dropped kerbs. The locations of the pedestrian crossings are illustrated in Figure 6.3a in TIA Appendix 3 (Maps).

Further details of the baseline pedestrian facilities (i.e. routing, directness, accessibility, crossing and footpath widths) at each junction along Section 1 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

5.3.2.2. Cycling Infrastructure

Cycle facilities are provided along the majority of Section 1 of the Proposed Scheme, including a mixture of cycle tracks, cycle lanes and combined bus and cycle lanes.

One-way cycle tracks, with an average width of approximately 1.5m, are provided adjacent to the northbound carriageway between St. Margaret's Road and R104 Santry Avenue and adjacent to the southbound carriageway between St. Margaret's Road and Balbutcher Lane. The cycle tracks are raised from the carriageway to provide segregation from vehicles whilst a solid white line delineates cyclist segregation from pedestrians.

For the rest the section, cycle provision predominately consists of advisory / mandatory cycle lanes (approximately 1.5m wide) within a combined bus and cycle lane. On the approach to junctions, combined bus and cycle lane is temporarily suspended to allow for turning vehicles whilst the cycle lane largely extends through junctions. The operational times of the cycle lanes and combined bus and cycle lanes vary with some sections operating for 24 hours, some between 04:00 and 10:00 and 16:00 and 23:00, and other between 07:00 and 10:00 and 12:00 and 19:00, Monday to Saturday.

Advisory cycle lanes not located within designated bus lanes are found along the one-way road system of R102 St. Mobhi Road and R102 Ballymun Road as well as along a short 50m section of the northbound carriageway of R108 Ballymun Road.

Cycle parking stands are provided at the following points in the vicinity of Section 1 of the Proposed Scheme, albeit, outside of the redline boundary:

- 10 Sheffield stands (able to accommodate up to 20 bicycles) along Silloge Road immediately off R108 Ballymun Road opposite the 'Ballymun Civic Building';
- 5 Sheffield stands (able to accommodate up to 10 bicycles) along Gateway Crescent adjacent to 'Sports and Fitness Ballymun' centre; and

- 5 Sheffield stands (able to accommodate up to 10 bicycles) along The Rise outside 'Wild Scissors Hair Salon'.

There are no designated public cycle rental scheme stands within Section 1 of the Proposed Scheme.

The existing cycle facilities along Section 1 of the Proposed Scheme are illustrated in Figure 6.4a in TIA Appendix 3 (Maps).

Further details of the baseline cycling facilities (i.e. level of segregation from vehicles, capacity for cycling two abreast and / or overtaking, and junction treatment) along the length of Section 1 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment).

5.3.2.3. Bus Infrastructure

5.3.2.3.1. Bus Priority Measures

Bus lanes are provided in both directions for the majority of Ballymun Section 1 of the Proposed Scheme, along R108 Ballymun Road between R104 Santry Avenue and the northern end of the triangular one-way road system (St. Mobhi Road, Griffith Avenue and Ballymun Road, aside from intermittent breaks at junctions. Notably, there are no bus lanes along Section 1 to the north of R104 Santry Avenue, where there are hard shoulders instead. At the southern end of this section there are no bus lanes at the Griffith Avenue one-way traffic gyratory system (St. Mobhi Road, Griffith Avenue and Ballymun Road).

5.3.2.3.2. Bus Stop Facilities

There are currently twenty-one bus stops along Section 1 of the Proposed Scheme. The inbound (southbound) stops are as follows:

- Stop 7113 (Northwood Avenue) on R108 Ballymun Road south of 'Circle K' petrol filling station;
- Stop 127 (Nursing Home) on R108 Ballymun Road south of the signalised pedestrian crossing;
- Stop 112 (Civic Centre) on R108 Ballymun Road south of Shangan Road;
- Stop 113 (Trinity Comprehensive School) on R108 Ballymun Road adjacent to Trinity Comprehensive School;
- Stop 114 (Ballymun Road) on R108 Ballymun Road south of Shanliss Road;
- Stop 115 (Ballymun Road Church) on R108 Ballymun Road adjacent to 'Our Lady of Victories Catholic Church';
- Stop 37 (DCU Ballymun Road) on R108 Ballymun Road south of St Pappin Road;
- Stop 38 (Hampstead Avenue) on R108 Ballymun Road north of Hampstead Avenue; and
- Stop 39 (The Rise) on R108 Ballymun Road south of The Rise.

The outbound (northbound) stops are as follows:

- Stop 322 (Gulliver's Retail Park) on R108 Ballymun Road north of Northwood Avenue;
- Stop 6182 (Santry Cross) on R108 Ballymun Road north of R104 Balbutcher Lane;
- Stop 126 (Ballymun Nursing Home) on R108 Ballymun Road south of the signalised pedestrian crossing;
- Stop 94 (Civic Centre) on R108 Ballymun Road south of Balbutcher Lane;
- Stop 93 (Gateway Avenue) on R108 Ballymun Road north of Shanliss Road;
- Stop 92 (Ballymun Library) on R108 Ballymun Road adjacent to the Ballymun Library;
- Stop 91 (Ballymun Road NS) on R108 Ballymun Road adjacent to 'Our Lady of Victories Infant School';
- Stop 90 (Albert College Court) on R108 Ballymun Road north of St Pappin Road;
- Stop 4680 (DCU) on R108 Ballymun Road opposite the entrance to DCU Glasnevin Campus;
- Stop 29 (Albert College Park) on R108 Ballymun Road north of St Canice's Road;

- Stop 28 (Hampstead Avenue) on R108 Ballymun Road adjacent to Glasnevin Lawn Tennis Club; and
- Stop 27 (Ballymun Road) on R102 Ballymun Road north of R102 Griffith Avenue.

The contents of Table 5.3 outline the availability of bus stop facilities at the existing 21 bus stops along Section 1 of the Proposed Scheme.

Table 5.3: Section 1 – Availability of Bus Stop Facilities (of a total 21 Bus Stops)

Bus Stop Facilities	Number of Existing Bus Stops in Baseline with Facility	Percentage of Bus Stops in Baseline with Facility
RTPI	5	24%
Timetable Information	13	62%
Shelter	11	52%
Seating	11	52%
Accessible Kerbs	15	71%
Indented Drop Off Area	0	0%

The existing bus facilities along Section 1 of the Proposed Scheme are illustrated in Figure 6.5b in TIA Appendix 3 (Maps). The bus services which operate along Section 1 of the Proposed Scheme are outlined in Table 5.4.

Table 5.4: Section 1 - Bus Service Frequency

Service	Route	Typical Service Frequency		
		Weekday	Saturday	Sunday
4	Harristown – Ballymun – Botanic Avenue – Phibsboro Shopping Centre – City Centre – Pembroke Rd – Blackrock – Monkstown Avenue	12 minutes	15 minutes	15 minutes
9	Charlestown – Beneavin Road – Botanic Road – O'Connell Street – South Circular Road – Limekiln Avenue	15 minutes	15 minutes	15 minutes
11	Wadelai Park – O'Connell Street – Ranelagh – Clonskeagh – Sandyford Business Park	30 minutes 15 minutes in peak hours	30 minutes	30 minutes
13	Harristown – Main St. Ballymun (Ballymun Shopping Centre) – Drumcondra Rail Station – O'Connell Street – St James's Hospital – Tyrconnell Road (Blacklion) – Nass Road (John Sisk and Sons) – Clondalkin Village – Grange Castle	15 minutes (10 minutes in peak hours)	15 minutes	20 minutes
109A	Dublin Airport / City Centre – Ashbourne – Ratoath – Dunshaughlin – Navan – Kells	Hourly	Hourly	Hourly
155	IKEA (Ballymun) – Ballymun Rd – Botanic Avenue – Phibsboro Shopping Centre – O'Connell St – Donnybrook – Cabinteely – Bray Rail Station	20 minutes	20 minutes	20 minutes

5.3.2.4. General Traffic

5.3.2.4.1. R108 Ballymun Road

R108 Ballymun Road is a two-way dual carriageway with a central reserve which separates the northbound and southbound carriageway for much of the length of Section 1. For the majority of this section. The R108 Ballymun Road consists of two general traffic lanes in each direction with some additional filter lanes on junction approaches. Bus lanes are provided in both directions for the majority of the section.

R108 Ballymun Road is subject to a speed limit of 50km/h in both directions for the majority of the section. Approximately 200m north of the R104 Santry Avenue / R104 Balbutcher Lane / R108 Ballymun Road signalised junction, the speed limit increases to 60km/h.

R108 Ballymun Road intercepts various other strategic regional roads such as the R104 Saint Margaret's Road, R103 Glasnevin Road / R103 Collins Avenue and R102 Griffith Avenue at key junctions.

The existing major junction arrangements along R108 Ballymun Road are as follows:

- R108 Ballymun Road / St. Margaret's Road junction;
- R108 Ballymun Road / Northwood Avenue junction;
- R108 Ballymun Road / R104 Balbutcher Lane / R104 Santry Avenue junction;
- R108 Ballymun Road / Balbutcher Lane / Shangan Road junction;
- R108 Ballymun Road / Gateway Crescent junction;
- R108 Ballymun Road / R103 Glasnevin Avenue / R103 Collins Avenue Extension junction; and
- R108 Ballymun Road / St. Pappin Road junction.

R108 Ballymun Road / St. Margaret's Road three-arm signalised junction: This junction is a wide, three-arm signalised junction between St. Margaret's Road and R108 Ballymun Road, both of which are two-way multi-lane dual carriageways with central reservations. Staggered signalised pedestrian crossings are available on all three arms with central reservations or traffic islands.

St. Margaret's Road (western arm) has three general traffic lanes (approximately 3.5m wide) on the approach and exit arms. On the approach arm, two lanes cater for right-turning vehicles and one caters for left-turning vehicles. There are traffic slip lanes at the corners of this junction separated by traffic islands, and a median island. This requires multiple stage crossings for pedestrians to traverse the junction.

The northern arm of R108 Ballymun Road has four lanes on approach to the junction, two of which cater for right-turning traffic that begin approximately 100m prior to the junction. There is a median traffic island with a staggered two-stage crossing for pedestrians.

The southern arm of R108 Ballymun Road has three lanes on approach to the junction. The nearside lane commences approximately 70m prior to the junction and caters for left-turning movements only whilst the other two traffic lanes are for straight-ahead movements. There is a median traffic island with a staggered two-stage crossing for pedestrians.

Advanced stop lines for cyclists are provided on the northern and southern approach arm of the junction.

Image 5.1 shows the existing arrangement of the R108 Ballymun Road / St. Margaret's Road junction.

Image 5.1: R108 Ballymun Road / St Margaret's Road Three-Arm Signalised Junction

R108 Ballymun Road / Northwood Avenue three-arm signalised junction: This junction is a three-arm signalised junction between the two-way dual carriageway of R108 Ballymun Road and the wide two-way multi lane carriageway of Northwood Avenue. Staggered signalised pedestrian crossings are present on both the eastern arm of Northwood Avenue and the southern arm of R108 Ballymun Road.

The eastern arm of Northwood Avenue widens on approach to the junction providing short left-turning lanes on to and off R108 Ballymun Road that are separated from the rest of the traffic, by traffic islands. Additional entry and exit lanes are provided on Northwood Avenue for traffic turning right at the junction, all of which are poorly marked but are approximately 3.3m wide. There are traffic slip lanes at the corners of this junction separated by traffic islands. This requires multiple stage crossings for pedestrians to traverse the junction.

The northern arm of R108 Ballymun Road features three lanes on approach to the junction, one of which starts approximately 75m north of the junction and is specifically for left-turning movements on to Northwood Avenue. All three lanes have widths of approximately 3.3m, although the left-turning lane widens at the junction to accommodate large vehicles. There is no pedestrian crossing on the northern arm. On the southern arm there is a median traffic island with a staggered two-stage crossing for pedestrians.

The southern arm of R108 Ballymun Road is approximately 13m wide on approach to the junction and features three marked lanes, one of which is a right-turning lane, whilst the nearside lane is wide enough to accommodate two vehicles side-by-side. The exit arms of R108 Ballymun Road mirror those at entry.

Image 5.2 shows the existing arrangement of the R108 Ballymun Road / Northwood Avenue junction.

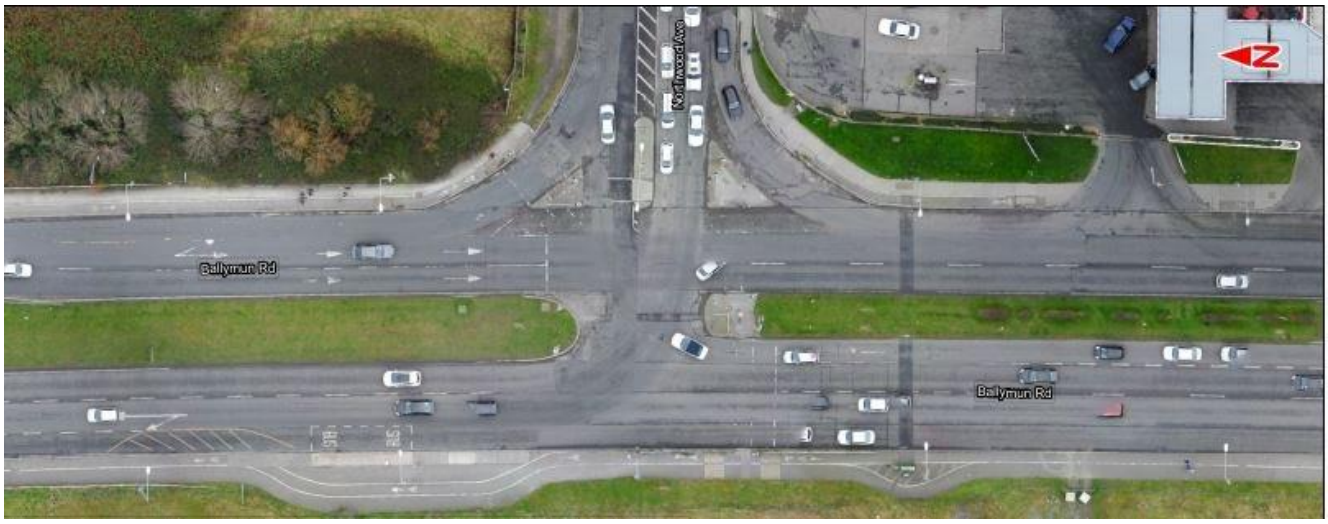

Image 5.2: R108 Ballymun Road / Northwood Avenue Three-Arm Signalised Junction

R108 Ballymun Road / R104 Balbutcher Lane / R104 Santry Avenue four-arm signalised junction: This junction is a wide, four-arm signalised junction with a central yellow box road marking. Advanced stop lines for cyclists are present on both the northern and eastern arms. Staggered signalised pedestrian crossings are present on the eastern and southern arms while a direct signalised crossing is present on the western arm. The northern arm of R108 Ballymun Road does not benefit from a pedestrian crossing.

Both the northern and southern arms of R108 Ballymun Road feature four lanes on approach to the junction, in which one is specifically for left-turning movements, another for right-turning movements and the other two for motorists travelling straight ahead. All lanes on both approaches have approximate widths of 3m. There is no pedestrian crossing on the northern arm. On the southern arm there is a median traffic island with a staggered two-stage crossing for pedestrians.

The western arm, R104 Balbutcher Lane, features three lanes on approach to the junction; whilst the eastern arm, R104 Santry Avenue, includes two lanes on approach to the junction. R104 Balbutcher Lane has three 3m wide lanes on approach to the junction although only a single lane of over 4m wide on its exit. There is a median traffic island with a staggered two-stage crossing for pedestrians.

The eastern arm, R104 Santry Avenue, consists of two approach lanes which are approximately 3.2m wide and a single exit lane which is 4.7m wide. The width of the exit lane narrows to the east of the junction. There is a median traffic island with a staggered two-stage crossing for pedestrians.

Image 5.3 shows the existing arrangement of the R108 Ballymun Road / R104 Balbutcher Lane / R104 Santry Avenue junction.

Image 5.3: R104 Balbutcher Lane / R108 Ballymun Road / R104 Santry Avenue Four-Arm Signalised Junction

R108 Ballymun Road / Balbutcher Lane / Shangan Road four-arm signalised junction: This junction is a four-arm signalised junction between the two-way single carriageway of Shangan Road / Balbutcher Lane and the two-way multi-lane dual carriageway of R108 Ballymun Road. Signalised direct pedestrian crossings are present on the Balbutcher Lane and Shangan Road arms while signalised indirect crossings, which benefit from raised tables, are located on the northern and southern arms of R108 Ballymun Road.

The northern and southern arms of R108 Ballymun Road widen from two general traffic lanes and a bus lane to four general traffic lanes on approach to the junction. The bus lanes terminate approximately 25m prior to the junction to allow general traffic to undertake left-turning movements. Lane widths on both the R108 Ballymun Road approaches are approximately 3.1m wide. Each R108 Ballymun Road exit has two lanes for general traffic alongside a bus lane. There is a median traffic island with staggered two-stage crossings for pedestrians.

The arms of Shangan Road and Balbutcher Lane are approximately 6m wide and include just one lane of traffic on approach to and exit from the junction.

Image 5.4 shows the existing arrangement of the R108 Ballymun Road / Balbutcher Lane / Shangan Road junction.

Image 5.4: R108 Ballymun Road / Balbutcher Lane / Shangan Road Four-Arm Signalised Junction

R108 Ballymun Road / Gateway Crescent three-arm signalised junction: This junction is a three-arm signalised junction between Gateway Crescent, a two-way single carriageway, and R108 Ballymun Road, a two-way dual carriageway. Staggered, signalised pedestrian crossings are present on both R108 Ballymun Road arms, whilst a direct signalised crossing is available on Gateway Crescent.

The northern arm of R108 Ballymun Road includes four lanes on approach to the junction of approximately 3m in width, one of which is specifically for right-turning movements and another is a bus lane with explicit operational hours. The northbound exit is comprised of two 3m wide lanes for general traffic and a bus lane. There is a median traffic island with a staggered two-stage crossing for pedestrians.

The southern arm of R108 Ballymun Road has three lanes (approximately 3.1m wide) on the approach to the junction, one of which is a bus lane which terminates 30m prior to the junction to allow motorists to turn left into Gateway Crescent. In addition, a fourth, right-turning lane is present prior to the junction for those turning right on to Shangan Road. There is a median traffic island with a staggered two-stage crossing for pedestrians.

The western arm of Gateway Crescent has two approach lanes of approximately 3m in width, one each for traffic turning left and right. Its exit had a single lane which also has a width of around 3m.

Image 5.5 shows the existing arrangement of the R108 Ballymun Road / Gateway Crescent junction.

Image 5.5: R108 Ballymun Road / Gateway Crescent Three-Arm Signalised Junction

R108 Ballymun Road / R103 Glasnevin Avenue / R103 Collins Avenue Extension four-arm signalised junction: This junction is a four-arm signalised junction between strategic regional roads, R103 Glasnevin Avenue, R103 Collins Avenue Extension and R108 Ballymun Road. Staggered signalised pedestrian crossings are present on all arms except for the R103 Glasnevin Avenue which has a direct signalised crossing.

The northern and southern arms of R108 Ballymun Road have four lanes on approach to the junction, both of which include a single left-turning lane formed by the termination of a bus lane approximately 35m prior the junction, and a fourth lane that is gained by narrowing the central reserve to facilitate a right-turning lane. All approach lanes on the northern and southern arms are approximately 3m wide save for the left-turn lane from the north which widens at the junction itself to accommodate large vehicles. As with the entries, the R108 Ballymun Road exits mirror one another and consist of two lanes for general traffic alongside a bus lane. There is a narrow median traffic island with staggered two-stage crossings for pedestrians.

R103 Collins Avenue Extension, the eastern arm, widens from one to two lanes (that are approximately 3m wide) on approach to the junction. Additionally, a widened segregated left-turn filter lane is also provided. There are traffic slip lanes at the corners of this junction separated by traffic islands. This requires multiple stage crossings for pedestrians to traverse the junction. R103 Glasnevin Avenue includes two lanes that are approximately 3m wide on approach to the junction, one for ahead and left traffic and another for right turning vehicles. Of these lanes, the right-turn lane commences approximately 65m west of the junction.

Image 5.6 shows the existing arrangement of the R108 Ballymun Road / R103 Glasnevin Avenue / R103 Collins Avenue Extension junction.

Image 5.6: R108 Ballymun Road / R103 Glasnevin Avenue / R103 Collins Avenue Extension Four-Arm Signalised Junction

R108 Ballymun Road / St. Pappin Road three-arm signalised junction: This junction is a three-arm signalised junction between St. Pappin Road, a two-way single carriageway, and R108 Ballymun Road, a two-way dual carriageway. Northbound and southbound cycle lanes along R108 Ballymun Road continue through the junction. Signalised pedestrian crossings are located on the western (direct) and northern (staggered) arms of the junction.

The northern arm of R108 Ballymun Road has four lanes (approximately 3m wide) on approach to the junction, which includes a right-turning lane that is approximately 55m long and three southbound lanes that continue through the junction, one of which is a bus lane. There is a 28m long single stage direct pedestrian crossing on this arm.

The southern arm of R108 Ballymun Road has three lanes on approach to the junction where the left-turning lane is developed by terminating a bus lane 75m prior to the junction. The ahead lanes are approximately 3m wide while the width of the left-turning lane varies greatly over the approach peaking at just under 6m. The northbound exit has 3 lanes, two for general traffic and one for buses. There is no pedestrian crossing on this arm.

St Pappin Road to the east has single lane on approach and exit with widths of around 3.5m. There is a 16m long single stage direct pedestrian crossing on this arm, which is extended in length by the wide-radius corners.

Image 5.7 shows the existing arrangement of the R108 Ballymun Road / St Pappin Road junction.

Image 5.7: R108 Ballymun Road / St Pappin Road Three-Arm Signalised Junction

5.3.2.4.2. R102 Ballymun Road / R102 St Mobhi Road / R102 Griffith Avenue One-Way Road System

A triangular one-way road system, which is considered part of the R102 regional road lies at the southern end of the R108 Ballymun Road dual carriageway.

Southbound traffic travelling along R108 Ballymun Road continues to the one-way southbound carriageway of R102 St. Mobhi Road, which has three lanes approximately 2.8m wide. The left lane is allocated for left-turning traffic, except for buses that can move straight ahead at the next junction (with R102 Griffith Avenue), along with an advisory cycle lane. The middle lane is designated for ahead traffic and the right-hand lane is designated for traffic continuing around the one-way system.

Until recent works in 2021 for provision of temporary cycle tracks, the one-way westbound carriageway section of R102 Griffith Avenue had four lanes of traffic (approximately 3m wide), two of which were for traffic travelling straight ahead on to the two-way carriageway section of R102 Griffith Avenue to the west of the one-way road system. The southernmost lane accommodates traffic turning right on to Ballymun Road (the non-regional road section). The other two lanes were designated for traffic turning right on to R102 Ballymun Road and continuing around the one-way system.

The one-way northbound carriageway of R102 Ballymun Road has three lanes which vary in width from 3.5m to 4.1m, where the two nearside lanes are allocated for ahead traffic and the right-hand lane for those continuing around the one-way system and to R108 St. Mobhi Road. This northbound section sits alongside a mandatory cycle lane adjacent to the nearside kerb.

5.3.2.5. Existing Parking / Loading

There is parking directly along Section 1 of the Proposed Scheme at the following locations:

- Three loading bay spaces adjacent to the northbound carriageway of R108 Ballymun Road to the south of the R104 Balbutcher Lane / Santry Avenue junction;
- Eight informal parking spaces spread at various locations next to both the northbound and southbound carriageways of R108 Ballymun Road to the south of the R104 Balbutcher Lane / Santry Avenue junction;

- 17 parking spaces within the southbound part-time bus lane along R108 Ballymun Road outside the Intreo Ballymun Centre of which 14 spaces are designated paid parking spaces and three spaces are disabled parking spaces;
- 10 informal parking spaces located within a lay-by adjacent to the southbound carriageway of R108 Ballymun Road, near the entrance to Dublin City University; and
- 15 permit parking spaces along the R102 one-way road system that covers Ballymun Road, St. Mobhi Road and Griffith Avenue.

Further parking is accommodated on the streets running parallel to the main carriageway which have residential frontage as follows:

- 9 informal parking spaces along Shangan Road;
- 8 informal parking spaces along Balbutcher Lane;
- 34 informal parking spaces outside an apartment complex with shops on the ground floor along Silloge Road;
- 50 informal parking spaces adjacent to R108 Ballymun Road, within Ballymun Car Park;
- 20 informal residential parking spaces along Gateway Crescent;
- 14 informal residential parking spaces, outside an apartment complex immediately north of Gateway Avenue;
- 14 informal residential parking spaces along Gateway Avenue;
- 40 informal parking spaces outside shops along St Pappin Road; and
- 57 informal residential parking spaces along Albert College Court.

5.3.3. Section 2 - St. Mobhi Road, Botanic Road and Diversionary Route from Griffith Avenue to Hart's Corner

This Section outlines the baseline environment for walking, cycling, bus services, general traffic and parking / loading facilities along Section 2 of the Proposed Scheme.

This section of the Proposed Scheme will commence at the R108 St. Mobhi Road / R102 Griffith Avenue Junction and will extend for 1.5km to Hart's Corner in Phibsborough, where it will meet the Finglas Section of the Proposed Scheme. Section 2 also includes a diversionary / local traffic route for outbound traffic which diverts away from R108 St. Mobhi Road along Botanic Road, Glasnevin Hill, Ballymun Road to re-join R108 Ballymun Road. An alternative diversion takes users via Old Finglas Road, Cremore Villas and R102 Griffith Avenue to re-join R108 Ballymun Road, although no infrastructure changes are proposed through this route and it is not included in the scheme red line boundary.

5.3.3.1. Pedestrian Infrastructure

Footpaths along Section 2 of the Proposed Scheme are present on both sides the carriageway and vary in width between approximately 2.0m and 3.5m. Street lights are provided for most of its length.

The majority of the eastern footpath adjacent to the southbound lane of R108 St Mobhi Road between Home Farm Road and St Mobhi Drive is positioned adjacent to a one-way cycle track.

The footpaths along the diversionary route for outbound traffic have a minimum width of 1.8m, apart from the footpaths adjacent to the southbound lane of Botanic Road which is quite narrow with an average width of approximately 1.5m over a distance of approximately 275m. It should be noted that the footpath adjacent to the northbound lane of Botanic Road is between 2.5m and 3m wide.

There are several controlled pedestrian crossings along Section 2 of the Proposed Scheme which benefit from tactile paving and dropped kerbs and can be found at the following locations:

- The four-arm R108 St. Mobhi Road / Stella Avenue junction provides a direct pelican crossing on the southern arm (across R108 St. Mobhi Road);

- A direct pelican pedestrian crossing across R108 St. Mobhi Road to the south of the entrance to Chaitríona Secondary School;
- The four-arm R108 St. Mobhi Road / St. Mobhi Drive junction provides a direct pelican crossing on the northern arm (across R108 St. Mobhi Road);
- The four-arm R108 St. Mobhi Road / Botanic Avenue signalised junction provides direct signalised pedestrian crossings on each arm of the junction;
- The four-arm R108 St. Mobhi Road / Fairfield Road / R108 Botanic Road / Botanic Road signalised junction provides two signalised pedestrian crossings. A direct signalised crossing is provided across the northern arm (R108 St. Mobhi Road), whilst an indirect staggered signalised crossing with pedestrian refuge island and guard rails is provided across the western arm Botanic Road;
- A direct pelican pedestrian crossing across R108 Botanic Road immediately north of Marguerite Road;
- The three-arm Botanic Road / Prospect Way (covering both R108 and R135 regional roads) signalised junction provides indirect signalised pedestrian crossings in all directions with the inclusion of a pedestrian refuge island. There are no guard rails;
- The three-arm Ballymun Road / Glasnevin Hill / Old Finglas Road signalised junction provides direct signalised pedestrian crossing on each arm of the junction; and
- The three-arm Glasnevin Hill / St. Mobhi Drive junction provides a directs signalised junction on the southern arm of the junction.

Uncontrolled crossings across priority junctions at side roads benefit from dropped kerbs. The location of pedestrian crossings is illustrated in Figure 6.3b in TIA Appendix 3 (Maps).

Further details of the baseline pedestrian facilities (i.e. routing, directness, accessibility, crossing and footpath widths) at each junction along Section 1 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

5.3.3.2. Cycling Infrastructure

Cycle facilities along Section 2 of the Proposed Scheme consist of a combination of cycle tracks, cycle lanes and / or combined bus and cycle lanes.

Between R102 Griffith Avenue and Botanic Avenue a southbound bus lane is provided along R108 St. Mobhi Road for a length of approximately 800m, which is used by cyclists going down the hill. The bus lane is operational between 07:00 and 19:00 Monday to Saturday and temporarily discontinues at junction to allow for turning vehicles. A northbound cycle track (approximately 1.25m wide) is available between Botanic Avenue and Home Farm Road. This cycle track is predominantly located on the eastern pavement of R108 St. Mobhi Road however, the southernmost section, between St. Mobhi Drive and Botanic Avenue is located on the western pavement of R108 St. Mobhi Road. A toucan crossing is provided to facilitate northbound cyclists to cross to the cycle track at St. Mobhi Drive at the southern end.

Between Botanic Avenue and Hart's Corner, mandatory and advisory cycle lanes currently exist in the southbound direction. Additionally, a southbound bus lane extends from a short way south of Marguerite Road to the one-way road system at Hart's Corner for a length of approximately 150m. Southbound bus lanes are provided along R108 / R135 Botanic Road between Iona Road and Lindsay Grove.

In the northbound direction between Hart's Corner and the R108 St. Mobhi Road / Botanic Road / Fairfield Road / R108 Botanic Road Junction, mandatory and advisory cycle lanes are provided. The cycle lanes extend north along the diversionary route for outbound traffic along Botanic Road, Glasnevin Hill and Ballymun Road (non-regional road section).

Cycle parking stands are provided at the following points in the vicinity of Section 2 of the Proposed Scheme, albeit, outside of the redline boundary:

- 5 Sheffield stands (able to accommodate up to 10 bicycles) along Old Finglas Road outside St Mary's Secondary School;

- 5 Sheffield stands (able to accommodate up to 10 bicycles) on St David's Terrace off Glasnevin Hill (diversionary route) opposite 'The Washerman' restaurant;
- 5 Sheffield stands (able to accommodate up to 10 bicycles) at Prospect Square within proximity of the 'John Kavanagh The Gravediggers' pub; and
- 4 Sheffield stands (able to accommodate up to 8 bicycles) along R108 / R135 Prospect Way adjacent to Prospect Avenue.

There are no designated public cycle rental scheme stands within Section 2 of the Proposed Scheme.

The existing cycle facilities along Section 2 of the Proposed Scheme is illustrated in Figure 6.4b in TIA Appendix 3 (Maps).

Further details of the baseline cycling facilities (i.e. level of segregation from vehicles, capacity for cycling two abreast and / or overtaking, and junction treatment) along the length of Section 2 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment).

5.3.3.3. Bus Infrastructure

5.3.3.3.1. Bus Priority Measures

Bus lanes are provided along Section 2 of the Proposed Scheme at the following locations (aside from intermittent breaks and junctions):

- Southbound bus lane along R108 St. Mobhi Road for approximately 600m between R102 Griffith Avenue and St. Mobhi Drive; and
- Southbound bus lane along R108 Botanic Road for approximately 100m between Marguerite Road and Hart's Corner.

There are no bus priority measures provided for northbound traffic along Section 2 of the Proposed Scheme.

5.3.3.3.2. Bus Stop Facilities

There are currently 14 bus stops (10 along R108 regional road and 4 along the diversionary route) along Section 2 of the Proposed Scheme. The inbound (southbound) stops are as follows:

- Stop 40 (Stella Avenue) on R108 St Mobhi Road south of Stella Avenue;
- Stop 146 (Na Fianna GAA Club) on R108 St Mobhi Road south of the entrance to 'Scoil Chaitríona' school;
- Stop 147 (Tolka Bridge) on R108 St Mobhi Road south of St Mobhi Drive;
- Stop 184 (Botanic Road) on R108 Botanic Road north of Cliftonville Road;
- Stop 185 (St Teresa's Place) on R108 Botanic Road south of Marguerite Road;
- Stop 183 (Botanic Gardens) on Bóthar Gharraithe Na Lus south of Botanic Avenue; and
- Stop 182 (Met Éireann) on Glasnevin Hill south-east of Ballymun Road.

The outbound (northbound) stops are as follows:

- Stop 150 (Na Fianna GAA Club) on R108 St Mobhi Road opposite entrance to 'Scoil Chaitríona' school;
- Stop 149 (Tolka Bridge) on R108 St Mobhi Road north of St Mobhi Drive;
- Stop 148 (Mobhi Road) on R108 St Mobhi Road north of Fairfield Road;
- Stop 202 (Glasnevin, Fairfield Rd) on R108 Botanic Road south of Fairfield Road;
- Stop 201 (Botanic Road) on R108 Botanic Road south of Marguerite Road;
- Stop 151 (Botanic Gardens) on Bóthar Gharraithe Na Lus adjacent to the National Botanic Gardens; and
- Stop 153 (Met Éireann) on Glasnevin Hill south-east of Ballymun Road.

The contents of Table 5.5 outline the availability of bus stop facilities at the existing 14 bus stops along Section 2 of the Proposed Scheme.

Table 5.5: Section 2 - Availability of Bus Stop Facilities (of a total 14 Bus Stops)

Bus Stop Facility	Number of Bus Stops in Baseline with Facility	Percentage of Bus Stops in Baseline with Facility
RTPI	3	21%
Weekly Timetable Information	12	86%
Shelter	5	36%
Seating	4	29%
Accessible Kerbs	12	86%
Indented Drop Off Area	6	43%

The existing bus facilities along Section 2 of the Proposed Scheme are illustrated in Figure 6.5b in TIA Appendix 3 (Maps). The bus services which operate along Section 2 of the Proposed Scheme are outlined in Table 5.6.

Table 5.6: Section 2 - Bus Service Frequency

Service	Route	Typical Service Frequency		
		Weekday	Saturday	Sunday
4	Harristown – Ballymun – Botanic Avenue – Phibsboro Shopping Centre – City Centre – Pembroke Rd – Blackrock – Monkstown Avenue	12 minutes	15 minutes	15 minutes
9	Charlestown – Beneavin Road – Botanic Road – O'Connell Street – South Circular Road – Limekiln Avenue	15 minutes	15 minutes	15 minutes
11	Wadelai Park – O'Connell Street – Ranelagh – Clonskeagh – Sandyford Business Park	30 minutes 20 mins in peak hours	30 minutes	30 minutes
83 / 83a	Harristown – Glasanoan Rd – Church Street – College Street – Lwr. Camden Street – Sundrive Road (Stannaway Road) – Stannaway Avenue	15 minutes	15 minutes	15 / 20 minutes
155	IKEA (Ballymun) – Ballymun Rd – Botanic Avenue – Phibsboro Shopping Centre – O'Connell St – Donnybrook – Cabinteely – Bray Rail Station	20 minutes	20 minutes	20 minutes

5.3.3.4. General Traffic

5.3.3.4.1. R108 St. Mobhi Road

R108 St. Mobhi Road is a two-way single lane carriageway which features one general lane in each directions. Along sections of R108 St. Mobhi Road, a southbound bus lane is presented in addition to the general traffic lanes. The environment surrounding R108 St. Mobhi Road is mainly residential and is subject to a 50km/h speed limit.

The existing major junction arrangements along R108 St. Mobhi Road are as follows:

- R108 St. Mobhi Road / R102 Griffith Avenue / R102 St. Mobhi Road four-arm signalised junction;
- R108 St. Mobhi Road / Botanic Avenue four-arm signalised junction; and
- R108 St. Mobhi Road / Botanic Road/ Fairfield Road / R108 Botanic Road four-arm signalised junction.

R108 St. Mobhi Road / R102 Griffith Avenue / R102 St. Mobhi Road four-arm signalised junction: This junction is a four-arm signalised junction between R102 Griffith Avenue, R102 St. Mobhi Road and R108 St. Mobhi Road, with staggered pedestrian crossings on the northern and western arms, a direct pedestrian crossing on the eastern arm. No pedestrian crossing facilities are available on the southern arm.

The northern arm (R102 St. Mobhi Road) is a one-way carriageway for southbound vehicles only. The three lane carriageway (each approximately 3m wide) provides an advisory cycle lane, one general traffic lane for left-turning vehicles, one lane for straight ahead vehicles and a third bypass lane for right-turning vehicles. There is a left-slip lane with a large separation island on the north-western corner of this arm, and pedestrians must cross the road in two stages.

The western arm (R102 Griffith Avenue) of the junction is a one-way multi-lane carriageway for westbound vehicles only. The arm consists of two general traffic lanes (each approximately 3m wide).

The eastern arm of R102 Griffith Avenue includes one mandatory cycle lane, delineated by cycle road markings and cycle bollards, and one general traffic lane (approximately 3.2m wide) from which vehicles left-turn and straight ahead movements are permitted. The exit arms of R102 Griffith Avenue mirror those at entry.

The southern arm of R108 St. Mobhi Road has a single lane approach that is approximately 3.5m wide and only allows traffic to turn left on to R102 Griffith Avenue. Its exit comprises of two lanes, one of which is a designated bus lane which is operational between the hours of 07.00hrs to 19.00hrs from Monday to Saturday, the other is for general traffic.

These characteristics are shown in Image 5.8.

Image 5.8: R108 St Mobhi Road / R102 Griffith Avenue / R102 St Mobhi Road Four-Arm Signalised Junction

R108 St. Mobhi Road / Botanic Avenue four-arm signalised junction: This junction is a four-arm signalised junction between Botanic Avenue and R108 St. Mobhi Road, with direct signalised pedestrian crossings on all four arms. A yellow box marking is provided in the centre of the junction.

The south-eastern and south-western approaches, with single lane approaches and exits, are approximately 3.5m in width with exit arms being broadly similar.

The single lane approach from the north-west is somewhat narrower, at approximately 3m, with its associated exit also of the same 3m width.

The north-eastern arm of R108 St. Mobhi Road features a two-lane approach, whereby the southbound bus lane stops 30m short of the junction to allow general traffic to turn left on to Botanic Avenue. The northern approach also benefits from an advanced cycle stop line to allow cyclists to access the mandatory cycle lane on the southbound exit.

There are short and direct pedestrian crossings on all four arms of this junction, which all operate at the same time in a wrap-around signal stage.

These characteristics are shown in Image 5.9.

Image 5.9: R108 St Mobhi Road / Botanic Avenue Four-Arm Signalised Junction

R108 St. Mobhi Road / Bóthar Gharraithe na Lus / Fairfield Road / R108 Botanic Road four-arm signalised junction: This junction is a four-arm signalised junction between the two-way carriageways of Bóthar Gharraithe Na Lus, R108 St. Mobhi Road, Fairfield Road and R108 Botanic Road. There is a staggered crossing on the north-western arm and a direct signalised pedestrian crossing on the north-eastern arm.

The northern approach arm (R108 St. Mobhi Road) consists of a mandatory cycle lane, a single general traffic lane (approximately 3.5m wide) from which right-turns are not permitted. The cycle lane continues through the junction as an advisory cycle lane. The exit arm consists of a single general traffic lane.

The eastern arm (Fairfield Road) consists of a single general traffic approach lane and a single general traffic exit lane. The approach arm is approximately 4.0m wide on the approach to the junction however this width is narrowed to the east by on-street parking.

The southern arm (Botanic Road) consists of one mandatory cycle lane which continues through the junction to the western arm (Botanic Road), one left-turn general traffic lane and one straight-ahead general traffic lane. The two general traffic lanes are separated by hatched road markings. The exit arm consists of one advisory cycle lane and one general traffic lane.

The approach of the western arm (Botanic Road) is approximately 4.0m wide and permits straight-ahead and right-turn movements only. Whilst 4.0m wide, directional arrows marked on the carriageway indicate two separate lanes however there are no other road markings indicating two lanes. The exit arm consists of one advisory cycle lane and a general traffic lane.

These characteristics are shown in Image 5.10.

Image 5.10: R108 St. Mobhi Road / Bóthar Gharraithe na Lus / Fairfield Road / R108 Botanic Road Four-Arm Signalised Junction

5.3.3.4.2. R108 Botanic Road

R108 Botanic Road is a two-way carriageway and consists of advisory cycle lanes in each direction and one general traffic lane in each direction. A southbound bus lane commences approximately 100m north of R108 Botanic Road / R135 Botanic Road / R135 Prospect Way junction, replacing the advisory cycle lane.

The one-way road system at Hart's Corner is part of both the R108 and R135 regional roads and connects together R135 Finglas Road, R108 Botanic Road and R108 / R135 Prospect Road. The one-way road system includes Prospect Way (eastbound traffic), Botanic Road (southbound traffic) and Finglas Road (north-westbound traffic), all of which feature two or three lanes of traffic and in places, a designated bus lane. Finglas Section 3 covers the eastern and northern portion of this road arrangement which includes 250m of carriageway between junctions with Prospect Avenue and Dalcassian Downs. The surrounding environment is a mixture of retail and residential with a speed limit of 50km/hr.

The existing major junction arrangement along the one-way road system at Hart's Corner includes as follows:

- R108 Botanic Road / R108 and R135 Botanic Road / R108 and R135 Prospect Way three-arm signalised junction; and
- Lindsay Road / R108 and R135 Botanic Road / R108 and R135 Finglas Road priority junction arrangement – detailed in Section 3.

R108 Botanic Road / R108 and R135 Botanic Road / R108 and R135 Prospect Way three-arm signalised junction: This junction forms the eastern point of the triangular one-way road system.

The northern arm (R108 Botanic Road) arm consists of a bus lane and one general traffic lane. A narrow advisory cycle lane extends through the junction. The northern arm exit consists of a one general traffic lane and a mandatory cycle lane.

The southbound arm is exit-only and consists of two lanes for general traffic alongside a bus lane.

The western arm (R108 and R135 Prospect Way) is approach-only and consists of three lanes widening to four lanes approximately 10m prior to the stop line for southbound traffic to accommodate a short bus lane. Adjacent to the bus lane there are two lanes for general traffic which are approximately 3.2m in width. The lane for left-turning traffic to travel northbound varies in width considerably, becoming wider at the point of turning to accommodate larger vehicles.

These characteristics are shown in Image 5.1.

Image 5.11: R108 Botanic Road / R108 and R135 Botanic Road / R108 and R135 Prospect Way Three-Arm Signalised Junction

5.3.3.4.3. Diversionary Route

A diversionary route for northbound buses and cyclists is provided along Botanic Road, Glasnevin Hill and Ballymun Road (the non-regional road section) between R108 Botanic Road and R102 Griffith Avenue, due to the lack of northbound bus and cycle infrastructure along R108 St. Mobhi Road. These roads are two-way single carriageways, which feature cycle lanes in the northbound direction for the majority of the route. The surrounding environment is mainly residential with a speed limit of 50km/h. An alternative diversion takes users via Old Finglas Road, Cremore Villas and R102 Griffith Avenue to re-join R108 Ballymun Road, although no changes are proposed through this length thus it does not appear on scheme drawings and has not been assessed.

The existing major junction arrangements along the diversionary route are as follows:

- Glasnevin Hill / Ballymun Road / Old Finglas Road three-arm signalised junction; and
- R108 Ballymun Road / Ballymun Road / R102 Griffith Avenue four-arm signalised junction.

Glasnevin Hill / Ballymun Road / Old Finglas Road three-arm signalised junction: This junction is a three-arm signalised junction between Old Finglas Road, Ballymun Road and Glasnevin Hill. Direct signalised pedestrian crossings are available on all arms and a yellow box marking is present.

All three arms are two-way single carriageways with widths of approximately 9.4m. Each approach has a single entry and exit lane. The northern and western arms of Ballymun Road and Glasnevin Hill, respectively, include advanced stop lines for cyclists and include cycle lanes. The cycle lane on Ballymun Road commences approximately 10m before the advanced cycle stop line.

These characteristics are shown in Image 5.12.

Image 5.12: Old Finglas Road / Ballymun Road / Glasnevin Hill Three-Arm Signalised Junction

R108 Ballymun Road / R102 Griffith Avenue / Ballymun Road four-arm signalised junction: This junction is a four-arm signalised junction between R102 Griffith Avenue, R108 Ballymun Road and Ballymun Road (the non-regional road section). Direct signalised pedestrian crossings are available on the northern, southern and western arms whilst an indirect signalised crossing is provided on the eastern arm. Approaching cycle lanes continue through the junction.

The eastern arm (R102 Griffith Avenue) is a one-way carriageway for general traffic. The approach arm consists of a cycle lane and two general traffic lanes which operate separate signal phases. The nearside general traffic lane caters for straight-ahead and left-turn movements whilst the offside lane caters for right-turning movements. An exit cycle lane is also provided and is separated from general traffic through hatched road makings / cycle bollards.

The southern arm of Ballymun Road is a two-way carriageway. The approach consists of a mandatory cycle lane and single general traffic lane whilst the exit arm consists of a single general traffic lane (approximately 2.4m in width).

The western arm of R102 Griffith Avenue is a two-way carriageway. The approach and exit arms consists of a single general traffic lane and cycle lanes / tracks.

The northern arm (R102 Ballymun Road) is a multi-lane one-way carriageway and is an exit arm only. The exit arm consists of one mandatory cycle lane and three general traffic lanes.

These characteristics are shown in Image 5.13. However, note that improvement works to the junction have taken place since capture of the aerial photography, and therefore do not appear within Image 5.13.

Image 5.13: R108 Ballymun Road / R102 Griffith Avenue / Ballymun Road Four-Arm Signalised Junction

5.3.3.5. Existing Parking / Loading

There is parking directly along Section 2 of the Proposed Scheme at the following locations:

- 35 informal parking spaces within the southbound lane of Ballymun Road;
- 10 informal parking spaces and one disabled space within the lay-by adjacent to the northbound lane of Glasnevin Hill, near to the Washerwoman Irish restaurant;
- 14 informal parking spaces within the lay-by adjacent to the northbound lane of Glasnevin Hill, outside the Tolka House pub;
- 14 permit parking spaces and 1 loading bay within the southbound lane of Botanic Road
- 20 informal parking spaces within the westbound lane of St. Mobhi Drive between R108 St. Mobhi Road and Glasnevin Hill; and
- 5 informal parking spaces adjacent to the southbound lane of R108 St. Mobhi Road on approach to the Botanic Avenue junction.

Further parking is accommodated on the streets running parallel to the main carriageway which have residential frontage as follows:

- 32 informal residential parking spaces along Fairfield Road;
- 70 informal residential parking spaces along Cliftonville Road;
- 10 informal residential parking spaces along St Teresa's Road;
- 67 informal residential parking spaces along Marguerite Road;
- 55 informal residential parking spaces along Iona Road;
- 55 informal residential parking spaces along Lindsay Road;
- 25 informal residential parking spaces along Enniskerry Road;
- 32 informal residential parking spaces along Munster Street;
- 28 informal residential parking spaces along Royse Road; and
- 40 informal residential parking spaces along Connaught Street.

5.3.4. Section 3 – Prospect Road and Phibsborough Road from Hart's Corner to Western Way

This Section outlines the baseline environment for walking, cycling, bus services, general traffic and parking / loading facilities along Section 3 of the Proposed Scheme.

This section of the Proposed Scheme will commence at the R108 Prospect Road / Lindsay Road Junction at the southern apex of Hart's Corner and will extend through Phibsborough over a length of 1.3 km to the R135 Western Way Junction.

5.3.4.1. Pedestrian Infrastructure

The walking facilities along Section 3 of the Proposed Scheme comprise of reasonably wide, well-lit footpaths on both sides of the carriageway between Hart's Corner and R131 Western Way.

The footpath widths range from 2.5m wide to 4m wide, apart from a section of Phibsborough Road (R108 and R135) adjacent to Royal Canal Terrace which is slightly narrower and approximately 2m wide.

There are several controlled pedestrian crossings along Section 3 of the Proposed Scheme which benefit from tactile paving and dropped kerbs and can be found at the following locations:

- An indirect staggered pelican crossing across R108 / R135 Prospect Road to the south of Lindsay Road. Pedestrians cross in two stages using the traffic island between the carriageways as a refuge pedestrian island. There are no guard rails;
- The three-arm Prospect Road (R108 and R135) / Whitworth Road signalised junction provides direct signalised pedestrian crossings on the southern and eastern arms;
- The three-arm Phibsborough Road (R108 and R135) / Connaught Street signalised junction provides indirect staggered signalised pedestrian crossings on both the southern and western arms. Both crossings are staggered by the use of pedestrian refuge islands and guard rails;
- A direct pelican crossing across Phibsborough Road (R108 and R135) adjacent to Phibsborough Shopping Centre;
- The four-arm Phibsborough Road (R108 and R135) / R101 North Circular Road signalised junction provides direct signalised pedestrian crossings on all four arms of the junction;
- The three- arm Phibsborough Road (R108 and R135) / Monck Place junction signalised provides a direct signalised crossing on the northern arm; and
- The three-arm Phibsborough Road (R108 and R135) / R135 Western Way / R108 Constitution Hill signalised junction at Broadstone provides direct signalised crossings across the northern and southern arms, whilst an indirect crossing is provided across the eastern arm (R135 Western Way) with the central reservation and a traffic island acting as pedestrian refuge islands. In addition, a further signalised pedestrian crossing is provided to the north of the LUAS tram tracks between the traffic island and the western footpath.

Uncontrolled crossings across priority junctions at side roads benefit from dropped kerbs. The locations of the pedestrian crossings are illustrated in Figure 6.3c in TIA Appendix 3 (Maps).

Further details of the baseline pedestrian facilities (i.e. routing, directness, accessibility, crossing and footpath widths) at each junction along Section 3 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

5.3.4.2. Cycling Infrastructure

Existing cycle facilities along Ballymun Section 3 of the Proposed Scheme are intermittent. Where present, cycle facilities consist of cycle lanes and / or bus lanes.

Southbound bus lanes are provided along R108 Phibsborough Road between Royal Canal Bank and Connaught Street. Northbound bus lanes are also provided along R108 Phibsborough Road between north of R101 North Circular Road and the western side of Hart's Corner.

South of the junction with R101 North Circular Road, southbound advisory cycle lanes (approximately 1.5m wide) provided between for approximately 700m between R101 North Circular Road and R135 Western Way. Northbound combined bus and cycle lanes are provided between R135 Western Way and Monck Place. At Monck Place, a northbound cycle lane is provided for approximately 65m between Monck Place and Phibsborough.

Northbound bus lanes are provided between R135 Western Way and Monck Place. At Monck Place, a northbound cycle lane is provided for approximately 65m between Monck Place and Phibsborough.

Cycle parking stands are provided at the following location along Section 3 of the Proposed Scheme, inside the redline boundary:

- 5 Sheffield stands (able to accommodate up to 10 bicycles) along R108 / R135 Phibsborough Road opposite 'Broadstone Hall' student accommodation.

Public cycle rental scheme stands are provided at the following point along Section 3 of the Proposed Scheme, inside the red line boundary:

- 40 public cycle rental scheme stands (able to accommodate up to 40 bicycles) on R108 / R135 Phibsborough Road opposite The Hair Company Broadstone.

Additional public cycle rental scheme stands are provided at the following point in the vicinity of Section 3 of the Proposed Scheme, albeit, outside the redline boundary:

- 35 public cycle rental scheme stands (able to accommodate up to 35 bicycles) located on Avondale Road opposite terraced housing within proximity to the 'Great Western Square' park and garden.

The existing cycle facilities along Section 1 of the Proposed Scheme are illustrated in Figure 6.4c in TIA Appendix 3 (Maps).

Further details of the baseline cycling facilities (i.e. level of segregation from vehicles, capacity for cycling two abreast and / or overtaking, and junction treatment) along the length of Section 3 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment).

5.3.4.3. Bus Infrastructure

5.3.4.3.1. Bus Priority Measures

Bus lanes are provided along the majority of Section 3 of the Proposed Scheme at the following locations (aside from intermittent breaks and junctions):

- Southbound bus lane along R108 / R135 Botanic Road and R108 / R135 Prospect Road for approximately 200m between Iona Road and Lindsay Grove;
- Northbound bus lane along R108 / R135 Prospect Road for approximately 70m;
- Northbound bus lane along R108 / R135 Phibsborough Road for approximately 350m between Phibsboro Shopping Centre and Whitworth Road;
- Southbound bus lane along R108 / R135 Phibsborough Road for approximately 150m between Eglinton Terrace and Connaught Street; and
- Northbound bus lane along R108 / R135 Phibsborough Road for approximately 400m between R135 Western Way and Monck Place.

5.3.4.3.2. Bus Stop Facilities

There are currently ten bus stops along Section 3 of the Proposed Scheme. The inbound (southbound) stops are as follows:

- Stop 186 (Lindsay Grove) on R108 / R135 Prospect Road to the north of Lindsay Grove;
- Stop 187 (Phibsborough Road) on R108 / R135 Phibsborough Road to the north of Connaught Street;
- Stop 188 (North Circular Road) on R108 / R135 Phibsborough Road to the south of R101 North Circular Road;
- Stop 189 (Fire Station) on R108 / R135 Phibsborough Road opposite Phibsborough Fire Station; and
- Stop 190 (Broadstone) on R108 / R135 Phibsborough Road to the north of R135 Western Way.

The outbound (northbound) stops are as follows:

- Stop 199 (Munster Street) on R108 / R135 Phibsborough Road to the south of Leinster Street North;
- Stop 198 (Phibsborough SC) on R108 / R135 Phibsborough Road outside Phibsboro Shopping Centre;
- Stop 197 (Monck Place) on R108 / R135 Phibsborough Road to the north of Monck Place;
- Stop 196 (Fire Station) on R108 / R135 Phibsborough Road to the north of Royal Canal Terrace; and
- Stop 195 (Broadstone) on R108 / R135 Phibsborough Road to the north of R135 Western Way.

Table 5.7 outlines the availability of bus stop facilities at the existing 10 bus stops along Section 3 of the Proposed Scheme.

Table 5.7: Section 3 - Availability of Bus Stop Facilities (of a total 10 Bus Stops)

Bus Stop Facility	Number of Bus Stops in Baseline with Facility	Percentage of Bus Stops in Baseline with Facility
RTPI	7	70%
Timetable Information	7	70%
Shelter	6	60%
Seating	6	60%
Accessible Kerbs	8	80%
Indented Drop Off Area	1	10%

The existing bus facilities along Section 3 of the Proposed Scheme are illustrated in Figure 6.5c in TIA Appendix 3 (Maps). The bus services which operate along Section 3 of the Proposed Scheme are outlined in Table 5.8.

Table 5.8: Section 3 – Bus Service Frequency

Service	Route	Typical Service Frequency		
		Weekday	Saturday	Sunday
4	Harristown – Ballymun – Botanic Avenue – Phibsboro Shopping Centre – City Centre – Pembroke Rd – Blackrock – Monkstown Avenue	12 mins	15 mins	15 mins
9	Charlestown – Beneavin Road – Botanic Road – O'Connell Street – South Circular Road – Limekiln Avenue	15 mins	15 mins	15 mins
40	Charlestown Shopping Centre – Finglas Village – St Helena's Road (Tolka Valley) – Dorset St. Lwr (North Circular Road) – O'Connell Street – Inchicore – Ballyfermot Road (Markievicz Park) – Neilstown Road (Finches) – Liffey Valley Shopping Centre	10 / 12 mins	10 / 15 mins	15 mins
40B	Parnell Street – Finglas – Toberburr	6 a day	5 a day	4 a day
40D	Harristown – Glasanoan Rd – Church Street – College Street – Lwr. Camden Street – Sundrive Road (Stannaway Road) – Stannaway Avenue	15 / 30 mins	40 mins	50 mins
83 / 83a	Harristown – Glasanoan Rd – Church Street – College Street – Lwr. Camden Street – Sundrive Road (Stannaway Road) – Stannaway Avenue	15 mins	15 mins	15 / 20 mins
103	Dublin – Ashbourne – Ratoath – Tayto Park	20 mins	20 / 30 mins	30 / 60 mins

Service	Route	Typical Service Frequency		
		Weekday	Saturday	Sunday
109X	Dublin – Kells – Cavan	60 mins	60 mins	60 mins
140	Ballymun (IKEA) – St Margaret's Road – Finglas Road (Finglas Bypass) – Phibsboro – O'Connell Street – Rathmines (Palmerston Park)	15 mins (10 mins in peak hours)	15 mins	20 / 30 mins
155	IKEA (Ballymun) – Ballymun Rd – Botanic Avenue – Phibsboro Shopping Centre – O'Connell St – Donnybrook – Cabinteely – Bray Rail Station	20 mins	20 mins	20 mins

5.3.4.4. General Traffic

5.3.4.4.1. Prospect Road and Phibsborough Road (R108 and R135)

The 1.3km stretch of Prospect Road and Phibsborough Road (R108 and R135) is a two-way multi-lane carriageway that has a north to south alignment and intercepts regional road R101 North Circular Road at a key junction. The speed limit along this section is 50km/h.

The existing major junction arrangements along Prospect Road and Phibsborough Road (R108 and R135) between the one-way road system at Hart's Corner and R135 Western Way are as follows:

- R108 and R135 Prospect Road / Whitworth Road three-arm signalised junction;
- Connaught Street / R108 and R135 Phibsborough Road three-arm signalised junction;
- R101 North Circular Road / R108 and R135 Phibsborough Road four-arm signalised junction; and
- R108 and R135 Phibsborough Road / R135 Western Way / R108 Constitution Hill three-arm signalised junction.

R108 and R135 Prospect Road / Whitworth Road three-arm signalised junction: This junction is a three-arm signalised junction between R108 and R135 Prospect Road and Whitworth Road, with signalised pedestrian crossings on the eastern and southern arms, but not on the northern arm.

The northern approach consists of two lanes for general traffic where the second is created by the termination of the bus lane 60m prior to the junction. The lanes are 3m wide at the junction entry and sit alongside two exit lanes (one bus lane and one general traffic lane).

The eastern arm (Whitworth Road) consists of a single approach lane (approximately 4.5m wide) and a single exit lane (approximately 3.7m wide).

The southern arm approach consists of a bus lane and one general traffic lane, both of which are approximately 3m wide. The exit consists of two lanes for general traffic, although the nearside lane becomes a bus lane approximately 55m south of the junction.

These characteristics are shown in Image 5.14.

Image 5.14: R108 and R135 Prospect Road / Whitworth Road Three-Arm Signalised Junction

R108 and R135 Phibsborough Road / Connaught Street three-arm signalised junction: This junction is a three-arm signalised junction formed by Connaught Street and R108 and R135 Phibsborough Road, with a set of indirect signalised pedestrian crossings on the western and southern arm and advanced stop lines for cyclists on the northern arm.

The northern arm approach consists of one bus lane and two general traffic lane. All three lanes have widths of approximately 3.0m. The northern arm exit consists of a single 3.2m wide general traffic lane and one bus lane. An advanced cycle stop line is presented on the approach.

The southern arm approach consists of two general traffic lanes which are approximately 3.0m in width. The nearside general traffic lane, which is created by the temporary termination of the bus lane approximately 20m short of the junction, caters for left-turning and ahead movements whilst the offside lane caters for ahead movements only. The southern arm exit consists of a single lane which is approximately 4.4m wide and narrows to the south of the junction to approximately 3.3m wide.

The western arm (Connaught Street) approach consists of two general lanes one single lane on exit. Entry lanes are approximately 2.5m in width while the exit lane is approximately 4.4m wide.

These characteristics are shown in Image 5.15.

Image 5.15: R108 and R135 Phibsborough Road / Connaught Street Three-Arm Signalised Junction

R108 and R135 Phibsborough Road / R101 North Circular Road four-arm signalised junction (Doyle's Corner): This junction is a four-arm signalised junction between the strategic regional roads of the R101 Road and R108 Road / R135 Road, with direct signalised pedestrian crossings on all four arms and a yellow box marking in the centre of the junction.

Each arm features two lanes on approach to the junction of approximately 2.8m in width and single lane exits. However, these lanes begin wide enough to accommodate two vehicles side by side prior to merging. All approaches allow for ahead movements from both lanes, with left-turn only from the left-hand lane. Right-hand turns are prohibited from each direction.

These characteristics are shown in Image 5.16.

Image 5.16: R108 and R135 Phibsborough Road / R101 North Circular Road Four-Arm Signalised Junction

R108 and R135 Phibsborough Road / R135 Western Way / R108 Constitution Hill three-arm signalised junction: This junction is a three-arm signalised junction between R108 and R135 Phibsborough Road, R135 Western Way and R108 Constitution Hill. The Luas green line tram tracks also intersect the junction. Direct signalised crossings are available on the northern and southern arms whilst an indirect crossing is available on the eastern arm. Yellow box markings are provided in the centre of the junction and at the tram intersection.

The northern arm approach consists of an advisory cycle lane and two general traffic lanes (approximately 3.2m in width). The exit arm consists of a bus lane and a single general traffic lane which are 3.5m and 3.1m in width, respectively.

The eastern arm (R135 Western Way) approach consists of an advisory cycle lane and two lanes, which, on the approach to the junction flares to three lanes. As such, one lane caters for left-turning general traffic, one lane caters for right-turning buses and one for right-turning general traffic. This arm has a single lane exit of 6.3m which narrows moving away from the junction.

The southern arm (R108 Constitution Hill) approach widens from one general traffic lane to two general traffic lanes (one for straight-ahead and one for right-turning movements) and a bus lane. All approach lanes have widths of approximately 3.1m. The southern arm exit, which is separated from the approach lanes by a central reserve, consists of one general traffic lane (approximately 3.8m in width) and an advisory cycle lane.

These characteristics are shown in Image 5.17.

Image 5.17: R108 and R135 Phibsborough Road / R135 Western Way / R108 Constitution Hill Three-Arm Signalised Junction

5.3.4.5. Existing Parking / Loading

There is parking directly along Section 3 of the Proposed Scheme at the following locations:

- Seven loading spaces adjacent to the southbound lane of R108 / R135 Phibsborough Road opposite Phibsborough Shopping Centre, to the north of R101 North Circular Road;
- 57 designated paid parking spaces within the car park outside Phibsborough Shopping Centre, located adjacent to R108 / R135 Phibsborough Road, to the north of R101 North Circular Road;
- Three designated paid parking spaces and two loading spaces adjacent to the northbound lane of R108 / R135 Phibsborough Road, immediately north of Monck Place; and
- 16 permit parking spaces adjacent to the southbound lane of R108 / R135 Phibsborough Road opposite the All Saints Parish Church and Phibsborough Fire Station;
- 10 permit parking spaces adjacent to the northbound lane of R108 / R135 Phibsborough Road outside the All Saints Parish Church;
- Three permit parking spaces adjacent to the northbound lane of R108 / R135 Phibsborough Road, immediately south of Phibsborough Fire Station;
- Two taxi ranks adjacent to the northbound lane of R108 / R135 Phibsborough Road, outside McGowan's Pub; and
- A combination of two loading, four taxi rank and 12 designated paid parking spaces positioned along R108 / R135 Phibsborough road between Royal Canal Terrace and R135 Western Way.

Further parking is accommodated on the streets running parallel to the main carriageway which have residential frontage as follows:

- 2 informal residential parking spaces along Phibsborough;
- 40 informal residential parking spaces along Monck Place; and
- 4 informal parking spaces along Western Way.

5.3.5. Section 4 – Constitution Hill, Church Street Upper and Church Street Lower from Western Way to Arran Quay

This Section outlines the baseline environment for walking, cycling, bus services, general traffic and parking / loading facilities along Section 4 of the Proposed Scheme.

This section of the Proposed Scheme will commence at the R135 Western Way Junction and will extend along R108 Constitution Hill and R132 Church Street for 1km southwards to the R148 Arran Quay Junction at the River Liffey, which will be the end of the Proposed Scheme.

5.3.5.1. Pedestrian Infrastructure

The walking facilities along Section 4 of the Proposed Scheme include reasonably wide, well-lit footpaths on both sides of the R108 regional road carriageway between R131 Western Way and R148 Arran Quay.

The widths of both footpaths are relatively consistent throughout this 1km section, which are approximately 2m wide at their narrowest, and are approximately 3m wide at their widest (apart from particularly wide footpaths in certain locations).

There are several controlled pedestrian crossings along Section 4 of the Proposed Scheme which benefit from tactile paving and dropped kerbs and can be found at the following locations:

- The three-arm R108 Constitution Hill / Broadstone signalised junction provides direct signalised pedestrian crossings across all three arms of the junctions;
- The three-arm R108 Church Street Upper / R804 Brunswick Street North signalised junction provides a direct signalised pedestrian crossing across the western arm of the junction, and an indirect staggered signalised pedestrian crossing across the northern arm of the junction in which there are guard rails and the central reservation between carriageways acts as a pedestrian refuge island;
- The four-arm R108 Church Street Upper / R804 King Street North / R108 Church Street signalised junction provides direct signalised pedestrian crossings across the southern and western arms, and indirect signalised pedestrian crossings across the northern and eastern arms. The indirect crossings include guard rails and the central reservations and a traffic island act as pedestrian refuge islands;
- A direct pelican crossing across R108 Church Street adjacent to Father Matthew Square;
- The four-arm R108 Church Street / Mary's Lane / May Lane signalised junction provides a direct signalised pedestrian crossing across the southern arm of the junction; and
- The four-arm R108 Church Street Upper / Chancery Street junction provides a direct signalised pedestrian crossing on the northern arm of the junction.

Uncontrolled crossings across priority junctions at side roads benefit from dropped kerbs. The locations of the pedestrian crossings are illustrated in Figure 6.3d in TIA Appendix 3 (Maps).

Further details of the baseline pedestrian facilities (i.e. routing, directness, accessibility, crossing and footpath widths) at each junction along Section 4 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

5.3.5.2. Cycling Infrastructure

Advisory cycle lanes are provided in both directions throughout Section 4 of the Proposed, apart from a 100m section for southbound traffic along the R108 Church Street carriageway between Mary's Lane and the tram tracks of the LUAS red line.

Cycle parking stands are provided at the following point in the vicinity of Section 4 of the Proposed Scheme, albeit, outside the red line boundary:

- 9 Sheffield stands (able to accommodate up to 18 bicycles) along Mary's Lane between R108 Church Street and Greek Street.

Public cycle rental scheme stands are provided at the following points in the vicinity of Section 4 of the Proposed Scheme, albeit, outside the redline boundary:

- 30 public cycle rental scheme stands (able to accommodate up to 30 bicycles) located on R135 Western Way adjacent to Dominick Street Upper;
- 20 public cycle rental scheme stands (able to accommodate up to 20 bicycles) located on R804 Bolton Street outside the 'TU Dublin' university building;
- 30 public cycle rental scheme stands (able to accommodate up to 30 bicycles) located on R804 King Street North adjacent to Coleraine Street;

- 30 public cycle rental scheme stands (able to accommodate up to 30 bicycles) located on R804 King Street North opposite 'The Cobblestone' pub; and
- 20 public cycle rental scheme stands (able to accommodate up to 20 bicycles) located on Greek Street adjacent to 'Hampton by Hilton Dublin Four Courts' hotel.

The existing cycle facilities along Section 4 of the Proposed Scheme are illustrated in Figure 6.4d in TIA Appendix 3 (Maps).

Further details of the baseline cycling facilities (i.e. level of segregation from vehicles, capacity for cycling two abreast and / or overtaking, and junction treatment) along the length of Section 4 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment).

5.3.5.3. Bus Infrastructure

5.3.5.3.1. Bus Priority Measures

There are no designated bus lanes along Section 4 of the Proposed Scheme, apart from a short 20m bus lane on the northbound approach of R108 Constitution Hill to the junction with R135 Western Way.

5.3.5.3.2. Bus Stop Facilities

There are currently six bus stops along Section 4 of the Proposed Scheme. The inbound (southbound) stops are as follows:

- Stop 1614 (Church Street Upper) on R108 Church Street Upper to the south of Linenhall Terrace; and
- Stop 1615 (Church Street) on R108 Church Street to the south of Mary's Lane.

The outbound (northbound) stops are as follows:

- Stop 1619 (Constitution Hill) on R108 Constitution Hill to the south of Broadstone;
- Stop 1618 (Church Street Upper) on R108 Church Street Upper to the north of R804 Brunswick Street North;
- Stop 1617 (Capuchin Church) on R108 Church Street to the south of Nicholas Avenue; and
- Stop 1616 (St Michan's Church) on R108 Church Street outside St Michan's Church.

Table 5.9 outlines the availability of bus stop facilities at the existing six bus stops along Section 4 of the Proposed Scheme.

Table 5.9: Section 4 – Availability of Bus Stop Facilities (of a total 6 bus stops)

Bus Stop Facility	Number of Bus Stops in Baseline with Facility	Percentage of Bus Stops in Baseline with Facility
RTPI	1	17%
Weekly Timetable Information	5	83%
Shelter	4	67%
Seating	2	33%
Accessible Kerbs	6	100%
Indented Drop Off Area	1	17%

The only frequent bus service stopping at the six bus stops along Section 4 of the Proposed Scheme is bus service 83 / 83a. This bus service provides a north to south route between Harristown and Stannaway Avenue and has an average frequency of 15 minutes.

5.3.5.4. General Traffic

5.3.5.4.1. R108 Constitution Hill

R108 Constitution Hill is a two-way carriageway subject to a speed limit of 50km/h. There are predominately two northbound and southbound lanes although the carriageway narrows to one lane where constrained.

The existing major junction arrangements along R108 Constitution Hill are as follows:

- R108 Constitution Hill / Broadstone three-arm signalised junction; and
- R108 Constitution Hill / R804 Brunswick Street North / R108 Church Street Upper three-arm signalised junction.

R108 Constitution Hill / Broadstone three-arm signalised junction: This junction is a three-arm signalised junction between Broadstone and R108 Constitution Hill, with direct signalised pedestrian crossings on all arms. Yellow box markings are located in the centre of the junction.

The northern arm (R108 Constitution Hill) approach consists of one advisory cycle lane and one general traffic lane which widens to two lanes (each approximately 3.3m in width) to cater for straight-ahead and right-turning movements. The exit consists of an advisory cycle lane and one general traffic lane which is approximately 4.5m in width.

The southern arm (R108 Constitution Hill) approach consists of a cycle track (which becomes an advisory cycle lane approximately 10m south of the stop line), one bus lane and one general traffic lane. The bus lane is temporarily discontinued at the junction to permit left-turning general traffic. The offside lane caters for general traffic travelling straight-ahead whilst straight ahead buses are permitted to use the nearside lane. The exit consists of one advisory cycle lane (which becomes an cycle track approximately 10m south of the stop line) and one general traffic lane.

The western arm (Broadstone) consists of one lane on the approach to the junction with an approximate width of 4.1m at the stop line. The exit arm consists of one general traffic lane which has a width of approximately 6.2m before reducing to approximately 3.6m 30m west of the junction.

Note the works to the junction have taken place since capture of the aerial photography so do not appear in Image 6.19.

These characteristics are shown in Image 5.18.

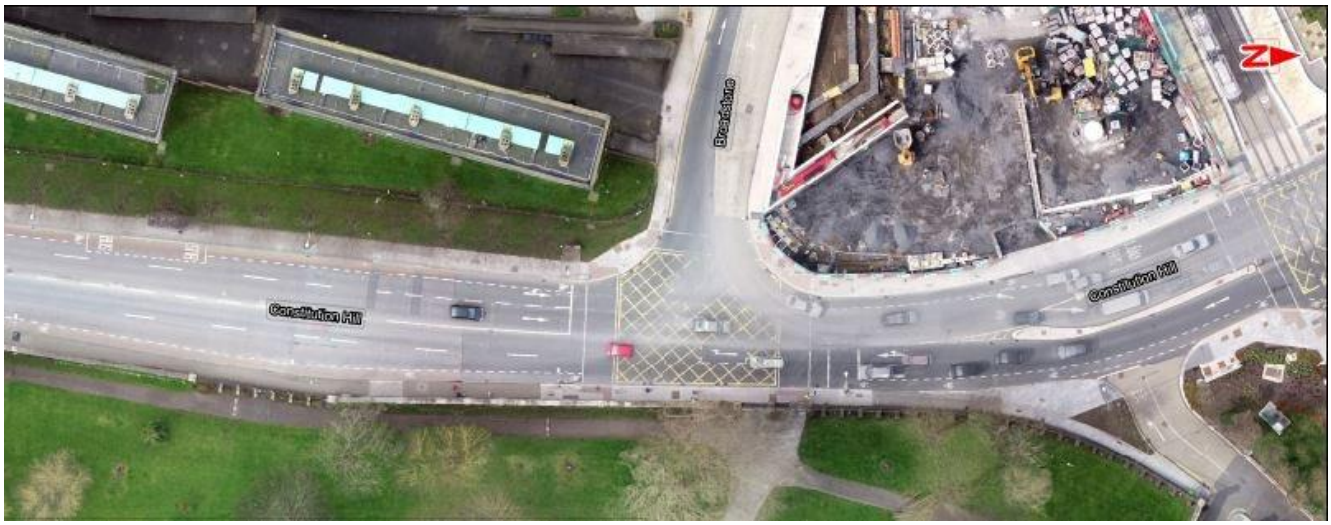

Image 5.18: R108 Constitution Hill / Broadstone Three-Arm Signalised Junction

R108 Constitution Hill / R804 Brunswick Street North / R108 Church Street Upper three-arm signalised junction: This junction is a three-arm signalised junction between R804 Brunswick Street North to the west, R108 Constitution Hill to the north and R108 Church Street Upper to the south, with an indirect signalised pedestrian crossing on the northern arm and a direct signalised pedestrian crossing on the western arm. Yellow box markings are present at the centre of the junction.

The northern arm (R108 Constitution Hill) approach comprises one bus lane and two general traffic lanes for straight-ahead movements. There is approximately 50m between this junction and the R804 King Street North / R108 Church Street Upper junction to the south and therefore, whilst on the approach to the junction both general traffic lanes are signed for straight-ahead movements, approach lanes are used to in preparation for the subsequent junction i.e. vehicles turning right at R804 King Street North / R108 Church Street Upper junction use the right turning lane at the R108 Constitution Hill / R804 Brunswick Street North / R108 Church Street Upper junction. The exit arm, which is separated from the approach by a central reserve, comprises an advisory cycle lane, a bus lane and one general traffic lane.

The southern arm (R108 Constitution Hill approach consists of one advisory cycle lane which continues through the junction and two general traffic lanes for straight-ahead movements only. The southbound arm exit, which is separated from the approach by a central reserve, comprises a bus lane and two general traffic lanes.

The western arm (R804 Brunswick Street North) is a one-way carriageway and consists of two general traffic lanes which vary in width from approximately 2.7m to 3.6m near the junction. One lane is used for left-turning traffic and the other for right-turning traffic.

These characteristics are shown in Image 5.19.

Image 5.19: R108 Constitution Hill / R804 Brunswick Street North / R108 Church Street Upper Three-Arm Signalised Junction

5.3.5.4.2. R108 Church Street Upper

R108 Church Street Upper is a multilane dual carriageway with a central reservation separating the northbound and southbound traffic.

The only existing major junction arrangement along R108 Church Street Upper is the R108 Church Street Upper / R804 King Street North / R108 Church Street four-arm signalised junction.

R108 Church Street Upper / R804 King Street North / R108 Church Street four-arm signalised junction: This junction is a four-arm signalised junction between R108 Church Street Upper, R804 King Street North (R132) and R108 Church Street (R132). Indirect signalised pedestrian crossings are provided on the northern and eastern arms whilst direct signalised crossings are provided on the southern and western arms. Northbound and

southbound advisory cycle lanes continue through the junction and a yellow box marking is provided at the junction for southbound traffic.

The northern arm (R108 Church Street Upper) approach consists of a left-turn flare, a bus lane and two general traffic lanes. Each lane is approximately 3m in width. One of the general traffic lanes is a right-turn lane whilst the other acts as an ahead-only lane. The bus lane is temporarily discontinued on the approach to the junction to permit access to the left-turn flare, which is controlled separately from the other movements. The northern exit arm, which is separated from the approach by a central reserve, comprises an advisory cycle lane and two general traffic lanes.

The eastern arm (R804 King Street North (R132)) approach features three general traffic lanes which are approximately 3.2m in width, alongside an advisory cycle lane. The exit arm, which is separated from the approach by a central reserve, has two lanes for traffic which also sit alongside an advisory cycle lane.

The southern arm (R108 Church Street Upper (R132)) consists of an advisory cycle lane and one general traffic lane which flares to two lanes approximately 10m south of the stop line to cater for right-turning vehicles. At the stop line the two lanes have widths of approximately 3.1m. The southern exit has an advisory cycle lane and a single lane for traffic which requires the two ahead lanes from the northern approach to merge over a very short length following the junction.

The western arm (R804 King Street North) is a two lane exit only arm with a mandatory cycle lane.

Note the works to the junction have taken place since capture of the aerial photography so do not appear in Image 6.21.

These characteristics are shown in Image 5.20.

Image 5.20: R108 Church Street Upper / R804 King Street North / R108 Church Street Four-Arm Signalised Junction

5.3.5.4.3. R108 Church Street

For the majority of its length, R108 Church Street is a two-way multi-lane carriageway subject to a speed limit of 50km/h.

The existing major junction arrangements along R108 Church Street are as follows:

- R108 Church Street / Mary's Lane / May Lane four-arm junction; and
- R108 Church Street / R148 Arran Quay / R148 Inns Quay four-arm signalised junction.

R108 Church Street / Mary's Lane / May Lane four-arm junction: This junction is a four-arm junction between R108 Church Street, Mary's Lane and May Lane. The junction arms of R108 Church Street and Mary's Lane are signalised whilst May Lane is a one-way street away from the junction. A direct signalised pedestrian crossing is available on the southern arm only.

The northern arm (R108 Church Street) consists of single approach (approximately 3m wide) and exit (approximately 4.8m wide) lanes. Cycle tracks, delineated by cycle bollards, are present on the approach and exit arms.

The eastern arm (Mary's Lane) consists of two approach lanes (approximately 2.5m in width), where one lane is allocated to ahead and left-turning traffic, and the other to ahead and right-turning traffic. This is despite the destination of the ahead, May Lane, being extremely narrow. The single exit lane of Mary's Lane is 4.8m wide, as it is used by large commercial vehicles for access to the fruit and vegetable markets nearby, with on-street parking just 15m away from the junction.

The southern arm (R108 Church Street) consists of two general traffic lanes which are approximately 3m in width and sit alongside an advisory cycle lane. The southbound exit has two lanes of 3.5m in width, one of these is a general traffic lane and one is a bus lane.

The western arm (May Lane) is a single lane exit only arm.

These characteristics are shown in Image 5.21.

Image 5.21: R108 Church Street / Mary's Lane Three-Arm Signalised Junction

R108 Church Street / R148 Arran Quay / R148 Inns Quay four-arm signalised junction: This junction is a four-arm signalised junction between R108 (R132R132) Church Street, R148 Arran Quay and R148 Inns Quay. Signalised pedestrian crossings are present on all four arms; the eastern, southern and western arms are all direct whilst the north arm crossing is indirect due to the left-turn filter lane. The junction benefits from an advanced cycle stop line on the western arm and the junction is covered by yellow box road markings.

The northern arm (R108 (R132R132) Church Street) approach comprises two advisory cycle lane (one for left-turning cyclists and one for straight-ahead cyclists) and two general traffic lanes (one for left-turning vehicles and one for straight-ahead vehicles). The exit has two general traffic lanes and an advisory cycle lane.

The eastern arm (R148 Inns Quay) is an exit arm only and comprises two general traffic lanes. The nearside lane becomes a bus lane approximately 20m east of the junction.

The southern arm (R108 (R132R132) Church Street) approach consists of two general traffic lanes from which straight-ahead movements only are permitted. The exit arm consists of a mandatory cycle lane and a single general traffic lane.

The western arm (R148 Arran Quay) is approach only and comprises a cycle lane, a bus lane and a general traffic lane. On the approach to the junction, the general traffic lane caters for straight-ahead movements and flares creating a right-turn lane. The bus lane temporarily permits left-turning vehicles whilst buses within the lane are permitted to travel straight-ahead.

These characteristics are shown in Image 5.22.

Image 5.22: R108 Church Street / R148 Arran Quay / R148 Inns Quay Four-Arm Signalised Junction

5.3.5.5. Existing Parking / Loading

There is parking directly along Section 4 of the Proposed Scheme at the following locations:

- 15 residential permit parking spaces and two disabled parking spaces along Coleraine Street;
- 16 residential permit parking spaces along Linenhall Street;
- Nine residential permit parking spaces along Lisburn Street;
- 11 residential permit parking spaces along Anne Street North;
- One loading bay adjacent to the northbound lane of R108 Church Street outside 'The Kings Building' to the south of Mary's Lane; and
- 12 permit parking spaces adjacent to the southbound lane of R108 Church Street outside the LIV student accommodation.

Further parking is accommodated on the streets running parallel to the main carriageway which have residential frontage as follows:

- 16 informal residential parking spaces along Mary's Lane;
- Three loading parking spaces along Temple Cottages, adjacent to R108 Constitution Hill;
- 15 informal residential parking spaces along Linenhall Terrace;
- 10 informal residential parking spaces along Stirrup Lane;
- 16 informal residential parking spaces along New Street North;
- 18 informal residential parking spaces along Church Terrace;
- 20 informal residential parking spaces along Father Matthew Square; and
- 15 informal residential parking spaces along Church Avenue.

5.3.6. Section 5 – Finglas Road from St. Margaret's Road to Wellmount Road

This Section outlines the baseline environment for walking, cycling, bus services, general traffic and parking / loading facilities along Section 5 of the Proposed Scheme.

This section of the Proposed Scheme will commence at the northern end at the junction of R135 Finglas Road with R104 St. Margaret's Road. Section 5 of the Proposed Scheme will extend in a south-eastern direction along the Finglas Bypass dual carriageway over a length of 1.1km and will conclude at the Wellmount Road Junction on the southern edge of Finglas Village.

5.3.6.1. Pedestrian Infrastructure

Between the R135 Finglas Road / Casement Road / R135 North Road / R104 St Margaret's Road four-arm roundabout and the R103 Seamus Ennis Road bridge there are no pedestrian facilities located immediately adjacent to the carriageway. However, Mellowes Park, located to the west of R135 Finglas Road, provides a traffic free route for pedestrians.

Between R103 Seamus Ennis Road bridge and the R135 Finglas Road / Wellmount Road junction, footpaths (approximately 2.0m in width) are provided on both sides of the carriageway. Street lighting is also provided.

Whilst there are no controlled pedestrian crossings along Section 5 of the Proposed Scheme, two pedestrian footbridges crossing the R135 Finglas Road dual carriageway are provided:

- Approximately 35m south of the R135 Finglas Road / R104 St Margaret's Road roundabout providing a link between Casement Road to the west and North Road to the east; and
- Approximately 120m north of the R135 Finglas Road / Wellmount Road junction providing a link between Church Street to the west and Main Street to the east.

Uncontrolled crossings across priority junctions at side roads benefit from dropped kerbs. The locations of the pedestrian crossings are illustrated in Figure 6.3e in TIA Appendix 3 (Maps).

Further details of the baseline pedestrian facilities (i.e. routing, directness, accessibility, crossing and footpath widths) at each junction along Section 5 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

5.3.6.2. Cycling Infrastructure

Combined bus and cycle lanes, in which cyclists travel with bus traffic, are located on the southbound carriageway of R135 Finglas Road for the majority of the 1.1km section. Notably the southbound combined bus and cycle lane is temporarily discontinued for approximately 160m to north of the R135 Finglas Road / R103 Seamus Ennis Road junction and for approximately 100m to south of the R135 Finglas Road / R103 Seamus Ennis Road junction to allow for merging vehicles.

In the northbound direction, a combined bus and cycle lane is available for approximately 500m between the slip roads that connect R135 Finglas Road and R103 Seamus Ennis Road together.

Cycle parking stands are provided at the following point along Section 5 of the Proposed Scheme, albeit, outside the redline boundary:

- 5 Sheffield stands (able to accommodate up to 10 bicycles) along Finglas Road outside 'Tunney Opticians'.

There are no designated public cycle rental scheme stands within Section 5 of the Proposed Scheme.

The existing cycle facilities along Section 5 of the Proposed Scheme are illustrated in Figure 6.4e in TIA Appendix 3 (Maps).

Further details of the baseline cycling facilities (i.e. level of segregation from vehicles, capacity for cycling two abreast and / or overtaking, and junction treatment) along the length of Section 5 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment).

5.3.6.3. Bus Infrastructure

5.3.6.3.1. Bus Priority Measures

Bus lanes are provided along Section 5 of the Proposed Scheme at the following locations (aside from intermittent breaks and junctions):

- Along the southbound carriageway for the majority of the 1.1km apart from breaks at the entrance and exit of the eastern slip lanes leading to the R103; and
- Along the northbound carriageway for approximately 500m between the entrance and exit of the western slip lanes leading to the R103.

5.3.6.3.2. Bus Stop Facilities

There are no bus stops along Section 5 of the Proposed Scheme.

5.3.6.4. General Traffic

5.3.6.4.1. R135 Finglas Road

R135 Finglas Road between R104 St. Margaret's Road and Wellmount Road is a dual carriageway with a general north to south alignment. Each carriageway has an average width of approximately 7.5m (two lanes). The dual carriageway passes beneath the R103 Seamus Ennis Road bridge located 350m north of Wellmount Road. R135 Finglas Road and R103 Seamus Ennis Road are connected by a pair of access and egress slip roads that's provided for both northbound and southbound traffic. R135 Finglas Road is subject to a speed limit of 60km/h, whilst the adjacent side roads have a speed limit of 50km/h.

The existing major junction arrangements along Section 5 of the Proposed Scheme are as follows:

- R135 Finglas Road / Casement Road / R135 North Road / R104 St. Margaret's Road four-arm roundabout; and
- R135 Finglas Road / Wellmount Road three-arm signalised junction.

R135 Finglas Road / Casement Road / R135 North Road / R104 St Margaret's Road four-arm roundabout: This junction is a four-arm roundabout with an inscribed circle diameter of approximately 50m, providing on average a circulatory carriageway width of approximately 9m. The informal crossing with dropped kerbs and refuge island on the arm of R104 St. Margaret's Road provides a pedestrian route towards the footbridge located 35m south of the roundabout. There are no other formal or informal pedestrian crossing points adjacent to the roundabout.

Both the R135 regional road arms have two 3.5m wide lanes on approach to the roundabout with minimal flaring. The R104 St. Margaret's Road, although a single lane road, widens to provide two lanes of traffic at the 'give-way' road markings where its width is approximately 6.2m. Casement Road is the only arm to provide one-lane of traffic on approach to the roundabout although it does widen to 5.4m at the 'give-way' line. A bus lane starts approximately 55m south of the roundabout along the R135 Finglas Road dual carriageway.

These characteristics are shown in Image 5.23.

Image 5.23: R135 Finglas Road / Casement Road / R135 North Road / R104 St. Margaret's Road Four-Arm Roundabout

R135 Finglas Road / Wellmount Road three-arm signalised junction: This junction is a three-arm signalised junction between Wellmount Road, a two-way single carriageway, and R135 Finglas Road, a two-way dual carriageway. A staggered signalised pedestrian crossing is provided across the southern arm of R135 Finglas Road.

The northern arm (R135 Finglas Road) approach consists of one bus lane and one general traffic lane. Approximately 40m prior to the junction a right turn flare is provided whilst on the nearside, the bus lane is temporarily suspended to allow for straight ahead and left turn movements at the subsequent junction. The lanes are approximately 3.3m wide. The exit consists of two 3.5m lanes in a typical dual carriageway arrangement.

The southern arm (R135 Finglas Road) is short in length with about approximately 30m between the R135 Finglas Road / Wellmount Road junction and the R135 Finglas Road / Main Street junction. The approach consists of two lanes which are approximately 3.5m in width. The nearside lane caters for left-turn and straight-ahead movements whilst the offside lane caters for straight-ahead movements only. The exit consists of three lanes (approximately 3.5m in width) and the nearside lane caters to left-turning traffic at the subsequent junction.

The western arm (Wellmount Road) approach has lane markings which indicate it is a single lane of approximately 4.6m in width, although destination arrows suggest it can be used as two lanes. The exit is approximately 9.5m wide immediately at the junction but narrows considerably to approximately 4.2m, 30m west of the junction. The arm also has a yellow box marking protecting the access to dwellings on its northern side.

These characteristics are shown in Image 5.24.

Image 5.24: R135 Finglas Road / Wellmount Road Three-Arm Signalised Junction

5.3.6.5. Existing Parking / Loading

There are no existing parking and loading facilities along Section 5.

5.3.7. Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road

This Section outlines the baseline environment for walking, cycling, bus services, general traffic and parking / loading facilities along Section 6 of the Proposed Scheme.

This section of the Proposed Scheme will extend along R135 Finglas Road from the Wellmount Road Junction to the Ballyboggan Road Junction, over a length of 1.6km.

5.3.7.1. Pedestrian Infrastructure

The walking facilities along Section 6 of the Proposed Scheme include reasonably wide, well-lit footpaths on both sides of the R135 Finglas Road between Wellmount Road and Ballyboggan Road.

The pavements adjacent to the northbound and southbound carriageways vary from 2m to 4m wide and 2m to 3m wide respectively. However, large sections of both pavements include both a footpath and cycle track (approx. 1.25m wide) which are separated by a clear solid white line, or are designated for shared use. In places, the clear solid white line separating both pedestrians and cyclists is eroded creating a 'shared-use' feel to the environment.

There are several controlled pedestrian crossings along Section 6 of the Proposed Scheme which benefit from tactile paving and dropped kerbs and can be found at the following locations:

- The three-arm R135 Finglas Road / Wellmount Road signalised junction provides an indirect signalised pedestrian crossings across the southern arm (Finglas Road). Guard rails are provided along the central reservation that acts as a pedestrian refuge island. The central reservation also links to a signalised pedestrian crossing to the south (north of Main Street);
- The four-arm R135 Finglas Road / Glenhill Road / Access to Shopping Centre signalised junction provides indirect staggered signalised pedestrian crossings on the northern and western arms, in which the various traffic islands and the central reservation along R135 Finglas Road are used as pedestrian refuge islands. Guard rails are present;
- The three-arm R135 Finglas Road / The Griffith signalised junction provides an indirect staggered signalised pedestrian crossing on the southern arm, in which the central reservation includes guard rails and acts as pedestrian refuge island. (Note: the access on the eastern side is disused, and the access on the western side is unsignalised.);

- The four-arm R135 Finglas Road / R102 Tolka Valley Road signalised junction provides a direct signalised pedestrian crossing across the eastern arm, and indirect staggered signalised pedestrian crossings across the northern and western arms in which traffic islands and central reservations are used as pedestrian refuge islands. Guard rails are present;
- The three-arm R135 Finglas Road / R102 Old Finglas Road signalised junction provides an indirect staggered signalised pedestrian crossing across the northern arm of the junction. Guard rails are present on the central reservation that acts as a pedestrian refuge island; and
- The three-arm R135 Finglas Road / Ballyboggan Road signalised junction provides indirect staggered signalised pedestrian crossings across the southern and western arms of the junctions in which the central reservation and traffic islands act as pedestrian refuge islands. Guard rails are present on the southern arm crossing.

Uncontrolled crossings across priority junctions at side roads benefit from dropped kerbs. The locations of the pedestrian crossings are illustrated in Figure 6.3f in TIA Appendix 3 (Maps).

Further details of the baseline pedestrian facilities (i.e. routing, directness, accessibility, crossing and footpath widths) at each junction along Section 6 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

5.3.7.2. Cycling Infrastructure

Cycle facilities are provided along the majority of Finglas Section 2 of the Proposed Scheme. Intermittent cycle lanes and cycle tracks are provided adjacent to both the northbound and southbound carriageways for most of this section. The cycle tracks are located on the adjacent pavements, with cyclists separated from pedestrians by a clear solid white line (although this separation in not clear in certain locations). The cycle tracks are relatively narrow. Advisory on-road cycle lane markings and dropped kerbs are used on occasion to direct cycle traffic on to and off the carriageway when navigating major junctions.

Furthermore, bus lanes in which cyclists travel with bus traffic are located in the northbound and southbound carriageways for approximately. 1.25km (between Finglas Road and R102 Old Finglas Road) and 1.45km (between Finglas Road and Ballyboggan Road) respectively. The operational hours of these bus lanes are indicated by adjacent signs which state only buses and cyclists are permitted to use the lanes between 07.00 to 19.00 from Monday to Saturday.

Cycle parking stands are provided at the following point along Section 6 of the Proposed Scheme, albeit, outside the redline boundary:

- 6 Sheffield stands (able to accommodate up to 12 bicycles) along Finglas Road opposite the ‘Bottom of the Hill’ pub.

There are no designated public cycle rental scheme stands within Section 6 of the Proposed Scheme.

The existing cycle facilities along Section 6 of the Proposed Scheme are illustrated in Figure 6.4f in TIA Appendix 3 (Maps).

Further details of the baseline cycling facilities (i.e. level of segregation from vehicles, capacity for cycling two abreast and / or overtaking, and junction treatment) along the length of Section 6 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment).

5.3.7.3. Bus Infrastructure

5.3.7.3.1. Bus Priority Measures

Bus lanes are provided along Section 6 of the Proposed Scheme at the following locations (aside from intermittent breaks and junctions):

- Along the northbound carriageway of R135 Finglas Road for approximately 1.25km, between R102 Old Finglas Road and Finglas Road; and

- Along the southbound carriageway of R135 Finglas Road for approximately 1.45km, between Finglas Road and Ballyboggan Road.

The operational hours of these combined bus and cycle lanes are indicated by adjacent signs which state only buses and cyclists are permitted to use the lanes between 07.00 to 19.00 from Monday to Saturday.

5.3.7.3.2. Bus Stop Facilities

There are currently ten bus stops along Section 6 of the Proposed Scheme. The inbound (southbound) stops are as follows:

- Stop 4542 / 101141 (Finglas Road) on R135 Finglas Road to the south of Finglas Road;
- Stop 1531 (Clearwater SC) on R135 Finglas Road to the south of Glenhill Road;
- Stop 1532 (Glasnevin, Prospect Hill) on R135 Finglas Road to the south of The Griffith;
- Stop 1533 (Tolka Valley) on R135 Finglas Road between Tolka Valley Road and R102 Old Finglas Road; and
- Stop 1534 (Ballyboggan Road) on R135 Finglas Road south of Ballyboggan Road.

The outbound (northbound) stops are as follows:

- Stop 4543 / 100891 (Bottom of the Hill) on R135 Finglas Road to the south of Finglas Road;
- Stop 1538 (Clearwater SC) on R135 Finglas Road to the north of Glenhill Road;
- Stop 1512 (Prospect Hill) on R135 Finglas Road to the north of The Griffith;
- Stop 1511 (Tolka Vale) on R135 Finglas Road to the north of R102 Old Finglas Road; and
- Stop 1510 (Ballyboggan Road) on R135 Finglas Road between R102 Old Finglas Road and Ballyboggan Road.

Table 5.10 outlines the availability of bus stop facilities at the existing nine bus stops along Section 6 of the Proposed Scheme.

Table 5.10: Section 6 – Availability of Bus Stop Facilities (of a total 9 Bus Stops)

Bus Stop Facility	Number of bus stops in baseline with Facility	Percentage of Bus Stops in baseline with Facility
RTPI	2	20%
Weekly Timetable information	6	70%
Shelter	7	80%
Seating	6	70%
Accessible Kerbs	0	0%
Indented Drop Off Area	0	0%

The existing bus facilities along Section 6 of the Proposed Scheme are illustrated in Figure 6.5f in TIA Appendix 3 (Maps). The bus services which operate along Section 6 of the Proposed Scheme are outlined in Table 5.11.

Table 5.11: Section 6 – Bus Service Frequency

Service	Route	Typical Service Frequency		
		Weekday	Saturday	Sunday
40	Charlestown Shopping Centre – Finglas Village – St Helena's Road (Tolka Valley) – Dorset St. Lwr (North Circular Road) – O'Connell Street – Inchicore – Ballyfermot Road (Markievicz Park) – Neilstown Road (Finches) – Liffey Valley Shopping Centre	10 / 12 mins	10 / 15 mins	15 mins
40B	Parnell Street – Finglas – Toberburr	6 a day	5 a day	4 a day
40D	Harristown – Glasanoan Rd – Church Street – College Street – Lwr. Camden Street – Sundrive Road (Stannaway Road) – Stannaway Avenue	15 / 30 mins	40 mins	50 mins
103	Dublin – Ashbourne – Ratoath – Tayto Park	20 mins	20 / 30 mins	30 / 60 mins
109X	Dublin – Kells – Cavan	60 mins	60 mins	60 mins
140	Ballymun (IKEA) – St Margaret's Road – Finglas Road (Finglas Bypass) – Phibsboro – O'Connell Street – Rathmines (Palmerston Park)	15 mins (10 mins in peak hours)	15 mins	20 / 30 mins

5.3.7.4. General Traffic

5.3.7.4.1. R135 Finglas Road

R135 Finglas Road, between Wellmount Road and Ballyboggan Road, is a dual carriageway that includes a central reservation, has a north to south alignment, and features on occasions an additional third lanes for right-turning manoeuvres. R135 Finglas Road is subject to a speed limit of 60km/h, whilst the adjacent side roads have a speed limit of 50km/h.

The existing major junction arrangements along Section 6 of the Proposed Scheme are as follows:

- R135 Finglas Road / Clearwater Shopping Centre / Glenhill Road four-arm signalised junction;
- R135 Finglas Road / The Griffith four-arm signalised junction;
- R135 Finglas Road / R102 Tolka Valley Road four-arm signalised junction;
- R135 Finglas Road / Access to Tolka Vale Apartments / R102 Old Finglas Road four-arm signalised junction; and
- R135 Finglas Road / Ballyboggan Road three-arm signalised junction.

Clearwater Shopping Centre / R135 Finglas Road / Glenhill Road four-arm signalised junction: This junction is a four-arm signalised junction between the two-way single carriageway access road to Clearwater Shopping Centre, the two-way dual carriageway of R135 Finglas Road and the two-way single carriageway of Glenhill Road. Staggered signalised pedestrian crossings are provided on only the western arm (access road to Clearwater Shopping Centre) and the northern arm (R135 Finglas Road).

The northern arm (R135 Finglas Road) approach has three lanes available for all traffic which are approximately 3m wide, one of which is created by the temporary termination of a bus lane 30m prior to the junction. A mandatory cycle lane is created adjacent to these lanes by diverting the cycle track onto the highway, which is then continued, albeit in an advisory capacity, through the junction. Traffic lanes are separated into on right turn lane, one ahead lane and one ahead and left lane. The adjacent exit consists of a bus lane and a single general traffic lane.

The eastern arm of Glenhill Road has a single lane on entry and exit which are between 4.3m and 4.5m wide to ensure large vehicles can negotiate the bend which is immediately east of the junction.

The southern arm (R135 Finglas Road) approach consists of three lanes, one for left-turning and straight-ahead traffic, which is created by the temporary termination of the bus lane approximately 40m prior to the junction, a central lane for ahead traffic only and a right-turning lane created through reducing the width of the central reserve.

The lanes are approximately 3.3m in width and sit alongside a mandatory cycle lane created by diverting the cycle track onto the highway. The cycle lane is then continued, albeit in an advisory capacity, through the junction. The southbound exit has a short length of carriageway which is able to support two lanes of general traffic before narrowing, forcing a merge, and creating a combined bus and cycle lane.

The western arm approach consists of one approach lane which flares to provide a give way controlled left-turn lane. The left-turn lane (approximately 6.4m wide) is separated from the right-turn and ahead lane (approximately 6.0m wide) through a median strip. Similar, the exit lane (approximately 4.4m wide) is separated from the right-turn and ahead lane through a median strip.

These characteristics are shown in Image 5.25.

Image 5.25: R135 Finglas Road / Clearwater Shopping Centre / Glenhill Road Four-Arm Signalised Junction

R135 Finglas Road / The Griffith four-arm signalised junction: This junction is a four-arm signalised junction between R135 Finglas Road, a two-way dual carriageway, The Griffith, and a gated entrance that, although not currently in use, is controlled by traffic signals. A direct signalised crossing is provided on the eastern arm and a staggered signalised pedestrian crossing is located on the southern arm. Both the northern and southern approaches have advanced cycle stop lines.

The north-western arm (R135 Finglas Road) approach consists of three lanes for all traffic, one of which is created by the temporary termination of the combined bus and cycle lane 25m prior to the junction. Although not marked as such the alignment of the junction suggests the right-hand lane is for right-turning traffic only, while the remaining two are for ahead traffic. Each lane has a width of approximately 3.4m. The cycle track is brought onto the highway adjacent to these lanes as a mandatory cycle lane which is then continued, albeit in an advisory capacity, through the junction. The exit consists of a combined bus and cycle lane and a single general traffic lane.

The north-eastern arm has a gated entrance / exit that is not currently in use however is signalised.

The south-eastern arm (R135 Finglas Road) approach mirrors that of the northern approach with three lanes for all traffic created by the temporary termination of the combined bus and cycle lane. There are no on road cycle lanes on this approach. The exit consists of an advisory cycle lane, a combined bus and cycle lane and a single general traffic lane.

The south-western arm (The Griffith) is a two-way carriageway which one lane in each direction. The approach arm, which is not signal controlled, caters to left and right-turning movements.

These characteristics are shown in Image 5.26.

Image 5.26: R135 Finglas Road / The Griffith Three-Arm Signalised Junction

R135 Finglas Road / R102 Tolka Valley Road four-arm signalised junction: This junction is a four-arm signalised junction between the two-way single carriageway of R102 Tolka Valley Road, the two-way dual carriageway of R135 Finglas Road and a short section of R102 Tolka Valley Road that provides access to nearby dwellings. Staggered signalised pedestrian crossings are located on both the northern and western arms of the junction. Both the northern and southern R135 Finglas Road approaches have advanced cycle stop lines.

The northern arm of R135 Finglas Road has three lanes on approach, an 80m long right-turn lane, a lane for general traffic and a bus lane. The bus lane is temporarily suspended approximately 20m prior to the junction. All three lanes are approximately 3.0m wide and are joined on the carriageway by an advisory cycle lane transferring from the adjacent track to ensure continuous provision through the junction. The exit consists of a cycle lane separated from traffic by an area of hatched road markings, a bus lane and a general traffic lane.

The eastern arm which provides access / egress from residential properties consists of a single lane in each direction.

The southern approach (R135 Finglas Road) has three lanes for general traffic where the left lane is for left-turning vehicles and those continuing ahead, the central lane for ahead only and the right-hand lane for right-turning vehicles. The nearside lane is made available for general traffic by the temporary termination of a bus lane prior the junction. The right-turn lane is created through the flaring of the middle lane and a reduction on central reserve width. All three lanes have widths of approximately 3.5m. To the left of the traffic lanes the off-road cycle track joins the carriageway as an advisory cycle way providing a continuous route through the junction. The southern arm exit comprises a single lane for general traffic and a bus lane.

The western arm (R102 Tolka Valley Road) approach has two lanes (approximately 3.2m in width) and a give way controlled left-turn flare lane (approximately 4.3m in width) which is separated from other lanes by a pedestrian refuge island. The exit arm consists of a single general traffic lane (approximately 5.7m in width) which narrows when moving away from the junction.

These characteristics are shown in Image 5.27.

Image 5.27: R135 Finglas Road / R102 Tolka Valley Road / Four-Arm Signalised Junction

R135 Finglas Road / Access to Tolka Vale Apartments / R135 Old Finglas Road four-arm signalised junction: This junction is a four-arm signalised junction between the access / egress of Tolka Vale Apartments, the two-way dual carriageway of R135 Finglas Road and the two-way single carriageway of R102 Old Finglas Road. An advanced stop line for cyclists and a signalised staggered pedestrian crossing are available on the northern arm only.

The northern arm (R135 Finglas Road) approach consists of a mandatory cycle lane which transfers from the cycle track and three general traffic lanes (approximately 3.3m wide). The three general traffic lanes consist of a left-turn lane, which is formed by the termination of the nearside bus lane, a straight ahead lane, and a right-turn lane which is approximately 20m long. The cycle lane continues through the junction, albeit in an advisory state. The exit has a short merge after the junction and consists of a single lane for general traffic alongside a bus lane.

The eastern arm (R102 Old Finglas Road) approach consists of has two narrow lanes of just 2.3m wide on approach, one each for left-turning and right-turning traffic. Its single exit lane is approximately 3.6m wide.

The southern arm (R135 Finglas Road) approach consists of three general traffic lanes. The nearside lane caters for left-turn and straight ahead movements, the middle lane for straight ahead and the offside lane for right-turn movements (which is 45m long). The three lanes vary in width with the nearside lane being much wider, at approximately 5.2m than the those of the offside which are approximately 3.2m each. The exit has a short merge prior to the junction and consists of a single lane for general traffic alongside a bus lane.

The western arm which provides access / egress from residential properties consists of a single lane in each direction.

These characteristics are shown in Image 5.28.

Image 5.28: R135 Finglas Road / Access to Tolka Vale Apartments / R102 Old Finglas Road Four-Arm Signalised Junction

R135 Finglas Road / Ballyboggan Road three-arm signalised junction: This junction is a three-arm signalised junction between Ballyboggan Road, a wide two-way single carriageway, and R135 Finglas Road, a two-way dual carriageway. The southern and western arms have staggered pedestrian crossings.

The northern arm (R135 Finglas Road) approach has three lanes (each approximately 3.3m in width) including two for general traffic (one for ahead movement and one for right-turners) and a bus lane. The additional lane for right-turning vehicles is developed approximately 40m north of the junction. The exit has two lanes for general traffic and a short advisory cycle lane which then transfers to an off-road cycle track.

The southern arm (R135 Finglas Road) approach consists of a give way controlled left-turn flare, a bus lane and a general traffic lane. The bus lane is temporarily suspended on the approach to the junction to allow access to the left-turn flare. The two ahead lanes, which sit alongside an advisory cycle lane, which continues through the junction, are approximately 3.4m wide.

The western arm (Ballyboggan Road) approach consists of three lanes, including two for left-turning traffic which are separated from the single lane for right-turning vehicles. The two left-turning lanes are approximately 100m in length and developed from a single lane. The width of the lanes vary over this distance and through the turn onto the northbound section of the R135 Finglas Road. The right-turn lane is created approximately 150m west of the junction and, for the most part, is approximately 3.6m wide. The Ballyboggan Road exit is a single lane of 5.3m in width. However, this narrows moving away from the junction.

These characteristics are shown in Image 5.29.

Image 5.29: R135 Finglas Road / Ballyboggan Road Three-Arm Signalised Junction

5.3.7.5. Existing Parking / Loading

There are no parking and loading spaces along the main corridor of Section 6 of the Proposed Scheme, however 20 informal parking spaces are located outside apartments on Tolka Valley Road located immediately off R135 Finglas Road.

5.3.8. Section 7 – Finglas Road from Ballyboggan Road to Hart's Corner

This Section outlines the baseline environment for walking, cycling, bus services, general traffic and parking / loading facilities along Section 7 of the Proposed Scheme.

This section of the Proposed Scheme will extend along R135 Finglas Road for a distance of 1.5km to Hart's Corner where it will meet the Ballymun Section of the Proposed Scheme.

5.3.8.1. Pedestrian Infrastructure

The walking facilities along Section 7 of the Proposed Scheme include reasonably wide, well-lit footpaths on both sides of the carriageways between Ballyboggan Road and Hart's Corner.

The width of the adjacent footpaths range from 2m to 3m wide, and in certain locations include cycle tracks that are approx. 1.25m wide, reducing the width available for pedestrians, These are indicated by solid white lines and bicycle markings on the surface. At times, the footpaths are set back from the carriageway due to the inclusion of green verges, bus stops or adjacent parking bays.

There are several controlled pedestrian crossings along Section 7 of the Proposed Scheme which benefit from tactile paving and dropped kerbs and can be found at the following locations:

- The three-arm R135 Finglas Road / Slaney Road signalised junction provides indirect staggered signalised pedestrian crossings on the southern and western arms. Guard rails are present, and the central reservation and traffic island are used as pedestrian refuge islands;
- The three-arm R135 Finglas Road / Claremont Court signalised junction provides indirect staggered signalised pedestrian crossing on the southern arm, in which guard rails are present and the central reservation are used as a pedestrian refuge island;
- A direct pelican pedestrian crossing across R135 Finglas Road outside Glasnevin Cemetery; and
- The three-arm Finglas Road / Prospect Way (covering both R108 and R135 regional roads) signalised junction provides indirect signalised pedestrian crossings in all directions with the inclusion of a pedestrian refuge island. There are no guard rails.

Uncontrolled crossings across priority junctions at side roads benefit from dropped kerbs. The locations of the pedestrian crossings are illustrated in Figure 6.3g in TIA Appendix 3 (Maps).

Further details of the baseline pedestrian facilities (i.e. routing, directness, accessibility, crossing and footpath widths) at each junction along Section 7 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

5.3.8.2. Cycling Infrastructure

Cycle tracks are provided along the pavement adjacent to the northbound carriageway for approximately 1.15km between St. Vincent's Secondary School and Ballyboggan Road, and along the pavement adjacent to the southbound carriageway for approximately 700m between Ballyboggan Road and Claremont Court. Cyclists and pedestrians are separated by a clear solid white line. The cycle tracks are relatively narrow (approximately 1.25m wide) and provide width for only one direction of cycle traffic.

Advisory cycle lanes (approximately 1m to 1.5m wide) are provided along the northbound carriageway of R108 / R135 Finglas Road (one-way) and R135 Finglas Road between Hart's Corner (No. 1506) bus stop and St. Vincent's Secondary School for approximately 250m, and along the nearside of the R135 Finglas Road southbound bus lane between Claremont Court and Hart's Corner for approximately 600m.

Bus lanes in which cyclists travel in line with bus traffic, are located on the northbound carriageway between Claremont Lawns and Ballyboggan Road (approximately 850m), and on the southbound carriageway between Ballyboggan Road and Claremont Court (approximately 700m), as well as part the of the northern portion of the one-way road system at Hart's Corner. The operational hours of these bus lanes are indicated by adjacent signs which state only buses and cyclists are permitted to use the lanes between 07.00 to 19.00 from Monday to Saturday.

Cycle parking stands are provided at the following point along Section 7 of the Proposed Scheme, inside the redline boundary:

- 8 Sheffield stands (able to accommodate up to 16 bicycles) along R135 Finglas Road opposite Glasnevin Cemetery.

There are no designated public cycle rental scheme stands within Section 7 of the Proposed Scheme.

The existing cycle facilities along Section 7 of the Proposed Scheme are illustrated in Figure 6.4f in TIA Appendix 3 (Maps).

Further details of the baseline cycling facilities (i.e. level of segregation from vehicles, capacity for cycling two abreast and / or overtaking, and junction treatment) along the length of Section 7 of the Proposed Scheme is included in TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment).

5.3.8.3. Bus Infrastructure

5.3.8.3.1. Bus Priority Measures

Bus lanes are provided along Section 7 of the Proposed Scheme at the following locations (aside from intermittent breaks and junctions):

- Southbound bus lane along R135 Finglas Road for approximately 1.3km between Ballyboggan Road and Hart's Corner;
- Eastbound bus lane along R108 / R135 Prospect Way for approximately 135m between R135 Finglas Road and R108 Botanic Road;
- Northbound bus lane along R135 Finglas Road for approximately 850m between Claremont Lawns and Ballyboggan Road; and
- Northbound bus lane along R108 / R135 Finglas Road for approximately 50m at the one-way road system at Hart's Corner.

5.3.8.3.2. Bus Stop Facilities

There are currently nine bus stops along Section 7 of the Proposed Scheme. The inbound (southbound) are as follows:

- Stop 1534 (Ballyboggan Road) on R135 Finglas Road to the south of Ballyboggan Road;
- Stop 1535 (The Willows) on R135 Finglas Road opposite The Willows;
- Stop 1536 (Glasnevin Cemetery) on R135 Finglas Road outside Glasnevin Cemetery; and
- Stop 1537 (St Vincent's School) on R135 Finglas Road to the north of St Philomena's Road.

The outbound (northbound) are as follows:

- Stop 1509 (Slaney Road) on R135 Finglas Road to the north of Slaney Road;
- Stop 1508 (Glasnevin Cemetery) on R135 Finglas Road opposite Glasnevin Cemetery;
- Stop 1507 (St Vincent's School) on R135 Finglas Road outside St Vincent's Secondary School;
- Stop 1506 (Hart's Corner) on R108 / R135 Finglas Road to the north of Dalcassian Downs; and
- Stop 200 (Glasnevin, Prospect Way) on R108 / R135 Prospect Way to the west of Prospect Avenue.

Table 5.12 outlines the availability of bus stop facilities at the existing nine bus stops along Section 7 of the Proposed Scheme.

Table 5.12: Section 7 - Availability of Bus Stop Facilities (a total of 9 bus stops)

Bus Stop Facility	Number of Bus Stops in Baseline with Facility	Percentage of Bus Stops in Baseline with Facility
RTPI	0	0%
Timetable Information	7	78%
Shelter	8	89%
Seating	6	67%
Accessible Kerbs	0	0%
Indented Drop Off Area	1	11%

The existing bus facilities along Section 7 of the Proposed Scheme are illustrated in Figure 6.5f in TIA Appendix 3 (Maps). The bus services which operate along Section 7 of the Proposed Scheme are outlined in Table 5.13.

Table 5.13: Section 7 – Bus Service Frequency

Service	Route	Typical Services Frequency		
		Weekday	Saturday	Sunday
40	Charlestown Shopping Centre – Finglas Village – St Helena's Road (Tolka Valley) – Dorset St. Lwr (North Circular Road) – O'Connell Street – Inchicore – Ballyfermot Road (Markievicz Park) – Neilstown Road (Finches) – Liffey Valley Shopping Centre	10 / 12 mins	10 / 15 mins	15 mins
40B	Parnell Street – Finglas – Toberburr	6 a day	5 a day	4 a day
40D	Harristown – Glasanoan Rd – Church Street – College Street – Lwr. Camden Street – Sundrive Road (Stannaway Road) – Stannaway Avenue	15 / 30 mins	40 mins	50 mins
140	Ballymun (IKEA) – St Margaret's Road – Finglas Road (Finglas Bypass) – Phibsboro – O'Connell Street – Rathmines (Palmerston Park)	15 mins (10 mins in peak hours)	15 mins	20 / 30 mins

5.3.8.4. General Traffic

5.3.8.4.1. R135 Finglas Road

R135 Finglas Road, between Ballyboggan Road and the one-way road system at Hart's Corner, predominately consists of a single general traffic lane and a bus lane in each direction with the exception of additional flares at junctions to cater for turning movements. South of the R135 Finglas Road / Claremont Court three-arm signalised junction there is no northbound bus lane and therefore, the northbound there is just one general traffic lane. R135 Finglas Road is subject to a speed limit of 60km/h except between R135 Finglas Road / Claremont Court and Hart's Corner, which is subject to a speed limit of 50km/h.

The existing major junction arrangements along this section of the R135 Finglas Road are as follows:

- R135 Finglas Road / Slaney Road three-arm signalised junction; and
- R135 Finglas Road / Claremont Court three-arm signalised junction.

R135 Finglas Road / Slaney Road three-arm signalised junction: This junction is a three-arm signalised junction between Slaney Road which is a two-way single carriageway, and the R135 Finglas Road which a two-way dual carriageway. The southern and western arms both have staggered pedestrian crossings.

The northern arm (R135 Finglas Road) approach has three lanes, including a bus lane and two general traffic lanes. Of the general traffic lanes, the left is reserved for straight ahead movements and the right, which is approximately 70m back from the stop line, is for right-turning traffic only. The bus lane is approximately 3.5m wide while the traffic lanes are slightly narrower at approximately 3.2m wide. The northbound exit consists of two lanes, a bus lane and a lane for general traffic.

The southern arm approach has two lanes for general traffic with the additional lane created by temporarily terminating a bus lane approximately 40m prior to the junction. These lanes sit alongside an advisory cycle lane which is the result of transferring provision from a cycle track in order to provide continuous provision through the junction. Traffic lanes are approximately 3.3m wide. The southern exit mirrors that of the northern exit with a single lane for traffic and a bus lane although an additional right-turning lane is created just south of the junction to accommodate vehicles turning to The Willows.

The western arm (Slaney Road) approach widens to two lanes for approximately 8.0m in the vicinity of the stop but is a single lane prior to this. The lanes are designated to provide one for left-turning vehicles and one for right-turning vehicles. The exit width is approximately 7.8m to allow for turning vehicles, before narrowing downstream of the junction.

These characteristics are shown in Image 5.30.

Image 5.30: R135 Finglas Road / Slaney Road Three-Arm Signalised Junction

R135 Finglas Road / Claremont Court three-arm signalised junction: This junction is a three-arm signalised junction between Claremont Court, which is a two-way single carriageway, and the R135 Finglas Road, which is a two-way dual carriageway. The northern arm features advanced stop lines, whilst cycle lanes continue through the junction in both northbound and southbound directions. A staggered pedestrian crossing is provided on the southern arm.

The northern arm (R135 Finglas Road) approach consists of three lanes, including a bus lane and two general traffic lanes. Of the general traffic lanes, the left is reserved for straight ahead movements and the right, which is approximately 50m back from the stop line, is for right-turning traffic only. The combined bus and cycle sit alongside an advisory cycle lane created by taking the cycle track onto the carriageway. The adjacent exit has a single lane for traffic alongside a combined bus and cycle.

The southern arm (R135 Finglas Road) approach has two lanes for general traffic. The second lane is created by terminating a combined bus and cycle approximately 30m prior to the junction. The left-hand lane is reserved for left-turning movement while the right-hand lane is for ahead traffic. Both lanes have widths of approximately 3.1m. The southern exit consists of two lanes, including one for general traffic and one bus lane.

The western arm (Claremont Court) has a single lane on entry and exit, which are both approximately 3.5m wide.

These characteristics are shown in Image 5.31.

Image 5.31: R135 Finglas Road / Claremont Court Three-Arm Signalised Junction

5.3.8.4.2. One-way Road System at Hart's Corner

At the southern end of the Section 7 Proposed Scheme, a one-way road configuration is in place where R135 Finglas Road meets R108 Prospect Way (Hart's Corner). The western arm of the one-way road configuration provides for northbound traffic, whilst the northern arm provides for eastbound traffic and the eastern arm provides for southbound traffic. Generally, all arms consist of three lanes of which one is bus lane.

There are three key junctions at the one-way road configuration, one on each corner. The junction at the north-western corner falls within Section 7 and is detailed subsequently whilst the remaining two junctions are detailed as part of Section 3.

Finglas Road (R108 and R135) / Prospect Way (R108 and R135) three-arm signalised junction: This signalised junction of the Finglas Road and Prospect Way forms the most western point of the one-way system. It has three northbound approach lanes with a bus and cycle lane located between two lanes for general traffic. The western most lane is for ahead traffic only continuing onto the R135 Finglas Road and is approximately 3.6m in width. The bus lane and remaining general traffic lane are for right-turning vehicles and are 3.2m and 2.75m wide, respectively.

From the north, there is a single lane of 3m in width for general traffic alongside a bus and cycle lane. These lanes sit alongside a single exit lane for northbound traffic.

Eastbound along Prospect Way, there are three lanes which are approximately 3.5m in width, including two for general traffic and one for buses and cyclists.

These characteristics are shown in Image 5.32.

Image 5.32: Finglas Road (R108 and R135) / Prospect Way (R108 and R135) Three-Arm Signalised Junction

5.3.8.5. Existing Parking / Loading

There is parking directly along Section 7 of the Proposed Scheme at the following locations:

- 30 designated paid parking, one disabled and two loading spaces positioned adjacent to the northbound lane of R135 Finglas Road opposite to Glasnevin Cemetery; and
- Four informal parking spaces along the one-way section of R108 / R135 Finglas Road at Hart's Corner, to the south of the Dalcassian Downs junction.

Further parking is accommodated on the streets running parallel to the main carriageway which have residential frontage as follows:

- 30 informal residential parking spaces along Prosect Avenue;
- 10 informal residential parking spaces along Dalcassian Downs;
- 16 informal residential parking spaces along St Philomena's Road;
- 13 informal residential parking spaces along Towerview Cottages;
- 12 informal residential parking spaces along Claremont Lawns;
- 12 informal residential parking spaces along Claremont Crescent; and
- Seven informal residential parking spaces along The Willows.

6. Potential Impacts

6.1. Characteristics of the Proposed Scheme

The Ballymun Section of the Proposed Scheme will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4, and will be routed along the R108 on Ballymun Road, St. Mobhi Road, Botanic Road, Prospect Road, Phibsborough Road, Constitution Hill and R132 Church Street as far as R148 Arran Quay at the River Liffey on the western edge of Dublin City Centre. Priority for buses will be provided along the entire route, consisting primarily of dedicated bus lanes in both directions, where feasible, with alternative measures proposed at particularly constrained locations such as at R108 St. Mobhi Road. A complementary cycle route along quiet streets is proposed along Royal Canal Bank in Phibsborough, which will extend southwards from the Royal Canal to Western Way, parallel a short distance to the east of R108 Phibsborough Road, and also through the Markets Area at the southern end of the Proposed Scheme.

The Finglas Section of the Proposed Scheme will commence on the R135 Finglas Road at the junction with R104 St. Margaret's Road and will be routed along the R135 Finglas Road as far as Hart's Corner in Phibsborough, where it will join the Ballymun Section of the Proposed Scheme. Priority for buses will be provided along the entire route, consisting of dedicated bus lanes in both directions. Continuous segregated cycle tracks will be provided from the Church Street Junction in Finglas to Hart's Corner. No cycle tracks are proposed along the Finglas Bypass at the northern end of the Proposed Scheme, where more suitable routes are available along local streets.

Moreover, pedestrian facilities will be upgraded and additional signalised crossings will be provided. In addition, urban realm works will be undertaken at key locations with higher quality materials, planting and street furniture provided to enhance the pedestrian experience.

6.2. 'Do Nothing' Scenario

With regards to this assessment, the 'Do Nothing' scenario means there would be no changes to existing transport infrastructure, so infrastructure provision for buses, pedestrians and cyclists would remain the same. The streetscape would continue to be based around the movement and parking requirements of private cars instead of people. High levels of traffic are associated with discouraging pedestrian and cyclist activity and this activity would be further discouraged as traffic congestion remains the same or increases. The baseline situation of congestion and journey time reliability issues for buses would also continue, and potentially be exacerbated over time as traffic congestion increases in line with travel demand growth.

6.3. 'Do Minimum' Scenario

The 'Do Minimum' scenario represents the likely traffic and transport conditions of the direct and indirect study areas **without** the Proposed Scheme in place. This scenario forms the reference case by which to compare the Proposed Scheme ('Do Something'). The Opening Year for the Proposed Scheme is assumed to be 2028, with a Design Year (opening + 15 years) assumed to be 2043.

For the qualitative analysis, the assessment is in relation to the conditions of the existing transport network, which have been outlined in Section 5 (Baseline Environment) corresponding with a Do Nothing scenario. As a result of the COVID-19 pandemic, a number of temporary transport mobility measures have been implemented. Due to their temporary status, the measures are not considered a permanent long-term feature of the receiving environment and as such have not been considered in the impact assessments.

For the quantitative analysis (i.e. the transport modelling elements of the impact assessment), the Do Minimum scenario is based on the 'likely' conditions of the transport network and includes for any known permanent improvements or changes to the road or public transport network that have taken place, been approved or are planned for implementation. The transport schemes and demand assumptions within the Do Minimum scenario are detailed below.

6.3.1.1. Do Minimum Transport Schemes

The core reference case (Do Minimum) modelling scenarios (Opening Year (2028) and Design Year (2043)) are based on the progressive roll-out of the GDA Strategy (NTA 2016), with a partial implementation by 2028, in line with National Development Plan (NDP) investment priorities and the full implementation by 2043.

The GDA Strategy provides an appropriate transport receiving environment for the assessment of the Proposed Scheme for the following reasons:

- The GDA Strategy is the approved statutory transportation plan for the region, providing a framework for investment in transport within the region up to 2035;
- The GDA Strategy provides a consistent basis for the 'likely' future receiving environment that is consistent with Government plans and Policies National Planning Framework (NPF) and NDP; and
- Schemes within the GDA Strategy are a means to deliver the set of objectives of the GDA Strategy. The sequencing and delivery of the strategy is defined by the implementation plan, but the optimal outcome of aiming to accommodate all future growth in travel demand on sustainable modes underpins the Strategy.

The Do Minimum scenarios (in both 2028 and 2043) include all other elements of the BusConnects Programme of projects, apart from the CBC Infrastructure Works elements (i.e. the new BusConnects routes and services (as part of the revised Dublin Area bus network), new bus fleet, the Next Generation Ticketing and integrated fare structure proposals), are included in the Do Minimum scenarios.

In 2028, other notable Do Minimum transport schemes include; the roll out of the DART+ Programme, Luas Green Line capacity enhancement and the Greater Dublin Area Cycle Network Plan implementation (excluding BusConnects CBC elements). As outlined above, the 2043 Do Minimum scenario assumes the full implementation of the GDA Strategy schemes, so therefore assumes that proposed major transport schemes such as MetroLink, DART+ Tunnel, Luas line extensions to Lucan, Finglas and Bray are all fully operational.

TIA Appendix 1 (Transport Modelling Report) contains further information on the modelling assumptions contained within the Do Minimum scenario including the full list of transport schemes included.

6.3.1.2. Do Minimum Transport Demand

The transport demand changes for the 2028 and 2043 assessment years have been included in the analysis contained within this chapter, using travel demand forecasting, which accounts for increases in population and economic activity, in line with planned growth contained within the NPF, Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland region and the local development plans for the GDA local authorities.

It is envisaged that the population will grow by 11% up to 2028 and 25% by 2043 (above 2016 census data levels). Similarly, employment growth is due to increase by 22% by 2028 and 49% by 2043 (Source: NTA Reference Case Data Planning Sheets 2028, 2043).

The GDA Strategy (along with existing supply side capacity constraints e.g., parking availability, road capacity etc.) has the effect of limiting the growth in car demand on the road network into the future. This is shown diagrammatically in Diagram 6.1.

Total trip demand (indicated by the dashed line) will increase into the future in line with demographic growth (population and employment levels etc.). To limit the growth in car traffic and to ensure that this demand growth is catered for predominantly by sustainable modes, a number of measures will be required, that include improved sustainable infrastructure and priority measures delivered as part of the NDP / GDA Strategy. In addition to this, demand management measures will play a role in limiting the growth in transport demand, predominantly to sustainable modes only. The result will be only limited or no increases overall in private car travel demand. The Proposed Scheme will play a key role in this as part of the wider package of GDA Strategy measures.

In general, total trip demand (combining all transport modes) will increase into the future in line with population and employment growth. A greater share of the demand will be by sustainable modes (Public Transport (PT),

Walking, Cycling). Private car demand may still grow in some areas but not linearly in line with demographics, as may have occurred in the past.

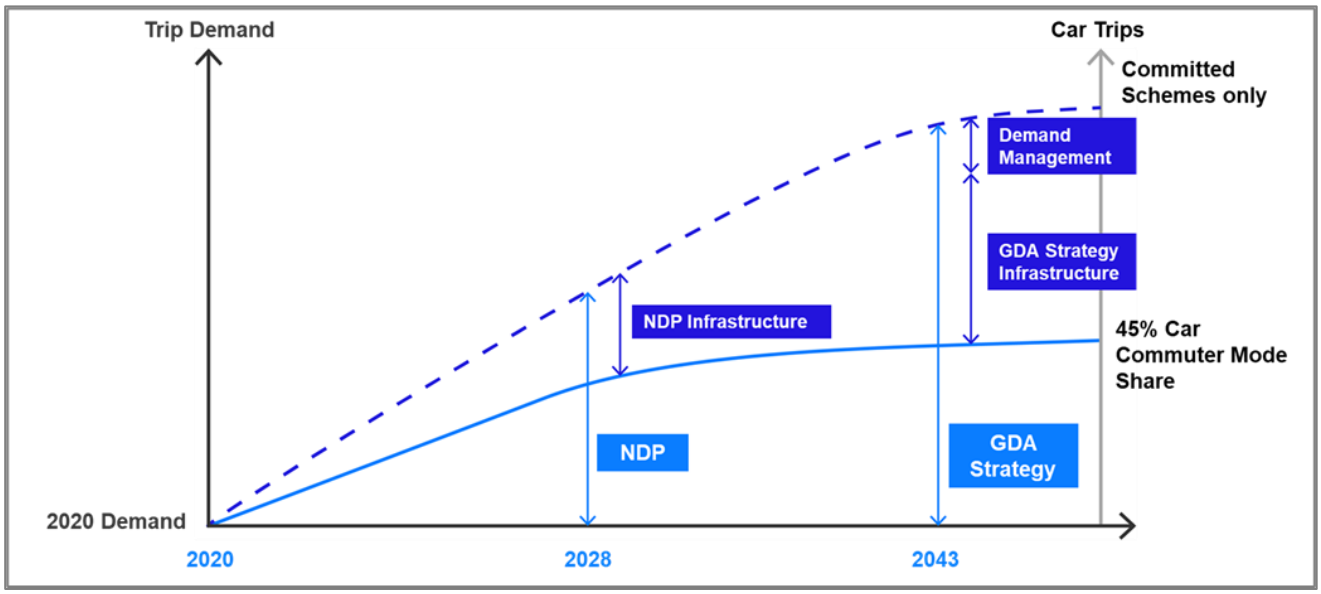

Diagram 6.1: Trip Demand Growth and the GDA Strategy

In terms of the transport modelling scenarios for the traffic and transport assessment, as per the GDA Strategy proposals, there are no specific demand management measures included in the Do Minimum scenario in the Opening Year (2028), other than constraining parking availability in Dublin at existing levels. For the Design Year (2043) scenario, a proxy for a suite of demand management measures is included in the Do Minimum in line with the target to achieve a maximum 45% car driver commuter mode share target, across the GDA, as outlined in the GDA Strategy.

6.4. 'Do Something' Scenario

The Do Something scenario represents the likely conditions of the direct and indirect study areas with the Proposed Scheme in place. The traffic and transport elements of the Proposed Scheme are presented in detail in Chapter 4 (Proposed Scheme Description) in Volume 2 of the EIAR.

6.5. Construction Phase

This Section considers the potential temporary traffic and transport impacts that construction of the Proposed Scheme will have on the direct and indirect study areas during the Construction Phase.

Chapter 5 (Construction) of the EIAR has been prepared to demonstrate the likely approach that will be taken to construct the Proposed Scheme, while it also provides an overview of the construction activities necessary to undertake the works, including information on a proposed Construction Compound, construction plant and equipment. This assessment, as outlined herein, provides an overview of the potential traffic and transport impacts of the Construction Phase based on the information set out in Chapter 5 (Construction) of the EIAR.

A Construction Environmental Management Plan (CEMP) has been prepared and is included as Appendix A5.1 in Volume 4 of the EIAR. The CEMP which will be updated and finalised by the appointed contractor prior to construction commencing. The CEMP comprises the construction mitigation measures, which are set out in the EIAR, and will be updated with any additional measures which may be required by the conditions attached to An Bord Pleanála's decision. Implementation of the CEMP will ensure disruption and nuisance are kept to a minimum during the Construction Phase. The CEMP has regard to the guidance contained in the TII Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan, and the handbook published by

Construction Industry Research and Information Association (CIRIA) in the UK, Environmental Good Practice on Site Guide, 4th Edition (CIRIA 2015).

All of the content provided in the CEMP will be implemented in full by the appointed contractor and its finalisation will not affect the robustness and adequacy of the information presented and relied upon in this TIA.

As with any construction project, the appointed contractor will be obliged to prepare a comprehensive Construction Traffic Management Plan (CTMP). In preparing the CTMP for the proposed works, the appointed contractor will be required to give consideration where practicable to facilitate and identify opportunities for the maximum movement of people during the construction period through implementing the following hierarchy of transport mode users:

- Pedestrians;
- Cyclists;
- Public Transport; and
- General Traffic.

Access will be maintained for emergency vehicles along the Proposed Scheme, throughout the Construction Phase.

6.5.1. Description of Construction Works

The Proposed Scheme has been divided into seven principal sections. These sections have been further subdivided into six sub-sections, according to the types of construction works required. The sections / sub-sections are the following (as shown in Diagram 6.2):

- **Section 1:** Ballymun Road from St. Margaret's Road to Griffith Avenue;
- **Section 2:** St. Mobhi Road and Botanic Road from Griffith Avenue to Hart's Corner:
  - **Section 2a:** Griffith Avenue to Botanic Road;
  - **Section 2b:** Griffith Avenue;
  - **Section 2c:** Ballymun Road, Glasnevin Hill, Botanic Road; and
  - **Section 2d:** Botanic Road to Prospect Way.
- **Section 3:** Prospect Road, Phibsborough Road from Hart's Corner to Western Way:
  - **Section 3a:** Prospect Way to Lindsay Road;
  - **Section 3b:** Lindsay Road to Royal Canal;
  - **Section 3c:** Royal Canal to Western Way; and
  - **Section 3d:** Royal Canal Bank Cycleway.
- **Section 4:** Constitution Hill and Church Street to Arran Quay:
  - **Section 4a:** Western Way to Coleraine Street;
  - **Section 4b:** Coleraine Street to Arran Quay; and
  - **Section 4c:** Markets Cycleway.
- **Section 5:** Finglas Road from St. Margaret's Road to Wellmount Road;
- **Section 6:** Finglas Road from Wellmount Road to Ballyboggan Road; and
- **Section 7:** Finglas Road from Ballyboggan Road to Hart's Corner:
  - **Section 7a:** Ballyboggan Road to Claremont Lawns;
  - **Section 7b:** Claremont Lawns to St. Vincent's School; and
  - **Section 7c:** St. Vincent's School to Hart's Corner.

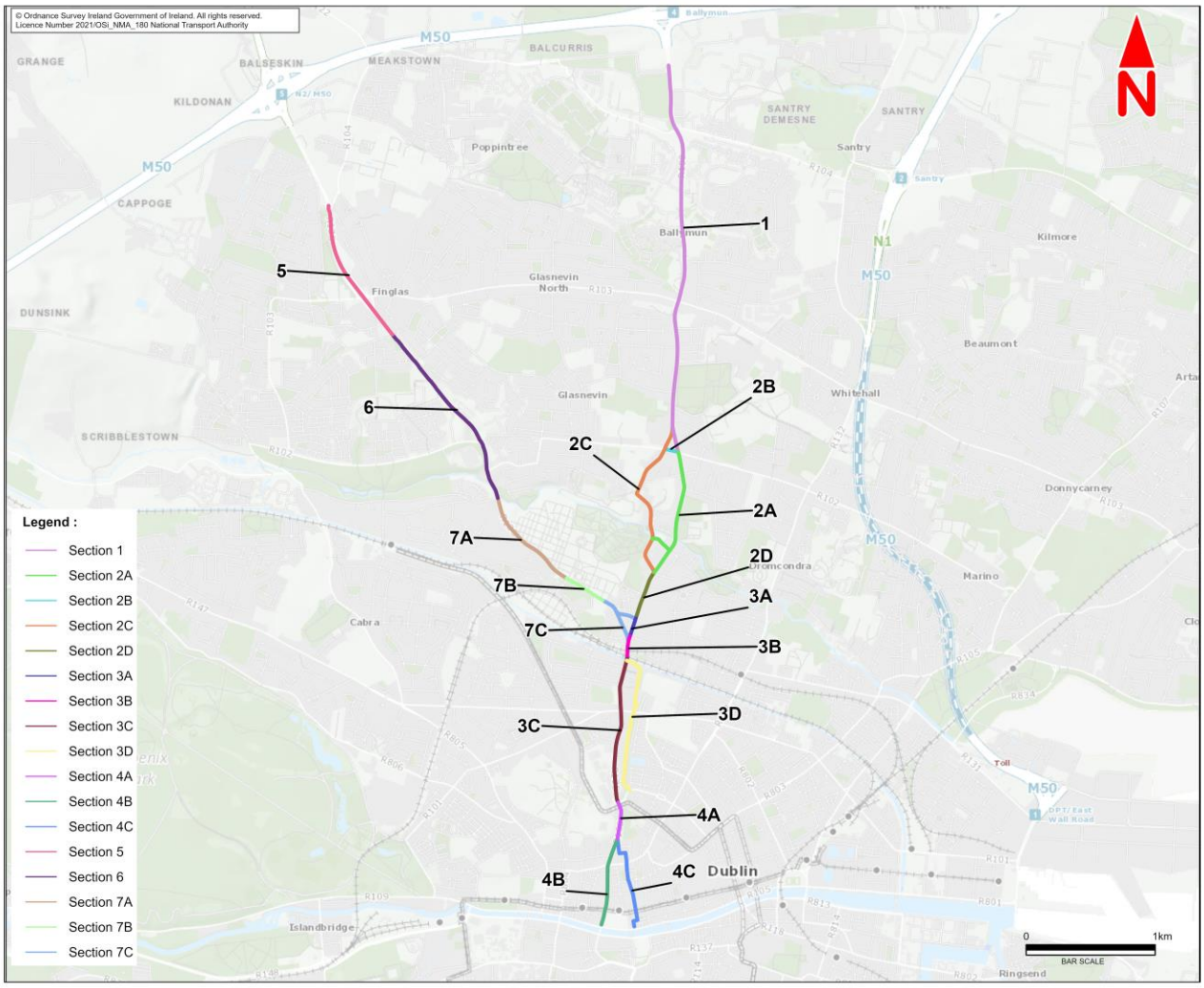

Diagram 6.2 Proposed Subsections of Construction Phase

6.5.2. Construction Programme

An indicative programme for the Proposed Scheme is provided in in Chapter 5 (Construction) of the EIAR. The Proposed Scheme is estimated to require some 24 months (approximately) to complete. However, individual activities will have shorter durations. Works are envisaged to proceed concurrently on multiple work-fronts to minimise the overall construction duration.

6.5.2.1. Construction Route

Six Construction Compounds have been identified at the following locations, as displayed in Diagram 6.3:

- Construction Compound B1: Santry Cross;
- Construction Compound B2: St. Mobhi Drive;
- Construction Compound B3: Constitution Hill / Catherine Lane North Junction;
- Construction Compound F1: St. Margaret's Road Roundabout;
- Construction Compound F2: Finglas Road / Finglas Place Junction; and
- Construction Compound F3: Claremont Lawns (opposite Glasnevin Cemetery).

The appointed contractor's CTMP shall include measures for managing traffic in and out of the Construction Compounds. Access to and egress from the Construction Compounds will be permitted via dedicated Construction Access Routes. The appointed contractor will be responsible for developing the final layout and use

of the Construction Compounds within the framework set out within the EIAR The appointed contractor may identify other (or additional) Construction Compound locations, subject to gaining all necessary approvals. In addition to the Construction Compounds, temporary / portable welfare facilities will be provided along the Proposed Scheme.

The haulage of material on site is anticipated to be minimal. There will however be the removal of excavated material and the delivery of construction materials to site. It is anticipated that the exporting and delivery of materials will be executed as efficiently as possible using dedicated Construction Access Routes. Construction vehicles will be directed to access work sections via the Proposed Scheme and dedicated routes on the National and Regional Road Network where practicable, to minimise use of the local road network. The following National and Regional roads are envisaged to form dedicated Construction Access Routes for construction vehicles to travel to and from the construction works (as shown in Diagram 6.3):

- M50 Motorway;
- R108 Regional Road; and
- R135 Regional Road.

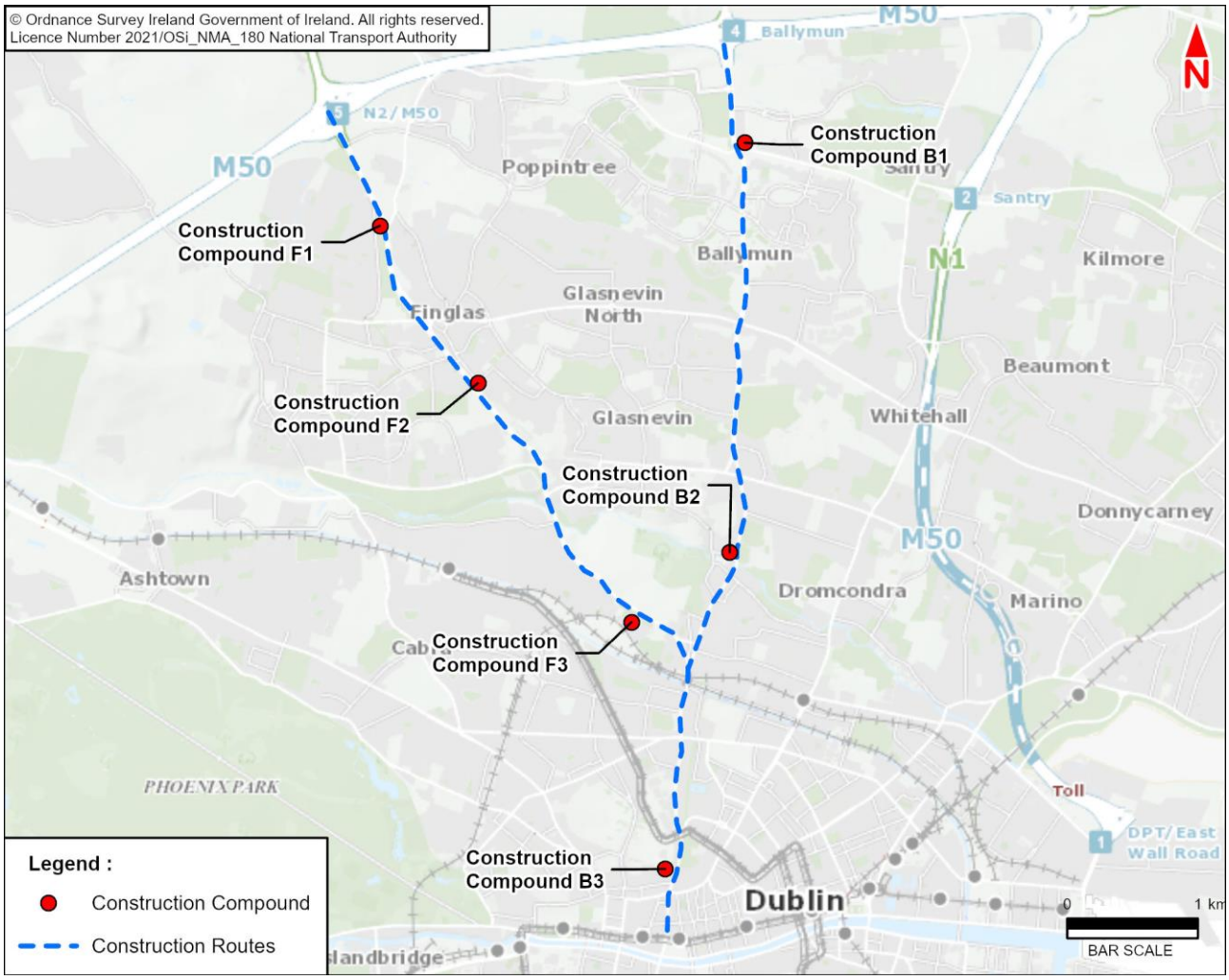

Diagram 6.3 Proposed Construction Routes and Main Compound Location

6.5.3. Construction Impact

6.5.3.1. Overview

Construction of the Proposed Scheme has the potential to impact people's day-to-day activities along the corridor while the works are underway. This Section and the CEMP (Appendix A5.1 in Volume 4 of the EIAR), identify

impactful activities, consider their effect, and identify mitigation measures to reduce or remove their impact insofar as practicably possible.

For construction activities on or adjacent to public roads, all works will be undertaken in accordance with DTTS 'Traffic Signs Manual, Chapter 8 Temporary Traffic Measures and Signs for Roadworks' and associated guidance (DTTS 2019a). Chapter 5 (Construction) in Volume 2 of the EIAR contains temporary traffic management proposals for the Proposed Scheme. These proposals maintain safe distance between road users and road workers, depending on the type of construction activities taking place and existing site constraints. Temporary diversions, and in some instances temporary road closures, may be required where a safe distance cannot be maintained to undertake works necessary to complete the Proposed Scheme. All road closures and diversions will be determined by the NTA, who will liaise with the local authority and An Garda Síochána, as necessary. The need for temporary access restrictions will be confirmed with residents and businesses prior to their implementation.

6.5.3.2. Pedestrian Provisions

As described in Chapter 5 (Construction) in Volume 2 of the EIAR, pedestrians may be temporarily impacted by construction activities along the Proposed Scheme corridor. Pedestrian diversions and temporary surface footpaths will be used to facilitate pedestrian movements around work areas. Access to local amenities, such as to bus stops, traffic crossings, private dwellings, and businesses, may be temporarily altered but access will be maintained.

Due consideration will be given to pedestrian provisions in accordance with Section 8.2.8 of Chapter 8, Temporary Traffic Measures and Signs for Roadworks of the Traffic Signs Manual (DTTS 2019a) and the DTTS Temporary Traffic Management Design Guidance (DTTS 2019b), to ensure the safety of all road users, in particular pedestrians (including able-bodied pedestrians, wheel-chair users, mobility impaired pedestrians, pushchair users etc.). Therefore, where footpaths are affected by construction, a safe route will be provided past the works area, and where practicable, provisions for matching existing facilities for pedestrians. Due consideration will also be given to the need for temporary ramps, and measures for accessible users, where changes in elevation are temporarily introduced to facilitate works and footpath diversions. Entrance points to the construction zone will be controlled as required.

6.5.3.3. Cycling Provisions

Cyclists may be temporarily impacted by construction activities along the Proposed Scheme corridor. As part of temporary traffic management arrangements, the appointed contractor will give due consideration to cyclist provision in accordance with Section 8.2.8 of Chapter 8, Temporary Traffic Measures and Signs for Roadworks of the Traffic Signs Manual (DTTS 2019a) and the Temporary Traffic Management Design Guidance (DTTS 2019b), including the use of site-based risk assessments. Therefore, where cycle tracks are affected by construction, a safe route will be provided past the works area, if practicable. However, these facilities may not be of the same standard as those temporarily lost. Lengths without such provisions will be minimised so far as practicable, along which cyclists may be required to share the carriageway with vehicles.

6.5.3.4. Public Transport Provisions

Existing public transport routes will be maintained throughout the duration of the Construction Phase of the Proposed Scheme (notwithstanding potential for occasional road closures / diversions as described in Chapter 5 (Construction) of the EIAR. Wherever practicable, bus services will be prioritised over general traffic. However, the temporary closure of sections of existing dedicated bus lanes may be required to facilitate the construction of new bus priority infrastructure that is being developed as part of the Proposed Scheme. It is also likely that some existing bus stop locations may need to be temporarily relocated to accommodate the works. In such cases operational bus stops will be safely accessible to all users.

6.5.3.5. Parking and Loading

Parking and loading locations may be temporarily impacted by construction activities along the Proposed Scheme corridor. There may be temporary restrictions to on-street parking and loading facilities. The appointed contractor will discuss temporary traffic management measures with the road authority and directly affected residents / business with the aim of minimising disruption.

6.5.3.6. General Traffic

The Proposed Scheme will be constructed to ensure the mitigation of disturbance to residents, businesses and existing traffic. Localised temporary lane or road closures may be required for short periods. Details of illustrative temporary traffic management measures to facilitate construction of the Proposed Scheme are included in Chapter 5 (Construction) in Volume 2 of the EIAR. All road closures and diversions will be determined by the NTA, who will liaise with the local authority and An Garda Síochána, as necessary. It should be noted that access will be maintained for emergency vehicles along the Proposed Scheme, throughout the Construction Phase.

6.5.3.6.1. General Traffic Redistribution

Significant impacts due to general traffic redistribution away from the direct study area are not anticipated during the Construction Phase based on the intended nature of the progressive works along the corridor whereby traffic flows are to be maintained in both directions. There may be a requirement for some localised temporary lane closures for short durations of the day, which will involve consultation between the appointed contractor and relevant authorities. Access for general traffic to existing residential and commercial units immediately adjacent to the Proposed Scheme is to be accommodated throughout the Construction Phase.

The appointed contractor will develop a CTMP that gives due consideration to provision of local access requirements and designates appropriate diversion routes in the case where localised temporary closures are required. Overall, for these reasons, the impact on general traffic redistribution is anticipated to be a **Medium Negative** and temporary impact due to the temporary nature of any restrictions.

For the purpose of air quality (Chapter 7 (Air Quality)), climate (Chapter 8 (Climate)) and noise and vibration (Chapter 9 (Noise & Vibration)) impact assessments, a worst-case scenario for construction activities was considered for assessment purposes and has been modelled in the LAM based on the notional stage of construction whereby works within Sections 1, 2a, 2d, 3a, 3b, 3c, 4a, 5, 6a, 7a and 7c were under underway concurrently. Further details on the impact assessments can be found within these chapters of the EIAR.

6.5.3.6.2. Construction Traffic Generation

Site Operatives: It is expected that there will be 70 to 80 staff directly employed across the Proposed Scheme, rising to 100 staff during peak construction periods. Work will be undertaken concurrently across multiple sections and therefore staff will be spread across these and the main site compounds.

Typical work hours on site are between 07:00hrs and 23:00hrs with staff working across early and late shifts. The adopted shift patterns help minimise travel by personnel during the peak hour periods of 08:00hrs to 09:00hrs and 17:00hrs to 18:00hrs.

The appointed contractor will prepare a Construction Stage Mobility Management Plan (CSMMP) which will be developed prior to construction, as described in Appendix A5.1 CEMP in Volume 4 of the EIAR, to actively discourage personnel from using private vehicles to travel to site. The CSMMP will promote the use of public transport, cycling and walking by personnel. Private parking at the Construction Compounds will be limited. Vehicle-sharing will be encouraged, subject to public health guidelines, where travel by private vehicle may be a necessity (e.g. for transporting heavy equipment). A combination of CSMMP measures, as well as work shift patterns, means that fewer than 10 trips by private vehicle are envisaged to and from site during peak periods.

HGVs: Additional construction traffic will be generated during the Construction Phase of the Proposed Scheme, for the purpose of the following:

- Clearance of existing site material and waste;
- Deliveries of construction material; and
- Removal of construction / demolition waste material.

Chapter 5 (Construction) in Volume 2 of the EIAR provides a breakdown of the expected operation for the construction of the Proposed Scheme during each subsection. It should be noted that the CTMP will control vehicular movement along the construction access routes, including restrictions on the number of HGVs

accessing and egressing the construction works throughout the day to mitigate the impacts to general traffic on the surrounding road network. Based on construction activities associated with the Proposed Scheme, a maximum of 16 two-way HGV trips are estimated to access / egress the construction works during the AM and PM Peak Hours.

Overall Peak Hour Impacts: The contents of Table 6.1 outline the anticipated maximum construction traffic generation by site operatives and HGVs during the AM and PM Peak Hours.

Table 6.1: Anticipated Maximum Construction Traffic Generation during Construction Phase

Peak Hour	Arrivals		Departures		Total Two-Way Traffic Flows (vehicles)	Total Two-Way Traffic Flows (PCUs)
	Car / Van (1 PCU)	HGV (2.3 PCUs)	Car / Van (1 PCU)	HGV (2.3 PCUs)		
AM Peak Hour	10	7	0	7	24	42
PM Peak Hour	0	7	10	7	24	42

Given that the above impacts are minimal and comfortably below the thresholds set out in TII's Guidelines for Transport Assessments (TII 2014), it is considered appropriate to define the general traffic impacts of the Construction Phase to have a **Low Negative impact**. Therefore, no further analysis is required for the purpose of this assessment.

It should be noted that further detail on the restrictions to construction vehicle movements during the peak periods of the day will be contained within the appointed contractor's CTMP prior to construction.

6.5.4. Construction Phase Summary

The contents of Table 6.2 present a summary of the potential impacts of the Proposed Scheme during the Construction Phase.

Table 6.2: Summary of Construction Phase Potential Impacts

Assessment Topic	Effect	Potential Impact
Pedestrian Access	Restrictions to pedestrians along Proposed Scheme.	Low Negative
Cycling Access	Restrictions to cyclists along Proposed Scheme.	Medium Negative
Bus Access	Restrictions to bus services and infrastructure along Proposed Scheme.	Medium Negative
Parking and Loading	Restrictions to parking and loading bays along Proposed Scheme.	Low Negative
General Traffic	Restrictions to general traffic along Proposed Scheme.	Medium Negative
	Additional construction traffic flows upon surrounding road network.	Medium Negative

6.6. Operational Phase

6.6.1. Overview

As previously noted, the impact assessment for the Operational Phase has been outlined in terms of a qualitative (walking, cycling, bus infrastructure and parking / loading) and quantitative (bus journey times / reliability, general traffic and people movements) impact analysis, which are outlined in the following sections.

6.6.2. Qualitative Assessment

6.6.2.1. Qualitative Assessment Methodology

The structure of the qualitative assessment is consistent with the Baseline Environment (Section 5), where the Proposed Scheme has been split into seven sections. This has allowed for a more detailed analysis of the quality of the infrastructure proposals per section. The approach for each qualitative assessment is outlined below.

6.6.2.1.1. Pedestrian Infrastructure

The impacts to the quality of the pedestrian infrastructure as a result of the Proposed Scheme have been considered with reference to any changes to the existing pedestrian facilities along footpaths and crossing locations within the direct study area. Reference has been made to the overall changes along the full length of the Proposed Scheme and the impact assessment primarily focuses only on the pedestrian facilities at junctions to provide a direct comparison between the Do Minimum and Do Something scenarios.

Where the Proposed Scheme introduces a change to a junction layout, the potential impact on pedestrians has been assessed using a set of criteria, which has been derived from a set of industry standards and guidance listed in Section 3. Table 6.3 outlines the assessment criteria for each junction.

Table 6.3: Pedestrian Junction Assessment Criteria

Aspect	Indicator
Routing	Are pedestrian crossings (signalised or uncontrolled) available on all arms?
Directness	Where crossings are available, do they offer direct movements which do not require diversions or staggered crossings i.e., no or little delay required for pedestrians to cross in one direct movement?
Vehicular speeds	Are there measures in place to promote low vehicular speeds, such as minimally sized corner radii and narrow carriageway lane widths?
Accessibility	Where crossings exist, are there adequate tactile paving, dropped kerbs and road markings for pedestrians (including able-bodied, wheelchair users, mobility impaired and pushchairs)?
Widths	Are there adequate footpath and crossing widths in accordance with national standards?

Note that in some instances direct crossings are split over two traffic signal phases. Where these signals operate out of sequence (i.e. with pedestrian required to stop in the centre refuge area, the crossing will not be classed as direct).

A LoS rating has been applied to each junction for both the Do Minimum and Do Something scenarios based on whether the above indicators have been met. Table 6.4 displays the LoS rating based on the number of indicators met.

Table 6.4: Pedestrian Junction Assessment LoS

LoS	Indicators Met (of a Total of 5)
A	5
B	4
C	3
D	2
E	1
F	0

When comparing the Do Minimum and Do Something scenarios for pedestrians, the terms outlined in Table 6.5 have been used to describe the potential impact, based on the changes in the Qualitative Pedestrian LoS rating.

Table 6.5: Description of Impact for Pedestrian Qualitative Assessment

Magnitude of Impact	Change in LoS Rating
High	4 to 5
Medium	2 to 3
Low	1
Negligible	0

6.6.2.1.2. Cycling Infrastructure

The potential impacts to the quality of the cycling infrastructure as a result of the Proposed Scheme have been considered with reference to the changes in physical provision for cyclists provided during the Do Minimum and Do Something scenarios. The NTA's National Cycle Manual (NTA 2011) Quality of Service (QoS) Evaluation criteria have been adapted for use in assessing the cycling qualitative impact along the Proposed Scheme. The refined cycling facilities criteria are as follows:

- **Segregation:** a measure of the separation between vehicular traffic and cycling facilities;
- **Number of adjacent cyclists / width:** the capacity for cycling two abreast and / or overtaking ('2+1' accommodates two abreast plus one overtaking); and
- **Junction Treatment:** a measure of the treatment of cyclist traffic at existing junctions.

Table 6.6 outlines the assessment criteria with reference to the corresponding LoS ratings.

Table 6.6: Cycling Assessment Criteria

LoS	Segregation	No. of adjacent cyclists/width		Junction treatment
A+	High degree of separation. Minimal delay	2+1	2.5m	Cyclists get green signal priority at signalised junctions / has priority across uncontrolled junctions
A	Well separated at mid-link with some conflict at intersections	1+1	2.0m	Toucan crossings at signalised junctions for cyclists along CBC / Protected junctions not already classified as A+ for junction treatment
B	On-road cycle lanes or carriageway designated as 'quiet cycle routes'	1+1	1.75m	Cyclists share green time with general traffic and cycle lanes continue through the junction, for junctions not already classified as A or A+ for junction treatment
C	Bicycle share traffic or bus lanes	1+0	1.25m	Cyclists share green time with general traffic with cycle facilities (advanced stacking locations / cycle lanes) available up to the junction but don't continue through
D	No specific bicycle facilities	1+0	0.75m	No specific bicycle facilities

As the cycle provision varies along the corridor, each section of the Proposed Scheme has been further separated into smaller subsections in order to apply the cycling assessment criteria appropriately.

When comparing the Do Minimum and Do Something scenarios for cyclists, the terms outlined in Table 6.7 have been used to describe the potential impact, based on the changes in the Qualitative Cycling LoS rating.

Table 6.7: Description of Impact for Cycling Qualitative Assessment

Magnitude of Impact	Change in LoS Rating
High	3 to 4
Medium	2
Low	1
Negligible	0

6.6.2.1.3. Bus Infrastructure

The implementation of the Proposed Scheme will result in changes in the quality of bus infrastructure provision along the route, including dedicated bus lanes and bus stop upgrades / relocations. Improvement in bus priority measures will reduce the interaction between buses and general traffic and reduce the likelihood of delays.

The qualitative impact assessment has been undertaken based on the following factors:

- Provision of bus lanes;
- Bus stop provision; and
- Changes to the existing bus stop facilities:
  - Real-time information;
  - Timetable information;
  - Shelters;
  - Seating;
  - Accessible kerbs; and
  - Removal of indented drop off areas, where appropriate.

The magnitude of impact of the Proposed Scheme, applied to the qualitative review of the above factors, is set out in Table 6.8.

Table 6.8: Magnitude of Impact for Bus Users Qualitative Assessment

Impact	Description of Impact / Proposed Changes
High positive	Significant benefit for bus stop users with no disbenefits
Medium positive	Positive impact for bus stop users with benefits outweighing any minor disbenefits.
Low positive	Slight benefit for users with benefits outweighing any disbenefits.
Negligible impact	Marginal impact to user buses where any benefits or disbenefits are offset.
Low negative	Slight negative impact for users with disbenefits marginally outweighing benefits.
Medium negative	Negative impact for bus users with benefits not outweighing any disbenefits.
High negative	Complete removal of provision.

6.6.2.1.4. Parking and Loading

The impacts of the Proposed Scheme on parking and loading provision have been assessed through a comparison of the availability of spaces or lengths of bay in the Do Minimum (baseline environment) and Do Something scenarios. The assessment has taken the parking information and considers the impact of any changes on the general availability of parking and loading in the vicinity of the Proposed Scheme. It classifies parking into the following categories:

- Designated Paid Parking;
- Permit Parking;
- Disabled Permit Parking;
- Loading / Unloading (in designated Loading Bays)
- Loading / Unloading (outside designated Loading Bays)
- Taxi Parking (Taxi Ranks);
- Commercial vehicles parked for display (car sales); and
- Informal Parking (i.e. parking alongside the kerb which is unrestricted).

This qualitative assessment has also taken account of adjacent parking on side streets which is defined as alternative parking locations along side roads within 200m to 250m of the Proposed Scheme.

Impact ratings for the impacts of any changes in parking provision have been generated for each specific instance of change and for each section of the Proposed Scheme. The ratings are based upon professional judgement and experience and consider:

- The magnitude of change in parking availability;
- The availability of alternative parking; and
- Nearby land uses, such as businesses.

Note that the parking and loading assessment has been undertaken as a qualitative analysis based on the above criteria and does not generate a resulting LoS rating.

6.6.2.2. Section 1 – Ballymun Road from St. Margaret's Road to Griffith Avenue

6.6.2.2.1. Pedestrian Infrastructure

The key infrastructural changes to the pedestrian link along Section 1 of the Proposed Schemes are the following:

- Footpaths with a minimum running width of 2.0m;
- Provision of a new signalised pedestrian crossing across the northern arm of the R108 Ballymun Road / Northwood Avenue Junction;
- Provision of a new signalised pedestrian crossing across the northern arm of the R108 Ballymun Road / R104 Balbutcher Lane / R104 Santry Avenue Junction;
- Provision of a new direct signalised pedestrian crossing across the southern arm of the R102 St. Mobhi Road / R108 St. Mobhi Road / R102 Griffith Avenue Junction;
- Provision of new direct signalised pedestrian crossings across the northern and eastern arms of the R102 Ballymun Road / Ballymun Road / R102 Griffith Avenue junction;
- The upgrade of various signalised crossings from staggered to direct crossing arrangements; and
- The inclusion of raised uncontrolled pedestrian crossings along the adjacent side roads.

The assessment of the qualitative impacts on the pedestrian facilities at the junctions along Section 1 of the Proposed Scheme are summarised in Table 6.9. A detailed breakdown of the assessment at each impacted junction, including a list of the junctions which experience no change, can be found in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

Table 6.9: Section 1 –Pedestrian Impact during Operational Phase

Junctions	Chainage	Do Minimum LoS	Do Something LoS	Impact
R108 Ballymun Road / St Margaret's Road	A0 – A50	C	B	Low Positive
R108 Ballymun Road / Northwood Avenue	A150 – A200	D	B	Medium Positive
R108 Ballymun Road / Access to Service Station	A230 – A270	C	B	Low Positive
R108 Ballymun Road / R104 Santry Avenue / R104 Balbutcher Lane	A450 – A550	D	B	Medium Positive
Mid-link crossing on R108 Ballymun Road	A650 – A700	C	B	Low Positive
R108 Ballymun Road / Coultry Road	A850 – A900	C	B	Low Positive
R108 Ballymun Road / Shangan Road	A950 – A1050	B	A	Low Positive
Mid-link crossing on R108 Ballymun Road	A1100 – A1150	C	B	Low Positive
R108 Ballymun Road / Silogue Road	A1100 – A1170	C	B	Low Positive
R108 Ballymun Road / Gateway Crescent	A1230 – A1280	B	A	Low Positive
R108 Ballymun Road / Gateway Avenue	A1370 – A1430	C	B	Low Positive
Mid-link crossing on R108 Ballymun Road	A1400 – A1425	C	B	Low Positive
R108 Ballymun Road / Shanliss Road	A1520 – A1570	D	B	Medium Positive
R108 Ballymun Road / Setanta GAA Access Road	A1580 – A1630	D	B	Medium Positive
R108 Ballymun Road / R103 Glasnevin Avenue / R103 Collins Avenue Ext	A1800 – A1880	C	B	Low Positive
Mid-link crossing on R108 Ballymun Road	A1925 – A1975	B	A	Low Positive
R108 Ballymun Road / Albert College Court	A2030 – A2080	D	B	Medium Positive
R108 Ballymun Road / DCU Glasnevin Campus Access Road	A2300 – A2350	D	C	Low Positive
R108 Ballymun Road / St Canice's Road	A2530 – A2580	C	B	Low Positive
Ballymun Road / Hampstead Ave	A2660 - A2690	C	B	Low Positive
R108 Ballymun Road / R102 Ballymun Road / R102 St Mobhi Road	A2850 – A2920	D	C	Low Positive
R102 St Mobhi Road / R108 St Mobhi Road / R102 Griffith Avenue	A3000 – A3060	E	A	High Positive
R102 Ballymun Road / R102 Griffith Avenue / Ballymun Road	C100 – D0	C	A	Medium Positive
Section Summary		**C**	**B**	**Low Positive**

The content of Table 6.9 demonstrate that the Proposed Scheme will have an overall long-term positive impact on the quality of the pedestrian infrastructure along R108 Ballymun Road between St Margaret's Road and R102 Griffith Avenue during the Operational Phase.

The LoS during the Do Minimum scenario ranges from B to E, with only three of the 23 impacted junctions receiving a rating of B. During the Do Something scenario (i.e. following the development of the Proposed Scheme), the LoS ranges from A to C, with the majority of impacted junctions receiving a rating of B, with only five and two of the impacted junctions receiving a rating of A and C respectively.

This change in LOS ratings is because of the proposed improvements of the existing pedestrian facilities in the form of additional pedestrian crossings, increased pedestrian directness, provision of traffic calming measures to reduce vehicle speeds, improved accessibility and increased footpath and crossing widths. All proposed facilities have been designed in accordance with the principles of DMURS and the National Disability Authority (NDA) 'Building for Everyone: A Universal Design Approach' (NDA 2020) with regards to catering for all users, including those with disabilities.

Overall, it is anticipated that there will be a **Low Positive** impact to the quality of the pedestrian infrastructure along Section 1 of the Proposed Scheme during the Operational Phase.

6.6.2.2.2. Cycling Infrastructure

The key cycling improvements along Section 1 of the Proposed Scheme can be summarised as follows:

- Existing cycle tracks along both sides of R108 Ballymun Road between St Margaret's Road and R104 Santry Avenue to be upgraded and extended to cover the whole link;
- Existing cycle lanes along R108 Ballymun Road between R104 Santry Avenue and the triangular one-way road system of regional road R102 to be replaced by 2.0m wide cycle tracks adjacent to designated bus lanes rather than combined use bus lanes;
- One-way cycle tracks to be provided along R102 St. Mobhi Road, R102 Ballymun Road and the northern side of R102 Griffith Avenue. A two-way cycle track is to be provided along the southern side of R102 Griffith Avenue;
- Upgrading several signalised junctions to feature green signals providing for cyclists; and
- Directing the proposed cycle tracks behind the existing, modified and proposed bus stops.

Along Section 1, the Proposed Scheme will provide a 60mm set down kerb segregation between the footpath and the cycle track. This is of particular importance in the context of providing for pedestrians with visual impairments, whereby the use of white line segregation (as is the case in some areas of the baseline environment) is not as effective for establishing a clear understanding of the change of pavement use and potential for cyclist / pedestrian interactions. The cycle tracks will also be raised 120mm from the carriageway to provide segregation from vehicles.

The contents of Table 6.10 outline the cycling qualitative assessment along Section 1 of the Proposed Scheme, which sets out the overall Do Minimum LoS and the Do Something LoS and the description of impact. Please refer to TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment) which outlines in further detail the methodology behind each LoS rating given to the Do Minimum and Do Something scenarios.

Table 6.10: Section 1 – Cycling Impact during Operational Phase

Locations	Chainage	Do Minimum LoS	Do Something LoS	Impact
R108 Ballymun Road: St Margaret's Road to R104 Santry Avenue	A0 – A520	C	A	Medium
R108 Ballymun Road: R104 Santry Avenue to R103 Collins Avenue	A520 – A1840	C	A	Medium
R108 Ballymun Road: R103 Collins Avenue to R102 One-Way Road System	A1840 – A2900	C	A	Medium
R102 One-Way Road System: St. Mobhi Road, Griffith Avenue and Ballymun Road	A2900 – A3050 and C0 – C200	D	B	Medium
Section Summary		**C**	**A**	**Medium**

The contents of Table 6.10 demonstrate that the Proposed Scheme will have a positive impact on the quality of the cycling infrastructure along R108 Ballymun Road between St Margaret's Road and R102 Griffith Avenue during the Operational Phase.

The LoS rating of the cycling facilities during the Do Minimum scenario ranges from C to D, in which three out of the four locations have a LoS rating of C. During the Do Something scenario the LoS ratings increase to mostly

A with one length receiving a B rating. This is as a result of the proposed improvements to the existing cycling facilities, in the form of increased segregation, improvements to cycle widths and cycle priority at junctions.

The findings of the cycling assessment fully aligns with the objective of the CBC Infrastructure Works, applicable to the traffic and transport assessment of the Proposed Scheme, to '*Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable*'.

Overall, it is anticipated that there will be a **Medium Positive** impact to the quality of the cycling infrastructure along Section 1 of the Proposed Scheme during the Operational Phase.

6.6.2.2.3. Bus Infrastructure

This Section provides an assessment of the changes in the quality of bus stop infrastructure provision as a result of the Proposed Scheme along Section 1, including upgrades and any relocations. Any relocations of bus stops which need to be carried through to the EIAR for significance assessment are identified.

There are currently 21 bus stops along Section 1 of the Proposed Scheme. Table 6.11 presents a summary of the changes in the number and locations of bus stops along Section 1 of the Proposed Scheme.

Table 6.11: Section 1 – Overview of Amendments to Bus Stop Locations

Direction	Stop	Chainage	Do Something	Comment
Outbound	322	A-150	Retained	Stop 322 to be retained
Inbound	7113	A-310	Retained	Stop 7113 to be retained
Outbound	6182	A-3450	Relocated	Stop 6182 to be moved approximately 90m south of the existing location.
Inbound	127	A-730	Retained	Stop 127 to be retained
Outbound	126	A-745	Retained	Stop 126 to be retained
Inbound	112	A-1065	Retained	Stop 112 to be retained
Outbound	94	A-1095	Retained	Stop 94 to be retained
Outbound	93	A-1480	Retained	Stop 93 to be retained
Inbound	113	A-1500	Retained	Stop 113 to be retained
Inbound	114	A-1600	Rationalised	Stop 114 to be removed (combined with stop 113).
Outbound	92	A-1775	Removed	Stop 92 to be removed
Outbound	91	A-1940	Relocated	Stop 91 to be retained
Inbound	115	A-1980	Retained	Stop 115 to be retained
Outbound	90	A-2170	Removed	Stop 90 to be removed
Inbound	37	A-2290	Retained	Stop 37 to be retained
Outbound	4680	A-2240	Relocated	Stop 4680 to be moved approximately 70m north of the existing location.
Outbound	29	A-2490	Removed	Stop 29 to be removed
Inbound	38	A-2640	Relocated	Stop 38 to be retained

Direction	Stop	Chainage	Do Something	Comment
Outbound	28	A-2705	Relocated	Stop 28 to be retained
Inbound	39	A-2940	Relocated	Stop 39 to be moved approximately 110m south of the current location
Outbound	27	C-50	Retained	Stop 27 to be retained

It is proposed that there will be a total of 17 bus stops along Section 1 of the Proposed Scheme (eight inbound (southbound) and nine outbound (northbound) bus stops). The altered layout of the bus stops is considered to better serve the existing and future catchment and be closer to existing and new pedestrian crossing facilities for improved convenience.

Table 6.12 outlines a summary of the changes to the bus stop infrastructure along Section 1 of the Proposed Scheme, with reference to the number and percentage of bus stops that provide each facility in the Do Minimum and Do Something scenarios.

Table 6.12: Section 1 – Overview of Changes in Bus Stop Facilities

Bus Stop Facility	Do Minimum		Do Something		Comment
	No. of Stops	Percentage of Stops	No. of Stops	Percentage of Stops	
RTPI	5	24%	17	100%	It is proposed that all bus stops provide real-time information
Timetable information	13	62%	17	100%	It is proposed that all bus stops provide timetable information
Shelter	11	52%	17	100%	All bus stops will have shelters.
Seating	11	52%	17	100	All bus stops will have seating.
Accessible Kerbs	15	71%	17	100%	It is proposed that all bus stops provide accessible kerbs
Indented Drop Off Area	0	0%	0	0%	It is proposed that all bus stops are positioned within dedicated bus lanes
Total Stops	**21**		**17**		Removal of four bus stops

The contents of Table 6.12 indicate that there are significant improvements to the bus stop facilities along Section 1 of the Proposed Scheme.

It is proposed that all bus stops are positioned within the dedicated bus lanes, meaning that buses will not incur delay when setting off after picking up passengers. Improvements in the provision of real-time information, timetable information, shelters, seating and accessible kerbs at the bus stops along Section 1 of the Proposed Scheme are assessed as providing an overall positive impact for bus passengers. All proposed facilities have been designed in accordance with BusConnects Preliminary Design Guidance which has been developed with cognisance to the relevant accessibility guidance. The Proposed Scheme is predicted to have an overall **Medium Positive** impact on the bus stop facilities along Section 1.

6.6.2.2.4. Parking and Loading

The proposals will impact on existing parking and loading facilities along Section 1 of the Proposed Scheme and the main changes are as follows:

- There are currently eight informal parking spaces along R108 Ballymun Road to the south of the R104 regional road (Balbutcher Lane / Santry Avenue). It is proposed that all eight informal spaces are removed in order to provide cycle tracks adjacent to both the northbound and southbound carriageway;
- There are currently three loading bays along R108 Ballymun Road to the south of the R104 regional road (Balbutcher Lane / Santry Avenue). It is proposed that all three loading bays are removed in order to provide cycle tracks adjacent to the northbound carriageway;
- There are currently 17 designated paid parking spaces within the southbound part-time bus lane along R108 Ballymun Road, outside the Intreo Centre Ballymun. Of the 17 parking spaces, three are designated disabled bays. At this location, it is proposed to provide one general traffic lane and one bus lane in each direction, therefore removing one general traffic lane in each direction. This enables the provision formalisation of parking along the carriageway at this location. Overall, it is proposed to provide a total of 25 spaces adjacent to the northbound carriageway, 25 spaces adjacent to the southbound carriageway and to retain the three disabled bays. This results in an overall increase of 36 designated paid parking spaces at this location;
- It is proposed that 11 additional designated paid parking spaces are provided adjacent to the northbound carriageway of R108 Ballymun Road between R103 Collins Avenue Ext and the R102 one-way triangular road section, at a location immediately north of St. Pappin Road;
- Along R108 Ballymun Road between R103 Collins Avenue Ext and the R102 one-way triangular road section, there are currently 10 informal parking spaces located within a lay-by adjacent to the southbound carriageway, near the entrance to Dublin City University (DCU). It is proposed that this lay-by is removed to facilitate adequate cycling infrastructure; and
- There are currently four permit parking spaces located on the southern side of the four-lane one-way R102 Griffith Avenue carriageway. In order, to provide a two-way cycle track on the southern side of this carriageway, it is proposed that the existing parking spaces are removed. These four parking spaces may often be used by residents or visitors attending the local apartment buildings.

The contents of Table 6.13 presents a summary of the proposed changes to parking and loading facilities along Section 1 of the Proposed Scheme between the Do Minimum and Do Something scenarios.

Table 6.13: Section 1 – Overall Changes in Parking / Loading Spaces

Location	Parking Type	Number of Parking Spaces		
		Do Minimum	Do Something	Change
R108 Ballymun Road: St Margaret's Road to Griffith Avenue	Designated Paid Parking	14	61	47
	Disabled Parking	3	3	0
	Informal Parking	18	0	-18
	Loading Bay	3	0	-3
	Permit Parking	15	11	-4
	Side Street Parking	251	251	0
Total:		**304**	**326**	**+22**

As shown in Table 6.13, there are currently approximately 304 parking spaces along Section 1 (including side street parking) of the Proposed Scheme. Although it is proposed that some of these parking spaces are removed, the overall changes result in the addition of 22 parking spaces. Taking cognisance of the reductions and additions, overall the Proposed Scheme is anticipated to have a **Low Positive** impact on the parking and loading facilities along Section 1 of the Proposed Scheme. This effect is considered acceptable in the context of the aim of the Proposed Scheme, to provide enhanced walking, cycling and bus infrastructure on this key access corridor.

6.6.2.3. Section 2 – St. Mobhi Road, Botanic Road and Diversionary Route from Griffith Avenue to Western Way

6.6.2.3.1. Pedestrian Infrastructure

The key infrastructural changes to the pedestrian link along Section 2 of the Proposed Schemes are the following:

- Footpaths with a minimum running width of 2.0m;
- Provision of a new direct signalised pedestrian crossing across the southern arm of the R108 St. Mobhi Road / St. Mobhi Drive;
- Provision of a new direct signalised pedestrian crossing across the southern of the R108 St. Mobhi Road / Fairfield Road / R108 Botanic Road / Botanic Road;
- The traffic island and staggered signalised pedestrian crossings in-between Botanic Road (R108 and R135) and Prospect Way (R108 and R135) to be replaced with direct signalised pedestrian crossings set further back from the junction;
- The upgrade of various signalised crossings from staggered to direct crossing arrangements; and
- The inclusion of raised uncontrolled pedestrian crossings along the adjacent side roads.

The assessment of the qualitative impacts on the pedestrian infrastructure for Section 2 of the Proposed Scheme are summarised in Table 6.14. A detailed breakdown of the assessment at each impacted junction, including a list of the junctions which experience no change, can be found in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

Table 6.14: Section 2 – Pedestrian Impact during Operational Phase

Junctions	Chainage	Do Minimum LoS	Do Something LoS	Impact
R108 St Mobhi Road / Stella Avenue / St Mobhi Boithrin	A3180 – A3230	C	B	Low Positive
Mid-link crossing on R108 St Mobhi Road	A3350 – A3400	B	A	Low Positive
R108 St Mobhi Road / St Mobhi Drive	A3360 – A3730	B	A	Low Positive
R108 St Mobhi Road / St Mobhi Grove	A3840 – A3880	C	B	Low Positive
R108 St Mobhi Road / Fairfield Road / R108 Botanic Road / Bóthar Gharraithe Na Lus	A3970 – A4050	D	A	Medium Positive
Botanic Road / Daneswell Place	A4350-A4360	C	B	Low Positive
R108 and R135 Botanic Road / R108 and R135 Prospect Way	A4360 – A4440	C	B	Low Positive
Ballymun Road / Claremont Avenue	D170 – D200	C	B	Low Positive
Glasnevin Hill / St David's Terrace	D425 – D475	D	B	Medium Positive
Glasnevin Hill / Beechmount Court	D500 – D550	D	B	Medium Positive
Glasnevin Hill / Bon Secours Hospital Dublin	D525 – D575	E	C	Medium Positive
Glasnevin Hill / River Gardens	D575 – D625	C	B	Low Positive
Glasnevin Hill / St Mobhi Drive	D675 – D725	D	B	Medium Positive
Glasnevin Hill / Botanic Avenue / Bóthar Gharraithe Na Lus	D750 – D800	E	B	Medium Positive
Glasnevin Hill / Botanic Lane	D900 – D950	D	B	Medium Positive
Section Summary		**C**	**B**	**Low Positive**

The content of Table 6.14 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the pedestrian infrastructure between R102 Griffith Avenue and Hart's Corner during the Operational Phase.

The LoS during the Do Minimum scenario for the various impacted junctions or crossings ranges from B to E. During the Do Something scenario, (i.e. following the development of the Proposed Scheme), the LoS ranges from A to C, with the majority of impacted junctions receiving a rating of B, with only three and only one of the fifteen impacted junctions receiving a rating of A and C respectively.

This change in LOS ratings is because of the proposed improvements of the existing pedestrian facilities in the form of additional pedestrian crossings, increased pedestrian directness, provision of traffic calming measures to reduce vehicle speeds, improved accessibility and increased footpath and crossing widths. All proposed facilities have been designed in accordance with the principles of DMURS (DTTS 2019) and the National Disability Authority (NDA) 'Building for Everyone: A Universal Design Approach' (NDA 2020) with regards to catering for all users, including those with disabilities.

Overall, it is anticipated that there will be a **Low Positive** impact to the quality of the pedestrian infrastructure along Section 1 of the Proposed Scheme during the Operational Phase.

6.6.2.3.2. Cycling Infrastructure

For the purposes of this assessment, the cycling infrastructure along the R108 regional road (St. Mobhi Road and Botanic Road) of Section 2 is assessed as far as the Prospect Way / Botanic Road (R108 / R135) junction, and that the proposed two-way cycle track adjacent to R108 / R135 Botanic Road (within Hart's Corner) and R108 / R135 Prospect Road between the Prospect Way / Botanic Road (R108 / R135) junction and the Royal Canal Bank is assessed as one location within Section 3, for legibility reasons, rather than being split between the two sections.

The key cycling improvements along Section 2 of the Proposed Scheme can be summarised as follows:

- The majority of R108 St. Mobhi Road to be provided with 1.25m wide cycle tracks on both sides between R102 Griffith Avenue and Fairfield Road, whilst a 350m long 2.5m wide two-way cycle track is to be provided on the eastern side of the carriageway between the vehicular access of 'Scoil Chaitríona' school and St. Mobhi Drive. This provision replaces the existing on-road cycle lanes;
- 1.5m wide cycle tracks to be provided on both sides of R108 Botanic Road between Fairfield Road and R108 / R135 Prospect Way, replacing the existing on-road cycle lanes;
- The existing northbound cycle lanes along the diversionary route (Botanic Road, Glasnevin Hill and Ballymun Road) to be amended and extended to cover the vast majority of the link;
- Southbound cycle lanes to be provided along the diversionary route from the southern end of Ballymun Road as far as St. Mobhi Drive;
- One-way and two-way cycle tracks to be provided on the northern and southern sides of R102 Griffith Avenue between R108 St. Mobhi Road and Ballymun Road respectively;
- Upgrading several signalised junctions to feature green signals providing for cyclists; and
- Directing the proposed cycle tracks behind the existing, modified and proposed bus stops.

Along Section 2, the Proposed Scheme will provide a 60mm set down kerb segregation between the footpath and the cycle track. This is of particular importance in the context of providing for pedestrians with visual impairments, whereby the use of white line segregation (as is the case in some areas of the baseline environment) is not as effective for establishing a clear understanding of the change of pavement use and potential for cyclist / pedestrian interactions. The cycle tracks will also be raised 120mm from the carriageway to provide segregation from vehicles.

The content of

Table 6.15 Table 6.15 outlines the cycling qualitative assessment along Section 2 of the Proposed Scheme, which sets out the overall Do Minimum LoS and the Do Something LoS and the description of impact. Please refer to

TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment) which outlines in further detail the methodology behind each LoS rating given to the Do Minimum and Do Something scenarios.

Table 6.15: Section 2 – Cycling Impact during Operational Phase

Locations	Chainage	Do Minimum LoS	Do Something LoS	Impact
R108 St. Mobhi Road: R102 Griffith Avenue to Fairfield Road	A3050 – A4020	D	B	Medium
R108 Botanic Road: Fairfield Road to R135 Prospect Way (Hart's Corner)	A4020 – A4400	C	B	Low
Diversionary Route (Bóthar Gharraithe Na Lus, Glasnevin Hill and Ballymun Road)	C0 – C1050	D	C	Low
Section Summary		**D**	**B**	**Low**

The content of Table 6.15 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the cycling infrastructure along R108 St Mobhi Road and R108 Botanic Road between R102 Griffith Avenue and Hart's Corner during the Operational Phase.

The LoS ratings of the cycling facilities during the Do Minimum scenario ranges from C to D, in which two out of the three locations have a LoS rating of D. During the Do Something scenario the LoS ratings along the main corridor (R108 regional road) increase to B, demonstrating meaningful change for cyclists along this route.

Along the diversionary route (Botanic Road, Glasnevin Hill and Ballymun Road) the LoS increases to C and there are substantial improvements for cyclists along the majority of the diversion route in general which include a new off highway two-way cycle path adjacent to St Mobhi Drive. Cyclists benefit from improved facilities along this section which offer alternatives to the section between St Mobhi Drive and Botanic Avenue. There will still be a lack of proposed cycle facilities in the southbound direction between St Mobhi Drive and Botanic Avenue

The increase in LoS ratings along the main corridor (R108 regional road) is as a result of the proposed improvements to the existing cycling facilities, in the form of increased segregation, improvements to cycle widths and cycle priority at junctions. Furthermore, the cycle infrastructure improvements along the main corridor (R108 regional road) allows northbound cyclists to continue along the main corridor (R108 regional road) rather than diverting onto the diversionary route (Bóthar Gharraithe Na Lus, Glasnevin Hill and Ballymun Road) as many existing cyclists might do.

The findings of the cycling assessment fully aligns with the objective of the CBC Infrastructure Works, applicable to the traffic and transport assessment of the Proposed Scheme, to '*Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable*'.

Overall, it is anticipated that there will be a **Low Positive** impact to the quality of the cycling infrastructure along Section 2 of the Proposed Scheme during the Operational Phase.

6.6.2.3.3. Bus Infrastructure

This Section provides an assessment of the changes in the quality of bus stop infrastructure provision as a result of the Proposed Scheme along Section 2, including upgrades and any relocations. Any relocations of bus stops which need to be carried through to the EIAR for significance assessment are identified.

There are currently 15 bus stops along Section 2 of the Proposed Scheme, of which 11 are along the Core Bus Corridor. Table 6.16 presents a summary of the changes in the number and locations of bus stops along the R108 corridor (St. Mobhi Road and Botanic Road) of Section 2 of the Proposed Scheme.

Table 6.16: Section 2 – Overview of Amendments to Bus Stop Locations

Direction	Stop	Chainage	Do Something	Comment
Inbound	40	A-3140	Removed	Stop 40 to be moved approximately 120m north of the existing location
Outbound	150	A-3435	Relocated	Stop 150 to be moved approximately 40m south of the existing location
Inbound	146	A-3435	Retained	Stop 146 to be retained
Outbound	149	A-3635	Retained	Stop 149 to be retained
Inbound	147	A-3635	Relocated	Stop 147 to be moved approximately 100m north of the existing location
Outbound	148	A-3970	Retained	Stop 148 to be retained
Outbound	202	A-4080	Removed	Stop 202 to be removed due to proximity to next stop (stop 148) which is located approximately 80m north of stop 202.
Inbound	184	A-4055	Relocated	Stop 184 to be moved approximately 50m north of the existing location.
Outbound	201	A-4215	Retained	Stop 201 to be retained
Inbound	185	A-4300	Retained	Stop 185 to be retained
Outbound	200	A-4400	Retained	Stop 200 to be retained
Outbound	151	D-420	Retained	Stop 151 located along the diversionary route- stop to be retained
Outbound	153	A-840	Retained	Stop 153 located along the diversionary route- stop to be retained
Inbound	183	A-800	Retained	Stop 183 located along the diversionary route- stop to be retained
Inbound	182	A-430	Retained	Stop 182 located along the diversionary route- stop to be retained

It is proposed that there will be a total of 14 bus stops along Section 2 of the Proposed Scheme of which 10 are along the Core Bus Corridor (five inbound (southbound) and five outbound (northbound) bus stops). The altered layout of the bus stops is considered to better serve the existing and future catchment and will be closer to existing and new pedestrian crossing facilities for improved convenience.

The contents of Table 6.17 outline a summary of the changes to the bus stop infrastructure along the Core Bus Corridor of Section 2 of the Proposed Scheme, with reference to the number and percentage of bus stops that provide each facility in the Do Minimum and Do Something scenarios.

Table 6.17: Section 2 – Overview of Changes in Bus Stop Facilities

Bus Stop Facility	Do Minimum		Do Something		Comment
	No. of Stops	Percentage of Stops	No. of Stops	Percentage of Stops	
RTPI	2	20%	10	100%	It is proposed that all bus stops will have RTPI.
Timetable information	8	80%	10	100%	It is proposed that all bus stops provide timetable information.
Shelter	2	20%	10	100%	It is proposed that all bus stops provide shelter.
Seating	1	10%	10	100%	It is proposed that all bus stops include seating.
Accessible Kerbs	9	90%	10	100%	It is proposed all bus stops provide accessible kerbs
Indented Drop Off Area	5	50%	0	0%	It is proposed that five indented drop off-areas are removed.
Total Stops	**10**		**10**		Addition of one bus stop

The contents of Table 6.17 indicate that there are significant improvements to the bus stop facilities along Section 2 of the Proposed Scheme. Improvements in the provision of real-time information, timetable information, shelters and seating at the bus stops along Section 2 of the Proposed Scheme are assessed as providing an overall positive impact for bus passengers. All proposed facilities have been designed in accordance with BusConnects Preliminary Design Guidance which has been developed with cognisance to the relevant accessibility guidance.

The Proposed Scheme is anticipated to have a **Low Positive** impact on the bus stop facilities along Section 2.

6.6.2.3.4. Parking and Loading

The proposals will impact on existing parking and loading facilities along Section 2 of the Proposed Scheme and the main changes are as follows:

- There are currently 59 informal parking spaces along the diversionary route (Ballymun Road and Glasnevin Hill). It's proposed that seven additional informal parking spaces is provided.

The contents of Table 6.18 present a summary of the proposed changes to parking and loading facilities along Section 2 of the Proposed Scheme between the Do Minimum and Do Something scenarios.

Table 6.18: Section 2 – Parking Provision

Location	Parking Type	Number of Parking Spaces		
		Do Minimum	Do Something	Change
Diversionary Route	Informal Parking	59	66	+7
	Disabled Parking	1	1	0
	Loading Bay	1	1	0
	Designated Paid Parking	14	14	0
R108 St. Mobhi Road	Informal Parking	25	25	0
	Side Street Parking	462	462	0
Total		**562**	**569**	**+7**

As shown in Table 6.18, there are currently approximately 562 parking spaces along Section 2 (including side street parking) of the Proposed Scheme. The overall changes result in the addition of seven parking spaces, and therefore the Proposed Scheme is anticipated to have a **Low Positive** impact on the parking and loading facilities along Section 2. This effect is considered acceptable in the context of the aim of the Proposed Scheme, to provide enhanced walking, cycling and bus infrastructure on this key access corridor.

6.6.2.4. Section 3 – Prospect Road and Phibsborough Road from Hart's Corner to Western Way

6.6.2.4.1. Pedestrian Infrastructure

The key infrastructural changes to the pedestrian link along Section 3 of the Proposed Schemes are the following:

- Footpaths with a minimum running width of 2.0m;
- Provision of a new signalised pedestrian crossing across Botanic Road (R108 and R135) and Finglas Road (R108 and R135) to the north of Lindsay Road;
- Provision of a new direct signalised pedestrian crossing across the northern arm of the R108 and R135 Prospect Road / Whitworth Road junction;
- Provision of a new direct signalised pedestrian crossing across R108 and R135 Phibsborough Road between Leinster Street North and Enniskerry Road junction;
- Provision of a new direct signalised pedestrian crossing across the northern arm of the R108 and R135 Phibsborough Road / Connaught Street junction;
- Provision of a new direct signalised pedestrian crossing across R108 and R135 Phibsborough Road to the north of R101 North Circular Road;
- Provision of a new direct signalised pedestrian crossing across R108 and R135 Phibsborough Road to the north of Phibsborough;
- Provision of a new direct signalised pedestrian crossing across R108 and R135 Phibsborough Road opposite the Phibsborough Fire Station;
- Provision of a new direct signalised pedestrian crossing across R108 and R135 Phibsborough Road to the north of Royal Canal Terrace;
- The upgrade of various signalised crossings from staggered to direct crossing arrangements; and
- The inclusion of raised uncontrolled pedestrian crossings along the adjacent side roads.

The assessment of the qualitative impacts on the pedestrian infrastructure for Section 3 of the Proposed Scheme are summarised in Table 6.19. A detailed breakdown of the assessment at each impacted junction, including a list of the junctions which experience no change, can be found in TIA Appendix 4 (Section 4.1 Pedestrian Infrastructure Assessment).

Table 6.19: Section 3 – Pedestrian Impact during Operational Phase

Junctions	Chainage	Do Minimum LoS	Do Something LoS	Impact
R108 and R135 Botanic Rd / R108 and R135 Finglas Rd / Lindsay Rd	A4530 – A4600	C	B	Low Positive
R108 and R135 Prospect Road / Lindsay Grove	A4620 – A4670	C	B	Low Positive
R108 and R135 Prospect Road / Whitworth Road	A4670 – A4760	B	A	Low Positive
R108 and R135 Phibsborough Rd / Connaught Street	A4900 – A4980	E	B	Medium Positive
R108 and R135 Phibsborough Rd / Phibsborough Shopping Centre / St Peter's Square	A5050 – A5075	D	B	Medium Positive
Mid-link crossing along R108 and R135 Phibsborough Rd	A5075 – A5100	N/A	A	High Positive
R108 and R135 Phibsborough Rd / R101 North Circular Rd	A5100 – A5170	B	A	Low Positive
Mid-link crossing along R108 and R135 Phibsborough Rd	A5250 – A5270	N/A	A	High Positive
R108 and R135 Phibsborough Rd / Phibsborough	A5270 – A5310	C	B	Low Positive
R108 and R135 Phibsborough Rd / King's Inns Street	A5400 – A5430	C	B	Low Positive
R108 and R135 Phibsborough Rd / King's Inns Court	A5450 – A5500	C	B	Low Positive
R108 and R135 Phibsborough Rd / King's Inns Court	A5550 – A5580	C	B	Low Positive
Mid-link crossing along R108 and R135 Phibsborough Rd	A5600 – A5625	N/A	A	High Positive
R108 and R135 Phibsborough Rd / Royal Canal Terrace	A5600 – A5650	C	B	Low Positive
R108 and R135 Phibsborough Rd / White Lane	A5680 – A5730	C	B	Low Positive
Section Summary		**C**	**A**	**Medium Positive**

The content of Table 6.19 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the pedestrian infrastructure between Hart's Corner and R135 Western Way during the Operational Phase.

The LoS during the Do Minimum scenario ranges from B to N/A, with most impacted junctions or crossings receiving a rating of C, two of the impacted junctions receiving a rating of B with one D and one E. These ratings have been determined using the previously referenced assessment criteria set previously. During the Do Something scenario (i.e. following the development of the Proposed Scheme), all impacted junctions receive a LoS rating of either A or B.

This change in LoS ratings is because of the proposed improvements of the existing pedestrian facilities in the form of additional pedestrian crossings, increased pedestrian directness, provision of traffic calming measures to reduce vehicle speeds, improved accessibility and increased footpath and crossing widths. All proposed facilities have been designed in accordance with the principles of DMURS (DTTS 2019) and the National Disability Authority (NDA) 'Building for Everyone: A Universal Design Approach' (NDA 2020) with regards to catering for all users, including those with disabilities.

Overall, it is anticipated that there will be a **Medium Positive** impact to the quality of the pedestrian infrastructure along Section 3 of the Proposed Scheme during the Operational Phase.

6.6.2.4.2. Cycling Infrastructure

As referred to in cycling qualitative assessment of Section 2, the proposed two-way cycle track adjacent to R108 / R135 Botanic Road (within Hart's Corner) and R108 / R135 Prospect Road between the Prospect Way / Botanic Road (R108 / R135) junction and the Royal Canal Bank is to be assessed as one location within Section 3, rather than being split between the two sections.

The key cycling improvements along Section 3 of the Proposed Scheme can be summarised as follows:

- A north-south two-way cycle track to be provided along R108 / R135 Botanic Road and R108 / R135 Prospect Road between R108 / R135 Prospect Way and the Royal Canal Bank, that features a cycle bridge section that crosses over the Royal Canal providing access and egress on to and from the proposed primary cycle route along the Royal Canal Bank;
- A primary cycle route in which cyclists share priority with vehicular traffic to be provided along both sections of the Royal Canal Bank carriageway which are to be connected via a new pedestrian and cycle underpass positioned underneath the R101 North Circular Road carriageway;
- Existing cycle lanes are to be removed along R108 / R135 Phibsborough Road in order to facilitate designated bus lanes in both directions where possible, and in order to revert cyclists that currently travel along R108 / R135 Phibsborough Road on to the new primary cycle route along Royal Canal Bank carriageways; and
- Existing signalised junctions and crossings to feature either green signals providing priority for cyclists or toucan crossings.

Along Section 3, the Proposed Scheme will provide a 60mm set down kerb segregation between the footpath and the cycle track. This is of particular importance in the context of providing for pedestrians with visual impairments, whereby the use of white line segregation is not as effective for establishing a clear understanding of the change of pavement use and potential for cyclist / pedestrian interactions. The cycle tracks will also be protected by a 120mm kerb on the carriageway side to provide segregation from vehicles.

The content of Table 6.20 outlines the cycling qualitative assessment along Section 3 of the Proposed Scheme, which sets out the overall Do Minimum and Do Something LoS and the description of impact. Please refer to TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment) which outlines in further detail the methodology behind each LoS rating given to the Do Minimum and Do Something scenarios.

Table 6.20: Section 3 – Cycling Impact during Operational Phase

Location: Existing Route	Location: Proposed Route	Chainage	Do Minimum LoS	Do Something LoS	Impact
R108 / R135 Botanic Road and R108 / R135 Prospect Road: R108 / R135 Prospect Way to Royal Canal Bank		A4400 – A4750	D	A	High
R108 / R135 Phibsborough Rd: Royal Canal Bank to R101 North Circular Rd	Royal Canal Bank Cycle Route: Royal Canal Bank to R101 North Circular Rd	A4750 – A5125	D	B	Medium
R108 / R135 Phibsborough Rd: Royal Canal Bank to R135 Western Way	Royal Canal Bank Cycle Route: Royal Canal Bank to R135 Western Way	A5125 – A5900	D	B	Medium
Section Summary			**D**	**B**	**Medium**

The content of Table 6.20 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the cycling infrastructure between Hart's Corner and R135 Western Way during the Operational Phase.

The LoS rating of the cycling facilities during the Do Minimum scenario is equal to D throughout Section 3. In the Do Something scenario the LoS ratings increase to mostly B, however with one location receiving a higher A rating. The increases in LoS are due to the proposed improvements to cycling facilities which will be brought about by the scheme. Enhancements which will benefit cyclists include increased segregation, improvements to cycle widths and cycle priority at junctions.

The findings of the cycling assessment fully aligns with the objective of the CBC Infrastructure Works, applicable to the traffic and transport assessment of the Proposed Scheme, to '*Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable*'.

Overall, it is anticipated that there will be a **Medium Positive** impact to the quality of the cycling infrastructure along Section 3 of the Proposed Scheme during the Operational Phase.

6.6.2.4.3. Bus Infrastructure

This Section provides an assessment of the changes in the quality of bus stop infrastructure provision as a result of the Proposed Scheme along Section 3, including upgrades and any relocations. Any relocations of bus stops which need to be carried through to the EIAR for significance assessment are identified.

There are currently 10 bus stops along Section 3 of the Proposed Scheme. Table 6.21 presents a summary of the changes in the number and locations of bus stops along Section 3 of the Proposed Scheme.

Table 6.21: Section 3 – Overview of Amendments to Bus Stop Locations

Direction	Stop	Chainage	Do Something	Comment
Inbound	186	A-4620 - A4760	Retained	Stop 186 to be retained. This stop will become a double bus stop - the northern part will be retained in the existing location whilst the southern part with be located to the south.
Outbound	199	A-4820	Retained	Stop 199 to be retained.
Inbound	187	A-4915	Retained	Stop 187 to be retained
Outbound	198	A-5010	Retained	Stop 198 to be retained
Inbound	188	A-5010	Retained	Stop 188 to be retained
Outbound	197	A-5350	Retained	Stop 197 to be retained
Inbound	189	A-5540	Retained	Stop 189 to be retained
Outbound	196	A-5575	Retained	Stop 196 to be retained
Inbound	190	A-5800	Retained	Stop 190 to be retained
Outbound	195	A-5835	Relocated	Stop 195 to be moved approximately 30m south of the existing location

It is proposed that there will be a total of 10 bus stops along Section 3 of the Proposed Scheme (five inbound (southbound) and five outbound (northbound) bus stops). The altered layout of the bus stops is considered to better serve the existing and future catchment and be closer to existing and new pedestrian crossing facilities for improved convenience.

As part of the MetroLink project, it is considered that an additional northbound stop will be provided at Glasnevin Rail Station (Section 4). Whilst the design recognises the proposed stop, it is not included within the scheme assessment.

Table 6.22 outlines a summary of the changes to the bus stop infrastructure along Section 3 of the Proposed Scheme, with reference to the number and percentage of bus stops that provide each facility in the Do Minimum and Do Something scenarios.

Table 6.22: Section 3 – Overview of Changes in Bus Stop Facilities

Bus Stop Facility	Do Minimum		Do Something		Comment
	No. of Stops	Percentage of Stops	No. of Stops	Percentage of Stops	
RTPI	7	70%	10	100%	It is proposed that all bus stops provide real-time information
Timetable information	7	70%	10	100%	It is proposed that all bus stops provide timetable information
Shelter	6	60%	8	80%	It is proposed that four (188, 197, 189 and 195) additional bus stops provide shelter, whilst the shelter from bus stops 186 and 199 are to be removed.
Seating	6	60%	8	80%	It is proposed that four (188, 197, 189 and 195) additional bus stops include seating, whilst the seating from bus stops 186 and 199 are to be removed.
Accessible Kerbs	8	80%	10	100%	It is proposed that all bus stops provide accessible kerbs
Indented Drop Off Area	1	10%	0	0%	It is proposed that all bus stops are positioned within dedicated bus lanes
Total Stops	**10**		**10**		

The contents of Table 6.22 indicate that there are significant improvements to the bus stop facilities along Section 3 of the Proposed Scheme.

It is proposed that all bus stops are positioned within the dedicated bus lanes, meaning that buses will not incur delay when setting off after picking up passengers. Improvements in the provision of real-time information, timetable information, shelters, seating and accessible kerbs at the bus stops along Section 3 of the Proposed Scheme are assessed as providing an overall positive impact for bus passengers. All proposed facilities have been designed in accordance with BusConnects Preliminary Design Guidance which has been developed with cognisance to the relevant accessibility guidance.

The Proposed Scheme is anticipated to have a **Medium Positive** impact on the bus stop facilities along Section 3.

6.6.2.4.4. Parking and Loading

The Proposed Scheme will impact on existing parking and loading facilities along Section 3. The main areas of parking and loading changes are as follows:

- There are currently 59 designated paid parking spaces located within the Phibsborough Shopping Centre car park, and there are seven existing loading bays adjacent to the southbound lane of R108 / R135 Phibsborough Road opposite to Phibsborough Shopping Centre. It is proposed that this section of R108 / R135 Phibsborough Road is extended from a three-lane carriageway to a four-lane carriageway to accommodate bus lanes in both directions. The inclusion of an additional lane will limit the available parking space resulting in a loss of 34 designated paid parking spaces within the Phibsborough Shopping Centre car park and a loss of three loading spaces adjacent to the southbound lane of R108 / R135 Phibsborough Road;
- There are currently 29 designated night parking spaces and two loading bays along R108 / R135 Phibsborough Road between R101 North Circular Road and Monck Place. In order to facilitate bus lanes in both directions for the majority of this carriageway section, it is proposed that all existing parking spaces and loading bays are removed;

- There are three permit parking spaces currently positioned adjacent to the northbound lane of R108 / R135 Phibsborough Road, immediately north of Monck Place. In order to facilitate a northbound bus lane, its proposed that these permit parking spaces are removed; and
- There are currently 41 designated paid parking, two loading and six taxi rank spaces along R108 / R135 Phibsborough Road between Monck Place and R135 Western Way. It is proposed that the majority of this section of R108 / R135 Phibsborough Road is extended from a three-lane carriageway to a four-lane carriageway with bus lanes in both directions. The inclusion of an additional lane will limit the available parking resulting in a loss of 23 designated paid parking spaces, and six taxi rank spaces. To mitigate this loss, it is proposed that seven additional designated paid parking spaces are provided along R108 / R135 Phibsborough Road, immediately north of White Lane.

The contents of Table 6.23 present a summary of the parking and loading spaces during both the Do Minimum and Do Something scenarios and the resulting change in parking along Section 3 of the Proposed Scheme.

Table 6.23: Section 3 – Parking Provision

Location	Parking Type	Number of Parking Spaces		
		Do Minimum	Do Something	Change
R108 Prospect Road / Lindsay Road to Hart's Corner	Loading Bay	11	6	-5
	Designated Paid Parking	103	50	-53
	Night Parking	29	0	-29
	Taxi Rank	6	0	-6
	Side Street Parking	106	106	0
Total		**255**	**162**	**-93**

Note that a number of spaces in this section are shared between loading and paid parking. For the purposes of this assessment these spaces have been counted as loading only.

As shown in Table 6.23, there are currently approximately 255 parking spaces (including side street parking) along Section 3 of the Proposed Scheme, and it is proposed that a 93 of these parking spaces are removed. The Proposed Scheme will formalise the parking arrangements at these locations to improve the environment, particularly for pedestrians and cyclists. Given the availability of equivalent types of parking along adjacent streets within 200m of these locations (and typically within under 100m), the overall impact of this loss of parking is considered to have a **Medium Negative i**mpact. This effect is considered acceptable in the context of the aim of the Proposed Scheme, to provide enhanced walking, cycling and bus infrastructure on this key access corridor.

6.6.2.5. Section 4 – Constitution Hill, Church Street Upper and Church Street from Western Way to Arran Quay

6.6.2.5.1. Pedestrian Infrastructure

The key infrastructural changes to the pedestrian link along Section 4 of the Proposed Schemes are the following:

- Footpaths with a minimum running width of 2.0m;
- Provision of a new signalised pedestrian crossing across the southern arm of the R108 Constitution Hill / Temple Cottages Junction;
- Provision of a new direct signalised pedestrian crossing across the eastern arm of the R108 Church Street / May Lane / Mary's Lane Junction;
- Provision of a new direct signalised pedestrian crossing across the southern arm of the R108 Church Street / Chancery Street Junction;
- The upgrade of various signalised crossings from staggered to direct crossing arrangements; and
- The inclusion of raised uncontrolled pedestrian crossings along the adjacent side roads.

The assessment of the qualitative impacts on the pedestrian infrastructure for Section 4 of the Proposed Scheme are summarised in Table 6.24. A detailed breakdown of the assessment at each impacted junction, including a list of the junctions which experience no change, can be found in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

Table 6.24: Section 4 – Pedestrian Impact during Operational Phase

Junction	Chainage	Do Minimum LoS	Do Something LoS	Magnitude and type of impact
R108 Constitution Hill / Temple Cottages	A5880 – A5920	C	B	Low Positive
R108 Church Street Upper / Catherine Lane North	A6150 – A6200	D	B	Medium Positive
R108 Church Street Upper / Linenhall Terrace	A6190 – A6220	C	B	Low Positive
R108 Church Street Upper / Brunswick Street North	A6250 – A6300	D	C	Low Positive
R108 Church Street / R804 King Street North	A6300 – A6400	C	A	Medium Positive
R108 Church Street / Stirrup Lane	A6365 – A6400	C	B	Low Positive
R108 Church Street / Nicholas Avenue / New Street North	A6400 – A6450	C	B	Low Positive
R108 Church Street / Church Terrace	A6435 – A6465	C	B	Low Positive
R108 Church Street / Church Avenue	A6540 - A6570	C	B	Low Positive
R108 Church Street / May Lane / Mary's Lane	A6570 – A6630	C	B	Low Positive
R108 Church Street / Chancery Street	A6670 – A6700	C	A	Medium Positive
R108 Church Street / Hammond Lane	A6750 – A6775	C	B	Low Positive
Section Summary		**C**	**B**	**Low Positive**

The content of Table 6.24 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the pedestrian infrastructure between R135 Western Way and R148 Arran Quay during the Operational Phase.

The LoS during the Do Minimum scenario ranges from C to D, with the majority of impacted junctions or crossings receiving a rating of C and just two of the impacted junctions receiving a rating of D. During the Do Something scenario, i.e. following the development of the Proposed Scheme, nine of the twelve impacted junctions receive a rating of B, whilst two and one of the impacted junctions receive a rating of A and C respectively.

This is as a result of the proposed improvements of the existing pedestrian facilities in the form of additional pedestrian crossings, increased pedestrian directness, provision of traffic calming measures to reduce vehicle speeds, improved accessibility and increased footpath and crossing widths. All proposed facilities have been designed in accordance with the principles of DMURS (DTTS 2019) and the National Disability Authority (NDA) 'Building for Everyone: A Universal Design Approach' (NDA 2020) with regards to catering for all users, including those with disabilities.

Overall, it is anticipated that there will be a **Low Positive** impact to the quality of the pedestrian infrastructure along Section 4 of the Proposed Scheme during the Operational Phase.

6.6.2.5.2. Cycling Infrastructure

The key cycling improvements along Section 4 of the Proposed Scheme can be summarised as follows:

- The majority of R108 Constitution Hill and R108 Church Street Upper to be provided with 1.5m wide one-way cycle tracks on both sides of the carriageway between R135 Western Way and R804 King Street North, replacing any existing on-road cycle lanes;
- In addition, a 400m long 3.0m wide two-way cycle track is to be provided along R135 Western Way and R108 Constitution Hill between the proposed toucan crossing opposite the proposed primary cycle route and Coleraine Street;
- It is proposed that a southbound cycle track is provided along the majority of R108 Church Street between R804 King Street North and Mary's Lane, all existing cycle lanes along this section of carriageway are to be removed and a combined use bus lane provided in the northbound direction;
- All existing cycle lanes along R108 Church Street, between Mary's Lane and R148 Arran's Quay, are to be removed and replaced by combined use bus lanes in both directions as well as a short 40m southbound cycle track;
- Upgrading several signalised junctions to feature green signals providing for cyclists; and
- Directing the proposed cycle tracks behind the existing, modified and proposed bus stops.

Along Section 4, the Proposed Scheme will provide a 60mm set down kerb segregation between the footpath and the cycle track. This is of particular importance in the context of providing for pedestrians with visual impairments, whereby the use of white line segregation is not as effective for establishing a clear understanding of the change of pavement use and potential for cyclist / pedestrian interactions. The cycle tracks will also be protected by a 120mm kerb on the carriageway side to provide segregation from vehicles.

The content of Table 6.25 outline the cycling qualitative assessment along Section 4 of the Proposed Scheme, which sets out the overall Do Minimum LoS and the Do Something LoS and the description of impact. Please refer to TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment) which outlines in further detail the methodology behind each LoS rating given to the Do Minimum and Do Something scenarios.

Table 6.25: Section 4 – Cycling Impact during Operational Phase

Locations	Chainage	Do Minimum LoS	Do Something LoS	Impact
R108 Constitution Hill and R108 Church Street Upper: R135 Western Way to R804 King Street North	A5900 – A6350	C	B	Low
R108 Church Street: R804 King Street North to Mary's Lane	A6350 – A6600	C	B	Low
R108 Church Street: Mary's Lane to R148 Arran Quay	A6600 – A6830	D	C	Low
Quiet Primary Cycle Route: R108 Constitution Hill to R148 Ormond Quay Upper	A6150 – A6830	D	C	Low
Section Summary		**D**	**C**	**Low**

The content of Table 6.25 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the cycling infrastructure between R135 Western Way and R148 Arran Quay during the Operational Phase.

The LoS rating of the cycling facilities in the Do Minimum scenario ranges from C to D, in which two out of the four locations have a LoS rating of C. During the Do Something scenario the LoS ratings increase along all the four locations to LoS ratings of B and C. The increases in the LoS ratings between the Do Minimum and Do Something scenarios is a result of the proposed improvements to the existing cycling facilities, in the form of increased segregation, improvements to cycle widths and cycle priority at junctions. The findings of the cycling assessment fully aligns with the objective of the CBC Infrastructure Works, applicable to the Traffic and Transport assessment of the Proposed Scheme, to '*Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable*'.

Overall, it is anticipated that there will be a **Low Positive** impact to the quality of the cycling infrastructure along Section 4 of the Proposed Scheme during the Operational Phase.

6.6.2.5.3. Bus Infrastructure

This Section provides an assessment of the changes in the quality of bus stop infrastructure provision as a result of the Proposed Scheme along Section 4, including upgrades and any relocations. Any relocations of bus stops which need to be carried through to the EIAR for significance assessment are identified.

There are currently six bus stops along Section 4 of the Proposed Scheme. Table 6.26 presents a summary of the changes in the number and locations of bus stops along Section 4 of the Proposed Scheme.

Table 6.26: Section 4 – Overview of Amendments to Bus Stop Locations

Direction	Stop	Chainage	Do Something	Comment
Outbound	1619	A-6040	Retained	Stop 1619 to be retained
Inbound	1614	A-6225	Retained	Stop 1614 to be retained
Outbound	1618	A-6255	Retained	Stop 1618 to be retained
Outbound	1617	A-6450	Removed	Stop 1617 to be removed
Inbound	1615	A-6610	Retained	Stop 1615 to be retained
Outbound	1616	A-6670	Retained	Stop 1616 to be retained

It is proposed that there will be a total of five bus stops along Section 4 of the Proposed Scheme (two inbound (southbound) and three outbound (northbound) bus stops). The altered layout of the bus stops is considered to better serve the existing and future catchment and be closer to existing and new pedestrian crossing facilities for improved convenience.

Table 6.27 outlines a summary of the changes to the bus stop infrastructure along Section 4 of the Proposed Scheme, with reference to the number and percentage of bus stops that provide each facility in the Do Minimum and Do Something scenarios.

Table 6.27: Section 4 – Overview of Changes in Bus Stop Facilities

Bus Stop Facility	Do Minimum		Do Something		Comment
	No. of Stops	Percentage of Stops	No. of Stops	Percentage of Stops	
RTPI	1	17%	5	100%	It is proposed that all bus stops provide real-time information
Timetable information	5	83%	5	100%	It is proposed that all bus stops provide timetable information.
Shelter	4	67%	2	40%	It is proposed that shelters at bus stops 1615 and 1616 remain, whilst others are removed.
Seating	2	33%	2	40%	It is proposed that seating is provided at bus stop 1615, but seating is removed from bus stop 1619.
Accessible Kerbs	6	100%	5	100%	It is proposed that all bus stops provide accessible kerbs.
Indented Drop Off Area	1	17%	2	40%	A second indented drop-off area is proposed for bus stop 1618.
Total Stops	**6**		**5**		Removal of one bus stop

The contents of Table 6.27 indicate that there are some improvements to the bus stop facilities along Section 4 of the Proposed Scheme.

It is proposed that four of the five bus stops are positioned within dedicated bus lanes, whilst one bus stop (1615) is positioned within indented drop-off areas adjacent to dedicated bus lanes, resulting in buses not incurring delay when setting off after picking up passengers. Improvements to the provision of real-time information and timetable information provides a positive impact for bus passengers, however the removal of shelters provides a negative impact for bus passengers. All proposed facilities have been designed in accordance with BusConnects Preliminary Design Guidance which has been developed with cognisance to the relevant accessibility guidance.

The Proposed Scheme is anticipated to have a **Medium Positive** impact on the bus stop facilities along Section 4.

6.6.2.5.4. Parking and Loading

The proposals will impact on existing parking and loading facilities along Section 4 of the Proposed Scheme, the only change is as follows:

- There is currently one loading bay located on R108 Church Street, south of Marys Lane, adjacent to the northbound carriageway. It is proposed to remove the one loading bay. This is mitigated by the availability of 14 spaces (including two disabled) adjacent to the southbound carriageway.

The contents of Table 6.28 present a summary of the parking and loading spaces during both the Do Minimum and Do Something scenarios and the resulting change in parking along Section 4 of the Proposed Scheme.

Table 6.28: Ballymun Section 4 – Parking Provision

Location	Parking Type	Number of Parking Spaces		
		Do Minimum	Do Something	Change
R108 Church Street: R804 King Street to R148 Arran Quay	Loading Bay	1	0	-1
	Permit Parking	12	12	0
	Disabled Parking	2	2	0
	Side Street Parking	106	106	0
Total		**121**	**120**	**-1**

As shown in Table 6.28, there are currently approximately 121 parking spaces (including side street parking) along Section 4 of the Proposed Scheme, and it is proposed that one loading bay along Section 4 of the Proposed Scheme is removed. Given the availability of equivalent types of parking along adjacent streets within 200m of these locations (and typically within under 100m), the overall impact of this loss of parking is considered to have a **Negligible** impact. This effect is considered acceptable in the context of the aim of the Proposed Scheme, to provide enhanced walking, cycling and bus infrastructure on this key access corridor.

6.6.2.6. Section 5 – Finglas Road from St. Margaret's Road to Wellmount Road

6.6.2.6.1. Pedestrian Infrastructure

The key infrastructural changes to the pedestrian link along Section 5 of the Proposed Schemes are the following:

- Footpaths with a minimum running width of 2.0m;
- Provision of new direct signalised pedestrian crossings on all four arms of the R135 North Road / R104 St Margaret's Road / R135 Finglas Road / Casement Road roundabout; and
- Provision of a new direct Toucan crossing across R135 Finglas Road to the south of Church Street.

The assessment of the qualitative impacts on the pedestrian infrastructure for Section 5 of the Proposed Scheme are summarised in Table 6.29. A detailed breakdown of the assessment at each impacted junction, including a

list of the junctions which experience no change, can be found in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

Table 6.29: Section 5 – Pedestrian Impact during Operational Phase

Junctions	Chainage	Do Minimum LoS	Do Something LoS	Impact
Casement Road / R135 North Rd / R104 St. Margaret's Rd / R135 Finglas Rd Roundabout	B0 – B50	D	B	Medium Positive
R135 Finglas Road / Church Street	B1000 – B1050	D	B	Medium Positive
Section Summary		**D**	**B**	**Medium Positive**

The content of Table 6.29 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the pedestrian infrastructure along R135 Finglas Road between R104 St. Margaret's Road and Wellmount Road during the Operational Phase.

The LoS during the Do Minimum scenario for both junctions is equal to a rating of D. During the Do Something scenario, following the development of the Proposed Scheme, both junctions are upgraded to a LoS rating of B.

This is as a result of the proposed improvements of the existing pedestrian facilities in the form of additional pedestrian crossings, increased pedestrian directness, provision of traffic calming measures to reduce vehicle speeds, improved accessibility and increased footpath and crossing widths. All proposed facilities have been designed in accordance with the principles of DMURS (DTTS 2019) and the National Disability Authority (NDA) 'Building for Everyone: A Universal Design Approach' (NDA 2020) with regards to catering for all users, including those with disabilities.

Overall, it is anticipated that there will be a **Medium Positive** impact to the quality of the pedestrian infrastructure along Section 5 of the Proposed Scheme during the Operational Phase.

6.6.2.6.2. Cycling Infrastructure

The limited cycling improvements along Section 5 of the Proposed Scheme includes 1.5m to 2.0m wide cycle tracks to be provided along R135 Finglas Road for northbound traffic between Wellmount Road and R103 Seamus Ennis Road, and for southbound traffic for approx. 90m on approach to the Wellmount Road junction. This is a reflection of the northern most part of the section being unsuitable for use by cyclists

Along Section 5 the Proposed Scheme will provide a 60mm set down kerb segregation between the footpath and the cycle track. This is of particular importance in the context of providing for pedestrians with visual impairments, whereby the use of white line segregation (as is the case in some areas of the baseline environment) is not as effective for establishing a clear understanding of the change of pavement use and potential for cyclist / pedestrian interactions. The cycle tracks will also be raised 120mm from the carriageway to provide segregation from vehicles.

The content of Table 6.30 outlines the cycling qualitative assessment along Section 5 of the Proposed Scheme, which sets out the overall Do Minimum LoS and the Do Something LoS and the description of impact. Please refer to TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment) which outlines in further detail the methodology behind each LoS rating given to the Do Minimum and Do Something scenarios.

Table 6.30: Section 5 – Cycling Impact during Operational Phase

Locations	Chainage	Do Minimum LoS	Do Something LoS	Impact
R135 Finglas Road: R104 St Margaret's Road to approx. 20m south of Church Street	A0 – A1040	D	D	Negligible
R135 Finglas Road: Approx. 20m south of Church Street to Wellmount Road	A1040 – A1170	D	B	Medium
Section Summary		**D**	**C**	**Low**

The content of Table 6.30 demonstrates that the Proposed Scheme will have a positive effect on the cycling environment along R135 Finglas Road between R104 St Margaret's Road and Wellmount Road during the Operational Phase. However, the majority of Section 5 of the Proposed Scheme is a key dual carriageway with minimal adjacent urban construction that provides a route towards the M50 Motorway, thus is both not well used by cyclists while also being unsuitable for use by cycles. Thus it is inappropriate to proposed cycle facilities along this length leading to a negligible impact on cyclists.

However, the 90m section north of Wellmount Road is deemed to have a Positive effect on the cycle environment. As this section is far more likely to be used by cyclists it has been given additional weight when considering the overall impact of the proposed scheme through this section.

The LoS rating of the cycling facilities during the Do Minimum scenario for both locations are equal to D. These ratings have been determined using the previously referenced assessment criteria set out previously. During the Do Something scenario the LoS rating remains at D for the majority of R135 Finglas Road however increases to a rating of B between the proposed toucan crossing (approx. 20m south of Church Street) and Wellmount Road. The increase in LoS rating along this short stretch of R135 Finglas Road is as a result of the proposed improvements to the existing cycling facilities, in the form of increased segregation, improvements to cycle widths and cycle priority at junctions.

Although the majority of Section 5 of the Proposed Scheme (R104 St Margaret's Road to approximately 20m south of Church Street) is deemed to have a Negligible impact on the cycling environment, it is considered unreasonable to provide cycle infrastructure alongside a relatively straight aligned dual carriageway with minimal adjacent urban construction and no junctions, in which vehicular speeds are likely relatively high. With a southbound cycle track provided on approach to Wellmount Road, a northbound cycle track provided in-between Wellmount Road and R103 Seamus Ennis Road, and a new toucan crossing across R135 Finglas Road, the findings of the cycling assessment align with the objective of the CBC Infrastructure Works, applicable to the traffic and transport assessment of the Proposed Scheme, to '*Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable*'.

Overall, the Proposed Scheme will have a **Low Positive** impact on the cycling environment along R135 Finglas Road between R104 St Margaret's Road and Wellmount Road during the Operational Phase.

6.6.2.6.3. Bus Infrastructure

This Section provides an assessment of the changes in the quality of bus stop infrastructure provision as a result of the Proposed Scheme along Section 5, including upgrades and any relocations. Any relocations of bus stops which need to be carried through to the EIAR for significance assessment are identified.

There are currently no bus stops along Section 5 of the Proposed Scheme. Table 6.31 presents a summary of the changes in the number and locations of bus stops along Section 5 of the Proposed Scheme.

Table 6.31: Section 5 – Overview of Amendments to Bus Stop Locations

Direction	Stop	Chainage	Do Something	Comment
Inbound	n/a	B-83	New	New stop proposed at St Margaret's Roundabout
Outbound	n/a	B-84	New	New stop proposed at St Margaret's Roundabout
Inbound	n/a	B-1026	New	New stop proposed at Church Street
Outbound	n/a	B-1076	New	New stop proposed at Church Street

It is proposed that there will be a total of four bus stops along Section 5 of the Proposed Scheme (two inbound (southbound) and two outbound (northbound) bus stops). The layout of the new bus stops is provided in order to better serve the existing and future catchment and be closer to the existing and new pedestrian crossing facilities for improved convenience.

Table 6.32 outlines a summary of the changes to the bus stop infrastructure along Section 5 of the Proposed Scheme, with reference to the number and percentage of bus stops that provide each facility in the Do Minimum and Do Something scenarios.

Table 6.32: Section 5 – Overview of Changes in Bus Stop Facilities

Bus Stop Facility	Do Minimum		Do Something		Comment
	No. of Stops	Percentage of Stops	No. of Stops	Percentage of Stops	
RTPI	0	0%	4	100%	It is proposed that all bus stops provide real-time information
Timetable information	0	0%	4	100%	It is proposed that all bus stops provide timetable information
Shelter	0	0%	4	100%	It is proposed that all bus stops provide shelters
Seating	0	0%	4	100%	It is proposed that all bus stops provide seating
Accessible Kerbs	0	0%	4	100%	It is proposed that all bus stops provide accessible kerbs
Indented Drop Off Area	0	0%	0	0%	It is proposed that all bus stops are positioned within dedicated bus lanes
Total Stops	**0**		**4**		Four additional bus stops to be provided

The contents of Table 6.32 indicate that there are significant improvements to the bus infrastructure along Section 5 of the Proposed Scheme.

It is proposed that all four bus stops are positioned within dedicated bus lanes, meaning that buses will not incur delay when setting off after picking up passengers. All four bus stops along Section 5 of the Proposed Scheme are proposed to include real-time information, timetable information, shelters, seating and accessible kerbs. All proposed facilities have been designed in accordance with BusConnects Preliminary Design Guidance which has been developed with cognisance to the relevant accessibility guidance.

The Proposed Scheme is anticipated to have a **High Positive** impact on the bus stop facilities along Section 5.

6.6.2.6.4. Parking and Loading

There are no existing or proposed parking and loading facilities along Section 5 of the Proposed Scheme. Therefore, it can be concluded that the overall impact will be **Negligible** during the Operational Phase.

6.6.2.7. Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road

6.6.2.7.1. Pedestrian Infrastructure

The key infrastructural changes to the pedestrian link along Section 6 of the Proposed Schemes are the following:

- Footpaths with a minimum running width of 2.0m;
- Provision of new direct signalised pedestrian crossings on all three arms of the R135 Finglas Road / Finglas Place Junction;
- Provision of new direct signalised pedestrian crossings on the eastern and southern arms of the R135 Finglas Road / Glenhill Road / Access to the Clearwater Shopping Centre Junction;
- Provision of a new direct signalised pedestrian crossing on the southern arm of the R135 Finglas Road / Tolka Valley Road Junction;

- Provision of new direct signalised pedestrian crossings on the eastern and southern arms of the R135 Finglas Road / R102 Old Finglas Road Junction;
- Provision of a Toucan crossing across R135 Finglas Road to the south of R102 Old Finglas Road that will tie in with the Tolka Valley Cycle Route;
- The upgrade of various signalised crossings from staggered to direct crossing arrangements; and
- The inclusion of raised uncontrolled pedestrian crossings along the adjacent side roads.

The assessment of the qualitative impacts on the pedestrian infrastructure for Section 6 of the Proposed Scheme are summarised in Table 6.33. A detailed breakdown of the assessment at each impacted junction, including a list of the junctions which experience no change, can be found in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

Table 6.33: Section 6 – Pedestrian Impact during Operational Phase

Junctions	Chainage	Do Minimum LoS	Do Something LoS	Impact
R135 Finglas Road / Wellmount Road	B1100 – B1200	D	B	Medium Positive
R135 Finglas Road / Finglas Road	B1170 – B1250	D	B	Medium Positive
R135 Finglas Road / Finglas Place	B1350 – B1500	D	A	Medium Positive
R135 Finglas Road / Glenhill Road / Access to Clearwater Shopping Centre	B1550 – B1650	F	A	High Positive
R135 Finglas Road / The Griffith	B1850 – B1950	E	B	Medium Positive
R135 Finglas Road / Premier Square	B2000 – B2100	D	B	Medium Positive
R135 Finglas Road / R102 Tolka Valley Road	B2150 – B2300	E	A	High Positive
R135 Finglas Road / R102 Old Finglas Road	B2410 – B2540	F	A	High Positive
Mid-link crossing on R135 Finglas Road	B2500 – B2550	N/A	A	High Positive
R135 Finglas Road / Ballyboggan Road	B2610 – B2740	E	C	Medium Positive
Section Summary		**D**	**A**	**Medium Positive**

The content of Table 6.33 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the pedestrian infrastructure along R135 Finglas Road between Wellmount Road and Ballyboggan Road during the Operational Phase.

The LoS in the Do Minimum scenario ranges from D to F for the ten impacted junctions or crossings. During the Do Something scenario (i.e. following the development of the Proposed Scheme), the LoS ranges from A to C, with only one of the ten impacted junctions receiving a rating of C.

This is as a result of the proposed improvements of the existing pedestrian facilities in the form of additional pedestrian crossings, increased pedestrian directness, provision of traffic calming measures to reduce vehicle speeds, improved accessibility and increased footpath and crossing widths. All proposed facilities have been designed in accordance with the principles of DMURS (DTTS 2019) and the National Disability Authority (NDA) 'Building for Everyone: A Universal Design Approach' (NDA 2020) with regards to catering for all users, including those with disabilities.

Overall, it is anticipated that there will be **Medium Positive** impact to the quality of the pedestrian infrastructure along Section 6 of the Proposed Scheme during the Operational Phase.

6.6.2.7.2. Cycling Infrastructure

The key cycling improvements along Section 6 of the Proposed Scheme can be summarised as follows:

- Existing cycle lanes to be replaced with 1.5m to 2.0m wide cycle tracks positioned adjacent to both sides of R135 Finglas Road between Wellmount Road and Ballyboggan Road;

- Provision of a new Toucan crossing across R135 Finglas Road to the south of Old Finglas Road, in order to tie in with the Tolka Valley Cycle Route;
- Upgrading several signalised junctions to feature green signals providing for cyclists; and
- Directing the proposed cycle tracks behind the existing, modified and proposed bus stops.

Along Section 6, the Proposed Scheme will provide a 60mm set down kerb segregation between the footpath and the cycle track. This is of particular importance in the context of providing for pedestrians with visual impairments, whereby the use of white line segregation is not as effective for establishing a clear understanding of the change of pavement use and potential for cyclist / pedestrian interactions. The cycle tracks will also be protected by a 120mm kerb on the carriageway side to provide segregation from vehicles.

The contents of Table 6.34 outline the cycling qualitative assessment along Section 6 of the Proposed Scheme, which sets out the overall Do Minimum LoS and the Do Something LoS and the description of impact. Please refer to TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment) which outlines in further detail the methodology behind each LoS rating given to the Do Minimum and Do Something scenarios.

Table 6.34: Section 6 – Cycling Impact during Operational Phase

Locations	Chainage	Do Minimum LoS	Do Something LoS	Impact
R135 Finglas Road: Wellmount Road to Finglas Place	A1170 – A1450	D	B	Medium
R135 Finglas Road: Finglas Place to Ballyboggan Road	A1450 – A2720	B	B	Negligible
Section Summary		**C**	**B**	**Low**

The content of Table 6.34 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the cycling infrastructure along R135 Finglas Road between Wellmount Road and Ballyboggan Road during the Operational Phase.

The LoS rating of the cycling facilities during the Do Minimum scenario ranges from B to D. During the Do Something scenario (i.e. following the development of the Proposed Scheme), the LoS ratings for both lengths are increased to B. This is due to the proposed improvements to the existing cycling facilities, in the form of enhanced segregation, improvements to cycle widths and cycle priority at junctions.

The findings of the cycling assessment fully aligns with the objective of the CBC Infrastructure Works, applicable to the traffic and transport assessment of the Proposed Scheme, to '*Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable'*.

Overall, it is anticipated that there will be a **Low Positive** impact to the quality of the cycling infrastructure along Section 6 of the Proposed Scheme during the Operational Phase.

6.6.2.7.3. Bus Infrastructure

This Section provides an assessment of the changes in the quality of bus stop infrastructure provision as a result of the Proposed Scheme along Section 6, including upgrades and any relocations. Any relocations of bus stops which need to be carried through to the EIAR for significance assessment are identified.

There are currently nine bus stops along Section 6 of the Proposed Scheme. Table 6.35 presents a summary of the changes in the number and locations of bus stops along Section 6 of the Proposed Scheme.

Table 6.35: Section 6 – Overview of Amendments to Bus Stop Locations

Direction	Stop	Chainage	Do Something	Comment
Inbound	101141/4542	B-1245	Retained	Stop 101141/4542 to be retained
Outbound	100891/4543	B-1290	Retained	Stop 100891/4543 to be retained
Outbound	1538	B-1525	Retained	Stop 1538 to be retained
Inbound	1531	B-1660	Retained	Stop 1531 to be retained
Outbound	1512	B-1855	Retained	Stop 1512 to be retained
Inbound	1532	B-1960	Retained	Stop 1532 to be retained
Inbound	1533	B-2335	Retained	Stop 1533 to be retained
Outbound	1511	B-2395	Retained	Stop 1511 to be retained
Outbound	1510	B-2560	Relocated	Stop 1510 to be relocated approximately 80m south of the existing location
Inbound	1534	B-2740	Relocated / New	Stop 1534 to be relocated approximately 120m north of the existing location (from Section 7 of the Proposed Scheme)

It is proposed that there will be a total of ten bus stops along Section 6 of the Proposed Scheme (five inbound (southbound) and five outbound (northbound) bus stops). The altered layout is considered to better serve the existing and future catchment as well as being closer to existing and new pedestrian crossing facilities for improved convenience.

Table 6.36 outlines a summary of the changes to the bus stop infrastructure along Section 6 of the Proposed Scheme, with reference to the number and percentage of bus stops that provide each facility in the Do Minimum and Do Something scenarios.

Table 6.36: Section 6 – Overview of Changes in Bus Stop Facilities

Bus Stop Facility	Do Minimum		Do Something		Comment
	No. of Stops	Percentage of Stops	No. of Stops	Percentage of Stops	
RTPI	2	22%	10	100%	It is proposed that all bus stops provide real-time information
Timetable information	6	67%	10	100%	It is proposed that all bus stops provide timetable information
Shelter	7	78%	10	100%	It is proposed that all bus stops provide shelters
Seating	6	67%	10	100%	It is proposed that all bus stops provide seating
Accessible Kerbs	0	0%	10	100%	It is proposed that all bus stops provide accessible kerbs
Indented Drop Off Area	0	0%	0	0%	It is proposed that all bus stops are positioned within designated bus lanes
Total Stops	**9**		**10**		

The contents of Table 6.36 indicate that there are significant improvements to the bus stop facilities along Section 6 of the Proposed Scheme.

It is proposed that all bus stops are positioned within dedicated bus lanes, meaning that buses will not incur delay when setting off after picking up passengers. Improvements to the provision of real-time information, timetable information, shelters, seating and accessible kerbs at the bus stops along Section 6 of the Proposed Scheme are assessed as providing an overall positive impact for bus passengers. All proposed facilities have been designed in accordance with BusConnects Preliminary Design Guidance which has been developed with cognisance to the relevant accessibility guidance.

The Proposed Scheme is anticipated to have a **Medium Positive** impact on the bus stop facilities along Section 6 of the Proposed Scheme.

6.6.2.7.4. Parking and Loading

There are no existing or proposed parking and loading facilities along Section 6 of the Proposed Scheme. However, there are 20 parking spaces on side streets within 200m of the Proposed Scheme. The Proposed Scheme does not impact parking and therefore it can be concluded that the overall impact will be **Negligible** impact during the Operational Phase**.**

6.6.2.8. Section 7 – Finglas Road from Ballyboggan Road to Hart's Corner

6.6.2.8.1. Pedestrian Infrastructure

The key infrastructural changes to the pedestrian link along Section 7 of the Proposed Schemes are the following:

- Footpaths with a minimum running width of 2.0m;
- Provision of a new direct signalised pedestrian crossing on the southern arm of the R135 Finglas Road / The Willows Junction;
- Provision of a new direct signalised pedestrian crossing on the southern arm of the R135 Finglas Road / Claremont Lawns Junction;
- Provision of a new direct signalised pedestrian crossing across R135 Finglas Road opposite St Vincent's Secondary School;
- Provision of a new direct signalised pedestrian crossing across Prospect Way (R108 and R135) to the west of Prospect Avenue;
- Provision of a new direct signalised pedestrian crossing across Finglas Road (R108 and R135) to the north of Dalcassian Downs;
- The upgrade of various signalised crossings from staggered to direct crossing arrangements; and
- The inclusion of raised uncontrolled pedestrian crossings along the adjacent side roads.

The assessment of the qualitative impacts on the pedestrian facilities at the junctions along Section 7 of the Proposed Scheme are summarised in Table 6.37. A detailed breakdown of the assessment at each impacted junction, including a list of the junctions which experience no change, can be found in TIA Appendix 4 (Section 4.1 - Pedestrian Infrastructure Assessment).

Table 6.37: Section 7 – Pedestrian Impact during Operational Phase

Junctions	Chainage	Do Minimum LoS	Do Something LoS	Impact
R135 Finglas Road / Slaney Road	B3050 – B3160	E	B	Medium Positive
R135 Finglas Road / The Willows	B3150 – B3250	D	B	Medium Positive
R135 Finglas Road / Claremont Court	B3350 – B3450	F	B	High Positive
R135 Finglas Road / Claremont Lawns	B3500 – B3570	C	B	Low Positive
R135 Finglas Road / Tower View Cottages	B3750 – B3770	D	B	Medium Positive
Mid-link crossing on R135 Finglas Road	B3875 – B3925	N/A	A	High Positive
R135 Finglas Road / St Philomena's Road	B3970 – B4010	C	B	Low Positive
R108 and R135 Prospect Way / Prospect Avenue	B4090 – B4121	C	A	Medium Positive
R108 and R135 Finglas Road / Dalcassian Downs	B4127	C	B	Low Positive
Section Summary		**D**	**B**	**Medium Positive**

The content of Table 6.37 demonstrates that the Proposed Scheme will have an overall positive impact on the quality of the pedestrian infrastructure along R135 Finglas Road between Ballyboggan Road and Hart's Corner during the Operational Phase.

The LoS in the Do Minimum scenario ranges from C to F for the nine impacted junctions or crossings. During the Do Something scenario (i.e. following the development of the Proposed Scheme), the LoS ratings range from A to B, in which two of the nine impacted junctions received a rating of A.

This is because of the proposed improvements of the existing pedestrian facilities in the form of additional pedestrian crossings, increased pedestrian directness, provision of traffic calming measures to reduce vehicle speeds, improved accessibility and increased footpath and crossing widths. All proposed facilities have been designed in accordance with the principles of DMURS (DTTS 2019) and the National Disability Authority (NDA) 'Building for Everyone: A Universal Design Approach' (NDA 2020) with regards to catering for all users, including those with disabilities.

Overall, it is anticipated that there will be a **Medium Positive** impact to the quality of the pedestrian infrastructure along Section 7 of the Proposed Scheme during the Operational Phase.

6.6.2.8.2. Cycling Infrastructure

The key cycling improvements along Section 7 of the Proposed Scheme can be summarised as follows:

- 1.4m to 2.0m wide cycle tracks to be provided in both directions throughout R135 Finglas Road between Ballyboggan Road and the one-way road system at Hart's Corner. As a result of these proposed improvements, existing cycle lanes along this stretch of R135 Finglas Road are to be removed;
- An east-west two-way cycle track to be provided along R108 / R135 Prospect Way connecting the cycle tracks of R135 Finglas Road with the north-south two-way cycle track along R108 / R135 Botanic Road (part of the Ballymun Proposed Scheme);
- Toucan crossing to be provided across R135 Finglas Road opposite Glasnevin Cemetery;
- Toucan crossings to be positioned at the junction between R135 Finglas Road and the one-way road system at Hart's Corner in order to connect various cycle tracks together;
- Upgrading several signalised junctions to feature green signals providing for cyclists; and
- Directing the proposed cycle tracks behind the existing, modified and proposed bus stops.

Along Section 7, the Proposed Scheme will provide a 60mm set down kerb segregation between the footpath and the cycle track. This is of particular importance in the context of providing for pedestrians with visual impairments, whereby the use of white line segregation is not as effective for establishing a clear understanding of the change of pavement use and potential for cyclist / pedestrian interactions. The cycle tracks will also be protected by a 120mm kerb on the carriageway side to provide segregation from vehicles.

The contents of Table 6.38 outline the cycling qualitative assessment along Section 7 of the Proposed Scheme, which sets out the overall Do Minimum LoS and the Do Something LoS and the description of impact. Please refer to TIA Appendix 4 (Section 4.2 - Cycling Infrastructure Assessment) which outlines in further detail the methodology behind each LoS rating given to the Do Minimum and Do Something scenarios.

Table 6.38: Section 7 – Cycling Impact during Operational Phase

Locations	Chainage	Do Minimum LoS	Do Something LoS	Impact
R135 Finglas Rd: Ballyboggan Rd to Claremont Court	A2700 – A3400	B	B	Negligible
R135 Finglas Rd: Claremont Court to Hart's Corner	A3400 – A4000	B	B	Negligible
R108 / R135 One-way road system at Hart's Corner: Finglas Road and Prospect Way	A4000 – A4127	C	A+	High
Section Summary		**B**	**B**	**Low**

The content of Table 6.38 demonstrates that the Proposed Scheme will have a negligible impact along R135 Finglas Road between Ballyboggan Road and Hart's Corner. However, it will have a positive impact along the one-way road sections of R108 / R135 Finglas Road and R108 / R135 Prospect Way at Hart's Corner during the Operational Phase.

The LoS rating of the cycling facilities during the Do Minimum scenario ranges from B to C. During the Do Something scenario (i.e. following the development of the Proposed Scheme), the LoS ratings range from B to A+. This is due to the proposed improvements to the existing cycling facilities, in the form of increased segregation, improvements to cycle widths and cycle priority at junctions.

The findings of the cycling assessment fully aligns with the objective of the CBC Infrastructure Works, applicable to the traffic and transport assessment of the Proposed Scheme, to '*Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable*'.

Overall, it is anticipated that there will be a **Low Positive** impact to the quality of the cycling infrastructure along Section 2 of the Proposed Scheme during the Operational Phase.

6.6.2.8.3. Bus Infrastructure

This Section provides an assessment of the changes in the quality of bus stop infrastructure provision as a result of the Proposed Scheme along Section 7, including upgrades and any relocations. Any relocations of bus stops which need to be carried through to the EIAR for significance assessment are identified.

There are currently eight bus stops along Section 7 of the Proposed Scheme.

Table 6.39 presents a summary of the changes in the number and locations of bus stops along Section 7 of the Proposed Scheme.

Table 6.39: Section 7 – Overview of Amendments to Bus Stop Locations

Direction	Stop	Chainage	Do Something	Comment
Inbound	1534	B-2740	Relocated / Removed	Stop 1534 to be relocated approximately 120m north of the existing location (to Section 6 of the Proposed Scheme)
Outbound	1509	B-3035	Retained	Stop 3048 to be retained
Inbound	1535	B-3170	Retained	Stop 3185 to be retained
Outbound	1508	B-3555	Retained	Stop 3564 to be retained
Inbound	1536	B-3660	Retained	Stop 3665 to be retained
Outbound	1507	B-3870	Retained	Stop 3865 to be retained
Inbound	1537	B-3960	Relocated	Stop 3925 to be approximately 50m south of the existing location
Outbound	1506	B-4120	Retained	Stop 1506 to be retained.

It is proposed that there will be a total of seven bus stops along Section 7 of the Proposed Scheme (three inbound (southbound) and four outbound (northbound) bus stops). The altered layout of the bus stops is considered to better serve the existing and future catchment and be closer to existing and new pedestrian crossing facilities for improved convenience.

Table 6.40 outlines a summary of the changes to the bus stop infrastructure along Section 7 of the Proposed Scheme, with reference to the number and percentage of bus stops that provide each facility in the Do Minimum and Do Something scenarios.

Table 6.40: Section 7 – Overview of Changes in Bus Stop Facilities

Bus Stop Facility	Do Minimum		Do Something		Comment
	No. of Stops	Percentage of Stops	No. of Stops	Percentage of Stops	
RTPI	0	0%	7	100%	It is proposed that all bus stops provide real-time information
Timetable information	7	78%	7	100%	It is proposed that all bus stops provide timetable information
Shelter	8	89%	7	100%	It is proposed that all bus stops provide shelters
Seating	6	67%	7	100%	It is proposed that all bus stops provide seating
Accessible Kerbs	0	0%	7	100%	It is proposed that all bus stops provide accessible kerbs
Indented Drop Off Area	1	11%	1	13%	Bus Stop 200 is proposed to be located at an indented drop off area, while all other bus stops are positioned within designated bus lanes
Total Stops	**8**		**7**		

The contents of Table 6.40 indicate that there are significant improvements to the bus stop facilities along Section 7 of the Proposed Scheme. It is proposed that seven of the bus stops are positioned within the designated bus lanes, whilst Bus Stop 200 is positioned within an indented drop off-area adjacent to a designated bus lane.

Improvements to the provision of real-time information, timetable information, shelters, seating and accessible kerbs at the bus stops along Section 7 of the Proposed Scheme are assessed as providing an overall positive impact for bus passengers. All proposed facilities have been designed in accordance with BusConnects Preliminary Design Guidance which has been developed with cognisance to the relevant accessibility guidance.

The Proposed Scheme is predicted to have a **Medium Positive** impact on the bus stop facilities along Section 7.

6.6.2.8.4. Parking and Loading

The Proposed Scheme will impact on existing parking and loading facilities along Section 7. The main areas of parking and loading changes are as follows:

- There are currently 30 designated paid parking spaces, one disabled parking space and two loading bays positioned adjacent to the northbound lane of R135 Finglas Road, opposite the Glasnevin Cemetery. It is proposed that the R135 Finglas Road carriageway is extended from a three-lane carriageway to a four-lane carriageway in order to accommodate bus lanes and adjacent cycle tracks in both directions. The existing parking spaces are to be re-positioned within a new adjacent car park that will feature specific access and egress points from and to R135 Finglas Road. It is proposed that the new car park will include 27 designated paid parking spaces, three disabled parking spaces and two loading bays.

The content of Table 6.41 presents a summary of the parking and loading spaces during both the Do Minimum and Do Something scenarios and the resulting change in parking along Section 7 of the Proposed Scheme.

Table 6.41: Section 7 – Parking Provision

Location	Parking Type	Number of Parking Spaces		
		Do Minimum	Do Something	Change
R135 Finglas Road: Tolka Valley Road to Hart's Corner	Designated Paid Parking	30	27	-3
	Disabled Parking	1	3	2
	Informal Parking	4	4	0
	Loading Bay	2	2	0
	Side Street Parking	120	120	0
Total		**157**	**156**	**-1**

With the change in parking provisions at the locations specified, the Proposed Scheme will provide substantial improvements to sustainable transport infrastructure. Considering the overall retention of 156 spaces (including side street parking), loss of three designated paid parking spaces and addition of two disabled spaces the overall impact to parking and loading along Section 7 is expected to be **Negligible** during the Operational Phase.

6.6.3. Quantitative Assessment

This quantitative assessment has been prepared with reference to the modelling outputs obtained from the four-tiered modelling approach outlined in Section 4.3. The following assessment topics have been considered:

- People Movement:
  - Peak Hour People Movement along the Proposed Scheme;
  - People Movement by Bus; and
  - Bus Boarding.
- Bus Network Performance Indicators:
  - Bus Journey Times; and
  - Bus Journey Time Reliability.
- General Traffic Network Performance Indicators:

- Flow changes on the Direct Study Area; and
- Redistributed flows and Junction Capacity Outputs on the Indirect Study Area.

- Overall Road Network-Wide Performance Indicators
  - Queuing;
  - Total Travel Times;
  - Total Travel Distance; and
  - Average Network Speed.

6.6.3.1. People Movement

In order to understand the benefit of the Proposed Scheme with regards to the Movement of People following the implementation of the proposed infrastructure measures, a quantitative People Movement assessment has been undertaken using outputs from the NTA ERM and LAM and comparing the Do Minimum and Do Something peak hour scenarios for each forecast year (2028, 2043).

The assessment of People Movement includes the following metrics:

- The average number of people moved by each transport mode (i.e., car, bus, walking and cycling) along the corridor in the inbound and outbound direction. This metric is compared for the Do Minimum and Do Something scenarios in the AM and PM peak hours for each forecast year (2028 / 2043). This metric provides an estimate of the modal share changes along the route as a result of the Proposed Scheme measures; and
- People Movement by Bus:
  - AM and PM peak hour Bus Passenger Loadings along the Proposed Scheme for each forecast year (2028 / 2043); and
  - Total Passengers Boarding Buses on bus routes that use any part of the Proposed Scheme for each forecast year (2028 / 2043).

6.6.3.1.1. Peak Hour People Movement along the Proposed Scheme

To determine the impact that the Proposed Scheme has on modal share changes on the direct study area as a result of its implementation, the weighted average number of people moved by each mode (car, bus, active modes) has been extracted from the ERM / LAM. The analysis compares the Do Minimum and Do Something scenarios both in the inbound and outbound direction in the AM (08:00hrs to 09:00hrs) and PM (17:00hrs to 18:00hrs) peak hours for each forecast year (2028 / 2043).

As outlined previously, the same demographic assumptions (population, employment levels) are included in both the Do Minimum and Do Something scenarios. The bus network and frequency assumptions are also the same in both scenarios and are in line with the BusConnects bus network proposals. It is acknowledged, therefore, that the assessment is conservative in terms of the level of people movement that is predicted in the Do Something scenario.

The Do Something scenario will facilitate opportunities to increase bus network capacity operating along the corridor due to the extensive priority provided. In addition to this, the significant segregation and safety improvements to walking and cycling infrastructure that is a key feature of the Proposed Scheme will further maximise the movement of people travelling sustainably along the corridor and will therefore cater for higher levels of future population and employment growth.

In the absence of the delivery of the Proposed Scheme, growth along this key corridor would continue to contribute to increased congestion and operational issues on the road network. The Proposed scheme delivers a reliable alternative to car-based travel that can support future sustainable growth and provide a positive contribution towards reducing carbon emissions.

6.6.3.1.1.1. 2028 AM Peak Hour People Movement

Diagram 6.4 illustrates the People Movement by mode inbound towards the City Centre during the AM Peak Hour in 2028 along the Proposed Scheme.

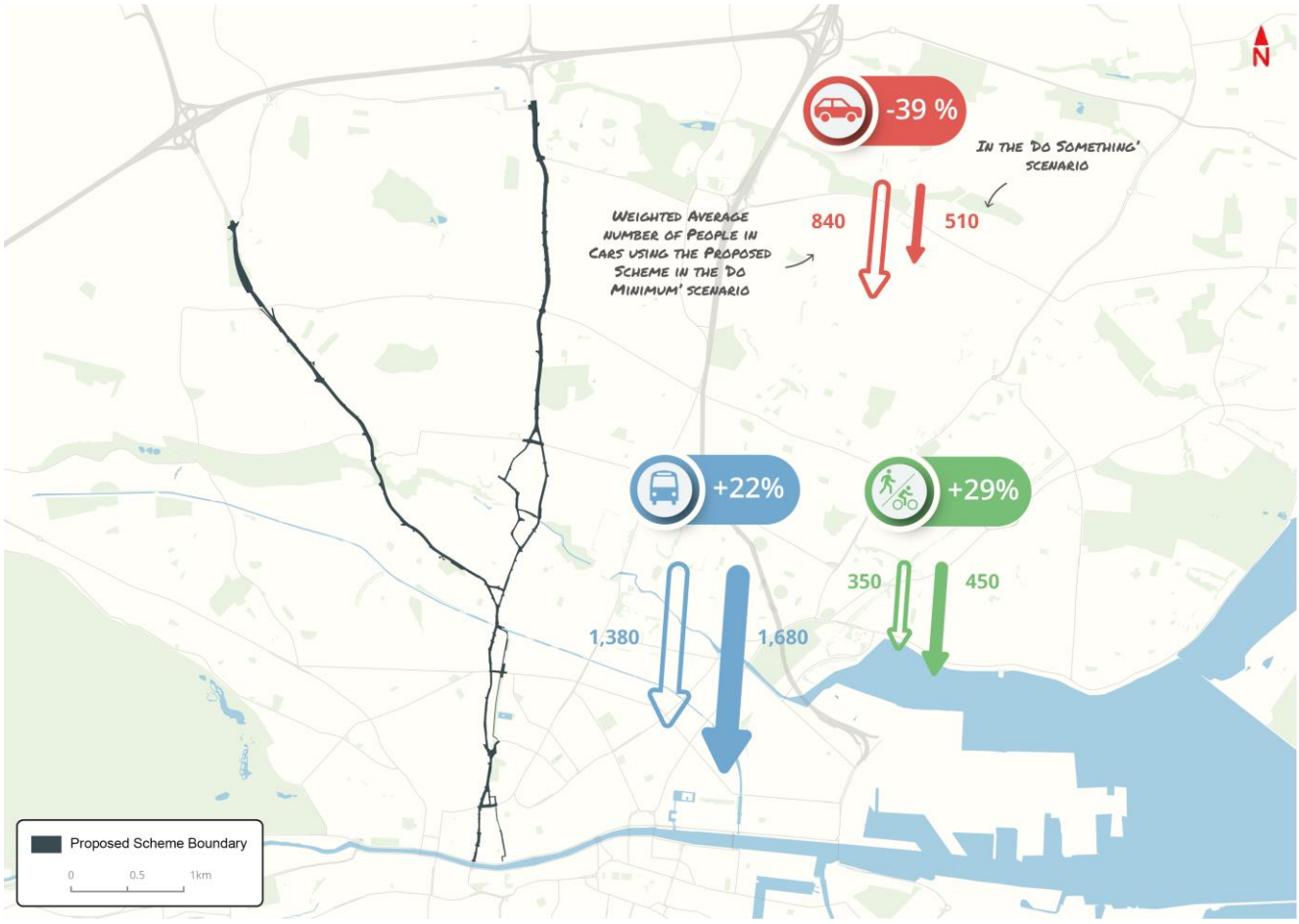

Diagram 6.4: Average People Movement by Mode during 2028 AM Peak Hour

As indicated in Diagram 6.4, there is a reduction of 39% in the number of people travelling via car, an increase of 22% in the number of people travelling via bus and an increase of 29% in people walking or cycling along the Proposed Scheme during the AM Peak Hour. It should be noted that the model predicts limited change in total walking trips between each scenario. This is due to the fact that growth in walk trips is offset by some walking trips in the Do Minimum scenario transferring to public transport and cycling due to the improved provision for these modes.

The Proposed Scheme will facilitate a step change in the level of segregated cycling provision in comparison with existing conditions along the entire length of the corridor. The transport modelling is conservative in terms of the predicted cycling mode share. The Proposed Scheme has been designed to cater for much higher levels of cycling uptake than modelled outputs, to cater for long-term trends in travel behaviours as people make sustainable travel lifestyle choices, which would otherwise not be achievable in the absence of the Proposed Scheme.

Table 6.42 outlines the difference in modal split between the Do Minimum and Do Something scenarios for each mode of travel in an inbound direction towards the City Centre during the AM Peak Hour. The results indicate a 23% increase in people moved by sustainable modes (public transport, walk, cycle).

Table 6.42: Modal Shift of 2028 AM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Inbound towards the City Centre	AM Peak Period	General Traffic	840	33%	510	19%	-330	-39%
		Public Transport (Bus)	1,380	54%	1,680	64%	300	22%
		Walking	210	8%	200	8%	-10	-5%
		Cycling	140	5%	250	9%	110	79%
		Combined Walking/Cycling	350	14%	450	17%	100	29%
		Sustainable Modes Total	**1,730**	**67%**	**2,130**	**81%**	**400**	**23%**

6.6.3.1.1.2. 2028 PM Peak Hour People Movement

Diagram 6.5 illustrates the People Movement by mode travelling outbound from the City Centre during the PM Peak Hour along the Proposed Scheme.

Diagram 6.5: Weighted Average People Movement by Mode during 2028 PM Peak Hour

As indicated in Diagram 6.5, there is a reduction of 48% in the number of people travelling via car, an increase of 26% in the number of people travelling via bus and an increase in 24% in the number of people walking or cycling along the Proposed Scheme during the PM Peak Hour. Table 6.43 outlines the difference in modal split between the Do Minimum and Do Something scenarios for each mode of travel in an outbound direction from the City

Centre during the PM Peak Hour. The results indicate a 26% increase in people moved by sustainable modes (Public Transport, Walk, Cycle).

Table 6.43: Modal Shift of 2028 PM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Outbound from the City Centre	PM Peak Period	General Traffic	840	41%	440	22%	-400	-48%
		Public Transport (Bus)	920	45%	1,160	59%	240	26%
		Walking	200	10%	190	10%	-10	-5%
		Cycling	90	4%	170	9%	80	89%
		Combined Walking/Cycling	290	14%	360	18%	70	24%
		Sustainable Modes Total	**1,210**	**59%**	**1,520**	**78%**	**310**	**26%**

6.6.3.1.1.3. 2043 AM Peak Hour People Movement

Diagram 6.6 the People Movement by mode inbound towards the City Centre during the AM Peak Hour in 2043 along the Proposed Scheme.

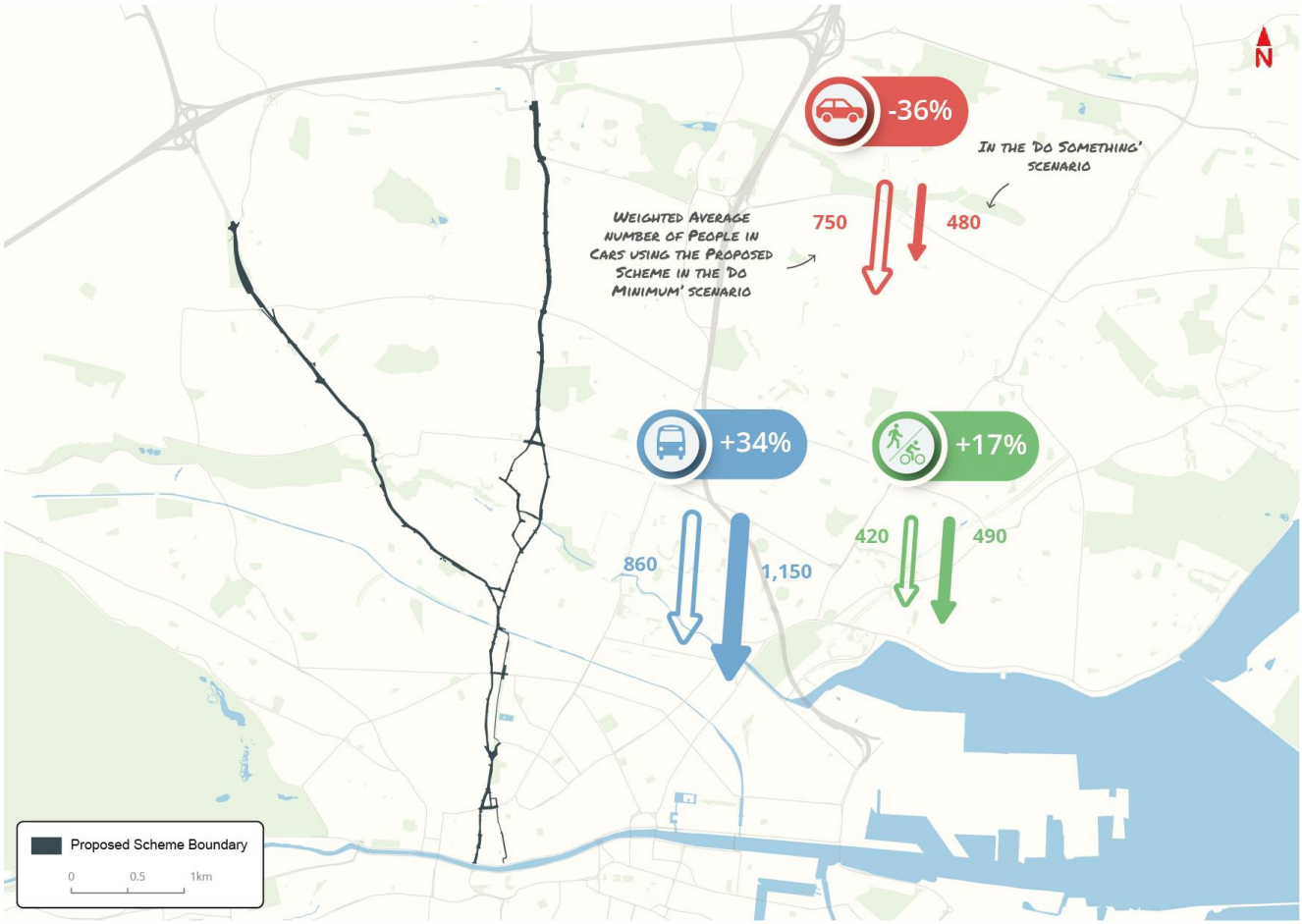

Diagram 6.6: Weighted Average People Movement by Mode during 2043 AM Peak Hour

As indicated in Diagram 6.6, there is a decrease of 36% in the number of people travelling via car, an increase of 34% in the number of people travelling via bus and an increase of 17% in the number of people walking and cycling along the Proposed Scheme during the AM Peak Hour.

Table 6.44 outlines the difference in modal split between the Do Minimum and Do Something scenarios for each mode of travel in an inbound direction towards the City Centre during the AM Peak Hour. The results indicate a 28% increase in people moved by sustainable modes (Public Transport, Walk, Cycle). The bus loadings in 2043 are lower in comparison to the Opening Year (2028) scenario due to the inclusion of MetroLink in the corridor by 2043.

Table 6.44: Modal Shift of 2043 AM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Inbound towards the City Centre	AM Peak Period	General Traffic	750	37%	480	23%	-270	-36%
		Public Transport (Bus)	860	42%	1,150	54%	290	34%
		Walking	280	14%	250	12%	-30	-11%
		Cycling	140	7%	240	11%	100	71%
		Combined Walking/Cycling	420	21%	490	23%	70	17%
		Sustainable Modes Total	**1,280**	**63%**	**1,640**	**77%**	**360**	**28%**

6.6.3.1.1.4. 2043 PM Peak Hour People Movement

Diagram 6.7 illustrates the People Movement by mode travelling outbound from the City Centre during the PM Peak Hour in 2043 along the Proposed Scheme.

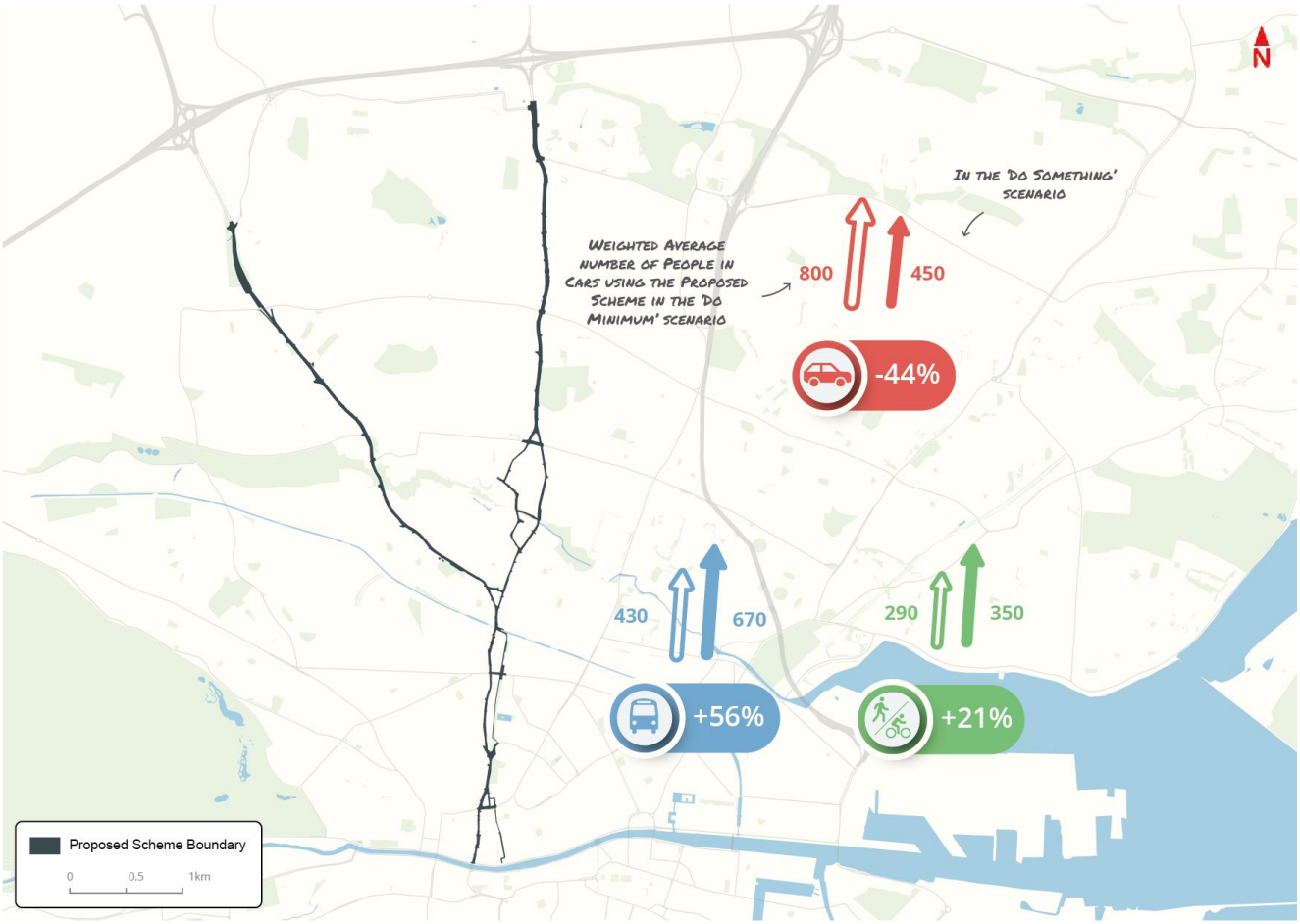

Diagram 6.7: Weighted Average People Movement by Mode during 2043 PM Peak Hour

As indicated in Diagram 6.7, there is a decrease of 44% in the number of people travelling via car, an increase of 56% in the number of people travelling via bus and an increase of 21% in the number of people walking and cycling along the Proposed Scheme during the PM Peak Hour. Table 6.45 outlines the difference in modal split between the Do Minimum and Do Something scenarios for each mode of travel in an outbound direction from the City Centre during the PM Peak Hour. The results indicate a 42% increase in people moved by sustainable modes (Public Transport, Walk, Cycle). The bus loadings in 2043 are lower in comparison to the Opening Year (2028) scenario due to the inclusion of MetroLink in the corridor by 2043.

Table 6.45: Modal Shift of 2043 PM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Outbound from the City Centre	PM Peak Period	General Traffic	800	53%	450	31%	-350	-44%
		Public Transport (Bus)	430	28%	670	46%	240	56%
		Walking	220	14%	220	15%	0	0%
		Cycling	70	5%	130	9%	60	86%
		Combined Walking/Cycling	290	19%	350	24%	60	21%
		Sustainable Modes Total	**720**	**47%**	**1,020**	**69%**	**300**	**42%**

6.6.3.1.2. People Movement by Bus

The following section presents the ERM demand outputs for People Movement by Bus in terms of passenger loadings along the corridor. The results indicate that the improvements in bus priority infrastructure with the Proposed Scheme in place show a substantial increase in Bus patronage during the peak hours.

6.6.3.1.2.1. 2028 AM Peak Hour Bus Passengers

Diagram 6.8 and Diagram 6.9 present the passenger loading profile comparing the Do Minimum and Do Something scenarios in the AM Peak Hour in the inbound direction in 2028.

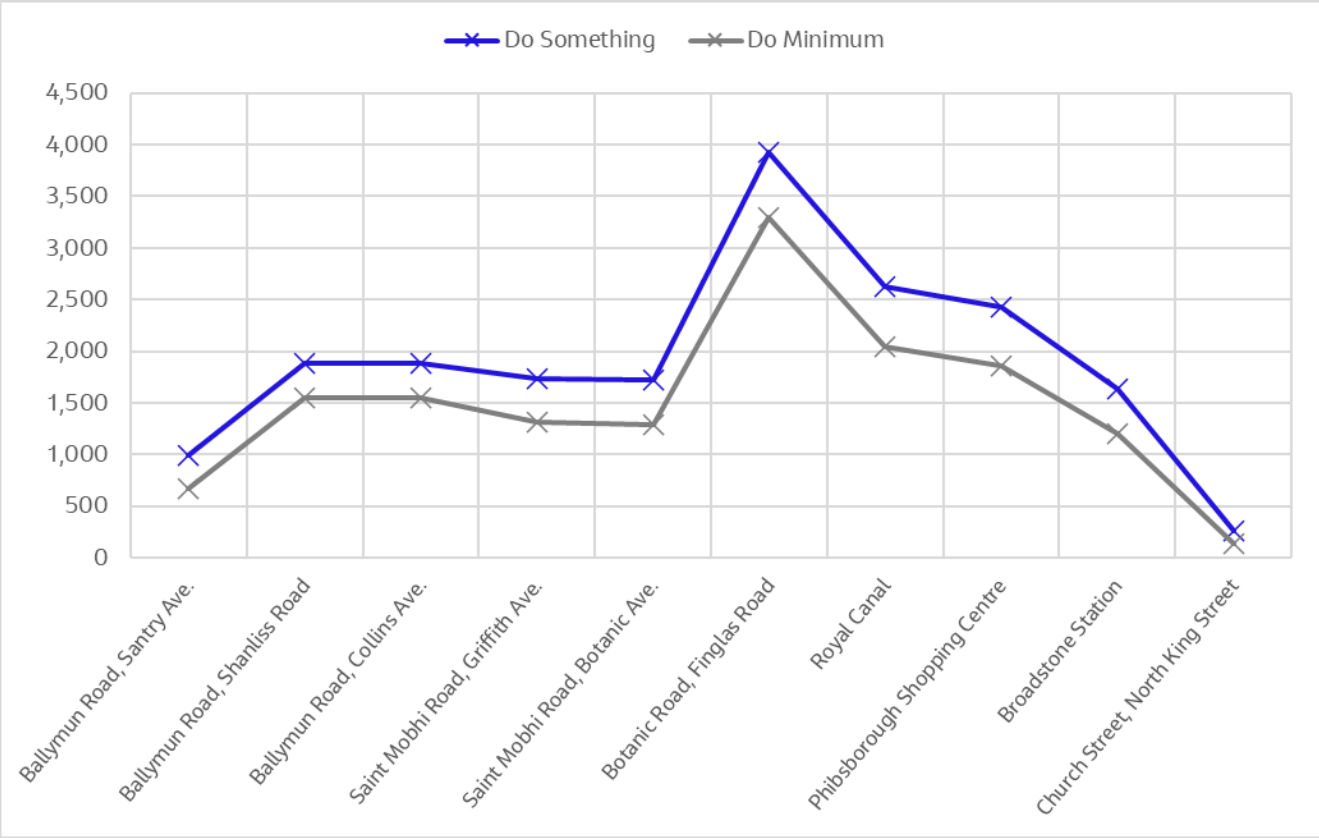

Diagram 6.8: 2028 AM Peak Hour Passenger Volume Along Proposed Scheme (inbound direction – Finglas to Phibsborough)

Diagram 6.8 shows higher levels of bus passenger loadings along the Ballymun to City Centre section of the Proposed Scheme with a peak at the intersection with Botanic Road (where the Finglas corridor joins) where the volume of passengers reaches 3,900 passengers in the AM Peak hour, compared to approximately 3,300 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 300 to 600 additional users on most of the corridor, compared to the Do Minimum scenario.

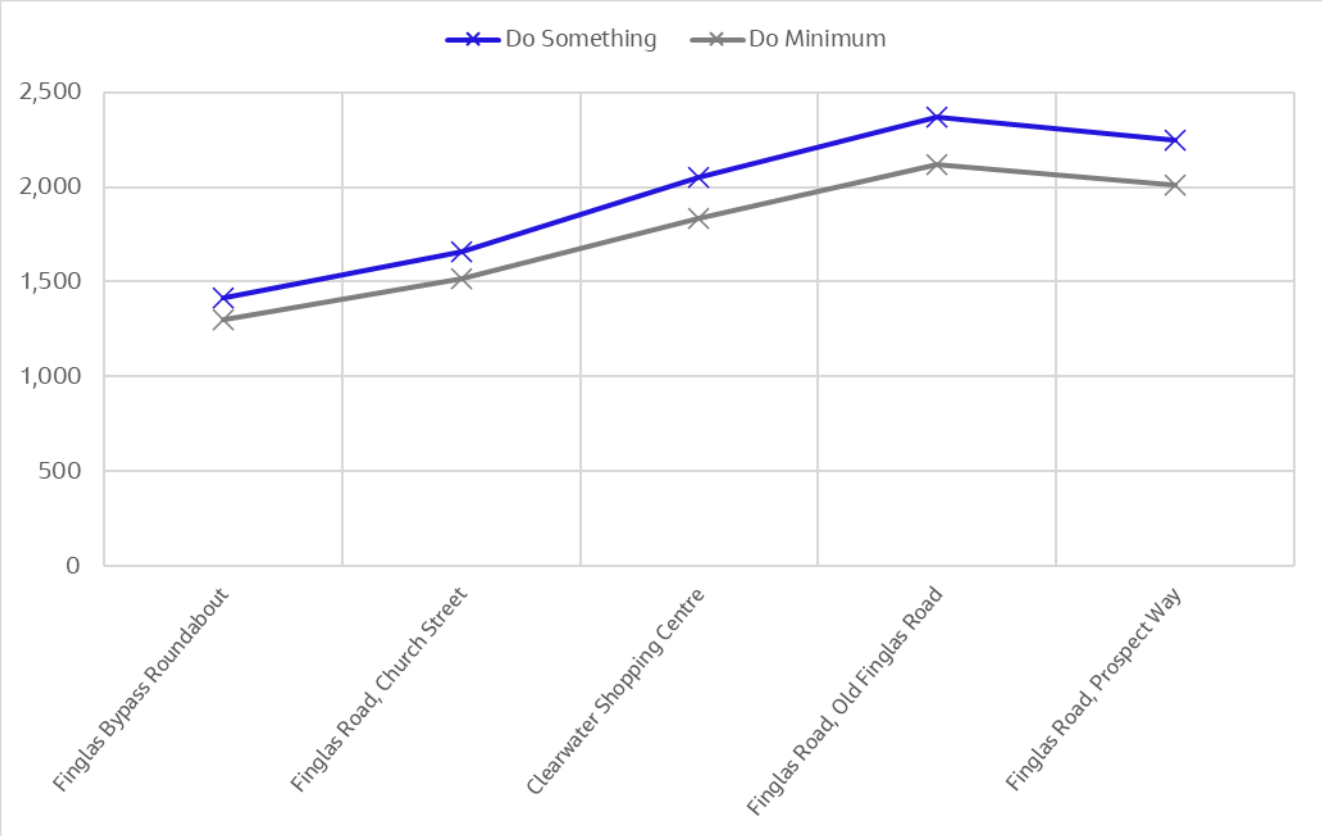

Diagram 6.9: 2028 AM Peak Hour Passenger Volume Along Proposed Scheme (inbound direction – Finglas to Phibsborough)

Diagram 6.9 shows higher levels of bus passenger loadings along the Finglas to Phibsborough section of the Proposed Scheme with a peak at the intersection with Old Finglas Road where the volume of passengers reaches 2,350 passengers in the AM Peak hour, compared to approximately 2,100 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 100 to 250 additional users on the corridor, compared to the Do Minimum scenario.

6.6.3.1.2.2. 2028 PM Peak Hour Bus Passengers

Diagram 6.10 and Diagram 6.11 present the passenger loading profile comparing the Do Minimum and Do Something scenarios in the PM Peak Hour in the outbound direction in 2028.

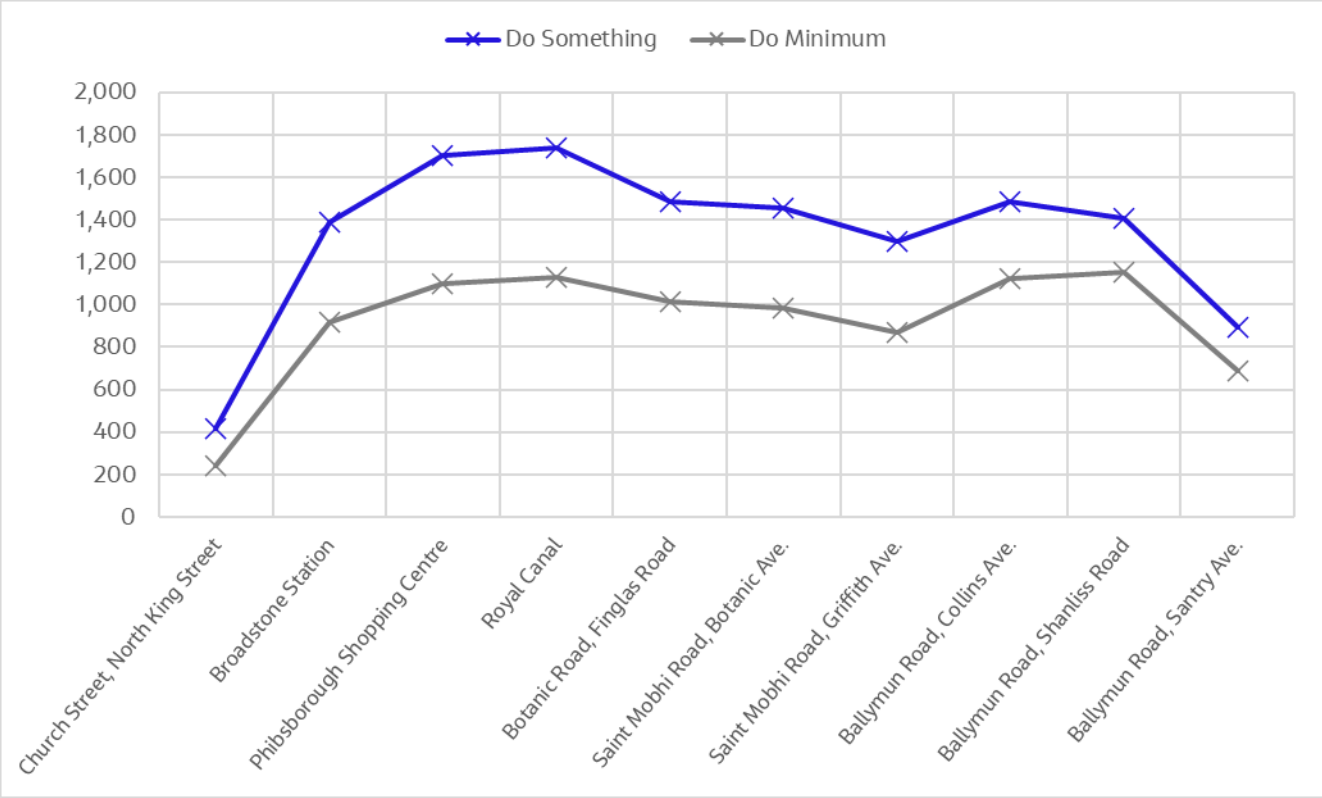

Diagram 6.10: 2028 PM Peak Hour Passenger Volume Along Proposed Scheme (outbound direction – Ballymun to City Centre)

Diagram 6.10 shows higher levels of bus passenger loadings along the Ballymun to City Centre section of the Proposed Scheme with a peak at the Royal Canal where the volume of passengers reaches 1,750 in the PM Peak hour, compared to approximately 1,150 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 400 to 600 additional users on most of the corridor, compared to the Do Minimum scenario.

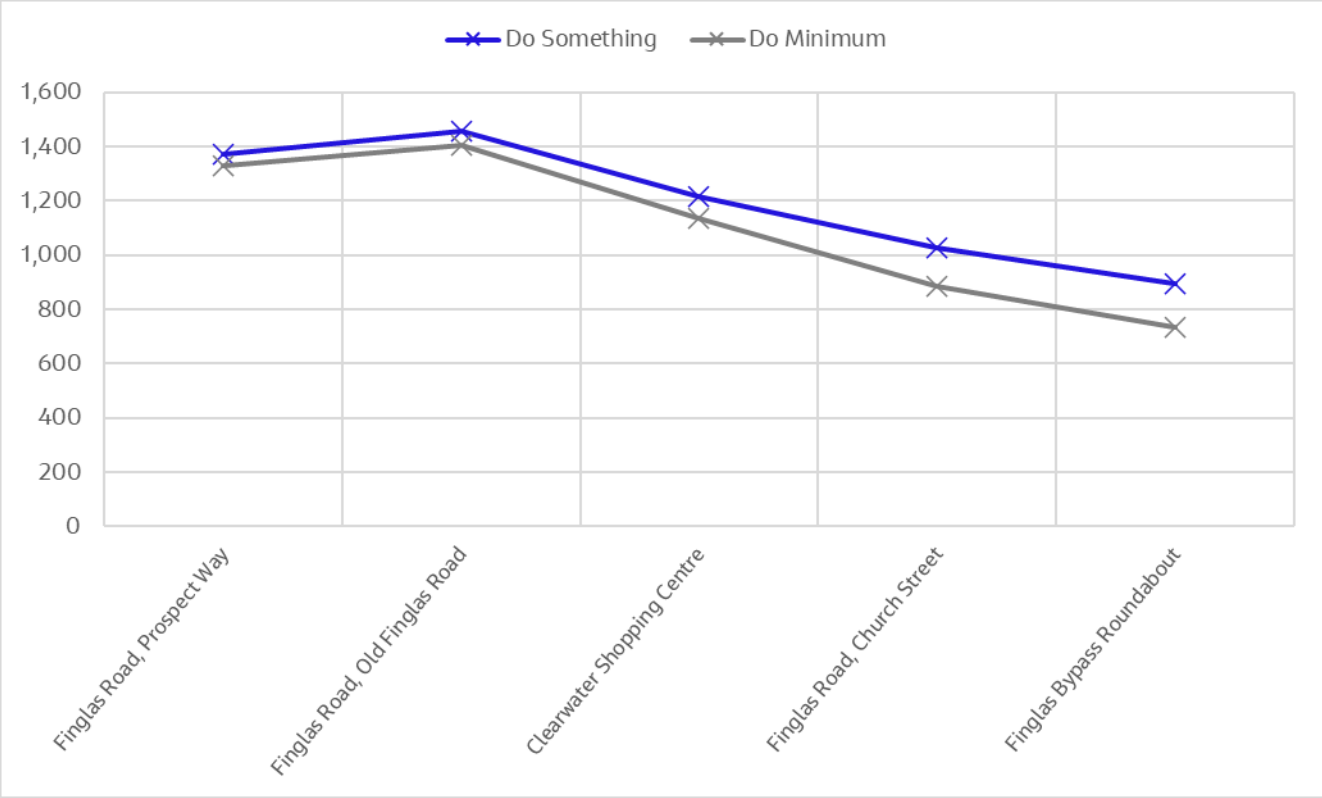

Diagram 6.11: 2028 PM Peak Hour Passenger Volume Along Proposed Scheme (outbound direction – Finglas to Phibsborough)

Diagram 6.11 shows higher levels of bus passenger loadings along the Finglas to Phibsborough Scheme with a peak at the intersection with Old Finglas Road, where the volume of passengers reaches 1,450 in the PM Peak hour, compared to approximately 1,400 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 50 to 150 additional users on most of the corridor, compared to the Do Minimum scenario.

6.6.3.1.2.3. 2043 AM Peak Hour Bus Passengers

Diagram 6.12 and Diagram 6.13 present the passenger loading profile comparing the Do Minimum and Do Something scenarios in the AM Peak Hour in the inbound direction in 2043.

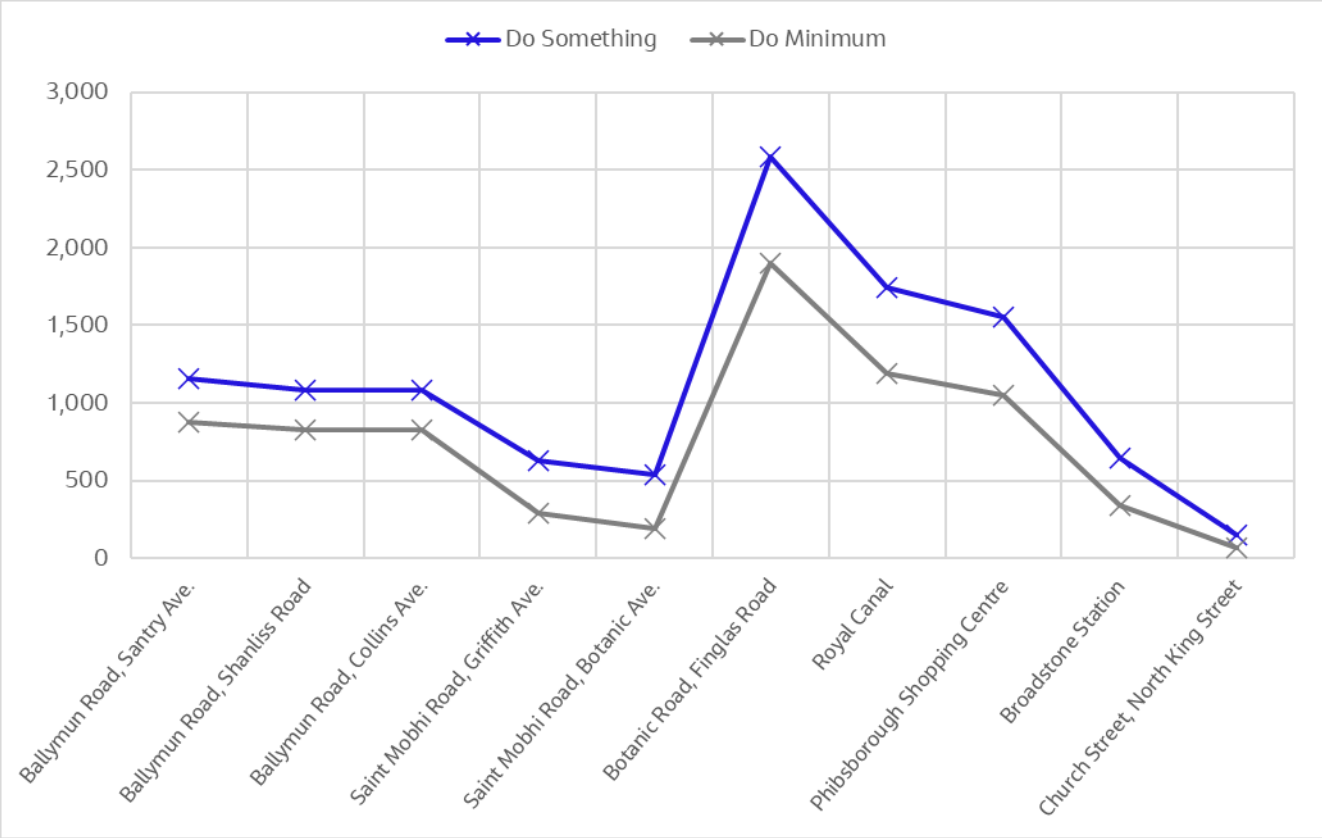

Diagram 6.12: 2043 AM Peak Hour Passenger Volume Along Proposed Scheme (inbound direction – Ballymun to City Centre)

Diagram 6.12 shows higher levels of bus passenger loadings along the Ballymun to City Centre section of the Proposed Scheme with a peak at the intersection with Botanic Road (where the Finglas corridor joins) where the volume of passengers reaches 2,600 in the AM Peak hour, compared to approximately 1,900 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 300 to 700 additional users on the corridor, compared to the Do Minimum scenario.

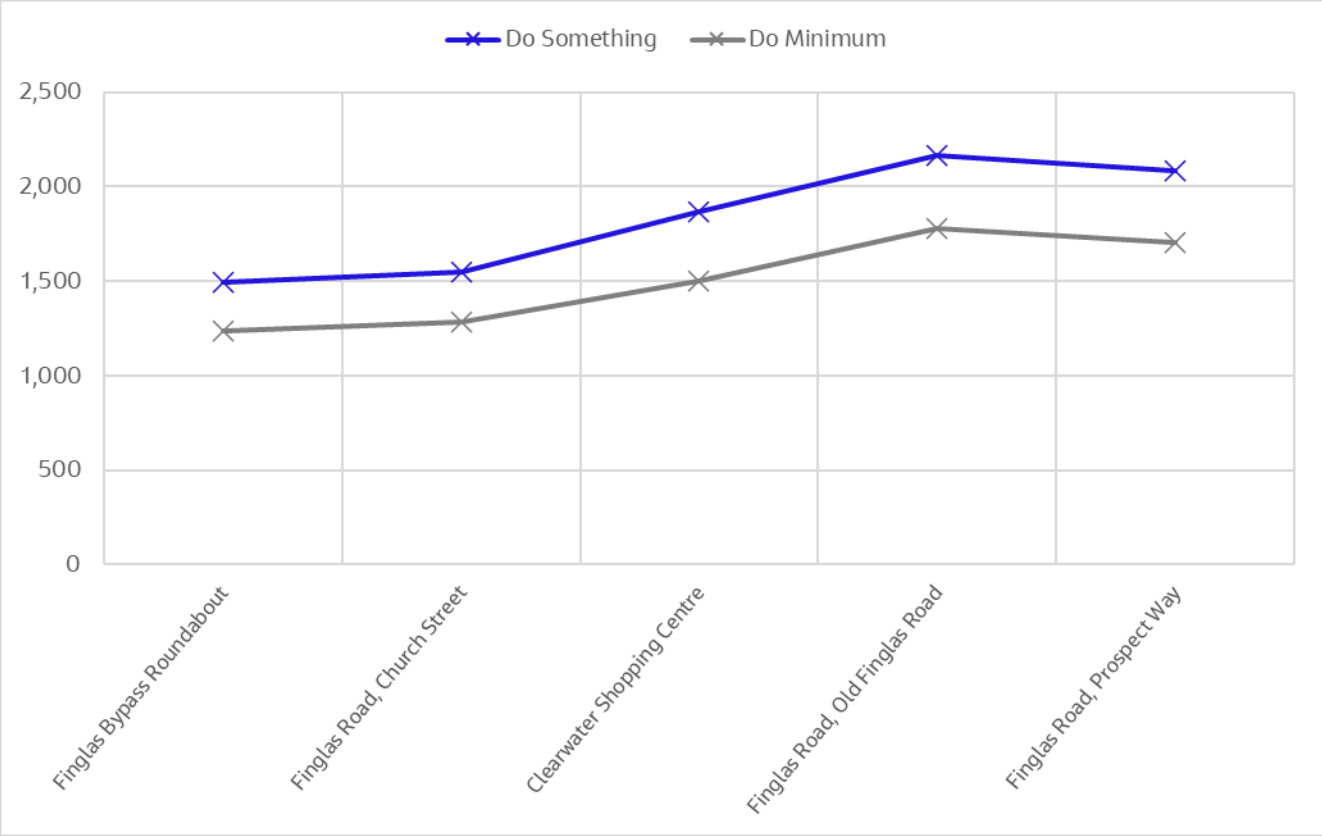

Diagram 6.13: 2043 AM Peak Hour Passenger Volume Along Proposed Scheme (inbound direction – Finglas to Phibsborough)

Diagram 6.13 shows higher levels of bus passenger loadings along the Finglas to Phibsborough section of the Proposed Scheme with a peak at the intersection with Old Finglas Road where the volume of passengers reaches 2,150 in the AM Peak hour, compared to approximately 1,800 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 200 to 300 additional users on the corridor, compared to the Do Minimum scenario.

6.6.3.1.2.4. 2043 PM Peak Hour Bus Passengers

Diagram 6.14 and Diagram 6.15 present the passenger loading profile comparing the Do Minimum and Do Something scenarios in the PM Peak Hour in the outbound direction in 2043.

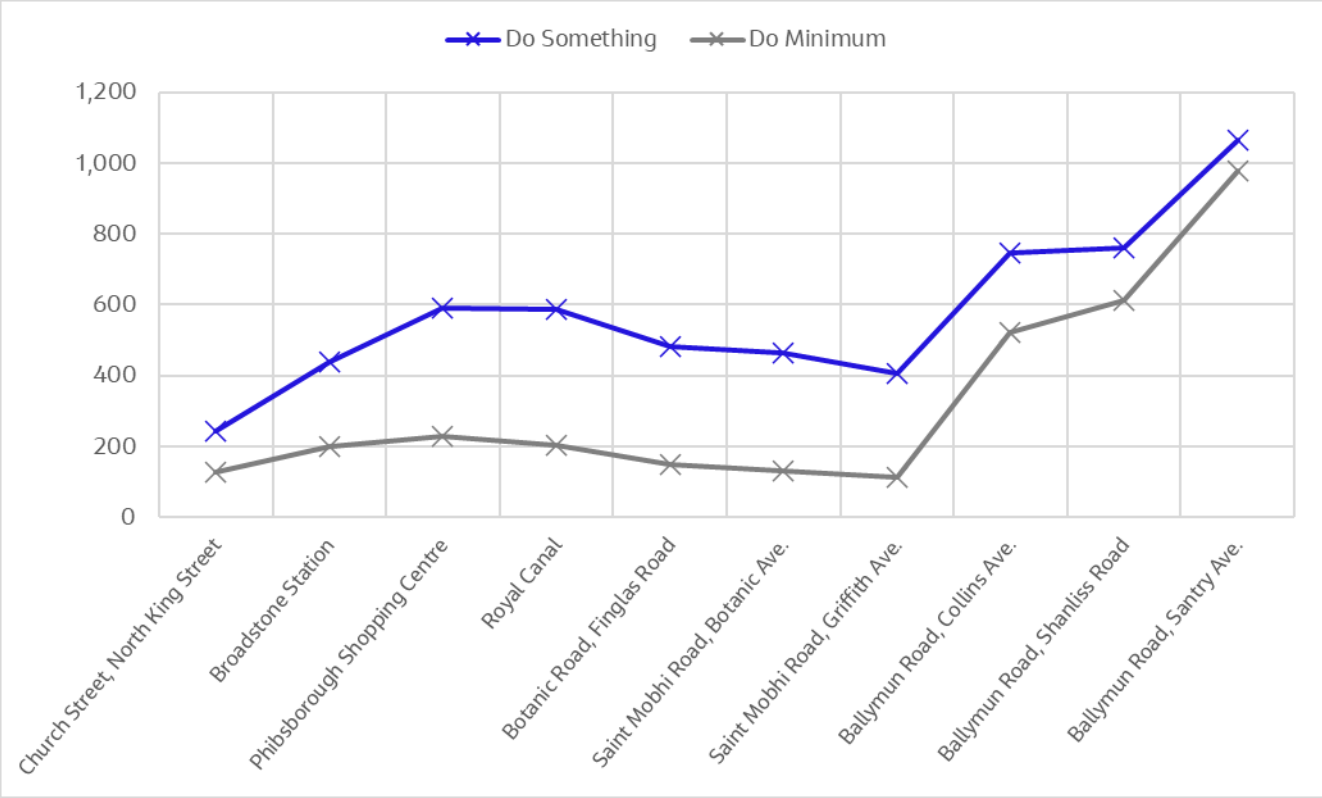

Diagram 6.14: 2043 PM Peak Hour Passenger Volume Along Proposed Scheme (outbound direction – Ballymun to City Centre)

Diagram 6.14 shows higher levels of bus passenger loadings along the Ballymun to City Centre section of the Proposed Scheme with a peak at the Northern end of the corridor where the volume of passengers reaches 1,050 in the PM Peak hour, compared to approximately 950 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 100 to 300 additional users on the corridor, compared to the Do Minimum scenario.

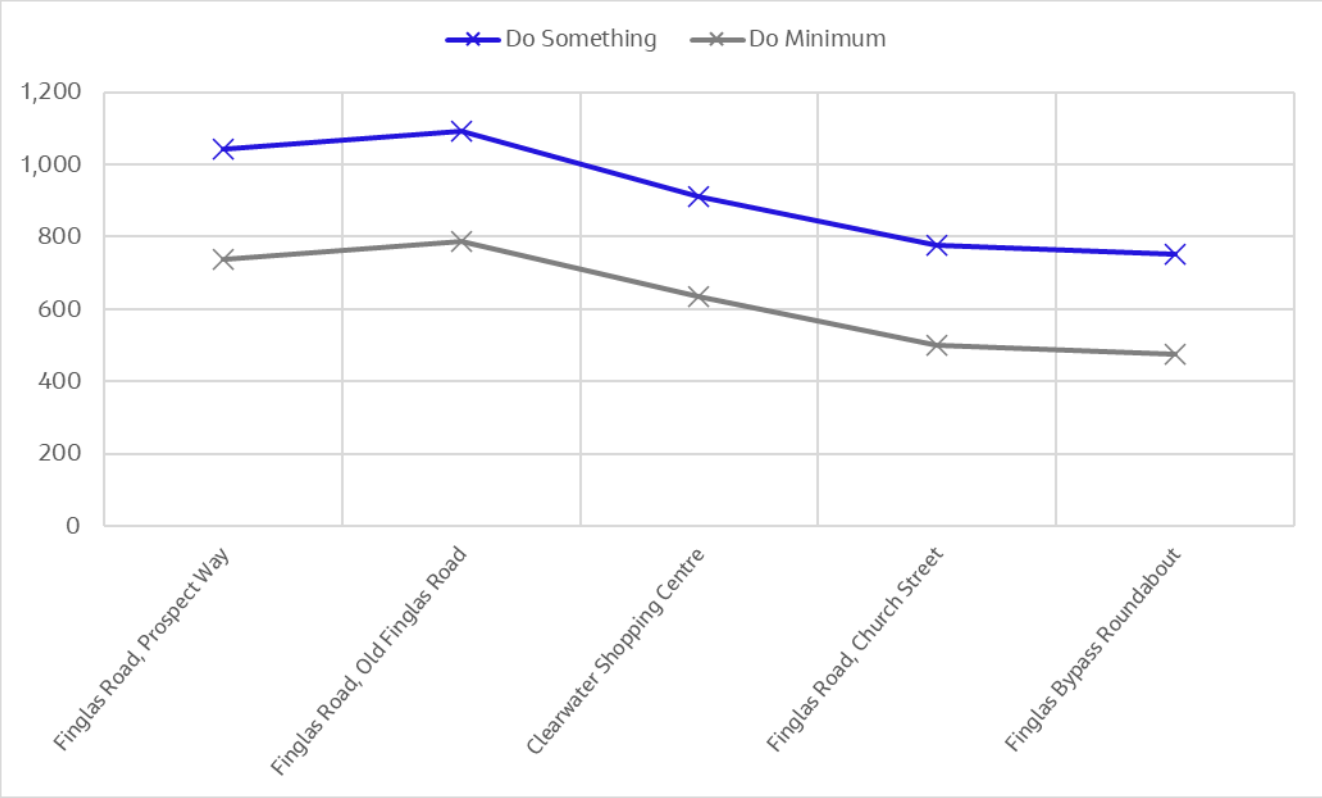

Diagram 6.15: 2043 PM Peak Hour Passenger Volume Along Proposed Scheme (outbound direction – Finglas to Phibsborough)

Diagram 6.15 shows higher levels of bus passenger loadings along the Finglas to Phibsborough section of the Proposed Scheme with a peak at the intersection with Old Finglas Road where the volume of passengers reaches 1,100 in the PM Peak hour, compared to approximately 800 in the Do Minimum scenario.

The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 300 additional users on the corridor, compared to the Do Minimum scenario.

6.6.3.1.2.5. Bus Boardings

Since many bus services commence and end further away from the direct alignment of the Proposed Scheme, an additional assessment has been undertaken to compare the total boardings on bus routes that use any part of the Proposed Scheme (including those stops not directly on the Proposed Scheme) in both the 2028 and 2043 forecast years. The results for the Opening Year (2028) scenario are indicated in Table 6.46.

Table 6.46: 2028 Peak Hour Bus Boardings on Routes using the Proposed Scheme (incl. boarding at stops outside Proposed Scheme)

Time Period	Do Minimum	Do Something	Difference in Boardings	Difference (%)
AM Peak Hour	17,330	18,680	1,350	7.8%
PM Peak Hour	13,360	14,480	1,120	8.4%

Table 6.46 shows that there will be a 7.8% increase in people boarding bus routes which use the Proposed Scheme during the AM Peak Hour. This represents an addition of 1,350 passengers in the AM Peak hour.

In the PM Peak hour, there will be an 8.4% increase in people boarding bus routes which use the Proposed Scheme, representing an additional 1,120 passengers.

Table 6.47 2043 Peak Hour Bus Boardings on Routes using the Proposed Scheme (inc. boarding at stops outside Proposed Scheme)

Time Period	Do Minimum	Do Something	Difference in Boardings	Difference (%)
AM Peak Hour	17,040	18,130	1,090	6.4%
PM Peak Hour	13,620	14,390	770	5.7%

Table 6.47 shows that there will be a 6.4% increase in people boarding bus routes which use the Proposed Scheme during the AM Peak Hour. This represents an addition of 1,090 passengers in the AM Peak hour.

In the PM Peak hour, there will be a 5.7% increase in people boarding bus routes which use the Proposed Scheme, representing an additional 770 passengers.

6.6.3.1.3. People Movement – Significance of Impact

The significance of impact for the movement of People Movement by sustainable modes with the Proposed Scheme in place has been appraised qualitatively, taking into account the changes in mode share, demand changes by mode along the Proposed Scheme as well as bus usage presented above. The Proposed Scheme has been adjudged to deliver a **High Positive** impact in terms of People Movement by sustainable modes. The Proposed Scheme can be shown to deliver significant improvements in people movement by sustainable modes along the Proposed Scheme corridor, particularly by bus, with reductions in car mode share due to the enhanced sustainable mode provision.

The findings of the People Movement assessment demonstrate that the Proposed Scheme aligns fully with the aims and objectives of the CBC Infrastructure Works, to '*provide enhanced walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor*'.

6.6.3.2. Operational Impacts for Bus Users

6.6.3.2.1. Overview

The impacts of the Proposed Scheme for bus users and operators have been assessed based on journey times and reliability metrics extracted from the micro-simulation model of the corridor.

Due to the stochastic nature of the micro-simulation software, model outputs based on the average of 20 simulation seed runs (minimum of five recommended as per the Transport for London (2010) Traffic Modelling Guidelines) have been calculated between the point of Proposed Scheme entry and exit and compared against the corresponding Do Minimum scenarios.

The results for bus services using the Ballymun Section and the Finglas Section of the Proposed Scheme have been presented separately so that bus services using the whole length of each section of the Proposed Scheme can be assessed.

6.6.3.2.2. Bus Journey Time and Reliability Changes as a Result of the Proposed Scheme - Ballymun Section

To give an overview of how the Proposed Scheme will impact on bus journey times along the corridor, outputs for the E1 service, which traverses the majority of the length of the Ballymun Section of Proposed Scheme, have been extracted from the model. The E1 service leaves the Proposed Scheme corridor at the R135 Western Way Junction. The assessment is based in the context of the full implementation of the BusConnects network re-design in both the Do Minimum and Do Something scenarios, with this section of the Proposed Scheme servicing the E-Spine services.

Inbound Direction

Average journey times for the inbound E1 service in the Opening Year (2028) and in the Design Year (2043) can be seen in Table 6.48. A breakdown of the changes in average journey times for all other bus services using the Proposed Scheme can be found in TIA Appendix 4 (Section 4.3 Average Bus Journey Times).

Table 6.48: E1 Service Bus Average Journey Times (Inbound Direction)

Peak Hour	Do Minimum (minutes)	Do Something (minutes)	Difference (minutes)	% Difference
2028 AM	24.6	19.6	-4.9	-20%
2028 PM	21.8	18.8	-3.1	-14%
2043 AM	25.3	18.9	-6.3	-25%
2043 PM	21.9	18.8	-3.1	-14%

Additional information regarding the range of journey times (minimum, maximum, average and standard deviation) for inbound E1 buses in the Do Minimum (red) and Do Something (blue) can be seen in Table 6.49 and Diagram 6.16. Each dot in the diagram represents the journey time for each individual bus in each scenario. A larger range of journey times are an indication of lower levels of reliability in a given scenario.

Table 6.49: E1 Service – Range of Journey Times (Inbound Direction)

Peak Hour	Do Minimum				Do Something			
	MIN	MAX	AVG	STDEV	MIN	MAX	AVG	STDEV
2028 AM	18.4	34.5	24.6	3.7	17.2	24.5	19.6	1.4
2028 PM	16.9	31.3	21.8	2.7	16.7	21.9	18.8	1.1
2043 AM	19.1	39.3	25.3	4.5	16.3	29.0	18.9	1.6
2043 PM	17.3	30.7	21.9	2.6	16.8	22.8	18.8	1.1

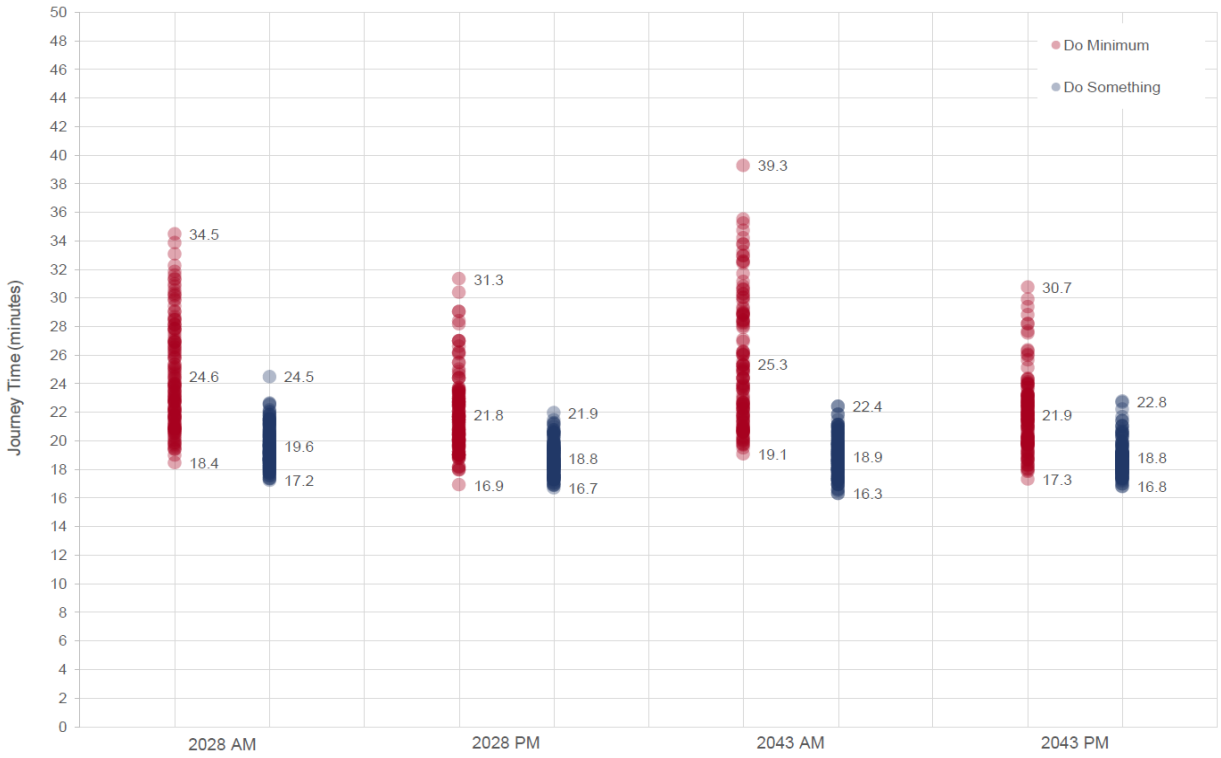

Diagram 6.16: E1 Bus Journey Times (Inbound Direction)

Based on the results presented in Table 6.48, the Proposed Scheme will deliver average inbound journey time savings for E1 service bus passengers of up to 4.9 minutes (20%) in 2028 (AM) and 6.3 minutes (25%) in 2043 (AM). Furthermore, results presented in Diagram 6.17 suggest an improvement in bus journey time reliability in all four scenarios, as indicated by the reduced ranges of journey times achieved with the individual durations focused much closer to the average journey times (lower standard deviation) in the Do Something scenario (blue dots) with the Proposed Scheme in place compared to the more dispersed range in the Do Minimum scenario (red dots).

Note that the variation in journey times shown above is based on one set of predicted flows for the Do Minimum and Do Something scenario. Traffic flows fluctuate daily which would mean that the variation in journey times would be much greater in the Do Minimum with any increases in traffic flows compared to the protection of journey time reliability provided by the bus priority measures that comprise the Proposed Scheme.

A comparison of average Do Minimum and Do Something inbound journey times are also illustrated in the cumulative time-distance graphs shown in Diagram 6.17 to Diagram 6.20. Note that the cumulative time-distance graphs are based on a combination of the E1 plus 23 and 24 services to ensure the full extent of the Proposed Scheme is captured to R148 Arran Quay.

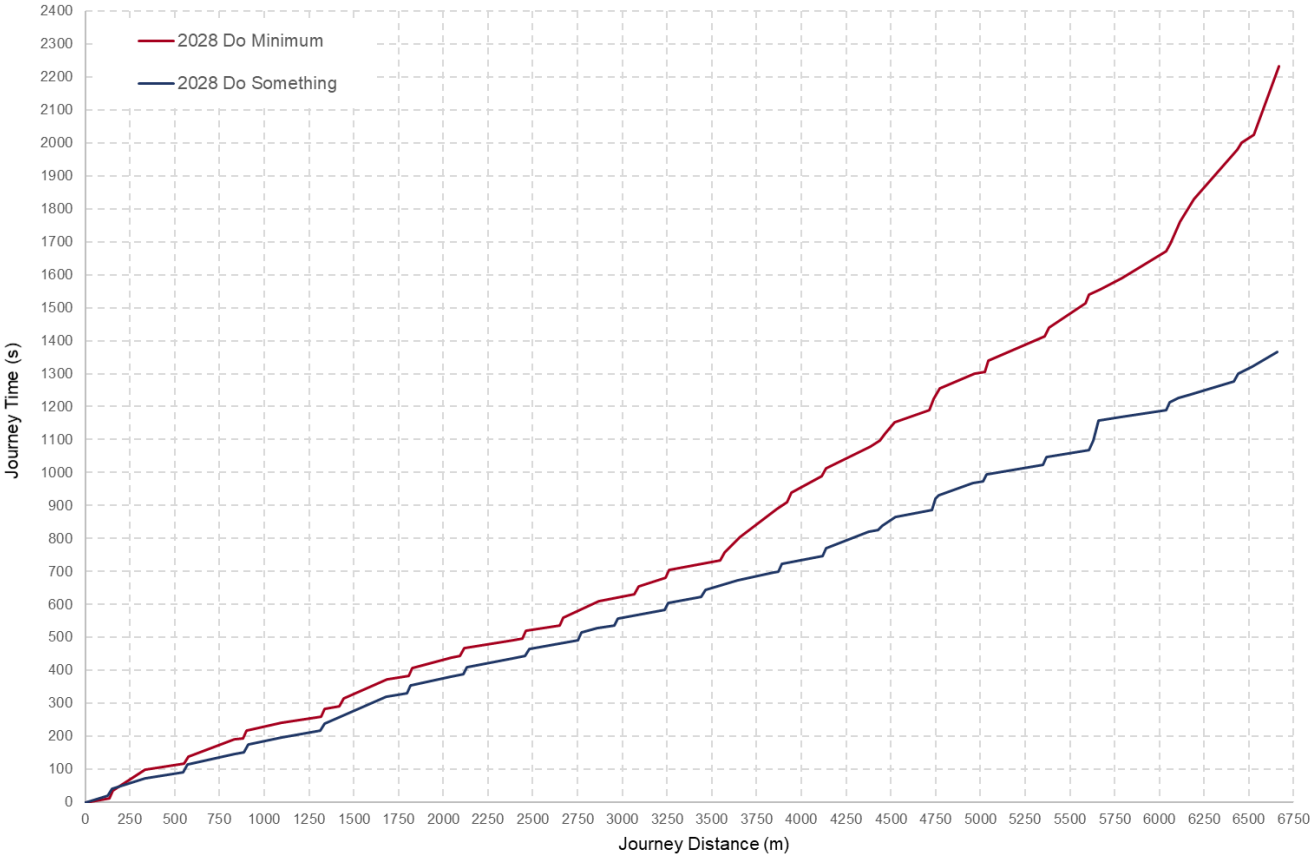

Diagram 6.17: E1/23/24 Bus Journey Time (2028 AM, Inbound)

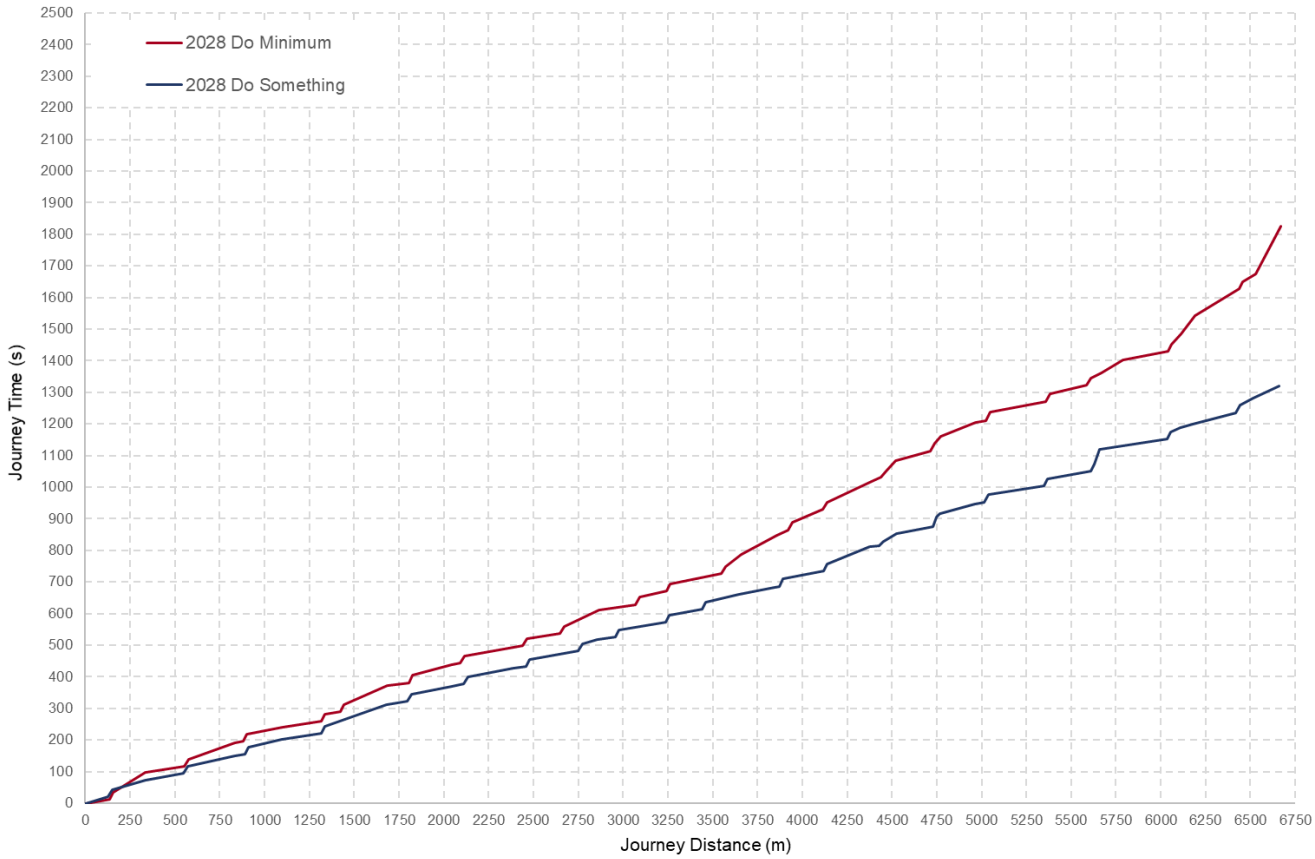

Diagram 6.18: E1/23/24: E1 Bus Journey Time (2028 PM, Inbound)

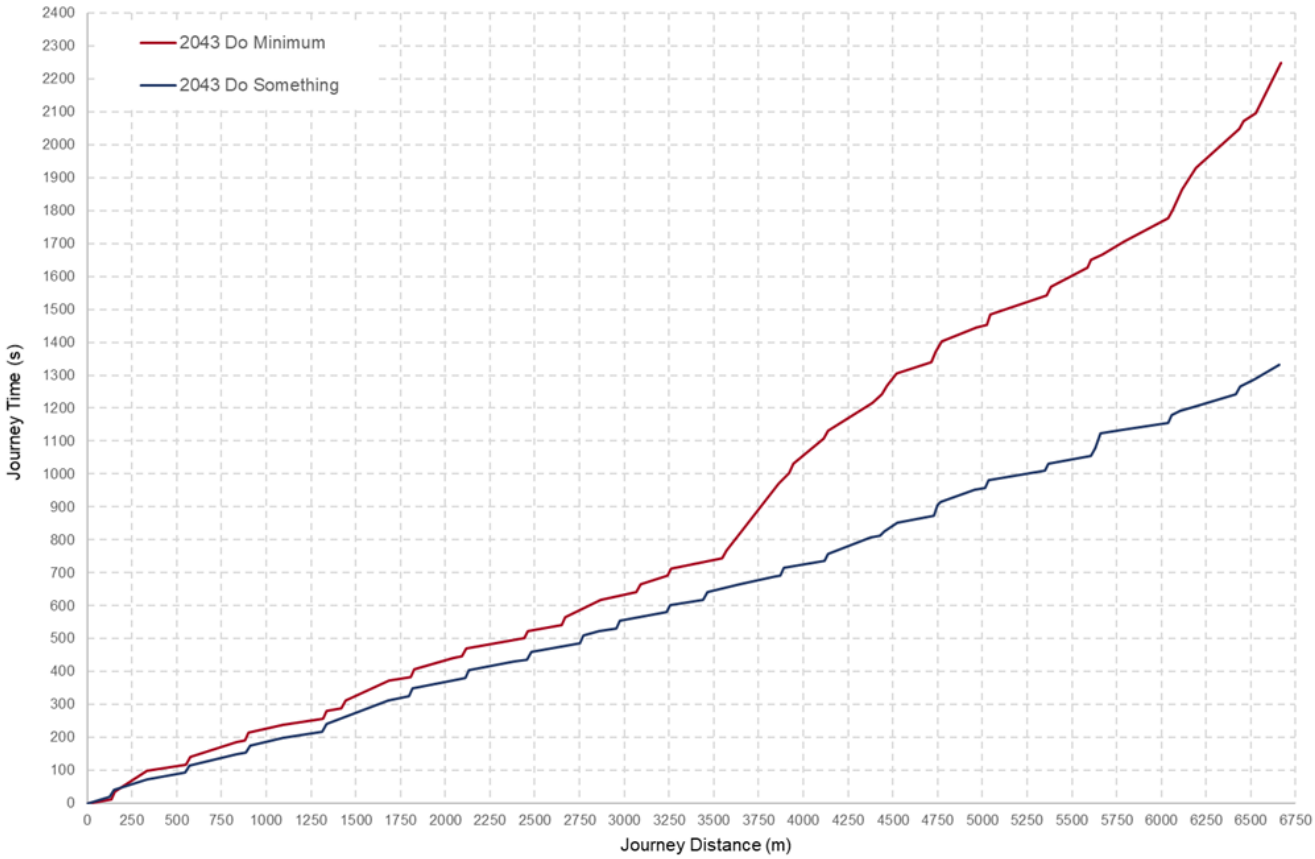

Diagram 6.19: E1/23/24: E1 Bus Journey Time (2043 AM, Inbound)

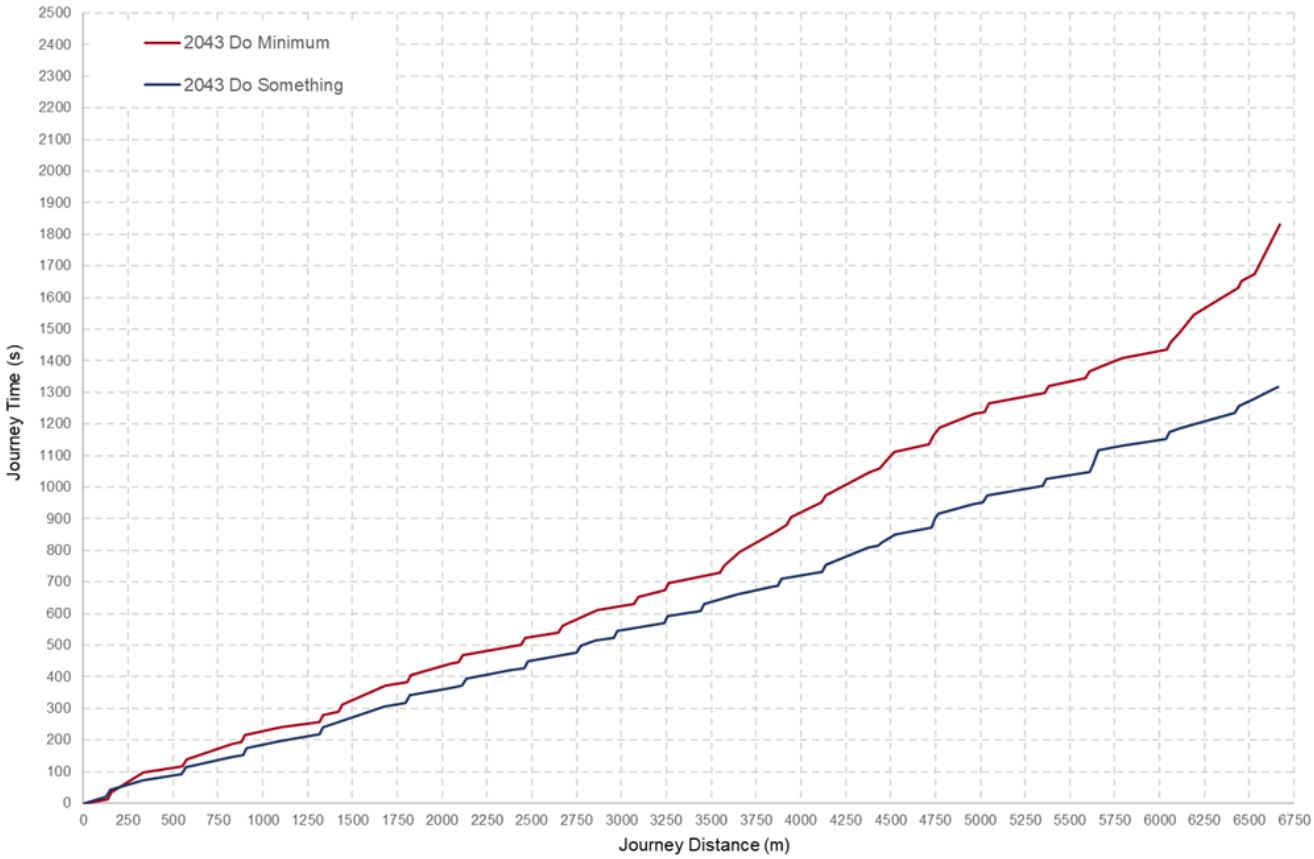

Diagram 6.20: E1/23/24: E1 Bus Journey Time (2043 PM, Inbound)

Based on the results presented in Diagram 6.17 to Diagram 6.20, the Proposed Scheme is expected to deliver significant journey time savings, most notably on the sections of Botanic Road and Prospect Way between Fairfield Road and Whitworth Road, on the Phibsborough Road approach to Western Way and on the sections of Constitution Hill and Church Street between Broadstone and Array Quay. This is due to the introduction of inbound bus lanes and bus priority 'hurry calls' signalling (use of traffic signal plans to give buses priority ahead of general traffic) offered to mainline buses as part of the Proposed Scheme.

Outbound Direction

Average journey times for the outbound E1 service in the Opening Year (2028) and in the Design Year (2043) can be seen in Table 6.50. A breakdown of the changes in average journey times for all other bus services using this section of the Proposed Scheme can be found in TIA Appendix 4 (Section 4.3 - Average Bus Journey Times).

Table 6.50: E1 Service Bus Journey Times (Outbound Direction)

Peak Hour	Do Minimum (minutes)	Do Something (minutes)	Difference (minutes)	% Difference
2028 AM	23.4	20.4	-2.9	-13%
2028 PM	25.4	20.6	-4.8	-19%
2043 AM	24.2	20.3	-3.9	-16%
2043 PM	25.9	20.3	-5.5	-21%

Additional information regarding the range of journey times (minimum, maximum, average and standard deviation) for outbound E1 buses in the Do Minimum (red) and Do Something (blue) can be seen in Table 6.51 and Diagram 6.21. Each dot represents the journey time for each individual bus in each scenario. A larger range of journey times are an indication of lower levels of reliability.

Table 6.51: E1 Service – Range of Journey Times (Outbound Direction)

Peak Hour	Do Minimum				Do Something			
	MIN	MAX	AVG	STDEV	MIN	MAX	AVG	STDEV
2028 AM	19.6	27.6	23.4	1.5	18.3	23.0	20.4	1.1
2028 PM	20.5	32.7	25.4	2.2	18.4	23.4	20.6	1.0
2043 AM	18.8	29.5	24.2	1.9	17.7	23.2	20.3	1.1
2043 PM	20.0	32.3	25.9	2.6	18.3	23.6	20.4	1.0

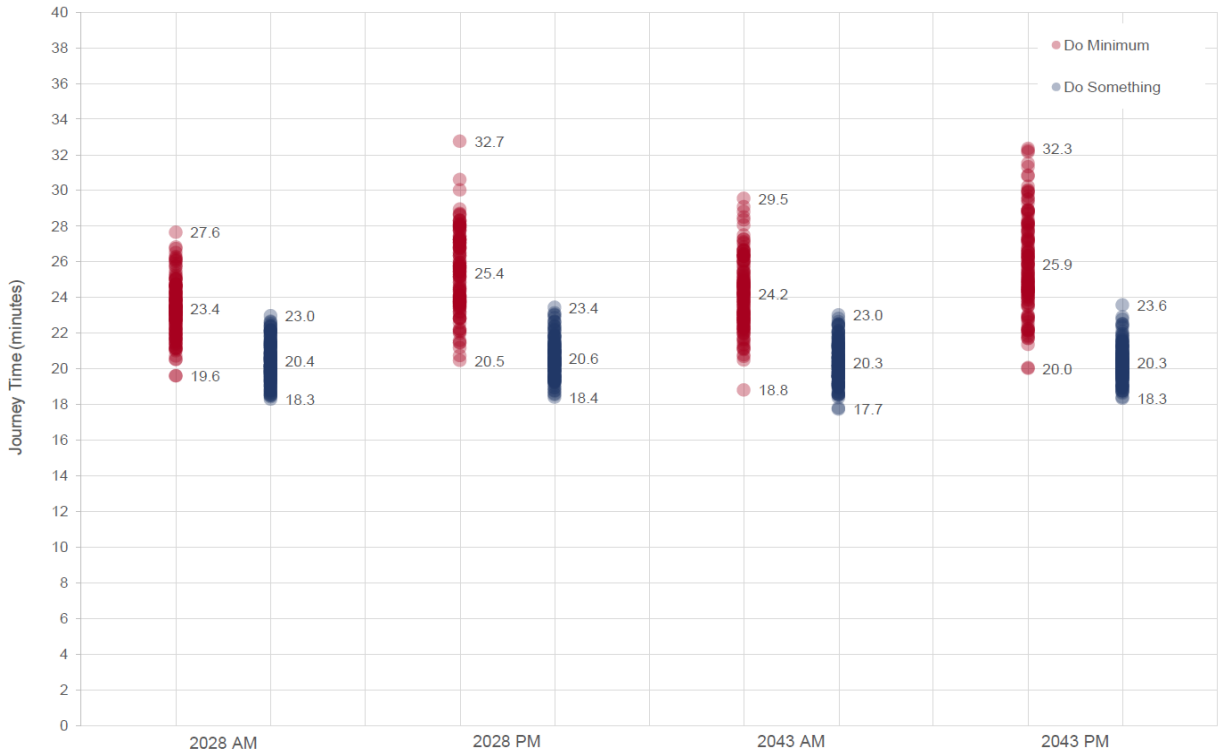

Diagram 6.21: E1 Bus Journey Times (Outbound Direction)

Based on the results presented in Table 6.51, the Proposed Scheme will deliver average outbound journey time savings for E1 service bus passengers of up to 4.8 minutes (19%) in 2028 (PM) and 5.5 minutes (21%) in 2043 (PM). Furthermore, results presented in Diagram 6.21 suggest an improvement in bus journey time reliability in all four scenarios as indicated by the reduced ranges of journey times achieved with the durations focused much closer to the average journey times (lower standard deviation) in the Do Something scenario (blue dots) with the Proposed Scheme in place compared to the more dispersed range in the Do Minimum scenario (red dots).

Note that the variation in journey times shown above are based on one set of predicted flows for the Do Minimum and Do Something scenario. Traffic flows fluctuate daily which would mean that the variation in journey times would be much greater in the Do Minimum with any increases in traffic flows compared to the protection of journey time reliability provided by the bus priority measures that comprise the Proposed Scheme.

A comparison of average Do Minimum and Do Something outbound journey times are also illustrated in the cumulative time-distance graphs shown in Diagram 6.21 to Diagram 6.25. As above, the cumulative time-distance graphs are based on a combination of the E1 plus 23 and 24 services to ensure the full extent of the Proposed Scheme is captured from Arran Quay.

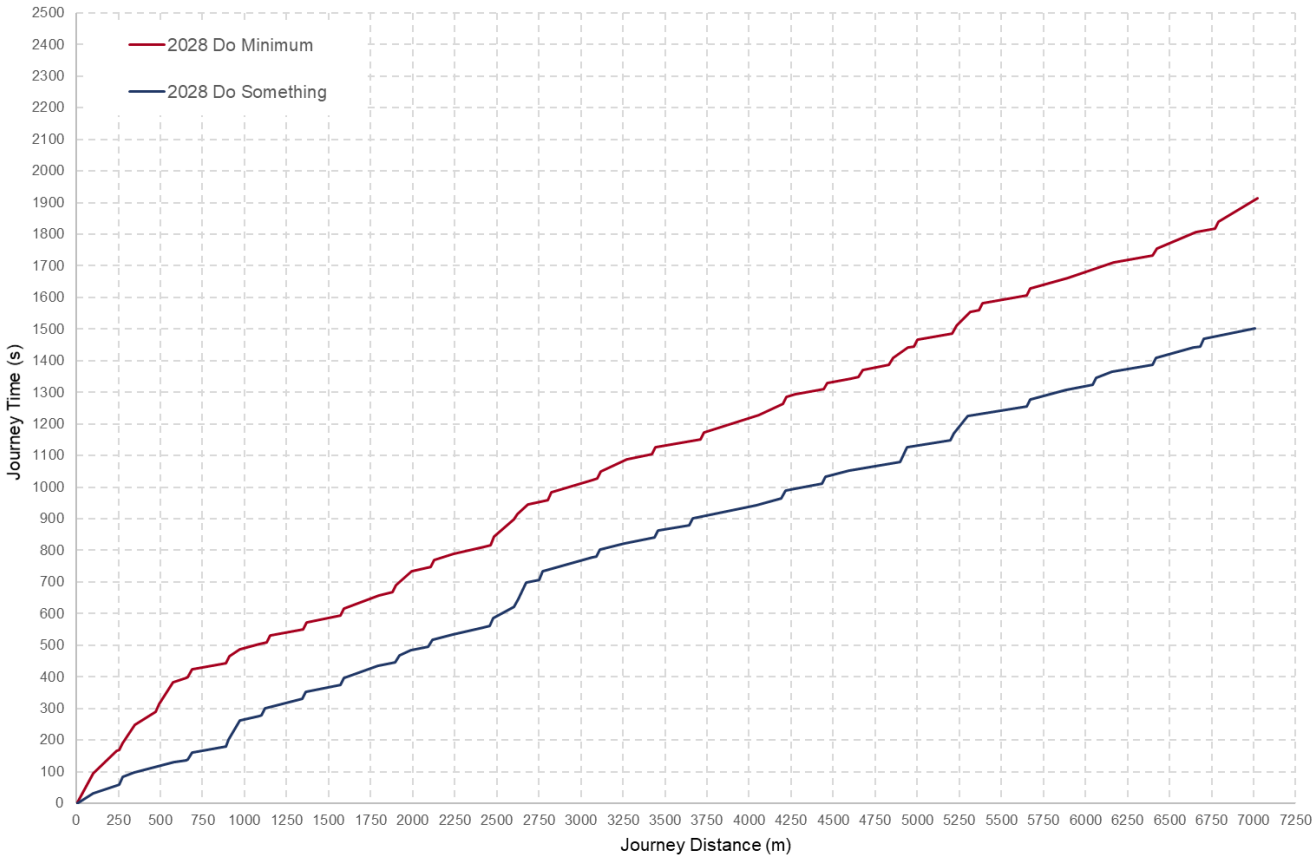

Diagram 6.22: E1/23/24 Bus Journey Time (2028 AM, Outbound)

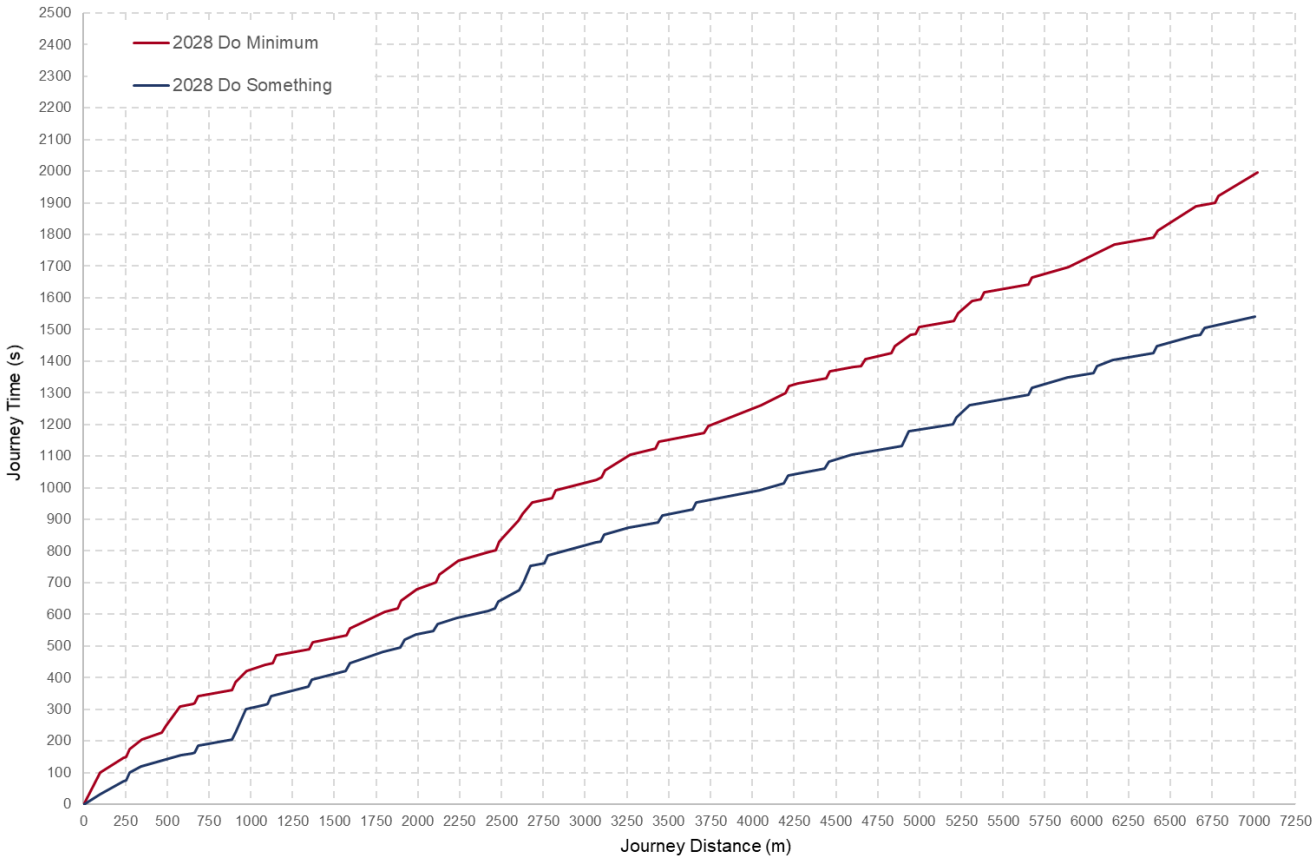

Diagram 6.23: E1/23/24 Bus Journey Time (2028 PM, Outbound)

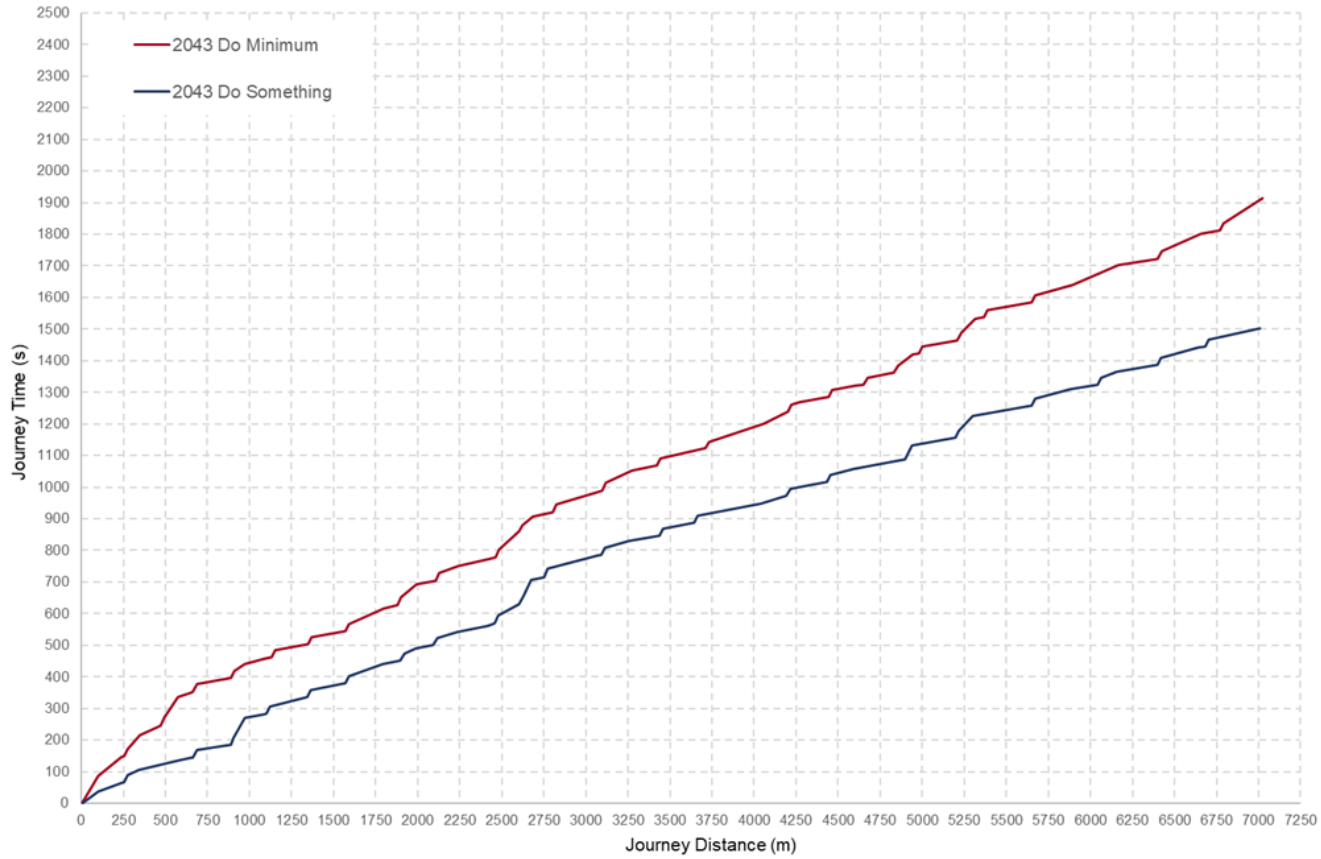

Diagram 6.24: E1/23/24 Bus Journey Time (2043 AM, Outbound)

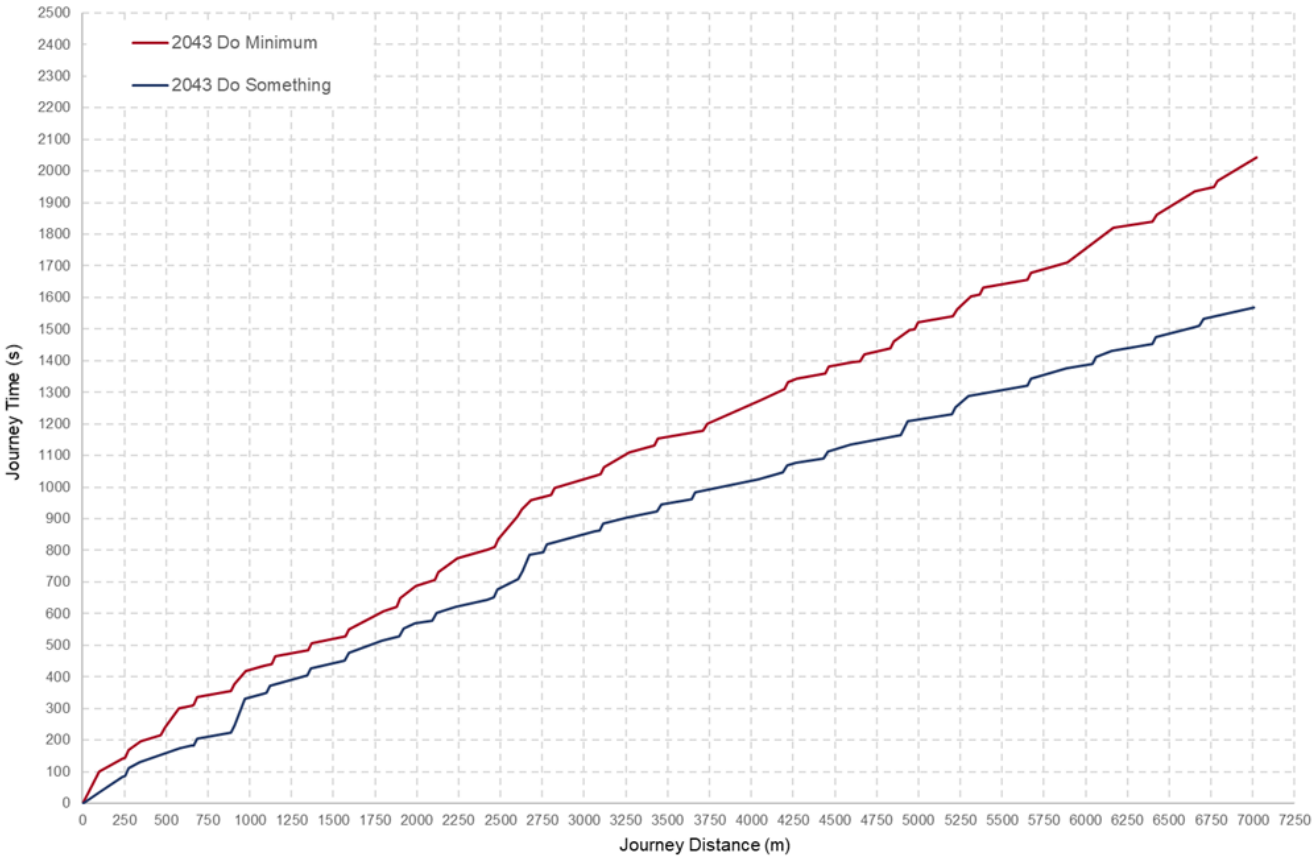

Diagram 6.25: E1/23/24 Bus Journey Time (2043 PM, Outbound)

Based on the results presented in Diagram 6.21 to Diagram 6.25, the Proposed Scheme is expected to deliver bus journey time savings, most notably on key sections such as the outbound Church Street approach to King Street North and the outbound St Mobhi Road approach to Griffith Avenue. Outside of these sections, the bus priority 'hurry calls' signalling (use of traffic signal plans to give buses priority ahead of general traffic) offered to mainline buses as part of the Proposed Scheme can be shown to create cumulative bus journey time savings over the Do Minimum.

6.6.3.2.3. Bus Journey Time and Reliability Changes as a Result of the Proposed Scheme - Finglas Section

To give an overview of how the Proposed Scheme will impact on bus journey times along the Finglas Section of the Proposed Scheme, outputs for the F9 service, which traverses the entire length of the section, have been extracted from the model. The assessment is based in the context of the full implementation of the BusConnects network re-design in both the Do Minimum and Do Something scenarios, with this section of the Proposed Scheme servicing the F-Spine services.

When considering the results below, it should be noted that the Finglas Section already includes a high proportion of bus priority measures in the form of bus lanes. The Proposed Scheme seeks to address the remaining un-prioritised sections of bus priority with a combination of further sections of bus lane and signal control priority at pinch-points and junctions whilst also improving the pedestrian and cycling environment.

Inbound Direction

Average journey times for the inbound F9 service (which leaves the Proposed Scheme extents at Whitworth Road) in the Opening Year (2028) and in the Design Year (2043) can be seen in Table 6.52. A breakdown of the changes in average journey times for all other bus services using the Proposed Scheme can be found in TIA Appendix 4 (Section 4.3 - Average Bus Journey Times).

Table 6.52: F9 Service Bus Average Journey Times (Inbound Direction)

Peak Hour	Do Minimum (minutes)	Do Something (minutes)	Difference (minutes)	% Difference
2028 AM	13.8	12.8	-1.0	-7%
2028 PM	13.4	12.3	-1.1	-8%
2043 AM	14.2	13.1	-1.1	-8%
2043 PM	13.5	12.3	-1.2	-9%

Additional information regarding the range of journey times (minimum, maximum, average and standard deviation) for inbound F9 buses in the Do Minimum (red) and Do Something (blue) can be seen in Table 6.53 and Diagram 6.26. Each dot in the diagram represents the journey time for each individual bus in each scenario. A larger range of journey times are an indication of lower levels of reliability in a given scenario.

Table 6.53: F9 Service – Range of Journey Times (Inbound Direction)

Peak Hour	Do Minimum				Do Something			
	MIN	MAX	AVG	STDEV	MIN	MAX	AVG	STDEV
2028 AM	10.6	17.1	13.8	1.4	10.7	17.5	12.8	1.3
2028 PM	11.1	16.4	13.4	1.4	10.3	15.7	12.3	1.2
2043 AM	11.2	17.9	14.2	1.4	10.6	16.0	13.1	1.1
2043 PM	10.9	17.0	13.5	1.3	10.3	15.9	12.3	1.0

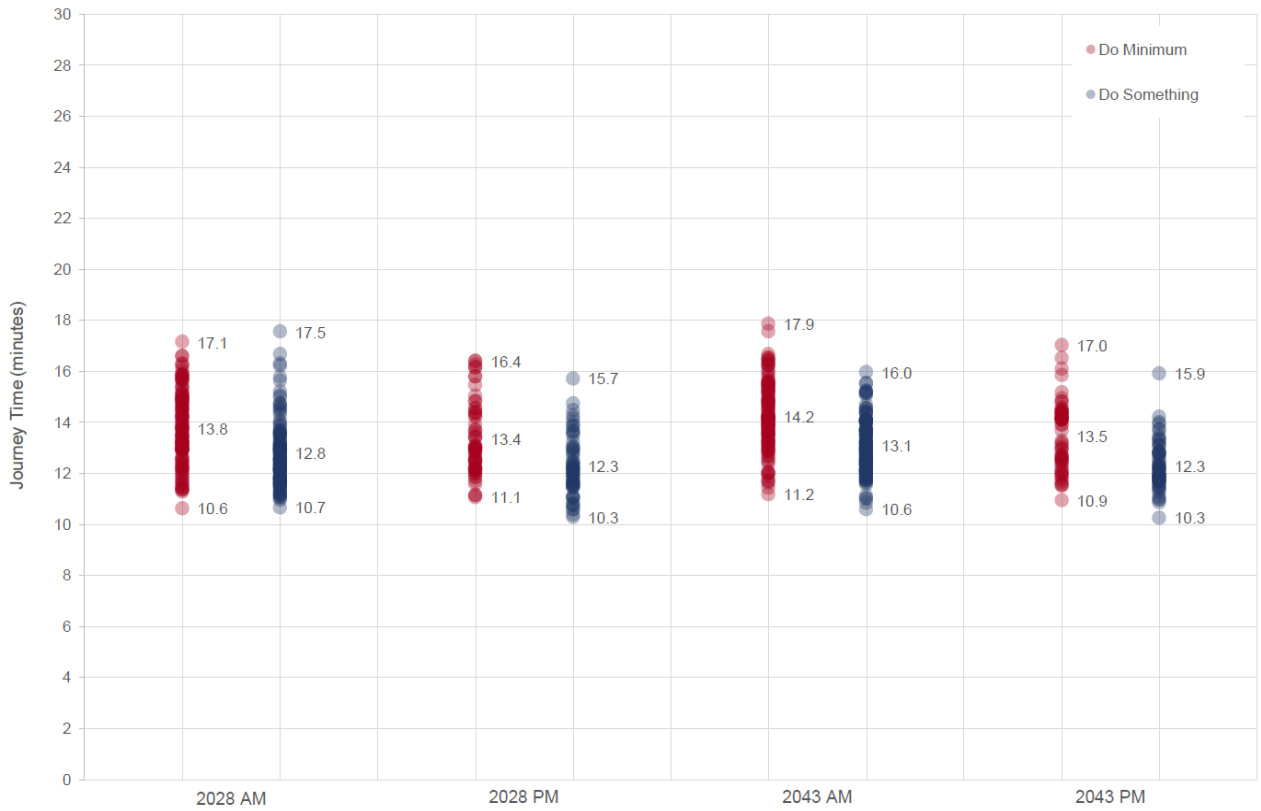

Diagram 6.26: F9 Bus Journey Times (Inbound Direction)

Based on the results presented in Table 6.53, the Proposed Scheme will deliver average inbound journey time savings for F9 service bus passengers of circa 1-minute in 2028 and 2043. Furthermore, results presented in Diagram 6.26 suggest an improvement in bus journey time reliability for all four core scenarios as indicated by the

reduced ranges of journey times achieved with the individual durations focused much closer to the average journey times (lower standard deviation) in the Do Something scenario (blue dots) with the Proposed Scheme in place compared to the more dispersed range in the Do Minimum scenario (red dots). Modest improvements in journey time savings and reliability were anticipated on this section of the Proposed Scheme due to the good coverage of existing bus lanes and the relatively short travel time from Finglas to Phibsborough.

Note that the variation in journey times shown above are based on one set of predicted flows for the Do Minimum and Do Something scenario. Traffic flows fluctuate daily which would mean that the variation in journey times would be much greater in the Do Minimum with any increases in traffic flows compared to the protection of journey time reliability provided by the bus priority measures that comprise the Proposed Scheme.

A comparison of average Do Minimum and Do Something journey times for the inbound F9 service are also illustrated in the cumulative time-distance graphs shown in Diagram 6.27 to Diagram 6.30.

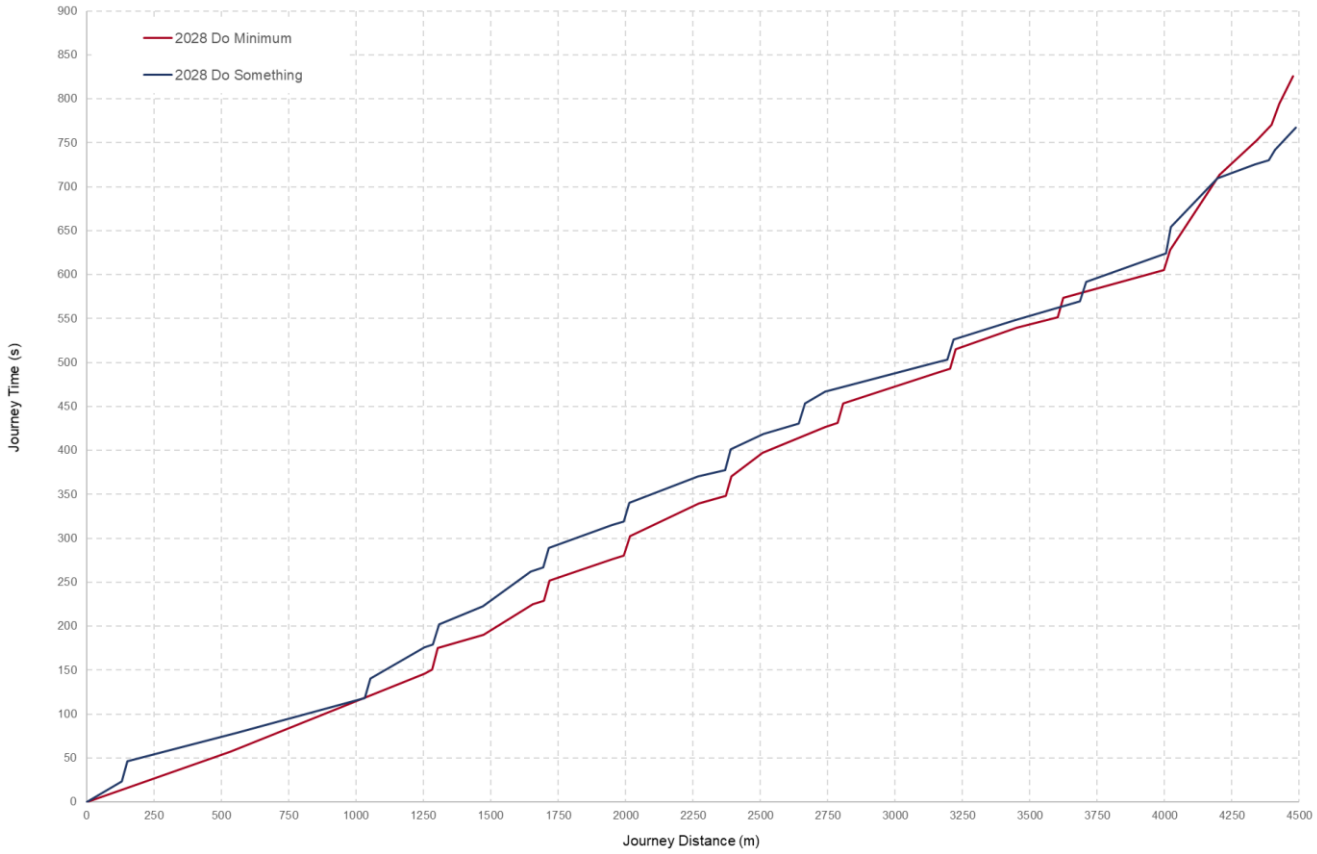

Diagram 6.27: F9 Bus Journey Time (2028 AM, Inbound)

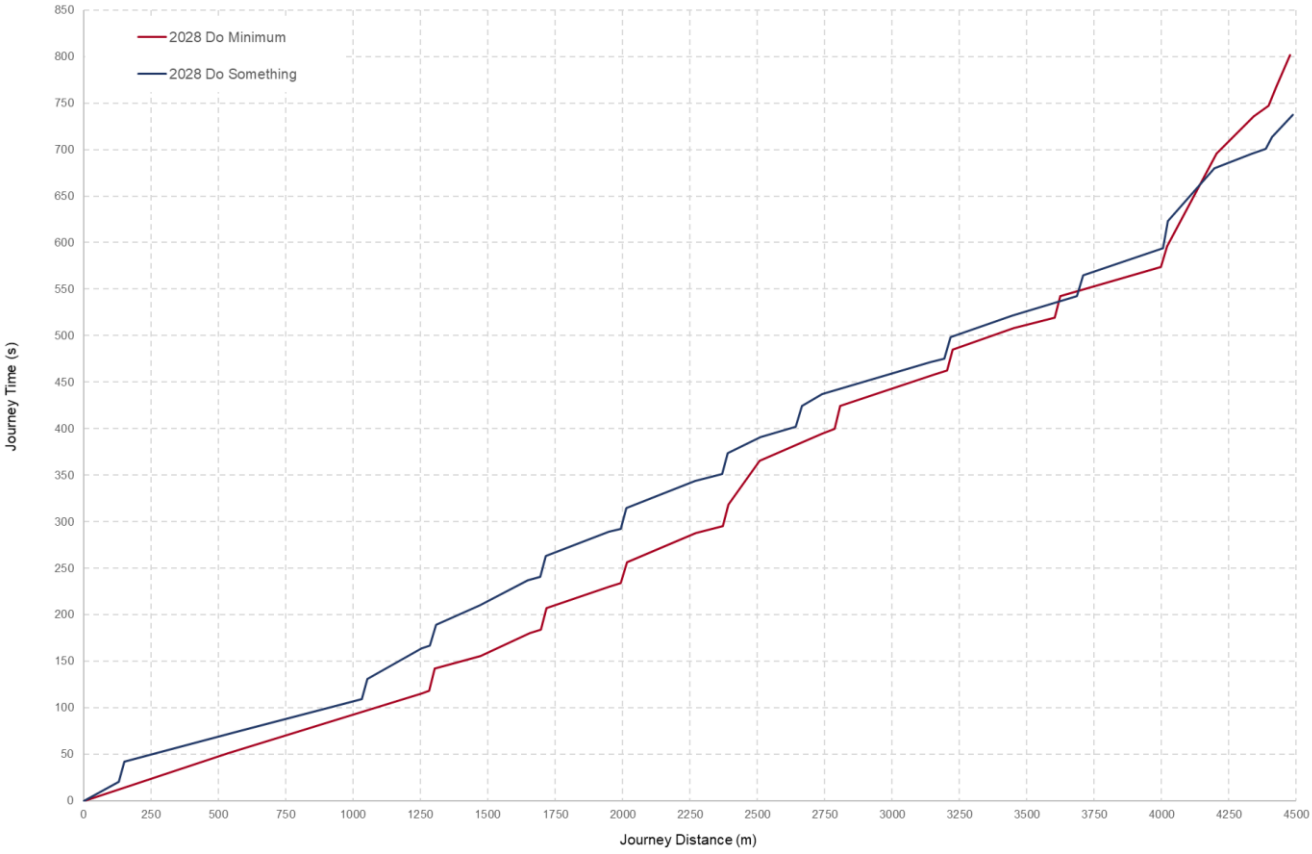

Diagram 6.28: F9 Bus Journey Time (2028 PM, Inbound)

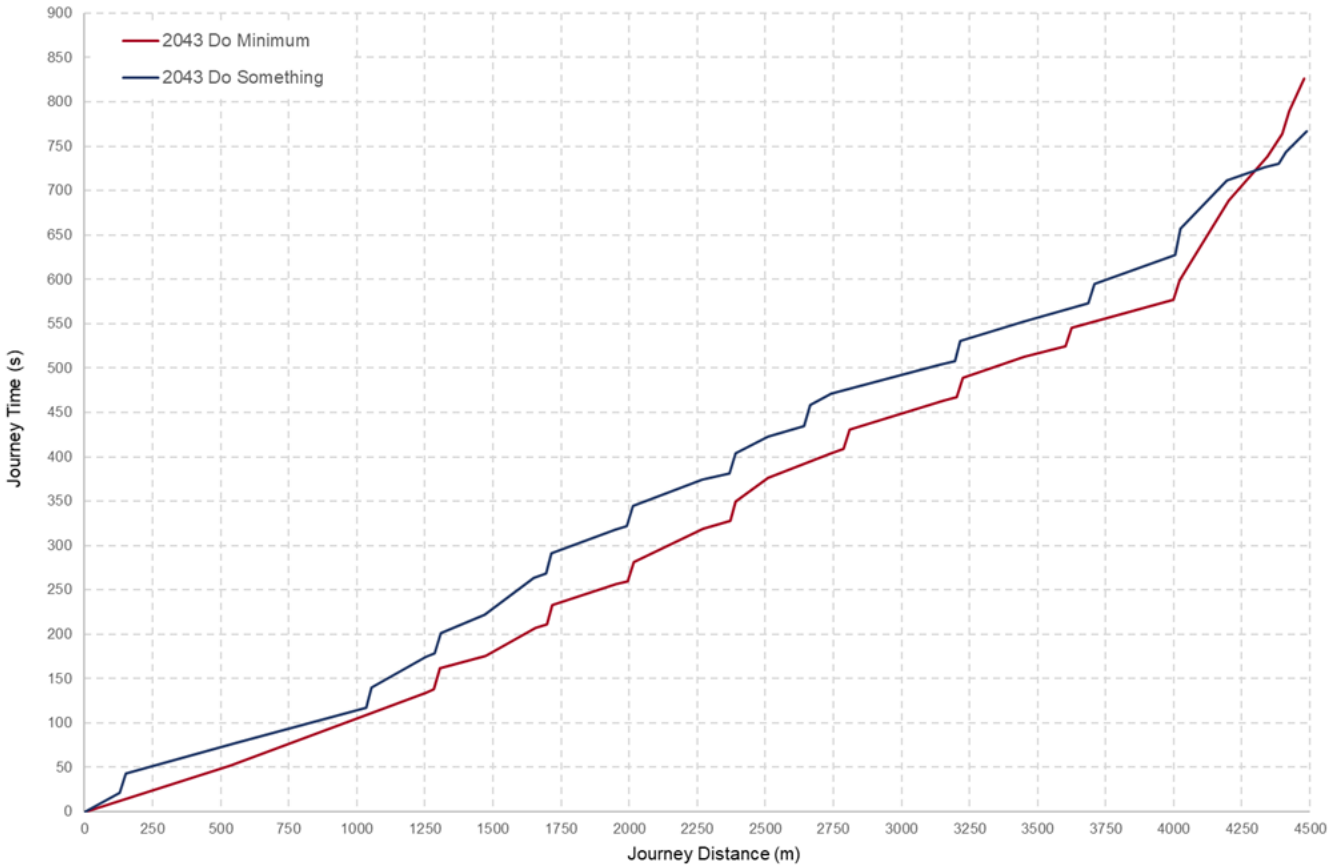

Diagram 6.29: F9 Bus Journey Time (2043 AM, Inbound)

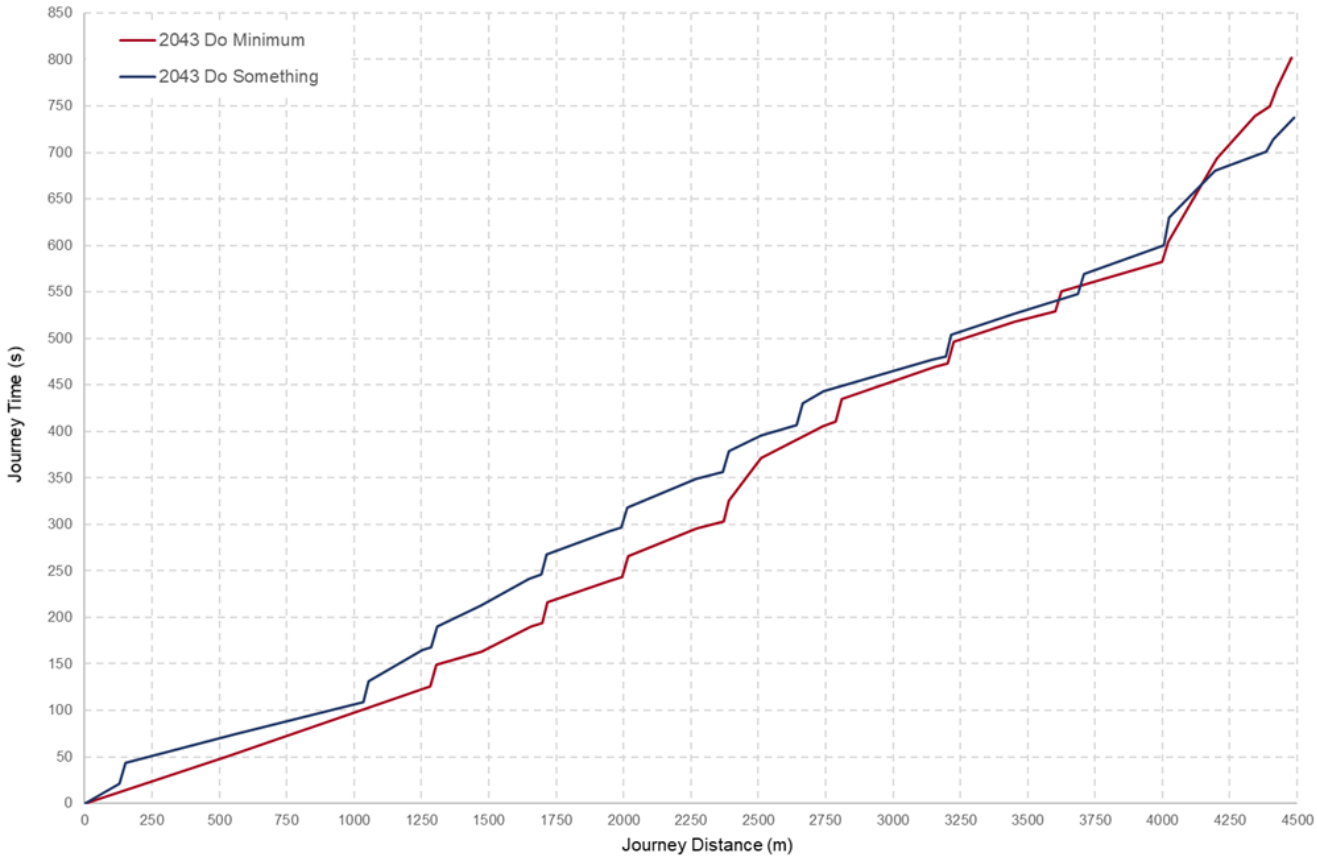

Diagram 6.30: F9 Bus Journey Time (2043 PM, Inbound)

Based on the results presented in Diagram 6.27 to Diagram , the Proposed Scheme is expected to deliver modest overall average bus journey time savings. Whilst cumulative benefits can be seen along the corridor, the journey time savings are offset by the introduction of two new bus stops (north of Wellmount Road and south of the R135 Finglas Road / Casement Road / R135 North Road / R104 St Margaret's Road four-arm roundabout) and enhanced pedestrian and cycle crossing facilities at both ends of Prospect Way which results in an increased the number of stages/phases. The increased number of bus stops will enhance the level of accessibility to the Proposed Scheme but will result in approximately 60 to 90 seconds of additional travel time (deceleration, dwell time at stops and re-acceleration) compared to the Do Minimum. The inclusion of additional bus stops as well as pedestrian and cyclist crossing opportunities will provide a more complete sustainable modes offering along this section of the Proposed Scheme. This section of the Proposed Scheme will further benefit from its connection with the Ballymun Section of the Proposed Scheme which is predicted to experience significant journey time savings to and from the City Centre.

Outbound Direction

Average journey times for the outbound F9 service (which joins the Proposed Scheme extents at Whitworth Road), in the Opening Year (2028) and in the Design Year (2043) can be seen in Table 6.54.

A breakdown of the changes in average journey times for all other bus services using the Proposed Scheme can be found in TIA Appendix 4 (Section 4.3 - Average Bus Journey Times).

Table 6.54: F9 Service Bus Journey Times (Outbound Direction)

Peak Hour	Do Minimum (minutes)	Do Something (minutes)	Difference (minutes)	% Difference
2028 AM	11.5	11.5	0.0	0%
2028 PM	12.5	11.9	-0.6	-5%
2043 AM	11.4	11.8	0.4	3%
2043 PM	12.3	12.1	-0.2	-2%

Additional information regarding the range of journey times (minimum, maximum, average and standard deviation) for outbound F9 buses in the Do Minimum (red) and Do Something (blue) can be seen in Table 6.55 and Diagram 6.31. Each dot represents the journey time for each individual bus in each scenario. A larger range of journey times are an indication of lower levels of reliability.

Table 6.55: F9 Service – Range of Journey Times (Outbound Direction)

Peak Hour	Do Minimum				Do Something			
	MIN	MAX	AVG	STDEV	MIN	MAX	AVG	STDEV
2028 AM	10.1	15.6	11.5	1.1	10.1	14.3	11.5	0.7
2028 PM	10.1	15.6	12.5	1.4	10.8	13.6	11.9	0.6
2043 AM	10.1	14.2	11.4	1.1	10.4	13.6	11.8	0.7
2043 PM	9.5	15.5	12.3	1.3	10.8	13.6	12.1	0.7

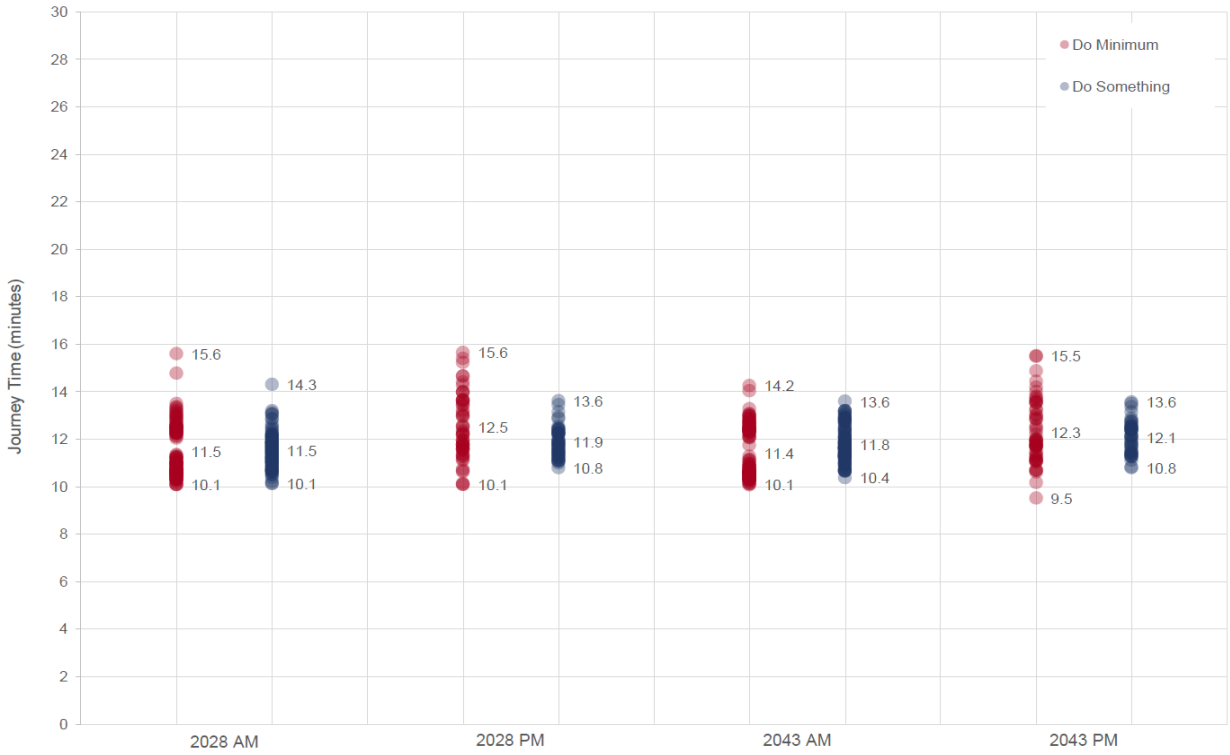

Diagram 6.31: F9 Bus Journey Times (Outbound Direction)

Based on the results presented in Table 6.55, the Proposed Scheme will deliver average outbound journey time savings, in the peak direction of travel, for F9 service bus passengers of up to 0.6 minutes (5%) in 2028 (PM) and 0.2 minutes (2%) in 2043 (PM). Furthermore, results presented in Diagram 6.31 suggest an improvement in bus journey time reliability in all four scenarios as indicated by the reduced ranges of journey times achieved with the durations focused much closer to the average journey times (lower standard deviation) in the Do Something

scenario (blue dots) with the Proposed Scheme in place compared to the more dispersed range in the Do Minimum scenario (red dots).

Note that the variation in journey times shown above are based on one set of predicted flows for the Do Minimum and Do Something scenario. Traffic flows fluctuate daily which would mean that the variation in journey times would be much greater in the Do Minimum with any increases in traffic flows compared to the protection of journey time reliability provided by the bus priority measures that comprise the Proposed Scheme.

A comparison of average Do Minimum and Do Something journey times for the F9 service for the outbound direction of travel illustrated in the cumulative time-distance graphs shown in Diagram 6.32 to Diagram 6.35.

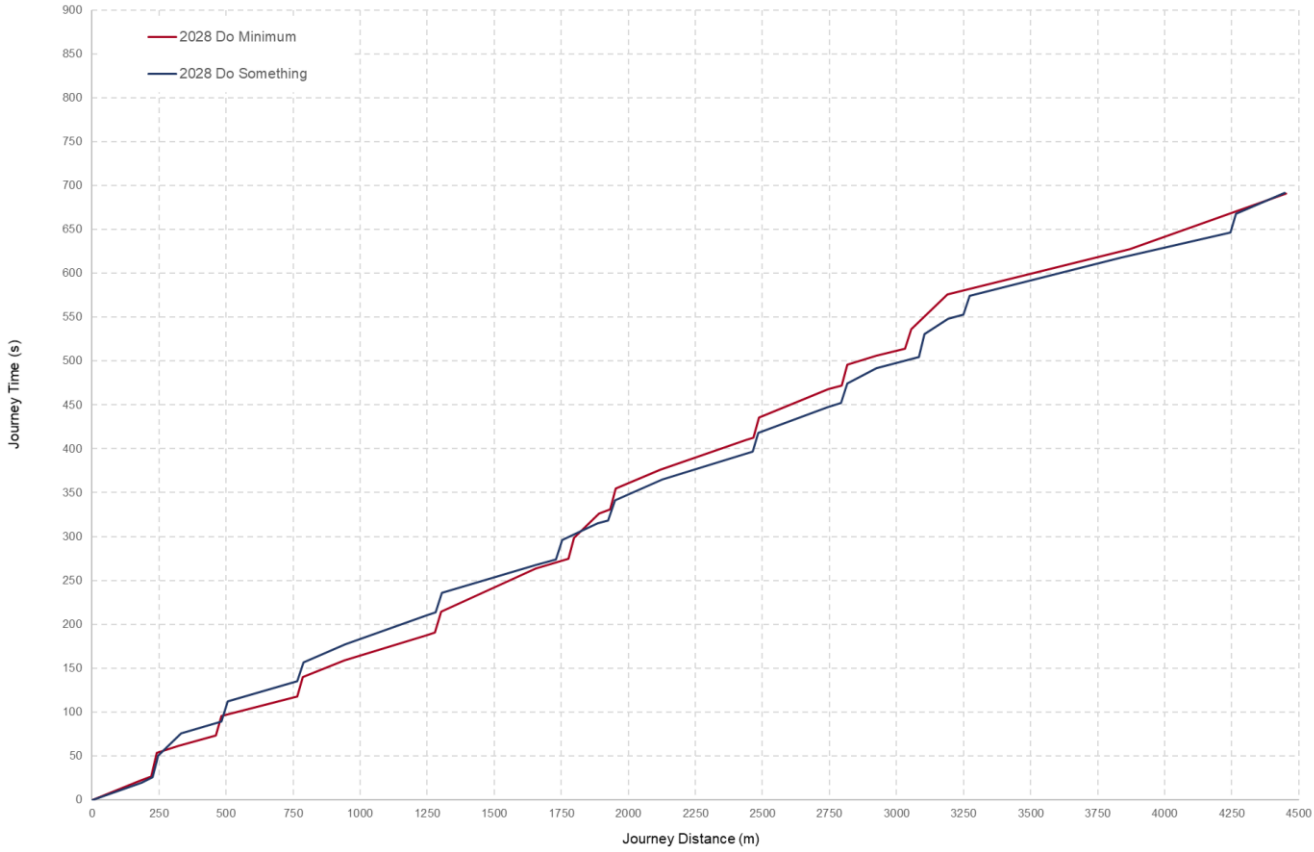

Diagram 6.32: F9 Bus Journey Time (2028 AM, Outbound)

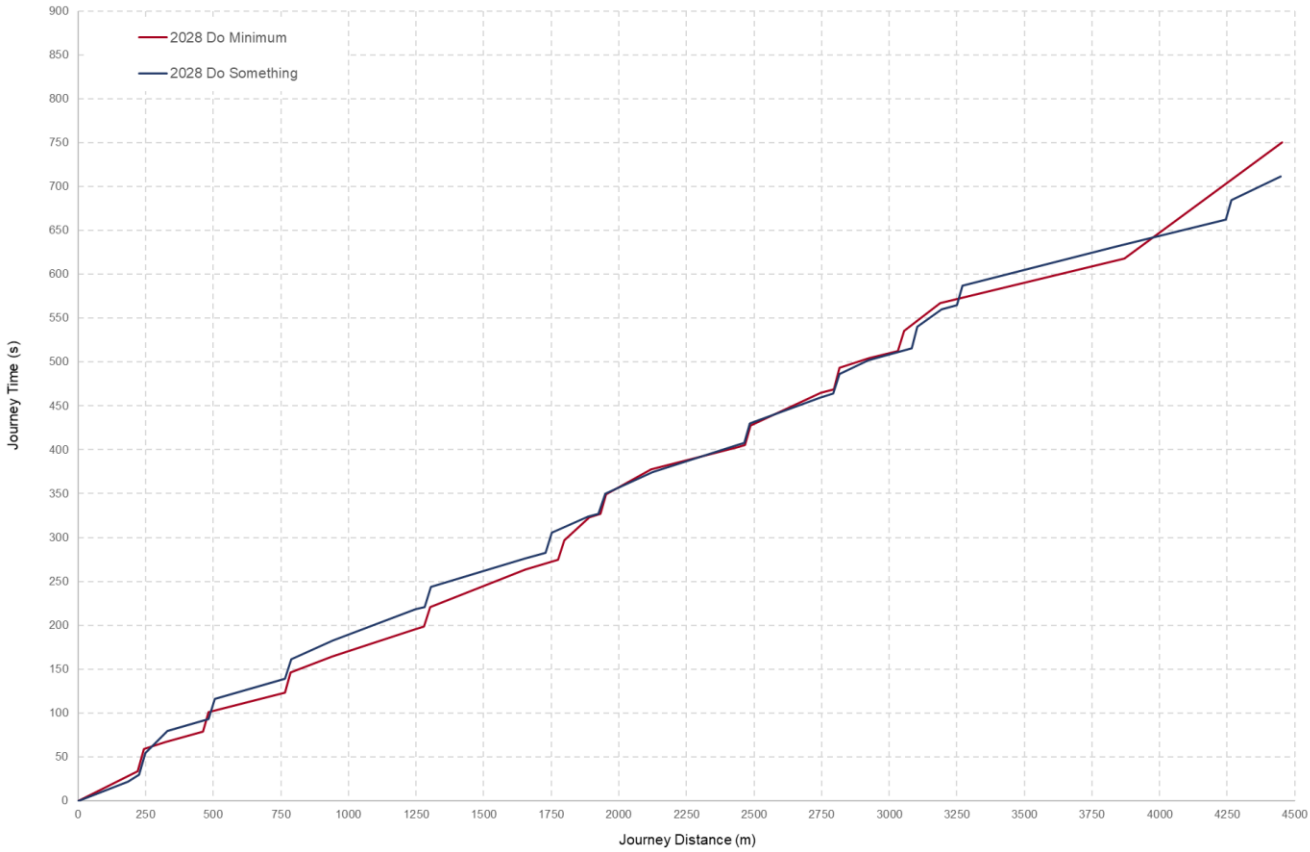

Diagram 6.33: F9 Bus Journey Time (2028 PM, Outbound)

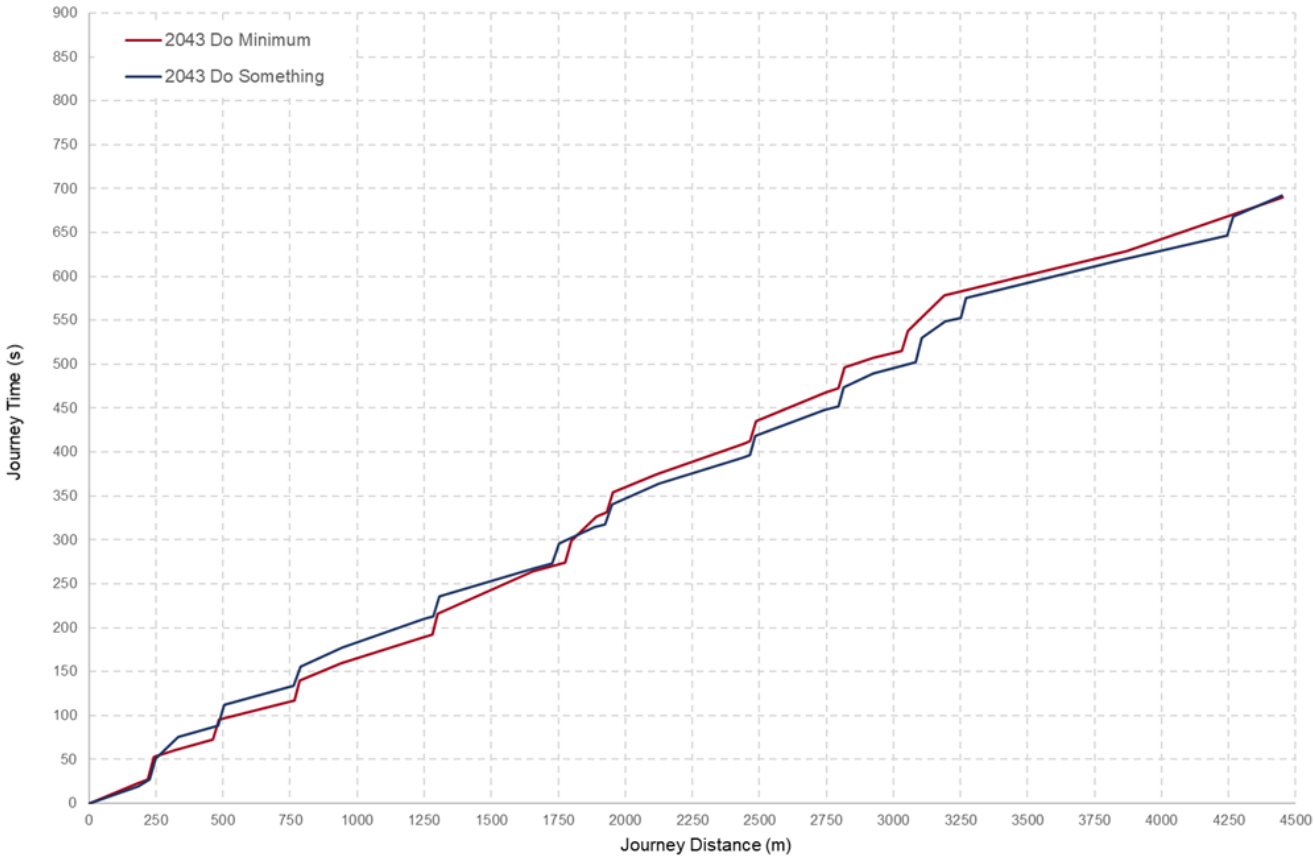

Diagram 6.34: F9 Bus Journey Time (2043 AM, Outbound)

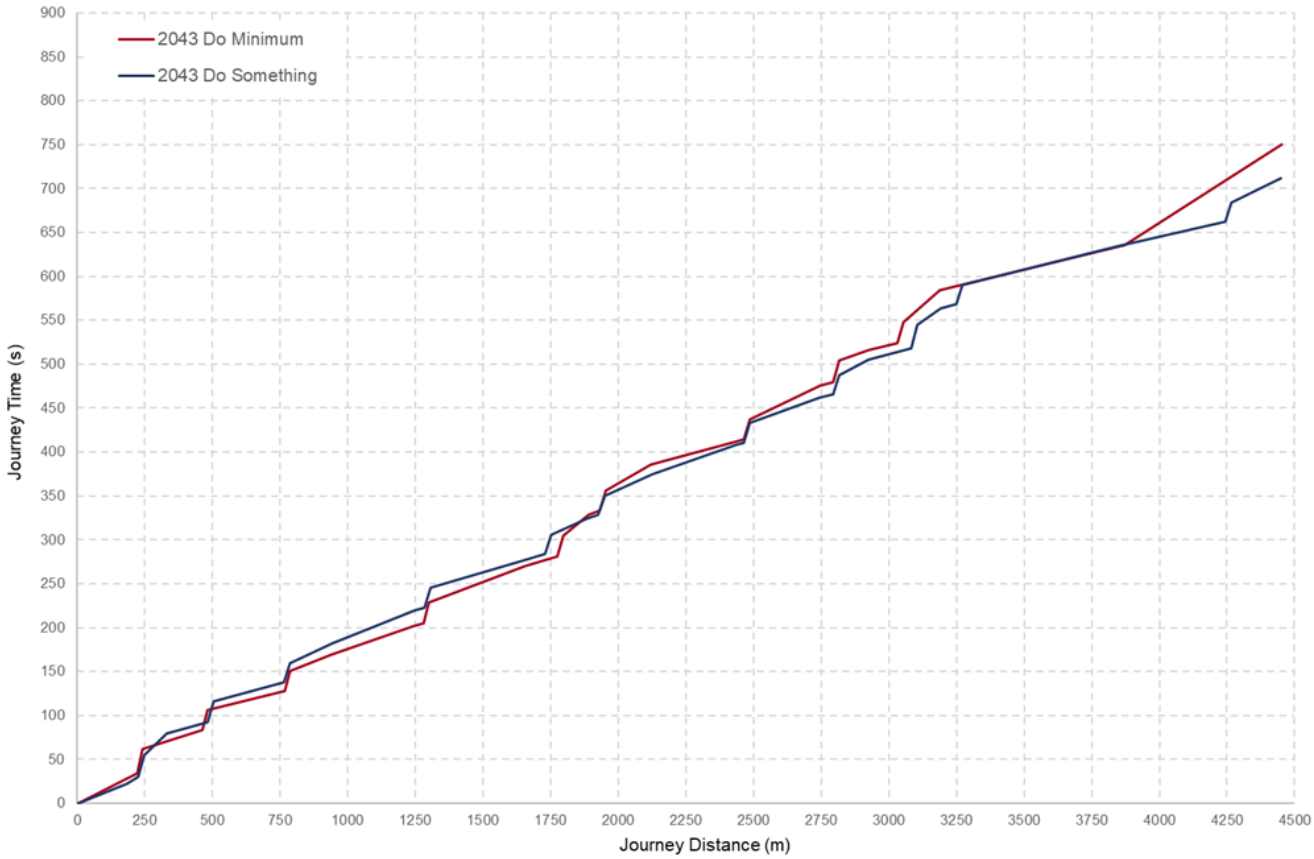

Diagram 6.35: F9 Bus Journey Time (2043 PM, Outbound)

Based on the results presented in Diagram 6.32 to Diagram 6.35, the Proposed Scheme is expected to deliver negligible average changes in bus journey time savings in the AM peak and small savings in the PM peak in the outbound direction. Similar to the Inbound direction, this is due to the journey time savings being offset by the introduction of two new bus stops (north of Wellmount Road and south of the R135 Finglas Road / Casement Road / R135 North Road / R104 St Margaret's Road four-arm roundabout) and enhanced pedestrian and cycle crossing facilities at both ends of Prospect Way which results in an increased the number of stages / phases.

As per the inbound direction, the increased number of bus stops will enhance the level of accessibility to the Proposed Scheme but will result in approximately 60 to 90 seconds of additional travel time (deceleration, dwell time at stops and re-acceleration) compared to the Do Minimum. The inclusion of additional bus stops as well as pedestrian and cyclist crossing opportunities will provide a more complete sustainable modes offering along this section of the Proposed Scheme. This section of the Proposed Scheme will further benefit from its connection with the Ballymun Section of the Proposed Scheme which is predicted to experience significant journey time savings to and from the City Centre.

6.6.3.2.4. Total Journey Time Changes for all Proposed Scheme Bus Services

The change in total bus journey time for all buses travelling along both the Finglas and Ballymun Sections of the Proposed Scheme is shown in Table 6.56 in vehicle minutes.

Table 6.56: Total Bus Journey Time

Peak Hour	Do Minimum (vehicle.minutes)	Do Something (vehicle.minutes)	Difference (vehicle.minutes)	%Difference
2028 AM	1548.9	1294.1	-254.8	-16.5%
2028 PM	1430.6	1208.4	-222.2	-15.5%
2043 AM	1573.1	1288.5	-284.6	-18.1%
2043 PM	1443.3	1210	-233.3	-16.2%

Based on the results presented in Table 6.56, modelling indicates that the Proposed Scheme will reduce total bus journey times along the Proposed Scheme by up to 16.5% in 2028 and 18% in 2043. Based on the AM and PM peak hours alone, this equates to 8 hours of savings in 2028 and 8.6 hours in 2043 combined across all buses when compared to the Do Minimum. On an annual basis this equates to approximately 6,000 hours of bus vehicle savings in 2028 and 6,500 hours in 2043, when considering weekday peak periods only.

6.6.3.2.5. Bus Users Assessment Summary

The findings of the bus user assessment shows that the Proposed Scheme fully aligns with the aims and objectives of the CBC Infrastructure Works, to '*Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements*'.

The significance of impact on bus users of the Proposed Scheme has been appraised using a qualitative assessment, taking the changes in journey time and journey reliability metrics presented above into consideration. The Proposed Scheme is considered to deliver a **High Positive** impact overall.

6.6.3.2.6. Increased Bus Frequency - Resilience Sensitivity Analysis

6.6.3.2.6.1. Background

For the purposes of this EIAR and the transport modelling undertaken in support of the EIAR, no increase in bus service frequency beyond that planned under the current Bus Connects Network redesign proposals was assessed. The bus frequencies used in the modelling are based on the proposed service rollout as part of the BusConnects Network Redesign and are the same in both the Do Minimum and Do Something scenarios. This rollout is currently underway. The rationale for undertaking this approach was that the planning consent being sought and which this EIAR supports is solely for the infrastructural improvements associated with providing bus priority and other sustainable modes measures along the Proposed Scheme.

This analysis, however, is conservative as the bus priority infrastructure improvements and indeed the level of protection it will provide to bus journey time consistency and reliability will provide a significant level of resilience for bus services that will use the Proposed Scheme from implementation into the future. The resilience provided by the Proposed Scheme will allow the service pattern and frequency of bus services to be increased into the future to accommodate additional demand without having a significant negative impact on bus journey time reliability or the operation of cycle and pedestrian facilities. In order to assess this resilience and the potential impacts of this resilience on carbon emissions, an additional analysis has been undertaken, which is detailed below.

6.6.3.2.6.2. Resilience Testing

A key benefit of the provision of a resilient BusConnects Service network, one which can provide reliable and consistent journey times, is that it has potential to cater for further significant transfer from private car travel to more sustainable and environmentally friendly travel via public transport.

To assess the resilience of the Proposed Scheme to cater for additional bus service frequency provision whilst maintaining a high level of bus journey time reliability, a separate analysis was undertaken in the Proposed Scheme micro-simulation model. In this analysis, the service frequency, in both directions of travel, was increased to achieve a 10 buses per hour increase, at the busiest section, to assess whether the Proposed Scheme could

cater for this increased service frequency whilst maintaining a high level of journey time reliability. The analysis was undertaken in the 2028 Do Minimum and Do Something models to assess whether the bus priority infrastructure was having the desired impact of protecting bus journey time reliability.

The bus service frequency, along the busiest section between Hart's Corner and Whitworth Road, in the 2028 Do Minimum model and in the 2028 Do Something resilience testing model is outlined in Table 6.57.

Table 6.57: Resilience Testing Bus Service Frequency Scenario Testing

Scenario	Inbound (Buses per Hour)	Outbound (Buses per Hour)
Do Minimum	46	46
Do Something	46	46
Do Minimum - Additional Services Resilience Test	56	56
Do Something - Additional Services Resilience Test	56	56

Table 6.58 outlines the average journey times for the inbound and outbound E1 service in the Opening Year (2028) scenarios. The E1 service has been chosen for the resilience testing as it represents the bus service which travels the longest distance along the Proposed Scheme.

Table 6.58: E1 Service – Average Bus Journey Times

Direction	Do Minimum (minutes)	Do Minimum (Additional Services) (minutes)	% Difference	Do Something (minutes)	Do Something - Additional Services (minutes)	% Difference
2028 Inbound AM	24.6	25.2	2.8%	19.6	20.2	2.9%
2028 Outbound PM	25.4	25.9	2.0%	20.6	20.6	0%

The results of the scenario testing with an additional 10 buses per direction per hour operating along the Proposed Scheme in the Opening Year (2028) are presented graphically in Diagram 6.36. The diagram displays the maximum, minimum and average journey times for each of the E1 bus services modelled.

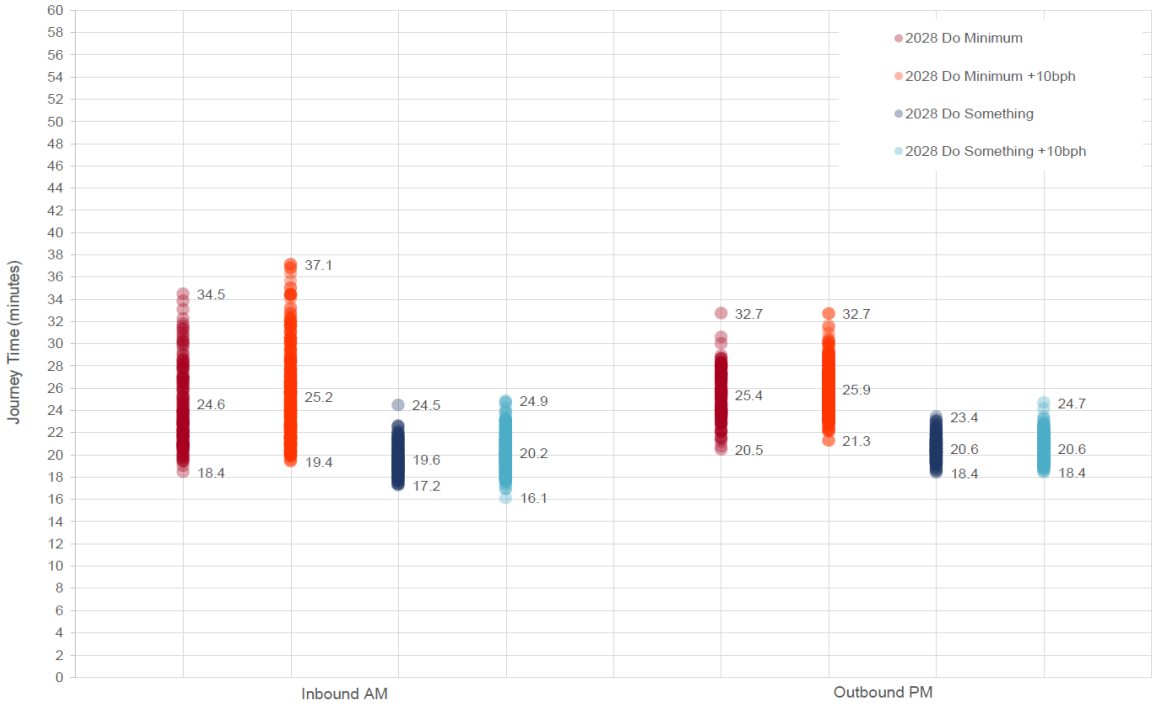

Diagram 6.36: Resilience Testing Bus Journey Time Reliability Indicators - Scenario Testing– Opening Year (2028)

As can be seen from Table 6.58 and Diagram 6.36, the modelling indicates that even with an additional 10 services operating per direction per hour along the Proposed Scheme, a high level of journey time reliability is maintained in the Do Something scenario, comparable with the 46 buses per direction per hour results. The results indicate negligible change in average journey times in both the Do Minimum and the Do Something resilience sensitivity tests per bus. In the Do Something resilience sensitivity test, however, bus journey time reliability is maintained with the additional services in place as indicated by the reduced range of journey times compared to the Do Minimum resilience test scenario. This highlights the benefit that the Proposed Scheme infrastructure improvements can provide in protecting bus journey time reliability and consistency, as passenger demand continues to grow into the future.

It should be noted that it was assumed that the general traffic levels included in each scenario would remain static. If traffic levels were to increase (typical daily variations are in the order of +/- 15%), then the bus priority infrastructure would further protect journey time reliability and resilience in comparison with the Do Minimum scenario.

Further details on the potential additional greenhouse gas (GHG) emissions savings that could occur from this resilience is outlined in Chapter 8 (Climate) in Volume 2 of the EIAR.

6.6.3.3. General Traffic Assessment

6.6.3.3.1. Overview

The Proposed Scheme aims to provide an attractive alternative to the private car and promote a modal shift to public transport, walking and cycling. It is however recognised that there will be an overall reduction in operational capacity for general traffic along the direct study area given the proposed changes to the road layout and the rebalancing of priority to walking, cycling and bus. This reduction in operational capacity for general traffic along the Proposed Scheme will likely create some level of trip redistribution onto the surrounding road network.

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

The assessment also assumes that goods vehicles (HGVs and LGVs) continue to grow in line with forecasted economic activity with patterns of travel remaining the same. For example, the assessment assumes a 45% and 77% increase in goods traffic versus the base year in 2028 and 2043, respectively. This is considered a very conservative assumption. It should be noted, however, that the 2021 Climate Action Plan (CAP) (DCCAE 2021) includes reference to a freight strategy for the region which will seek to further integrate smart technologies in logistics management and may include the regulation of delivery times as far as practicable to off-peak periods to limit traffic congestion in urban areas. The plan outlines plans to manage the increase in delivery and servicing requirements as the population grows, which may include the development of consolidation centres to limit the number of ‘last-mile’ trips made by larger goods vehicles with plans for higher use of smaller electric vans or cargo bikes for ‘last-mile’ deliveries in urban areas. As proposals for the above are at a pre-planning stage, it was not possible to account for them in the assessments and a worst-case assessment has been undertaken based on continued growth in goods traffic.

The purpose of this Section is to assess the overall impact that any redistributed general traffic will have on both the direct and indirect study areas. It should be noted that the impacts presented in this TIA are based on the final Preliminary Design for the Proposed Scheme which includes embedded mitigation to limit environmental and traffic and transport impacts to a minimal level as part of the iterative design development work described previously above.

To determine the impact that the Proposed Scheme has in terms of general traffic redistribution on the direct and indirect study areas, the LAM Opening Year (2028) model results have been used to identify the difference in general traffic flows between the Do Minimum and Do Something scenarios and the associated level of traffic flow

difference as a result of the Proposed Scheme. The assessment has been considered with reference to both the reductions and increases in general traffic flows along road links.

Reduction in General Traffic: For this assessment, the reductions in general traffic flows have been described as a positive impact to the environment.

The majority of instances where a reduction in general traffic flow occurs are located along or adjacent to the Proposed Scheme (i.e. the direct study area), where there are measures to improve priority for bus, cycle and walking facilities.

Localised junction models have been developed using industry standard modelling packages such as LinSig and Junctions 9 to determine the appropriate staging, phasing, green times and operational capacity at all junctions along the direct study area. These junction models have been developed using consistent traffic flows as predicted and modelled in the ERM / LAM and micro-simulation model using the iterative traffic modelling process described in Section 3 of this TIA. The full outputs of the results are included in TIA Appendix 2 (Junction Design Report).

Increase in General Traffic: To determine the impact that the Proposed Scheme has in terms of an increase in general traffic flows on the direct and indirect study areas, a more robust assessment has been undertaken, with reference to TII's Traffic and Transport Assessment Guidelines (TII 2014).

This document is considered a best practice guidance for the assessment of transport impacts related to changes in traffic flows due to proposed developments and is an appropriate means of assessing the impact of general traffic trip redistribution on the surrounding road network.

Diagram 6.37 provides a snapshot from the guidance which outlines 'Advisory Thresholds for Traffic and Transport Assessment Where National Roads are Affected'.

Where applications affect national roads a Transport Assessment should be requested if the thresholds in Table 2.2, below, are exceeded.

Table 2.2 Advisory Thresholds for Traffic and Transport Assessment Where National Roads are Affected

Vehicle Movements	*100 trips in / out combined in the Peak Hours for the proposed development*
	Development traffic exceeds 10% of turning movements at junctions with and on National Roads.
	Development traffic exceeds 5% of turning movements at junctions with National Roads if location has potential to become congested or sensitive.

Diagram 6.37 Extract from the Traffic and Transport Assessments Guidelines (TII 2014)

The basis of the guidance is to assess the impacts of additional trips that have been generated as part of a new development (for example, a new housing estate etc.). Noting that the guidance relates to national roads only, for the purpose of this assessment, the principles of the guidance have been adapted for the assessment of the Proposed Scheme. This has been achieved by extending the threshold to cover all road types[2] in the vicinity of the Proposed Scheme, not only national roads. This ensures a robust and rigorous assessment has been undertaken and that potential impacts on more localised or residential streets have been captured as part of the assessment.

[2] Part II of The Roads Act 1993 sets out the current classification of roads as National (National Primary and National Secondary), Regional and Local (Local Tertiary and Local Secondary). The road types are governed by the default speed limit of the road. National Roads are TII owned whilst Regional and Local Roads are owned by the associated Local Authority.

The impact assessment of increases to the general traffic flows has used the following thresholds based on the above guidelines:

- **Local / Regional Roads:** Traffic redistribution results in an increase above 100 combined flows (i.e. in a two-way direction) along residential, local and regional roads in the vicinity of the Proposed Scheme in the AM and PM Peak Hours;
- The threshold aligns with an approximate 1 vehicle per minute increase per direction on any given road. This is a very low level of traffic increase on any road type and ensures that a robust assessment of the impacts of redistributed traffic has been undertaken;
- **National Roads:** Traffic exceeds 5% of the combined turning flows at junctions with or on national roads in the AM and PM Peak Hours as a result of traffic redistribution comparing the Do Minimum to the Do Something scenario with the Proposed Scheme in place; and
- The guidelines indicate that a 10% threshold may be used, however, to ensure a rigorous assessment in this instance the lower 5% threshold for turning movements has been utilised.

Where road links have been identified as experiencing additional general traffic flow increases which exceed the above thresholds, a further assessment has been undertaken by way of a traffic capacity analysis on the associated junctions along the affected links. This further assessment is outlined in the following sections.

6.6.3.3.2. General Traffic Flow Difference – AM Peak Hour

Diagram 6.38 illustrates the difference in traffic flows on the road links in the AM Peak Hour for the Opening Year (2028). Please see TIA Appendix 4 (Section 4.4 - General Traffic Assessment) for the full LAM outputs.

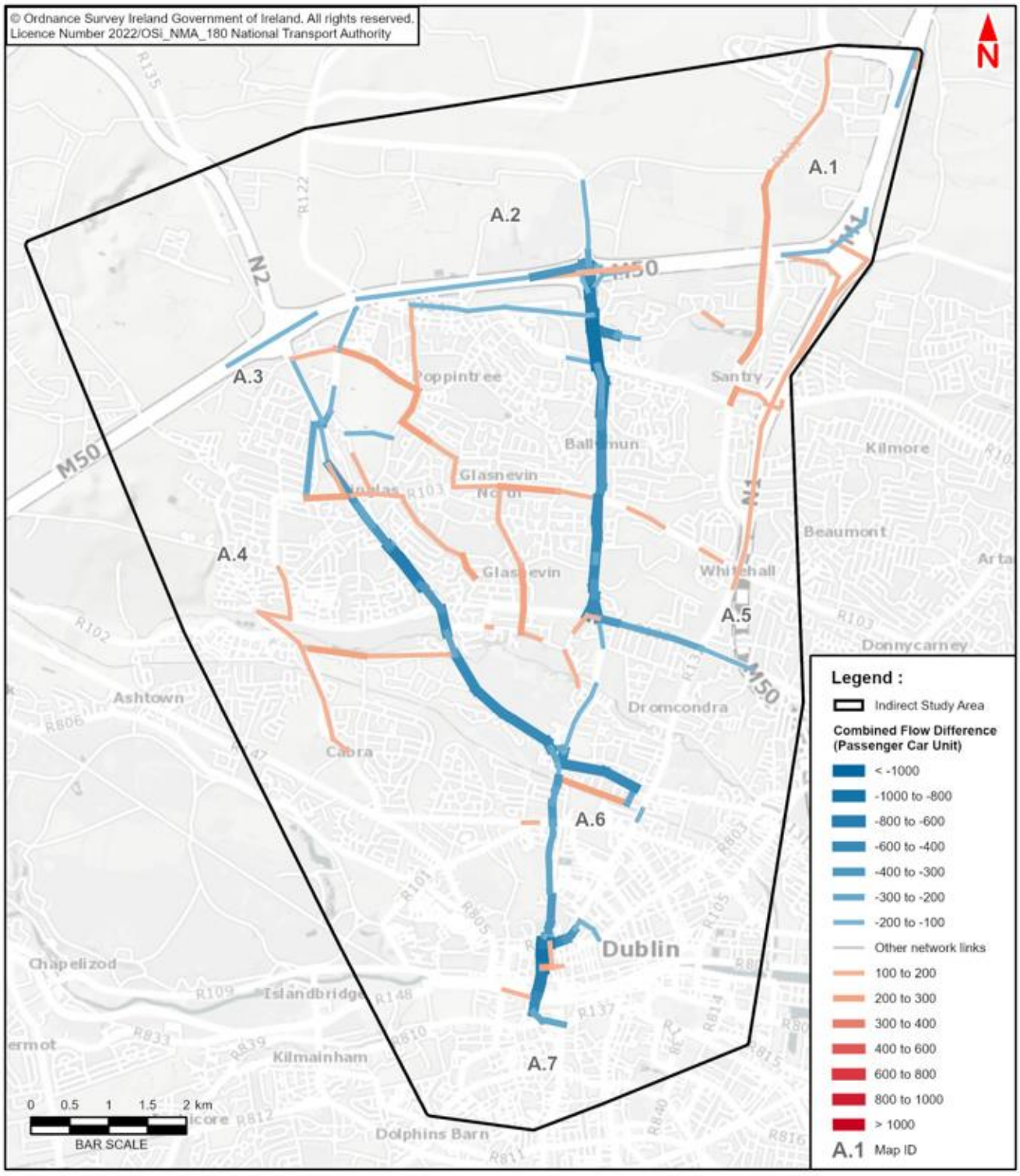

Diagram 6.38: Flow Difference on Road Links (Do Minimum vs. Do Something), AM Peak Hour, Opening Year (2028)

Impact on Direct Study Area (AM Peak Hour)

Direct Reductions in General Traffic: The LAM demonstrates that during the 2028 AM Peak Hour scenario, a significant reduction in general traffic travelling along the main corridor is predicted as well as some adjacent road links, as illustrated by the blue links in Diagram 6.38.

These blue links highlight roads and streets that experience a reduction of at least -100 combined traffic flows between the Do Minimum and Do Something scenarios.

The key reductions in traffic flows during the AM Peak Hour are outlined in Table 6.59. Note that the sections used in this analysis do not correspond to those used in the qualitative assessments, they are set for ease of understanding the general traffic assessment only.

Table 6.59: Road Links that Experience a Reduction of at least -100 Combined Flows during AM Peak Hour (Direct Study Area) (pcus)

Location	Map I.D.	Road Name	Do Minimum Flows	Do Something Flows	Flow Difference
Section 1 – R135 to Constitution Hill	A.3/A.4	Finglas Road	1675	1036	-639
		Phibsborough Road	1295	937	-358
Section 2 – Constitution Hill to Inn's Quay	A.7	Constitution Hill	1239	895	-344
		Church Street	1639	704	-935
		Church Street Upper	1414	1061	-353
Section 3 – Ballymun Road to Inn's Quay	A.2/A.6/A.7	Ballymun Road	1219	645	-574
		R108	2374	1268	-1106
		St. Mobhi Road	1441	911	-530
		Botanic Road	1270	867	-404
		Constitution Hill	1239	895	-344
		Church Street	1639	704	-935
		Church Street Upper	1414	1061	-353

As indicated in Table 6.59, the traffic reductions vary between -344 and -1106 combined flows.

Along Section 1 of the Proposed Scheme, Finglas Road experiences a reduction in up to -639 combined traffic flows. There is also a decrease of -358 flows on Phibsborough Road. Along Section 2, there is a reduction of -935 combined flows along Church Street and a decrease of -344 combined flows on Constitution Hill and - 353 Church Street Upper. Along Section 3, there is a reduction of -1106 vehicles on the R108. St. Mobhi Road experiences a reduction of -530 vehicles, similar to Ballymun Road at -574 vehicles. Botanic Road experiences a reduction of -404 vehicles.

Direct Increases in General Traffic: There are no anticipated increases greater than 100 combined two-way flows within the direct study area.

Overall Impact on Direct Study Area: In summary, reductions of between -304 and -964 combined general traffic flows along the direct study area during the AM Peak Hour in the Opening Year (2028) is expected. This is attributed to the rebalancing of priority towards sustainable modes as part of the Proposed Scheme and the associated modal shift as a result of its implementation.

This reduction in general traffic flow has been determined as an overall **Medium Positive** impact on the direct study area.

Impact on Indirect Study Area (AM Peak Hour)

Indirect Reductions in General Traffic: In addition to the general traffic flow reductions occurring along the direct study area, there are key reductions in general traffic noted along certain road links within the indirect study area during the AM Peak Hour. The key reductions in traffic flows along the indirect study area during the AM Peak Hour are outlined in Table 6.60.

Table 6.60: Road Links that Experience a Reduction of at least -100 Combined Flows during AM Peak Hour (Indirect Study Area) (pcus)

Location	Map I.D.	Road Name	Do Minimum Flows	Do Something Flows	Flow Difference
Adjacent to Section 1 - North of the Proposed Scheme (Finglas)	A.3	Jamestown Road	287	87	-200
		St. Margaret's Road	1426	1214	-212
		Prospect Way	1305	949	-356
		Lindsay Road	650	226	-424
		Shandon Road	189	51	-197
		Saint Patrick's Road	639	372	-267
		Finglas Place	407	215	-192
		Coleraine Street	161	58	-103
Adjacent to Section 2 - South of the Proposed Scheme (Finglas)	A.6/A.7	King Street North	1761	1135	-627
		Bolton Street	1852	1476	-376
		King's Inn Court	1094	832	-262
		Bridge Street Lwr	2588	2117	-471
		Bridge Street Upper	1706	1419	-288
		High Street	2148	1910	-238
		Cornmarket	2169	1930	-240
Adjacent to Section 3 - North and South of Proposed Scheme (Ballymun)	A.2/A.5	Balbutcher Lane	757	592	-165
		Griffith Avenue	1055	723	-332
		Lindsay Road	650	226	-424
		Collins Ave Extension	1057	949	-107
		Santry Avenue	1237	1101	-135
		St. Patricks Parade	696	278	-418
		St. Patrick's Road	639	372	-267
		Shandon Road	189	51	-137
		Northwood	1434	1020	-414

As indicated in Table 6.60, the traffic reductions vary between -103 and -471 combined flows along the surrounding road links. This reduction in general traffic flow has been determined as an overall **Medium Positive** impact on the direct study area.

Indirect Increases in General Traffic: The road links which experience additional traffic volumes of over 100 combined flows are illustrated by the orange / red lines in Diagram 6.38. These road links have been identified as experiencing traffic volumes above the additional traffic threshold and therefore require further analysis. The road links and associated flow difference between the Do Minimum and Do Something scenarios during the AM Peak Hour are outlined in Table 6.61.

Table 6.61: Road Links Exceeding the 100 Flow Additional Traffic Threshold during AM Peak Hour (Indirect Study Area)

Orientation	Map ID	Road Name	Do Minimum Flows	Do Something Flows	Flow Difference
North of Scheme	A.2	M1 / M50	901	1035	134
	A.5	Swords Road	1952	2238	286
	A.1	M1	906	1022	116
	A.1	Airport Roundabout	3667	3781	113
Whitehall/Drumcondra/Santry/Ballymun	A.6	Whitworth Road	209	415	206
	A.5	Griffith Avenue	1236	1346	110
	A.5	Ballymun Road	249	354	105
	A.5	Griffith Road	217	434	217
	A.1	M50 J2 / R104	522	641	119
	A.5	R103 / R132	2856	3052	196
	A.5	R104 / Swords Road	1597	1730	134
	A.1	M50 J3 / M1 J1	901	1035	134
	A.1	Northwood Avenue	956	1113	157
Finglas/Poppintree/Glasnevin/Cabra	A.6	Cabra Road	1036	1137	101
	A.4	Glasanaon Road	219	416	197
	A.4	Glasnevin Avenue	934	1058	123
	A.43	Beneavin Drive	212	381	168
	A.43	Grove Park Road	257	414	157
	A.43	Botanic Avenue	331	462	131
	A.43	Collins Avenue Extension	934	1051	116
	A.34	St Pappin Road	226	400	175
	A.43	Collins Avenue West	940	1064	125
	A.43	Glasnevin Hill	288	464	176
	A.3	Ballygall Road East	275	521	247
	A.3	Old Finglas Road	369	491	122
	A.3	Ballyboggan Road	745	955	210
	A.43	Ratoath Road	1934	2126	192
	A.43	R805 / Ratoath Road	820	988	169
	A.43	Tolka Valley Road	676	797	121
	A.3	R103	637	852	215
	A.3	Mellowes Road	906	1203	297
	A.3	R135	159	432	274
	A.3	McKee Avenue	440	541	101
	A.3	Sycamore Road	244	479	235
	A.3	Jamestown Road	712	978	266
	A.3	Cardiffsbridge Road	320	493	173
	A.3	Melville Road	648	880	232
	A.3	Balbutcher Lane	400	555	155
	A.3	Charlestown Place	1773	1926	152
City Centre	A.7	Beresford Street	159	353	194
	A.7	Marys Lane	101	393	292

Orientation	Map ID	Road Name	Do Minimum Flows	Do Something Flows	Flow Difference
	A.7	Usher's Quay	964	1133	169

As presented in Table 6.61, the additional traffic on the road links that exceed the threshold for further assessment varies between +101 and +297 combined flows during the AM Peak Hour. These road links have been identified as experiencing additional traffic volumes over the defined threshold and therefore require further analysis.

Further junction capacity assessment has been undertaken along these road links to determine whether the above road links have the capacity to cater for the additional traffic volumes as a result of the Proposed Scheme.

Operational capacity outputs have been extracted from the LAM at the associated junctions along the subject road links to determine whether there is reserve capacity to facilitate the uplift in traffic. The results are presented in terms of the significance of the impact to the V / C ratio for each junction based on its sensitivity and magnitude of impact.

It should be noted that the worst performing arm of the junction has been used for the purpose of the assessment to ensure a conservative impact assessment is undertaken.

National Roads – 5% Threshold Impact Assessment (AM Peak Hour)

On the basis of the assessment methodology specifically for national roads, whereby traffic exceeding 5% of the combined turning flows at junctions on or with national roads as a result of traffic redistribution associated with the Proposed Scheme, the junctions and associated flow difference between the Do Minimum and Do Something scenarios during the AM Peak Hour are outlined in Table 6.62.

Table 6.62: National Road Links where the 5% Additional Traffic Threshold is Exceeded (AM Peak Hour)

Junction	Total Do Minimum Turning Flows (PCUs)	Total Do Something Turning Flows (PCUs)	Turning Flow Difference (PCUs)	Percentage Difference
N4 Junction 2	9,723	9,687	-36	0%
M4 / M50 Junction 1	16,996	17,256	260	2%
M50 / N3 Junction	14,227	14,310	83	1%
M50 / N7 Junction	20,299	20,517	218	1%

The contents of Table 6.62 demonstrate that redistributed traffic from the Proposed Scheme will have a less than 5% impact on turning flows at junctions with national roads, therefore, no further assessment of the national junctions in the AM Peak Hour has been undertaken.

6.6.3.3.3. General Traffic Flow Difference – PM Peak Hour

Diagram 6.39 illustrates the difference in traffic flows on road links during the PM Peak Hour for the Opening Year (2028). Appendix A4.7 (General Traffic Flow) provides further details of the LAM outputs.

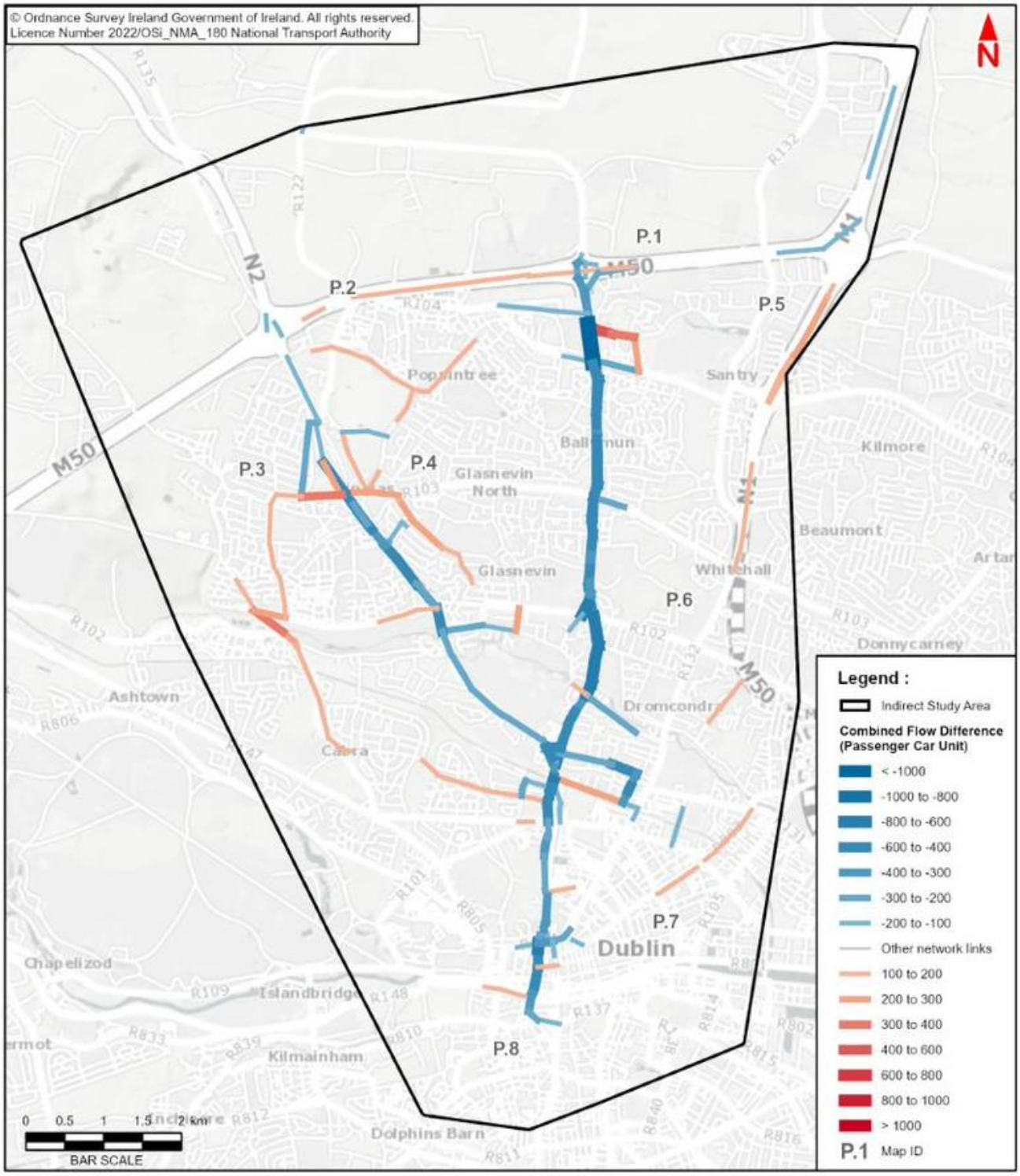

Diagram 6.39: Flow Difference on Road Links (Do Minimum vs Do Something), PM Peak Hour, Opening Year (2028) Impact on Direct Study Area (PM Peak Hour)

Impact on Direct Study Area (PM Peak Hour)

Direct Reductions in General Traffic Flows: The LAM indicates that during the Opening Year (2028) scenario, there are key reductions in general traffic noted along the Proposed Scheme during the PM Peak Hour, as illustrated by the blue links in Diagram 6.39. The blue links indicate where a reduction of at least -100 combined traffic flows may occur.

The key reductions in traffic flows during the PM Peak Hour are outlined in Table 6.63. Note that the sections used in this analysis do not correspond to those used in the qualitative assessments, they are set for ease of understanding the general traffic assessment only.

Table 6.63: Road Links that Experience a Reduction of at least -100 Combined Flows during PM Peak Hour (Direct Study Area) (pcus)

Location	Map I.D.	Road Name	Do Minimum Flows	Do Something Flows	Flow Difference
Section 1 – R135 to Constitution Hill	SP3-P.7	Finglas Road	1685	1115	-570
		Phibsborough Road	1615	917	-698
Section 2 – Constitution Hill to Inn's Quay	P.8	Constitution Hill	1179	780	-399
		Church Street	1523	901	-622
		Church Street Upper	1179	780	-399
Section 3 – Ballymun Road to Inn's Quay	P.1/P.6/P.7	Ballymun Road	1398	716	-682
		R108	2275	1132	-1144
		St. Mobhi Road	1343	645	-698
		Botanic Road	1382	770	-612
		Phibsborough Road	1615	917	-698
		Constitution Hill	1179	780	-399
		Church Street	1523	901	-622
		Church Street Upper	1179	780	-399

Along Section 1 of the Proposed Scheme, Finglas Road experiences a reduction in up to -570 combined traffic flows. There is also a larger decrease of -698 on Phibsborough Road. Both of these reductions can be considered significant. Along Section 2, there are similar reductions on Constitution Hill of -399 and Church Street Upper of -399 which can be considered slight. There is a significant reduction on Church Street of -622.Along Section 3, there are reductions of -612 on Botanic Road, larger reductions of -698 on St. Mobhi Road and -682 on Ballymun Road and a profound reduction on the R108 with -1144. All of these reductions can be considered significant or very significant.

Increases in General Traffic Flows: There are no anticipated increases greater than 100 combined two-way flows within the direct study area.

Overall Impact on Direct Study Area: In summary, reductions of between -399 and -1144 general traffic flows along the direct study area are predicted during the PM Peak Hour, which is attributed to the Proposed Scheme and the associated modal shift as a result of its implementation.

This reduction in general traffic flow has been determined as an overall **High Positive** impact on the direct study area.

Impact on Indirect Study Area (PM Peak Hour)

Reductions in General Traffic Flows: In addition to the general traffic flow reductions occurring along the direct study area, there are key reductions in general traffic predicted along certain road links within the indirect study area during the PM Peak Hour. They key reductions in traffic flows along the indirect study area during the PM Peak Hour are outlined in Table 6.64.

Table 6.64: Road Links that Experience a Reduction of at least -100 Combined Flows during PM Peak Hour (Indirect Study Area) (pcus)

Location	Map I.D.	Road Name	Do Minimum Flows	Do Something Flows	Flow Difference
Adjacent to Section 1 – North of the Proposed Scheme (Finglas)	P.3/P.4/P.7	Jamestown Road	212	56	-156
		Finglas Place	296	95	-201
		Old Finglas Road	551	358	-192
		Shandon Road	300	60	-240
		Leinster Street North	166	30	-136
		Royal Canal Bank	392	273	-119
		North Circular Road	507	334	-174
Adjacent to Section 2 - South of the Proposed Scheme (Finglas)	P.8	Coleraine Street	246	52	-194
		King Street North	1588	1216	-372
		Ryder's Row	520	414	-106
		Bridge Street Lower	2259	1926	-332
		Bridge Street Upper	1959	1672	-287
		High Street	1597	1462	-134
Adjacent to Section 3 - North and South of the Proposed Scheme (Ballymun)	P.4/P.6/P.7	Santry Avenue	887	632	-256
		Collins Avenue Extension	1094	812	-282
		Glasnevin Hill	914	811	-103
		Botanic Avenue	866	589	-276
		St. Patrick's Road	1039	631	-408
		Iona Road	518	246	-272
		St. Alphonsus Road Upper	614	203	-412
		Russell Street	559	438	-120
		Jones's Road	472	352	-120
		Whitetree Road	279	93	-186
		Crestwood Green	2043	1866	-177

As indicated in Table 6.64, the traffic reductions vary between -103 and -408 combined flows along the surrounding road links.

Increases in General Traffic Flows: The key road links which are expected to experience additional traffic volumes in the PM Peak Hour are illustrated by the red links in Diagram 6.39, which indicate where an increase of at least 100 combined flows may occur. The road links and associated flow difference between the Do Minimum and Do Something scenarios during the PM Peak Hour are outlined in Table 6.65.

Table 6.65: Road links where 100 flow additional traffic threshold is exceeded (2028 PM Peak Hour) (pcus)

Orientation	Map ID	Road Name	Do Minimum Flows	Do Something Flows	Flow Difference
North of Scheme	P.2	M50	3345	3547	202
Drumcondra / Santry / Whitehall / Ballymun	P.7	Whitworth Road	305	553	248
	P.7	Drumcondra Road Upper	1575	1684	109
	P.6	Swords Road	3259	3399	139
	P.4	Griffith Avenue	674	797	122
	P.24	Grace Park Road	1273	1377	104
	P.6	R104 / R132	3121	3271	150
	P.1	Northwood	576	1008	432
	P.1	Northwood Road	422	643	221
Finglas / Cabra / Charlestown	P.4	Glasanaon Road	293	531	238
	P.6	Botanic Avenue	437	546	109
	P.4	Ballygall Road East	477	743	266
	P.4	Fassaugh Avenue	750	893	143
	P.3	Ratoath Road	1825	2145	321
	P.4	Fassaugh Road	665	808	143
	P.4	Tolka Valley Road	805	1023	218
	P.4	Seamus Ennis Road	510	744	234
	P.4	R103	549	890	340
	P.3	Mellowes Road	779	1137	358
	P.3	Cardiffsbridge Road	294	465	171
	P.4	McKee Avenue	559	679	120
	P.4	Jamestown Road	542	725	183
	P.4	Poppintree Park Lane	437	575	137
	P.34	Balbutcher Lane	246	386	139
	P.2	St Margaret's Road	617	768	151
	P.4	Melville Road	826	929	103
	P.4	Finglas Road / Mellowes Road Slip	282	436	154
	P.2	Charlestown Place	826	929	103
City Centre	P.7	Summerhill	795	937	142
	P.7	Ballybough Road	2166	2293	126
	P.7	Marys Lane	175	296	121
	P.7	Summerhill Parade	2248	2378	131
	P.8	Usher's Quay	1874	1974	100
	P.8	Western Way	210	404	194
	P.8	Usher's Island	1948	2048	101
	P.7	Connaught Street	650	755	105

As outlined in Table 6.65, the predicted additional traffic on these road links varies between +100 and +432 combined flows during the PM Peak Hour. These road links have been identified as experiencing additional traffic volumes above the threshold outlined and therefore require further analysis which is presented in subsequently.

National Roads – 5% Threshold Impact Assessment (PM Peak Hour)

On the basis of the assessment methodology specifically for national roads, whereby traffic exceeding 5% of the combined turning flows at junctions on or with national roads as a result of traffic redistribution associated with the Proposed Scheme, the junctions and associated flow difference between the Do Minimum and Do Something scenarios during the PM Peak Hour are outlined in Table 6.66.

Table 6.66: National Road Links where the 5% Additional Traffic Threshold is Exceeded (PM Peak Hour)

Junction	Total Do Minimum Turning Flows (PCUs)	Total Do Something Turning Flows (PCUs)	Turning Flow Difference (PCUs)	Percentage Difference
M1 Junction 2	13,133	13,063	-71	1%
M1 / M50 Junction 3	16,666	16,724	57	0%
M50 Junction 4	12,910	12,609	-302	-2%
M50 Junction 5 / N2	16,270	16,217	-53	0%
M50 Junction 2	7,580	7,822	242	3%

The contents of Table 6.66 demonstrate that redistributed traffic from the Proposed Scheme will have a less than 5% impact on turning flows at junctions with national roads, therefore, no further assessment of the national junctions in the PM Peak Hour has been undertaken.

6.6.3.3.4. General Traffic Impact Assessment

This Section details the magnitude of the impacts as a result of the redistributed general traffic on the indirect study area. Note that further assessment is presented in Chapter 6 (Traffic & Transport) in Volume 2 of the EIAR which considers the junction sensitivities and the significant of effects.

To understand the magnitude of impact of the redistributed traffic, operational capacities have been extracted from the LAM.

The capacity of junctions within the LAM are expressed in terms of V / C ratios. The V / C ratios represent the operational efficiency for each arm of a junction. For the purpose of this TIA, operational capacity outputs of a junction have been identified with reference to the busiest arm which experiences the maximum V/C ratio.

A V / C ratio of below 85% indicates that traffic is operating well, with spare capacity, and does not experience queuing or delays throughout the hour. A value of 85% to 100% indicates that traffic is approaching its theoretical capacity and may experience occasional queues and delays within the hour. A value of over 100% indicates that traffic is operating above its theoretical capacity and experiences queues and delays regularly within the hour. The junctions have been described in the ranges outlined in Table 6.67.

Table 6.67: Junction Volume / Capacity Ranges

V / C Ratio	Traffic Condition
≤85%	Traffic is operating well within theoretical capacity.
85% - 100%	Traffic is approaching theoretical capacity and may experience occasional queues and delays.
≥100%	Traffic is operating above its theoretical capacity and experiences queues and delays regularly.

When comparing the V / C ratios during the Do Minimum and Do Something scenarios for the key junctions, the terms outlined in Table 6.68 have been used to describe the impact.

Table 6.68: Magnitude of Impact for Redistributed Traffic

		Do Something		
		≤85%	85% - 100%	>100%
Do Minimum	≤85%	Negligible	Low Negative	High Negative
	85% - 100%	Low Positive	Negligible	Medium Negative
	>100%	Medium Positive	Low Positive	Negligible

As indicated in Table 6.68, the changes in V / C ratios between the Do Minimum and Do Something scenarios result in either a positive, negative or negligible magnitude of impact.

General Traffic Impact Assessment (Opening Year (2028)) – Indirect Study Area – AM Peak Hour

The contents of Table 6.69 outline the V / C ratios at the key local / regional road junctions in the AM Peak Hour for the Opening Year (2028). The location of these junctions and the V / C ratio comparison between the Do Minimum and Do Something scenarios in the 2028 AM Peak Hour are illustrated in TIA Appendix 3 (Maps).

Table 6.69: Volume over Capacity Ratios at Key Junctions (Do Minimum vs. Do Something), AM Peak, Opening Year (2028)

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Balbutcher Lane	Balbutcher Way / Balbutcher Lane / Balbutcher Lane	✓			✓			Negligible
Ballyboggan Road	Finglas Road / Ballyboggan Road / Finglas Road	✓			✓			Negligible
	Ballyboggan Road / Ballyboggan Road	✓			✓			Negligible
	Broombridge Road / Ballyboggan Road / Ballyboggan Road	✓			✓			Negligible
Ballygall Road East	Fitzmaurice Road / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Ballygall Road East / Ballygall Road East / Cremore Heights	✓			✓			Negligible
	Griffith Avenue / Ballygall Road East / Griffith Avenue / Ballygall Road East	✓			✓			Negligible
	Hillcrest Park / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Ferndale Avenue / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Westpark Drive / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
Ballymun Road	Claremont Avenue / Ballymun Road / Ballymun Road	✓			✓			Negligible
Beneavin Drive	Beneavin Road / Beneavin Drive / Ballygall Road East	✓			✓			Negligible
Beresford Street	King Street North / Beresford Street / King Street North	✓			✓			Negligible
	Beresford Street / Marys Lane / Greek Street / Marys Lane	✓			✓			Negligible
Botanic Avenue	Botanic Avenue / Botanic Avenue / Daneswell Road	✓			✓			Negligible
	Botanic Avenue / Botanic Avenue / St Mobhi Road / St Mobhi Road		✓			✓		Negligible
Cardiffsbridge Road	Wellmount Road / Cardiffsbridge Road / Cardiffsbridge Road	✓			✓			Negligible
	Cardiffsbridge Road / Cardiffsbridge Road / Deanstown Avenue	✓			✓			Negligible
	Cardiffsbridge Road / Cardiffsbridge Road / St Helena's Road	✓			✓			Negligible
Charlestown Place	R135 / Charlestown Place / North Road		✓			✓		Negligible
	Charlestown Place	✓			✓			Negligible
	Charlestown Place	✓			✓			Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Collins Avenue Extension	Collins Avenue Extension / Shanowen Avenue / Collins Avenue Extension / Collins Avenue Extension	✓			✓			Negligible
	Collins Avenue Extension	✓			✓			Negligible
Collins Avenue West	Collins Avenue West / Larkhill Road / Iveragh Road / Collins Avenue West	✓			✓			Negligible
	Larkhill Road / Collins Avenue West / Collins Avenue Extension / Falcarragh Road	✓			✓			Negligible
Cabra Road	North Circular Road / North Circular Road / Dalymount	✓			✓			Negligible
	St Peters Road / Cabra Road / Dalymount	✓			✓			Negligible
R132 / R104	Swords Road / R132 / R104 / R132		✓			✓		Negligible
Glasanaon Road	Ballygall Road West / Glasanaon Road	✓			✓			Negligible
	Ballygall Place / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Ballygall Crescent / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Ferndale Avenue / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Griffith Road / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
Glasmeen Road	Griffith Avenue / Tolka Estate Road / Tolka Estate Road / Griffith Avenue	✓			✓			Negligible
	Griffith Road / Glasnamana Road / Griffith Road	✓			✓			Negligible
Glasnevin Avenue	Willow Park Road / Beneavin Drive / Glasnevin Avenue	✓			✓			Negligible
	Glasnevin Drive / Glasnevin Avenue / Glasnevin Avenue	✓			✓			Negligible
	Glasnevin Avenue / Grove Park Road / Glasnevin Avenue	✓			✓			Negligible
	Ballymun Road / Ballymun Road / Glasnevin Avenue			✓			✓	Negligible
	Willow Park Avenue / Glasnevin Avenue / Glasnevin Avenue	✓			✓			Negligible
Glasnevin Hill	St Mobhi Drive / Glasnevin Hill / Glasnevin Hill	✓			✓			Negligible
	Glasnevin Hill / Botanic Avenue / Botanic Road	✓			✓			Negligible
	Glasnevin Hill / Ballymun Road / Old Finglas Road	✓			✓			Negligible
Griffith Avenue	Ballymun Road / Griffith Avenue / Griffith Avenue / Ballymun Road	✓			✓			Negligible
	Griffith Avenue / St Mobhi Road / Griffith Avenue / St Mobhi Road		✓			✓		Negligible
Griffith Road	Griffith Road / Griffith Drive / Griffith Road	✓			✓			Negligible
	Griffith Road / Griffith Parade / Griffith Road	✓			✓			Negligible
Grove Park Road	Grove Park Road / Grove Park Road / Grove Park Avenue	✓			✓			Negligible
	Sycamore Road / Grove Park Road / Willow Park Crescent	✓			✓			Negligible
Jamestown Road	Jamestown Road / Creston Avenue / St Margaret's Road / St Margaret's Road	✓			✓			Negligible
	Hampton Wood Road / Jamestown Road / Jamestown Road	✓			✓			Negligible
	Melville Road / Jamestown Road / Poppintree Park Ln West / Jamestown Road	✓			✓			Negligible
Marys Lane	May Lane / Church Street / Marys Lane / Church Street	✓			✓			Negligible
McKee Avenue	McKee Avenue / Jamestown Road / Seamus Ennis Road		✓			✓		Negligible
	McKee Avenue / McKee Avenue	✓			✓			Negligible
Mellowes Road	Mellowes Road / Mellowes Road	✓			✓			Negligible
	Finglaswood Road / R103 / Finglaswood Road / Mellowes Road		✓			✓		Negligible
Northwood Avenue	Northwood Avenue / Northwood Avenue	✓			✓			Negligible
	Northwood Avenue / Temple Court / Northwood Avenue	✓			✓			Negligible
	Addison Avenue / Old Finglas Road	✓			✓			Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Old Finglas Road	Cremore Avenue / Old Finglas Road / Old Finglas Road	✓			✓			Negligible
	Cremore Lawn / Old Finglas Road / Old Finglas Road	✓			✓			Negligible
	Old Finglas Road / Old Finglas Road / Tolka Estate Road	✓			✓			Negligible
R103	Mellowes Road / Mellowes Road	✓			✓			Negligible
	R103 / Seamus Ennis Road / Mellowes Road	✓			✓			Negligible
R104 / Swords Road	Swords Road		✓			✓		Negligible
R135	R135 / R135	✓			✓			Negligible
R805 / Ratoath Road	Ballyboggan Road		✓			✓		Negligible
Ratoath Road	Ventry Drive / Ratoath Road / Ratoath Road	✓			✓			Negligible
	Ratoath Road / The Bogie's Roundabout / The Bogie's Roundabout	✓			✓			Negligible
	Ratoath Road / Ratoath Road / River Road	✓			✓			Negligible
	Ballyboggan Road		✓			✓		Negligible
	Ratoath Road	✓			✓			Negligible
St Margaret's Road	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
Swords Road	Collins Avenue West / Collins Avenue / Swords Road / Swords Road			✓			✓	Negligible
	Iveragh Road / Swords Road / Swords Road		✓			✓		Negligible
	Swords Road / Santry Villas / Santry Avenue / Swords Road	✓			✓			Negligible
	Swords Road / Swords Road		✓			✓		Negligible
	Santry Close / Swords Road / Swords Road	✓			✓			Negligible
	Northwood Avenue / Swords Road / Swords Road		✓			✓		Negligible
	Swords Road / Swords Road		✓			✓		Negligible
Sycamore Road	Sycamore Road / McKee Road / Sycamore Road	✓			✓			Negligible
	Grove Road / Sycamore Road / Sycamore Road	✓			✓			Negligible
	Sycamore Park / Sycamore Road / Sycamore Road	✓			✓			Negligible
	Jamestown Road / Sycamore Road / Jamestown Road	✓			✓			Negligible
Tolka Valley Road	Cardiffsbridge Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible
Usher's Quay	Father Mathew Bridge / Merchant's Quay / Bridge Street Lower / Usher's Quay		✓		✓			Low Positive
	Usher's Quay / Usher's Quay / St Augustine Street	✓			✓			Negligible
Whitworth Road	Whitworth Road / Whitworth Road / St Columba's Road Lower	✓			✓			Negligible
	Whitworth Road / Whitworth Road / St Patricks Road	✓			✓			Negligible
	Whitworth Road / Whitworth Road / Wigan Road	✓			✓			Negligible
	Prospect Road / Prospect Road / Whitworth Road			✓			✓	Negligible

The results of the analysis presented in Table 6.69 demonstrate that only three junctions are operating at a maximum V / C ratio of over 100% during the AM Peak Hour in the 2028 scenario. This indicates that most junctions are operating well, with spare capacity that could accommodate additional traffic that may occur as a result of traffic redistribution following the delivery of the Proposed Scheme.

The three junctions below operate at over 100% V / C ratio in the Do Minimum and Do Something scenarios. This indicates that the Proposed Scheme will not have a significant effect on the operation of the junction

- Ballymun Road / Ballymun Road / Glasnevin Avenue (10203) operates just above 100% during both the Do Minimum and Do Something scenarios;
- Collins Avenue West / Collins Avenue / Swords Road / Swords Road (10217) operates just above 100% during both the Do Minimum and Do Something scenarios; and
- Prospect Road / Prospect Road / Whitworth Road (3253) operates just above 100% during both the Do Minimum and Do Something scenarios.

At each of the above junctions, performance is similar with or without the Proposed Scheme in place. As a result, the impact is expected to have a **Negligible** impact. Therefore, no further assessment into these junctions has been undertaken.

Given that the redistributed traffic will not lead to a significant deterioration of the operational capacity on the surrounding road network during the 2028 Do Something scenario, no further mitigation measures have been considered to alleviate the impact outside of the direct study area.

General Traffic Impact Assessment (Design Year (2043)) – Indirect Study Area – AM Peak Hour

The contents of Table 6.70 outline the V / C ratios at the key local / regional road junctions in the AM Peak Hour for the Design Year (2043). The location of these junctions and the V / C ratio comparison between the Do Minimum and Do Something scenarios in the 2043 AM Peak Hour are illustrated in TIA Appendix 3 (Maps).

Table 6.70: Volume over Capacity Ratios at Key Junctions (Do Minimum vs. Do Something), AM Peak, Design Year (2043)

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Balbutcher Lane	Balbutcher Way / Balbutcher Lane / Balbutcher Lane	✓			✓			Negligible
Ballyboggan Road	Finglas Road / Ballyboggan Road / Finglas Road	✓			✓			Negligible
	Ballyboggan Road / Ballyboggan Road	✓			✓			Negligible
	Broombridge Road / Ballyboggan Road / Ballyboggan Road	✓			✓			Negligible
Ballygall Road East	Fitzmaurice Road / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Ballygall Road East / Ballygall Road East / Cremore Heights	✓			✓			Negligible
	Griffith Avenue / Ballygall Road East / Griffith Avenue / Ballygall Road East	✓			✓			Negligible
	Hillcrest Park / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Ferndale Avenue / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Westpark Drive / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
Ballymun Road	Claremont Avenue / Ballymun Road / Ballymun Road	✓			✓			Negligible
Beneavin Drive	Beneavin Road / Beneavin Drive / Ballygall Road East	✓			✓			Negligible
Beresford Street	King Street North / Beresford Street / King Street North	✓				✓		Low Negative
	Beresford Street / Marys Lane / Greek Street / Marys Lane	✓			✓			Negligible
Botanic Avenue	Botanic Avenue / Botanic Avenue / Daneswell Road	✓			✓			Negligible
	Botanic Avenue / Botanic Avenue / St Mobhi Road / St Mobhi Road	✓			✓			Negligible
	Wellmount Road / Cardiffsbridge Road / Cardiffsbridge Road	✓			✓			Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Cardiffsbridge Road	Cardiffsbridge Road / Cardiffsbridge Road / Deanstown Avenue	✓			✓			Negligible
	Cardiffsbridge Road / Cardiffsbridge Road / St Helena's Road	✓			✓			Negligible
Charlestown Place	R135 / Charlestown Place / North Road			✓		✓		Low Positive
	Charlestown Place	✓			✓			Negligible
	Charlestown Place	✓			✓			Negligible
Collins Avenue Extension	Collins Avenue Extension / Shanowen Avenue / Collins Avenue Extension / Collins Avenue Extension	✓			✓			Negligible
	Collins Avenue Extension	✓			✓			Negligible
Collins Avenue West	Collins Avenue West / Larkhill Road / Iveragh Road / Collins Avenue West	✓			✓			Negligible
	Larkhill Road / Collins Avenue West / Collins Avenue Extension / Falcarragh Road	✓			✓			Negligible
Cabra Road	North Circular Road / North Circular Road / Dalymount	✓			✓			Negligible
	St Peters Road / Cabra Road / Dalymount	✓			✓			Negligible
R132 / R104	Swords Road / R132 / R104 / R132	✓				✓		Low Negative
	Dublin Port Tunnel / Swords Road	✓			✓			Negligible
Glasanaon Road	Ballygall Road West / Glasanaon Road	✓			✓			Negligible
	Ballygall Place / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Ballygall Crescent / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Ferndale Avenue / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Griffith Road / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
Glasmeen Road	Griffith Avenue / Tolka Estate Road / Tolka Estate Road / Griffith Avenue	✓			✓			Negligible
	Griffith Road / Glasnamana Road / Griffith Road	✓			✓			Negligible
Glasnevin Avenue	Willow Park Road / Beneavin Drive / Glasnevin Avenue	✓			✓			Negligible
	Glasnevin Drive / Glasnevin Avenue / Glasnevin Avenue	✓			✓			Negligible
	Glasnevin Avenue / Grove Park Road / Glasnevin Avenue	✓			✓			Negligible
	Ballymun Road / Ballymun Road / Glasnevin Avenue			✓		✓		Low Positive
	Willow Park Avenue / Glasnevin Avenue / Glasnevin Avenue	✓			✓			Negligible
Glasnevin Hill	St Mobhi Drive / Glasnevin Hill / Glasnevin Hill	✓			✓			Negligible
	Glasnevin Hill / Botanic Avenue / Botanic Road	✓			✓			Negligible
	Glasnevin Hill / Ballymun Road / Old Finglas Road	✓			✓			Negligible
Griffith Avenue	Ballymun Road / Griffith Avenue / Griffith Avenue / Ballymun Road	✓					✓	High Negative
	Griffith Avenue / St Mobhi Road / Griffith Avenue / St Mobhi Road		✓		✓			Low Positive
Griffith Road	Griffith Road / Griffith Drive / Griffith Road	✓			✓			Negligible
	Griffith Road / Griffith Parade / Griffith Road	✓			✓			Negligible
Grove Park Road	Grove Park Road / Grove Park Road / Grove Park Avenue	✓			✓			Negligible
	Sycamore Road / Grove Park Road / Willow Park Crescent	✓			✓			Negligible
Jamestown Road	Jamestown Road / Creston Avenue / St Margaret's Road / St Margaret's Road	✓			✓			Negligible
	Hampton Wood Road / Jamestown Road / Jamestown Road	✓			✓			Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
	Melville Road / Jamestown Road / Poppintree Park Ln West / Jamestown Road	✓			✓			Negligible
Marys Lane	May Lane / Church Street / Marys Lane / Church Street	✓			✓			Negligible
McKee Avenue	McKee Avenue / Jamestown Road / Seamus Ennis Road		✓			✓		Negligible
	McKee Avenue / McKee Avenue	✓			✓			Negligible
Mellowes Road	Mellowes Road / Mellowes Road	✓			✓			Negligible
	Finglaswood Road / R103 / Finglaswood Road / Mellowes Road		✓			✓		Negligible
Northwood Avenue	Northwood Avenue / Northwood Avenue	✓			✓			Negligible
	Northwood Avenue / Temple Court / Northwood Avenue	✓			✓			Negligible
Old Finglas Road	Addison Avenue / Old Finglas Road	✓			✓			Negligible
	Cremore Avenue / Old Finglas Road / Old Finglas Road	✓			✓			Negligible
	Cremore Lawn / Old Finglas Road / Old Finglas Road	✓			✓			Negligible
	Old Finglas Road / Old Finglas Road / Tolka Estate Road	✓			✓			Negligible
R103	Mellowes Road / Mellowes Road	✓			✓			Negligible
	R103 / Seamus Ennis Road / Mellowes Road	✓			✓			Negligible
R104 / Swords Road	Swords Road	✓			✓			Negligible
R135	R135 / R135	✓			✓			Negligible
R805 / Ratoath Road	Ballyboggan Road		✓			✓		Negligible
Ratoath Road	Ventry Drive / Ratoath Road / Ratoath Road	✓			✓			Negligible
	Ratoath Road / The Bogie's Roundabout / The Bogie's Roundabout	✓			✓			Negligible
	Ratoath Road / Ratoath Road / River Road	✓			✓			Negligible
	Ballyboggan Road		✓			✓		Negligible
	Ratoath Road	✓			✓			Negligible
St Margaret's Road	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
Swords Road	Collins Avenue West / Collins Avenue / Swords Road / Swords Road			✓			✓	Negligible
	Iveragh Road / Swords Road / Swords Road		✓			✓		Negligible
	Swords Road / Santry Villas / Santry Avenue / Swords Road	✓			✓			Negligible
	Swords Road / Swords Road		✓			✓		Negligible
	Santry Close / Swords Road / Swords Road	✓			✓			Negligible
	Northwood Avenue / Swords Road / Swords Road	✓			✓			Negligible
	Swords Road / Swords Road		✓			✓		Negligible
Sycamore Road	Sycamore Road / McKee Road / Sycamore Road	✓			✓			Negligible
	Grove Road / Sycamore Road / Sycamore Road	✓			✓			Negligible
	Sycamore Park / Sycamore Road / Sycamore Road	✓			✓			Negligible
	Jamestown Road / Sycamore Road / Jamestown Road	✓			✓			Negligible
Tolka Valley Road	Cardiffsbridge Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Usher's Quay	Father Mathew Bridge / Merchant's Quay / Bridge Street Lower / Usher's Quay		✓		✓			Low Positive
	Usher's Quay / Usher's Quay / St Augustine Street	✓			✓			Negligible
Whitworth Road	Whitworth Road / Whitworth Road / St Columba's Road Lower	✓			✓			Negligible
	Whitworth Road / Whitworth Road / St Patricks Road	✓			✓			Negligible
	Whitworth Road / Whitworth Road / Wigan Road	✓			✓			Negligible
	Prospect Road / Prospect Road / Whitworth Road		✓			✓		Negligible

The results of the analysis demonstrate that the majority of junctions are operating at a maximum V / C ratio of below 85% during the AM Peak Hour in the 2043 Do Something scenario. This indicates that these junctions are operating well and could accommodate additional traffic that may occur as a result of traffic redistribution following the delivery of the Proposed Scheme. The Proposed Scheme is deemed to have a negligible impact at the majority of junctions presented in Table 6.70.

Four junctions are highlighted in Table 6.70 which have a greater than negligible impact. Three junctions experience a low negative impact and one junction experiences a high negative impact:

- King Street North / Beresford Street / King Street North - operates under 85% in the Do Minimum scenario and between 85% and 100% in the Do Something scenarios and therefore has a low negative impact;
- Swords Road / R132 / R104 / R132 - operates under 85% in the Do Minimum scenario and between 85% and 100% in the Do Something scenarios and therefore has a low negative impact;
- Ballymun Road / Griffith Avenue / Griffith Avenue / Ballymun Road - operates under 85% in the Do Minimum scenario and over 100% in the Do Something scenarios and therefore has a high negative impact; and
- Collins Avenue West / Collins Avenue / Swords Road / Swords Road- operates just above 100% during both the Do Minimum and Do Something scenarios and therefore has a low negative impact.

At each of the above junctions, performance is similar with or without the Proposed Scheme in place. As a result, the impact is expected to have a **Low Negative** impact. Therefore, no further assessment into these junctions has been undertaken.

Given that the redistributed traffic will not lead to a significant deterioration of the operational capacity on the surrounding road network during the 2043 Do Something scenario, no further mitigation measures have been considered to alleviate the impact outside of the direct study area.

General Traffic Impact Assessment (Opening Year (2028)) – Indirect Study Area – PM Peak Hour

The contents of Table 6.71 outline the V / C ratios at the key local / regional road junctions in the PM Peak Hour for the Opening Year (2028). The location of these junctions and the V / C ratio comparison between the Do Minimum and Do Something scenarios in the 2028 PM Peak Hour are illustrated in TIA Appendix 3 (Maps).

Table 6.71: Volume over Capacity Ratios at Key Junctions (Do Minimum vs. Do Something), PM Peak, Opening Year (2028)

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Ballybough Road	Ballybough Road / Ballybough Road / Spring Garden Street	✓			✓			Negligible
	Ballybough Road / Clonliffe Avenue / Ballybough Road	✓			✓			Negligible
	Bayview Avenue / Ballybough Road / Clonliffe Avenue / Ballybough Road	✓			✓			Negligible
	Clonliffe Road / Ballybough Road / Ballybough Road / Poplar Row		✓			✓		Negligible
	Summerhill Parade / William Street North / Summerhill Parade	✓			✓			Negligible
	Foster Terrace / Charleville Avenue / Ballybough Road / Ballybough Road	✓			✓			Negligible
Ballygall Road East	Fitzmaurice Road / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Ballygall Road East / Ballygall Road East / Cremore Heights	✓			✓			Negligible
	Addison Avenue / Old Finglas Road	✓			✓			Negligible
	Griffith Avenue / Ballygall Road East / Griffith Avenue / Ballygall Road East	✓			✓			Negligible
Belclare Park	Poppintree Park Lane / Poppintree Park Lane / Poppintree Industrial Estate	✓			✓			Negligible
	Balbutcher Lane	✓			✓			Negligible
Botanic Avenue	Botanic Avenue / Botanic Avenue / St Mobhi Road / St Mobhi Road	✓				✓		Low Negative
	Glasnevin Hill / Botanic Avenue / Botanic Road	✓			✓			Negligible
Cardiffsbridge Road	Kildonan Road / Mellowes Road / Mellowes Road	✓			✓			Negligible
	Cappagh Road / Cardiffsbridge Road / Cardiffsbridge Road / Cappagh Road	✓			✓			Negligible
	Wellmount Road / Cardiffsbridge Road / Cardiffsbridge Road	✓			✓			Negligible
	Cardiffsbridge Road / Cardiffsbridge Road / Deanstown Avenue	✓			✓			Negligible
	Cardiffsbridge Road / Cardiffsbridge Road / St Helena's Road	✓			✓			Negligible
	Cardiffsbridge Road / Wellmount Avenue / Cardiffsbridge Road	✓			✓			Negligible
	Cardiffsbridge Road / Ratoath Avenue / Cardiffsbridge Road	✓			✓			Negligible
Charlestown Place	Charlestown Place	✓			✓			Negligible
	Charlestown Place	✓			✓			Negligible
Connaught Street	Connaught Street / St Peters Road / Connaught Street	✓			✓			Negligible
	Devery's Lane / Phibsborough Road / Phibsborough Road / Connaught Street	✓			✓			Negligible
	Shandon Crescent / Connaught Street / Connaught Street	✓			✓			Negligible
Cabra Road	North Circular Road / North Circular Road / Dalymount		✓			✓		Negligible
	St Peters Road / Cabra Road / Dalymount	✓			✓			Negligible
Drumcondra Road Upper	Ormond Road / Drumcondra Road Upper / Drumcondra Road Upper		✓			✓		Negligible
	Drumcondra Road Upper / Drumcondra Road Upper / Drumcondra Road Upper	✓			✓			Negligible
	Drumcondra Road Upper / Millbourne Avenue / Drumcondra Road Upper	✓			✓			Negligible
	Drumcondra Road Upper / Millmount Avenue / Drumcondra Road Upper / Richmond Road	✓			✓			Negligible
R132 / R104	Swords Road / R132 / R104 / R132		✓			✓		Negligible
	Dublin Port Tunnel / Swords Road	✓			✓			Negligible
Fassaugh Avenue	Bannow Road / Fassaugh Avenue / Fassaugh Avenue	✓			✓			Negligible
	St Attracta Road / Fassaugh Road / Fassaugh Avenue	✓			✓			Negligible
	Fassaugh Avenue / Fassaugh Avenue / Broombridge Road	✓			✓			Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
	Ratoath Road / The Bogie's Roundabout / The Bogie's Roundabout	✓			✓			Negligible
Fassaugh Road	Fassaugh Road / Quarry Road / Fassaugh Avenue	✓			✓			Negligible
	St Eithne Road / Delvin Road / Fassaugh Road / Fassaugh Road	✓			✓			Negligible
	St Attracta Road / Fassaugh Road / Dowth Avenue / Fassaugh Road	✓			✓			Negligible
Glasanaon Road	Ballygall Road West / Glasanaon Road	✓			✓			Negligible
	Ballygall Place / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Clune Road / Ballygall Road West / Glasanaon Road / Seamus Ennis Road	✓			✓			Negligible
	Ballygall Crescent / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Ferndale Avenue / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Griffith Road / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
Glasmeen Road	Griffith Avenue / Tolka Estate Road / Tolka Estate Road / Griffith Avenue	✓			✓			Negligible
	Griffith Road / Glasnamana Road / Griffith Road	✓			✓			Negligible
Grace Park Road	Grace Park Road / Gracepark Terrace / Grace Park Road	✓			✓			Negligible
	Church Avenue / Grace Park Road / Grace Park Road	✓			✓			Negligible
Griffith Avenue	Griffith Avenue / Griffith Avenue / Drumcondra Road Upper / Drumcondra Road Upper		✓			✓		Negligible
Griffith Road	Griffith Road / Griffith Drive / Griffith Road	✓			✓			Negligible
	Griffith Road / Griffith Parade / Griffith Road	✓			✓			Negligible
Jamestown Road	Jamestown Road / Sycamore Road / Jamestown Road	✓			✓			Negligible
Marys Lane	May Lane / Church Street / Marys Lane / Church Street	✓			✓			Negligible
	Beresford Street / Marys Lane / Greek Street / Marys Lane	✓			✓			Negligible
	Marys Lane / Georges Hill / St Michan's Street / Marys Lane	✓			✓			Negligible
McKee Avenue	McKee Avenue / Jamestown Road / Seamus Ennis Road		✓			✓		Negligible
	McKee Avenue / McKee Avenue	✓			✓			Negligible
	McKee Avenue / McKee Avenue / Jamestown Road / McKee Avenue	✓			✓			Negligible
Mellowes Road	Mellowes Road / Mellowes Road	✓			✓			Negligible
	Finglaswood Road / R103 / Finglaswood Road / Mellowes Road	✓			✓			Negligible
Northwood	Ballymun Road / Northwood Avenue	✓			✓			Negligible
	Northwood Avenue	✓			✓			Negligible
Northwood Road	Santry Avenue / Northwood Road	✓			✓			Negligible
	Northwood Road / Northwood Avenue	✓			✓			Negligible
Palmerston Place	Western Way / Dominick Street Upper / Western Way	✓			✓			Negligible
Poppintree Park Lane	Poppintree Park Lane / Poppintree Park Lane / Parkview Road	✓			✓			Negligible
	Melville Road / Jamestown Road / Poppintree Park Ln West / Jamestown Road	✓			✓			Negligible
R103	Mellowes Road / Mellowes Road	✓			✓			Negligible
R135	R135 / R135	✓			✓			Negligible
Ratoath Road	Ventry Drive / Ratoath Road / Ratoath Road	✓			✓			Negligible
	Ratoath Road / Ratoath Road / River Road	✓			✓			Negligible
	Ballyboggan Road			✓			✓	Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
	Ratoath Road	✓			✓			Negligible
	Rathvilly Road / Ratoath Road / Ratoath Road	✓			✓			Negligible
	Ratoath Road / Scribblestown Road / Ratoath Road	✓			✓			Negligible
Seamus Ennis Road	Seamus Ennis Road / Seamus Ennis Road / Main Street	✓			✓			Negligible
	Mellowes Road / Seamus Ennis Road / North Road	✓			✓			Negligible
	R103 / Seamus Ennis Road / Mellowes Road	✓			✓			Negligible
St Margaret's Road	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
	St Margaret's Road / St Margaret's Road		✓			✓		Negligible
Summerhill	Summerhill / Buckingham Street Upper / Summerhill		✓			✓		Negligible
	Summerhill / Rutland Street Lower / Summerhill	✓			✓			Negligible
	Gardiner Street Lower / Summerhill / Summerhill / Gardiner Street Middle / Parnell Street	✓			✓			Negligible
Summerhill Parade	Summerhill Parade / Portland Row / North Circular Road / Summerhill		✓			✓		Negligible
Swords Road	Collins Avenue West / Collins Avenue / Swords Road / Swords Road			✓			✓	Negligible
Tolka Valley Road	Cardiffsbridge Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible
	St Helena's Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible
	Tolka Valley Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible
	Finglas Road / Tolka Valley Road / Finglas Road		✓			✓		Negligible
	Tolka Valley Road / Tolka Valley Road / Finglas Road	✓			✓			Negligible
Usher's Island	Mellows Bridge / Usher's Island / Usher's Quay / Bridgefoot Street	✓			✓			Negligible
	Usher's Island / Usher's Island / Blackhall Bridge	✓			✓			Negligible
Usher's Quay	Usher's Quay / Usher's Quay / St Augustine Street	✓			✓			Negligible
Western Way	Mountjoy Street / Mountjoy Street / St Marys Place North / Western Way	✓			✓			Negligible
	Constitution Hill / R135		✓			✓		Negligible
Whitworth Road	Whitworth Road / Whitworth Road / St Columba's Road Lower	✓			✓			Negligible
	Whitworth Road / Whitworth Road / St Patricks Road	✓			✓			Negligible
	Whitworth Road / Whitworth Road / Wigan Road	✓			✓			Negligible
	Prospect Road / Prospect Road / Whitworth Road		✓			✓		Negligible

The results of the analysis demonstrate that the majority of junctions are operating at a maximum V / C ratio of below 85% during the PM Peak Hour in the 2028 scenario. This indicates that these junctions are operating well, with spare capacity that could accommodate additional traffic that may occur as a result of traffic redistribution following the delivery of the Proposed Scheme.

A Negligible impact is anticipated at all but one junction (Botanic Avenue / Botanic Avenue / St Mobhi Road / St Mobhi Road) where a **Low Negative** impact is anticipated.

Given that the redistributed traffic will not lead to a significant deterioration of the operational capacity on the surrounding road network during the 2028 Do Something scenario, no further mitigation measures have been considered to alleviate the impact outside of the direct study area.

General Traffic Impact Assessment (Design Year (2043)) – Indirect Study Area – PM Peak Hour

The contents of Table 6.72 outline the V / C ratios at the key local / regional road junctions in the PM Peak Hour for the Design Year (2043). The location of these junctions and the V / C ratio comparison between the Do Minimum and Do Something scenarios in the 2043 PM Peak Hour are illustrated in TIA Appendix 3 (Maps).

Table 6.72: Volume over Capacity Ratios at Key Junctions (Do Minimum vs. Do Something), PM Peak, Design Year (2043)

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Ballybough Road	Ballybough Road / Ballybough Road / Spring Garden Street	✓			✓			Negligible
	Ballybough Road / Clonliffe Avenue / Ballybough Road	✓			✓			Negligible
	Bayview Avenue / Ballybough Road / Clonliffe Avenue / Ballybough Road	✓			✓			Negligible
	Clonliffe Road / Ballybough Road / Ballybough Road / Poplar Row		✓			✓		Negligible
	Summerhill Parade / William Street North / Summerhill Parade	✓			✓			Negligible
	Foster Terrace / Charleville Avenue / Ballybough Road / Ballybough Road	✓			✓			Negligible
Ballygall Road East	Fitzmaurice Road / Ballygall Road East / Ballygall Road East	✓			✓			Negligible
	Ballygall Road East / Ballygall Road East / Cremore Heights	✓			✓			Negligible
	Addison Avenue / Old Finglas Road	✓			✓			Negligible
	Griffith Avenue / Ballygall Road East / Griffith Avenue / Ballygall Road East	✓			✓			Negligible
Belclare Park	Poppintree Park Lane / Poppintree Park Lane / Poppintree Industrial Estate	✓			✓			Negligible
	Balbutcher Lane	✓			✓			Negligible
Botanic Avenue	Botanic Avenue / Botanic Avenue / St Mobhi Road / St Mobhi Road	✓			✓			Negligible
	Glasnevin Hill / Botanic Avenue / Botanic Road	✓			✓			Negligible
Cardiffsbridge Road	Kildonan Road / Mellowes Road / Mellowes Road	✓			✓			Negligible
	Cappagh Road / Cardiffsbridge Road / Cardiffsbridge Road / Cappagh Road	✓			✓			Negligible
	Wellmount Road / Cardiffsbridge Road / Cardiffsbridge Road	✓			✓			Negligible
	Cardiffsbridge Road / Cardiffsbridge Road / Deanstown Avenue	✓			✓			Negligible
	Cardiffsbridge Road / Cardiffsbridge Road / St Helena's Road	✓			✓			Negligible
	Cardiffsbridge Road / Wellmount Avenue / Cardiffsbridge Road	✓			✓			Negligible
	Cardiffsbridge Road / Ratoath Avenue / Cardiffsbridge Road	✓			✓			Negligible
Charlestown Place	Charlestown Place	✓			✓			Negligible
	Charlestown Place	✓			✓			Negligible
Connaught Street	Connaught Street / St Peters Road / Connaught Street	✓			✓			Negligible
	Devery's Lane / Phibsborough Road / Phibsborough Road / Connaught Street	✓			✓			Negligible
	Shandon Crescent / Connaught Street / Connaught Street	✓			✓			Negligible
Cabra Road	North Circular Road / North Circular Road / Dalymount		✓			✓		Negligible
	St Peters Road / Cabra Road / Dalymount	✓			✓			Negligible
Drumcondra Road Upper	Ormond Road / Drumcondra Road Upper / Drumcondra Road Upper		✓			✓		Negligible
	Drumcondra Road Upper / Drumcondra Road Upper / Drumcondra Road Upper	✓				✓		Low
	Drumcondra Road Upper / Millbourne Avenue / Drumcondra Road Upper	✓				✓		Low

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
	Drumcondra Road Upper / Millmount Avenue / Drumcondra Road Upper / Richmond Road	✓			✓			Negligible
R132 / R104	Swords Road / R132 / R104 / R132		✓			✓		Negligible
	Dublin Port Tunnel / Swords Road	✓			✓			Negligible
Fassaugh Avenue	Bannow Road / Fassaugh Avenue / Fassaugh Avenue	✓			✓			Negligible
	St Attracta Road / Fassaugh Road / Fassaugh Avenue	✓			✓			Negligible
	Fassaugh Avenue / Fassaugh Avenue / Broombridge Road	✓			✓			Negligible
	Ratoath Road / The Bogie's Roundabout / The Bogie's Roundabout	✓				✓		Low
Fassaugh Road	Fassaugh Road / Quarry Road / Fassaugh Avenue	✓			✓			Negligible
	St Eithne Road / Delvin Road / Fassaugh Road / Fassaugh Road	✓			✓			Negligible
	St Attracta Road / Fassaugh Road / Dowth Avenue / Fassaugh Road	✓			✓			Negligible
Glasanaon Road	Ballygall Road West / Glasanaon Road	✓			✓			Negligible
	Ballygall Place / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Clune Road / Ballygall Road West / Glasanaon Road / Seamus Ennis Road	✓			✓			Negligible
	Ballygall Crescent / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Ferndale Avenue / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
	Griffith Road / Glasanaon Road / Glasanaon Road	✓			✓			Negligible
Glasmeen Road	Griffith Avenue / Tolka Estate Road / Tolka Estate Road / Griffith Avenue	✓			✓			Negligible
	Griffith Road / Glasnamana Road / Griffith Road	✓			✓			Negligible
Grace Park Road	Grace Park Road / Gracepark Terrace / Grace Park Road	✓			✓			Negligible
	Church Avenue / Grace Park Road / Grace Park Road	✓			✓			Negligible
Griffith Avenue	Griffith Avenue / Griffith Avenue / Drumcondra Road Upper / Drumcondra Road Upper			✓			✓	Negligible
Griffith Road	Griffith Road / Griffith Drive / Griffith Road	✓			✓			Negligible
	Griffith Road / Griffith Parade / Griffith Road	✓			✓			Negligible
Jamestown Road	Jamestown Road / Sycamore Road / Jamestown Road	✓			✓			Negligible
Marys Lane	May Lane / Church Street / Marys Lane / Church Street	✓			✓			Negligible
	Beresford Street / Marys Lane / Greek Street / Marys Lane	✓			✓			Negligible
	Marys Lane / Georges Hill / St Michan's Street / Marys Lane	✓			✓			Negligible
McKee Avenue	McKee Avenue / Jamestown Road / Seamus Ennis Road		✓			✓		Negligible
	McKee Avenue / McKee Avenue	✓			✓			Negligible
	McKee Avenue / McKee Avenue / Jamestown Road / McKee Avenue	✓			✓			Negligible
Mellowes Road	Mellowes Road / Mellowes Road	✓			✓			Negligible
	Finglaswood Road / R103 / Finglaswood Road / Mellowes Road	✓			✓			Negligible
Northwood	Ballymun Road / Northwood Avenue	✓				✓		Low
	Northwood Avenue	✓			✓			Negligible
Northwood Road	Santry Avenue / Northwood Road	✓				✓		Low
	Northwood Road / Northwood Avenue	✓			✓			Negligible
Palmerston Place	Western Way / Dominick Street Upper / Western Way	✓			✓			Negligible

Road Name	Junction Name	DM Max V / C Ratio			DS Max V / C Ratio			Magnitude of Impact
		≤85%	85% - 100%	>100%	≤85%	85% - 100%	>100%	
Poppintree Park Lane	Poppintree Park Lane / Poppintree Park Lane / Parkview Road	✓			✓			Negligible
	Melville Road / Jamestown Road / Poppintree Park Ln West / Jamestown Road	✓			✓			Negligible
R103	Mellowes Road / Mellowes Road	✓			✓			Negligible
R135	R135 / R135	✓			✓			Negligible
Ratoath Road	Ventry Drive / Ratoath Road / Ratoath Road	✓			✓			Negligible
	Ratoath Road / Ratoath Road / River Road	✓			✓			Negligible
	Ballyboggan Road			✓			✓	Negligible
	Ratoath Road	✓				✓		Low
	Rathvilly Road / Ratoath Road / Ratoath Road	✓			✓			Negligible
	Ratoath Road / Scribblestown Road / Ratoath Road	✓			✓			Negligible
Seamus Ennis Road	Seamus Ennis Road / Seamus Ennis Road / Main Street	✓			✓			Negligible
	Mellowes Road / Seamus Ennis Road / North Road	✓			✓			Negligible
	R103 / Seamus Ennis Road / Mellowes Road	✓			✓			Negligible
St Margaret's Road	St Margaret's Road / St Margaret's Road	✓				✓		Low
	St Margaret's Road / St Margaret's Road	✓				✓		Low
Summerhill	Summerhill / Buckingham Street Upper / Summerhill	✓			✓			Negligible
	Summerhill / Rutland Street Lower / Summerhill	✓			✓			Negligible
	Gardiner Street Lower / Summerhill / Summerhill / Gardiner Street Middle / Parnell Street	✓			✓			Negligible
Summerhill Parade	Summerhill Parade / Portland Row / North Circular Road / Summerhill		✓			✓		Negligible
Swords Road	Collins Avenue West / Collins Avenue / Swords Road / Swords Road			✓			✓	Negligible
Tolka Valley Road	Cardiffsbridge Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible
	St Helena's Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible
	Tolka Valley Road / Tolka Valley Road / Tolka Valley Road	✓			✓			Negligible
	Finglas Road / Tolka Valley Road / Finglas Road		✓			✓		Negligible
	Tolka Valley Road / Tolka Valley Road / Finglas Road	✓			✓			Negligible
Usher's Island	Mellows Bridge / Usher's Island / Usher's Quay / Bridgefoot Street	✓			✓			Negligible
	Usher's Island / Usher's Island / Blackhall Bridge	✓			✓			Negligible
Usher's Quay	Usher's Quay / Usher's Quay / St Augustine Street	✓			✓			Negligible
Western Way	Mountjoy Street / Mountjoy Street / St Marys Place North / Western Way	✓			✓			Negligible
	Constitution Hill / R135		✓		✓			Low Positive
Whitworth Road	Whitworth Road / Whitworth Road / St Columba's Road Lower	✓			✓			Negligible
	Whitworth Road / Whitworth Road / St Patricks Road	✓			✓			Negligible
	Whitworth Road / Whitworth Road / Wigan Road	✓			✓			Negligible
	Prospect Road / Prospect Road / Whitworth Road		✓			✓		Negligible

The results of the analysis outlined in Table 6.72 demonstrate that the majority of junctions are operating at a maximum V / C ratio of below 85% during the PM Peak Hour in the 2043 Do Something scenario and experience either a negligible or low magnitude of impact. This indicates that these junctions are operating well and could accommodate additional traffic that may occur as a result of traffic redistribution following the delivery of the

Proposed Scheme. The Proposed Scheme is deemed to have a Negligible impact at the majority of junctions presented in Table 6.72.

A Low Negative impact is anticipated at the following eight junctions in the 2043 Do Something scenario where, all of the junctions operate below 85% during the Do Minimum scenario and between 85% and 100% in the Do Something scenario:

- Drumcondra Road Upper / Drumcondra Road Upper / Drumcondra Road Upper;
- Drumcondra Road Upper / Millbourne Avenue / Drumcondra Road Upper;
- Ratoath Road / The Bogie's Roundabout / The Bogie's Roundabout;
- Ballymun Road / Northwood Avenue;
- Santry Avenue / Northwood Road;
- Ratoath Road;
- St Margaret's Road / St Margaret's Road; and
- St Margaret's Road / St Margaret's Road.

As a result, the impact is expected to have a **Low Negative** impact. Therefore, no further assessment into these junctions has been undertaken.

Given that the redistributed traffic will not lead to a significant deterioration of the operational capacity on the surrounding road network during the 2043 Do Something scenario, no further mitigation measures have been considered to alleviate the impact outside of the direct study area.

6.6.3.3.5. Night-Time Traffic Redistribution

The night-time period is defined as between 23:00hrs and 07:00hrs. An analysis of traffic data during this period indicates that traffic levels are considerably lower and that junctions have a higher capacity for vehicular movement[3]. Automatic Traffic Counter data demonstrates that, typically, within Dublin the night-time period has approximately 19% of the traffic levels compared to the morning peak hour (08:00hrs to 09:00hrs). As a result, during the night-time period, junctions do not experience flows in excess of capacity which would result in queuing and in turn potential re-distribution of traffic to alternative routes to avoid congestion. Therefore, the impact of traffic redistribution due to the Proposed Scheme will be **negligible** during the night-time period.

6.6.3.3.6. General Traffic Impact Assessment Summary

Given the improvements to bus priority, walking and cycling as a result of the Proposed Scheme, there will likely be an overall reduction in operational capacity for general traffic along the direct study area. This may in turn result in some redistribution of general traffic away from the main corridor onto the surrounding road network.

Using the TII guidelines (TII 2014) as an indicator for best practice, the LAM Opening Year (2028) model results were used to identify the difference in traffic flows between the Do Minimum and Do Something scenarios. The following thresholds have been used to identify where a further assessment is required:

- **Local / Regional Roads:** Traffic redistribution results in an increase above 100 combined flows (i.e. in a two-way direction) along residential, local and regional roads in the vicinity of the Proposed Scheme in the AM and PM peak hours; and
- **National Roads:** Traffic exceeds 5% of the combined turning flows at junctions with/ on/or with national roads in the AM and PM peak hours as a result of traffic redistribution comparing the 'Do Minimum' to the 'Do Something' scenario with the Proposed Scheme in place.

[3] Less pedestrian, cycling and bus demand requirements leading to higher level of general traffic green time allocation per typical signal cycle

The threshold impact assessment identified the following roads that experience a reduction of at least -100 combined traffic flows during the Do Something scenario with the Proposed Scheme in place:

- **AM Peak Hour**: Church Street, Bolton Street, King Street North, Coleraine Street, Kings Inn Street, Church Street Upper, Bridge Street Lower, Dorset Street Lower, Phibsborough Road, Kings Inn Court, Constitution Hill, Botanic Road, Finglas Road, Prospect Way, Lindsay Road, St. Patrick's Road, St. Patrick's Parade, Prospect Road, High Street, Bridge Street Upper, St. Mobhi Road, Collins Avenue Extension, Ballymun Road, Griffith Avenue, Sherkin Gardens, Shandon Road, R108, Santry Avenue, Old Ballymun Road, Casement Drive, Finglaswood Road, Jamestown Road, Swords Road, Finglas Place; and
- **PM Peak Hour**: Church Street, Ryder's Row, King St North, Coleraine Street, Anne St North, Bolton Street, Jones' Road, Russel Street, Church Street Upper, Bridge Street Lower, Dorset Street Lower, Whitworth Road, Phibsborough Road, North Circular Road, King's Inn Court, Constitution Hill, St. Alphonsus Rd Upper, St. Patrick's Road, Botanic Road, Iona Road, Finglas Road, Prospect Way, Prospect Road, Royal Canal Bank, Leinster Street North, High Street, Bridge Street Upper, St. Mobhi Road, Collins Avenue Extension, Ballymun Road, Botanic Avenue, Glasnevin Hill, Ballygall Parade, Finglas Place, Old Finglas Road, Richmond Road, Shandon Road, Santry Avenue, Crestwood Green, Whitetree Road, Jamestown Road, Finglaswood Road, and Balbutcher Lane.

The threshold impact assessment also identified the following roads that experience an increase in traffic flows and require further traffic analysis:

- **AM Peak Hour**: Balbutcher Lane, Ballyboggan Road, Ballygall Road East, Beneavin Drive, Beresford Street, Botanic Avenue, Cardiffsbridge Road, Charlestown Place, Collins Avenue West, Cabra Road, R132/R104, Glasanaon Road, Glasmeen Road, Glasnevin Avenue, Glasnevin Hill, Griffith Avenue, Griffith Road, Grove Park Road, Mary's Lane, McKee Avenue, Mellowes Road, Northwood Avenue, Ratoath Road, St. Margaret's Road, Swords Road, Sycamore Road, Tolka Valley Road, Usher's Quay, Whitworth Road; and
- **PM Peak Hour**: Ballybough Road, Ballygall Road East, Belclare Park, Botanic Avenue, Cardiffsbridge Road, Charlestown Place, Connaught Street, Cabra Road, Drumcondra Road Upper, R132 / R104, Fassaugh Avenue, Fassaugh Road, Glasanaon Road, Glasmeen Road, Grace Park Road, Griffith Avenue, Griffith Road, Mary's Lane, McKee Avenue, Mellowes Road, Northwood Road, Palmerston Place, Poppintree Park Lane, R135, Ratoath Road, Seamus Ennis Road, St. Margaret's Road, Summerhill, Summerhill Parade, Swords Road, Tolka Valley Road, Usher's Island, Usher's Quay, Western Way and Whitworth Road.

In terms of the national roads 5% threshold impact assessment, no national road junctions are anticipated to exceed the total turning flows threshold between the Do Minimum and Do Something scenarios in both the AM and PM Peak Hours.

The general traffic impact assessment was undertaken by extracting operational capacities from the LAM at the key junctions along the above road links. To undertake a robust assessment, the operational capacity outputs have been presented with reference to the worst performing arm of a junction that experiences the maximum V / C ratio.

The majority of assessed junctions have V / C ratios of below 85% (i.e. they are operating within capacity for all assessed years in the Do Minimum and Do Something scenarios). This indicates that these junctions will be able to accommodate for the additional general traffic volumes redistributed, as a result of the Proposed Scheme and the impact is deemed to be **Negligible**.

Overall, it is determined that there will be a **Low Negative** impact from the redistributed general traffic as a result of the Proposed Scheme. Given that the redistributed traffic will not lead to a significant deterioration of the operational capacity on the surrounding road network, no mitigation measures have been considered to alleviate the impact outside of the direct study area.

During the night-time lower traffic flows aligned with more vehicular capacity at junctions will reduce or eliminate traffic redistribution from the Proposed Scheme Corridor. Thus, the impact during this period will be **Negligible**.

It should therefore be considered that the traffic congestion outlined in the impact assessment is acceptable with regard to the urban location of the area in the context of the increased movement of people overall and on sustainable modes in particular.

6.6.3.3.7. Network-Wide Performance Indicators

The traffic and transport analysis considers the impact that the Proposed Scheme will have on the road network, within the direct and indirect study areas. To further quantify the impact of the Proposed Scheme on the traffic and transport conditions, network-wide performance indicators have been extracted for the general traffic conditions beyond the defined study areas.

- **Transient Queues** (pcu.hrs) represent delay caused by reduced speeds approaching junctions and by waiting time at junctions. It does not include delay created whilst stopped in queues at over capacity junctions;
- **Over Capacity Queues** (pcu.hrs) measures the time spent queuing as a result of junctions operating over capacity and is a measure of network congestion;
- **Total Travel Time** (pcu.hrs) is the sum of the time spent in transient queues, over capacity queues and link cruise time;
- **Total Travel Distance** (pcu.kms) is the total distance travelled by all the vehicles in the model; and
- **Average Network Speed** (km/hr) is the average speed of all the vehicles in the network over the modelled period. It's calculated by dividing total travel distance by total travel time.

The contents of Table 6.73 outline the impact that the Proposed Scheme will have on the wider transport network, beyond the defined study areas.

Table 6.73: Network-Wide Performance Indicators with Proposed Scheme in Place

Scenario	Metric	Do Minimum	Do Something	% Difference	Impact
Opening Year (2028) AM Peak Hour	Transient Queues (pcu.hrs)	18,762	19,096	+1.78%	Low Negative
	Over Capacity Queues (pcu.hrs)	5,105	5,169	+1.25%	
	Total Travel Times (pcu.hrs)	62,145	62,562	+0.67%	
	Total Travel Distance (pcu.kms)	2,022,200	2,021,668	-0.03%	
	Average Network Speed (km / h)	32.5	32.3	-0.62%	
Opening Year (2028) PM Peak Hour	Transient Queues (pcu.hrs)	18,009	18,205	+1.09%	Low Negative
	Over Capacity Queues (pcu.hrs)	4,779	4,957	+3.72%	
	Total Travel Times (pcu.hrs)	59,085	59,264	+0.30%	
	Total Travel Distance (pcu.kms)	1,939,264	1,928,172	-0.57%	
	Average Network Speed (km / h)	32.8	32.5	-0.91%	
Design Year (2043) AM Peak Hour	Transient Queues (pcu.hrs)	18,081	18,442	+2.00%	Low Negative
	Over Capacity Queues (pcu.hrs)	5,276	5,287	+0.21%	
	Total Travel Times (pcu.hrs)	61,636	62,032	+0.64%	
	Total Travel Distance (pcu.kms)	2,057,151	2,056,530	-0.03%	
	Average Network Speed (km / h)	33.4	33.2	-0.60%	
Design Year (2043) PM Peak Hour	Transient Queues (pcu.hrs)	17,516	17,712	+1.12%	Low Negative
	Over Capacity Queues (pcu.hrs)	4,444	4,467	+0.52%	
	Total Travel Times (pcu.hrs)	58,084	58,148	+0.11%	
	Total Travel Distance (pcu.kms)	1,942,419	1,932,933	-0.49%	
	Average Network Speed (km / h)	33.4	33.2	-0.60%	

The results of the assessment demonstrate that the impacts to the network performance indicators range between -0.91% and 3.72%, therefore a low negative impact is anticipated.

6.6.4. Operational Phase Summary

The contents of Table 6.74 present a summary of the predicted impacts of the Proposed Scheme during the Operational Phase.

Table 6.74: Summary of Predicted Operational Phase Impacts

Assessment Topic	Effect	Predicted Impact
Pedestrian Infrastructure	Improvements to the quality of the pedestrian infrastructure along the Proposed Scheme.	Low Positive
Cycling Infrastructure	Improvements to the quality of the cycling infrastructure along the Proposed Scheme.	Low Positive
Bus Infrastructure	Improvements to the quality of the bus infrastructure along the Proposed Scheme.	Medium Positive
Parking and Loading	A total loss of 70 parking / loading spaces along the Proposed Scheme	Low Negative
People Movement	Increases to the total number of people travelling through the Proposed Scheme.	High Positive
Bus Network Performance Indicators	Improvements to the network performance indicators for bus users along the Proposed Scheme.	Medium Positive
General Traffic Network Performance Indicators	Reduction in general traffic flows along the Proposed Scheme.	Medium Positive
	Redistributed general traffic along the surrounding road network in the indirect study area as a result of the reduction of reserve capacity along the Proposed Scheme.	Low Negative
Network Wide Performance Indicators	Deterioration to the network-wide queuing capacity, travel times, travel distances and average network speeds beyond the direct and indirect study areas.	Low Negative

As outlined within Section 6.6 (Operational Phase) and summarised in Table 6.74, the Proposed Scheme will deliver strong positive impacts to the quality of pedestrian, cycling and bus infrastructure during the Operational Phase providing for enhanced levels of People Movement in line with the scheme objectives. These improvements will help to provide an attractive alternative to the private car and promote a modal shift to walking, cycling and public transport, allowing for greater capacity along the corridor to facilitate the sustainable movement of people as population and employment levels grow in the future.

The Proposed Scheme will address sustainable mode transport infrastructure deficits while contributing to an overall integrated sustainable transport system as proposed in the GDA Strategy (NTA 2016). It will increase the effectiveness and attractiveness of bus services operating along the corridor and will result in more people availing of public transport due to the faster, more reliable journey times which the Proposed Scheme provides. This in turn will support the future increase to the capacity of the bus network and services operating along the corridor and thereby further increasing the attractiveness of public transport. In addition to this, the significant segregation and safety improvements to walking and cycling infrastructure that are a key feature of the Proposed Scheme will further maximise the movement of people travelling sustainably along the corridor. All of these changes combined will therefore cater for higher levels of future sustainable population and employment growth.

In the absence of the Proposed Scheme bus services will be operating in a more congested environment, leading to higher journey times and lower reliability for bus journeys. This limits their attractiveness to users which will lead to reduced levels of public transport use, making the bus system less resilient to higher levels of growth. The

absence of walking and cycling measures that the Proposed Scheme will provide will also significantly limit the potential to grow those modes into the future.

On the whole, the Proposed Scheme will make a significant contribution to the overall aims of the CBC Infrastructure Works, the GDA Strategy and allow the city to grow sustainably into the future, which would not be possible in the absence of the Proposed Scheme. A further summary and conclusions of the assessment can be found in Section 7.

7. Cumulative Assessment

7.1. Construction Phase Cumulative Effects

The assessment of cumulative effects associated with the Construction Phase of the Proposed Scheme is contained within Chapter 21 (Cumulative Impacts & Environmental Interactions) in Volume 2 of the EIAR.

7.2. Operational Phase Cumulative Impacts

7.2.1. Introduction

This Section also reports the assessment of cumulative effects associated with Operational Phase of the Proposed Scheme. This includes the cumulative impacts of the Proposed Scheme on relevant transport receptors in combination with other existing and / or approved projects including all other Proposed BusConnects Schemes. The transport modelling undertaken as part of the Traffic and Transport assessment informs the cumulative impacts assessment of other environmental topics. Further details on the cumulative impacts of Air quality, Climate, Noise and vibration, Population and Human health are detailed within Chapter 21 (Cumulative Impacts & Environmental Interactions) in Volume 2 of the EIAR.

7.2.2. Transport Schemes

As detailed in Section 6.6.3 core reference case (Do Minimum) modelling scenarios (Opening Year (2028) and the Design Year (2043)) are based on the progressive roll-out of the GDA Strategy (NTA 2016), with a partial implementation by 2028, in line with NDP investment priorities and the full implementation by 2043. To this end, the modelling scenarios developed for the operational assessment of the Proposed Scheme(s) inherently accounts for the cumulative effects of complementary committed and proposed transport schemes within the GDA region.

The GDA Strategy provides is an appropriate receiving environment for the assessment of cumulative effects for the following reasons:

- The GDA Strategy is the approved statutory transportation plan for the region, providing a framework for investment in transport within the region up to 2035;
- The GDA Strategy provides a consistent basis for the 'likely' future receiving environment that is consistent with Government plans and Policies (National Planning Framework (NPF) and National Development Plan (NDP); and
- Schemes within the GDA Strategy are a means to deliver the set of objectives of the GDA Strategy. The sequencing and delivery of the strategy is defined by the implementation plan, but the optimal outcome of aiming to accommodate all future growth in travel demand on sustainable modes underpins the Strategy.

7.2.3. Transport Demand

Cumulative transport demand for the 2028 and 2043 assessment years have been included in the analysis contained within this chapter, using travel demand forecasting, which accounts for increases in population and economic activity, in line with planned growth contained within the NPF, Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland region and the local development plans for GDA local authorities.

It is envisaged that the population will grow by 11% up to 2028 and 25% by 2043 (above 2016 census data levels). Similarly, employment growth is due to grow by 22% by 2028 and 49% by 2043[4].

7.2.3.1. Strategic Trip Demand Assessment

The GDA Strategy (along with existing supply side capacity constraints e.g., parking availability, road capacity etc.) has the effect of limiting the growth in car demand on the road network into the future. This is shown diagrammatically in Diagram 7.1. Total trip demand (indicated by the dashed line) will increase into the future in line with demographic growth (population and employment levels etc), with the proposed Strategy sustainable modes infrastructure as well as demand management proposals playing a role in limiting the growth in transport demand, predominantly to sustainable modes only, with limited increases in private car travel demand.

In general, total trip demand (combining all transport modes) will increase into the future in line with population and employment growth. A greater share of the demand will be by sustainable modes (Public Transport (PT), Walking, Cycling). Private car demand may still grow in some areas but not linearly in line with demographics, as may have occurred in the past.

In terms of the transport modelling scenarios for the cumulative traffic and transport assessment, as per the Strategy proposals, there are no specific demand management measures included in the Do Minimum reference case (receiving environment) scenario in the Opening Year (2028), other than constraining parking availability in Dublin at existing levels. For the Design Year (2043) scenario, a proxy for a suite of demand management measures is included in the Do Minimum in line with the target to achieve a maximum 45% car driver commuter mode share target, across the GDA, as outlined in the Strategy.

7.2.3.1.1. Trip Demand Growth within Study Area of the Proposed Scheme

To understand the background levels of demand growth within the study area of the Proposed Schemes in the assessment years (2028, 2043), the 24-hour demand outputs[5] by mode from the NTA ERM have been analysed. Diagram 7.1 below outlines the changes in total trip demand, comparing car demand with sustainable mode demand (public transport, walking and cycling). The figures are presented for both 2028 and 2043 Do Minimum scenarios (i.e., without the Proposed Schemes in place) in relation to the 2020 ERM demand levels.

[4] Source: NTA Reference Case Planning Sheets 2028, 2043

[5] A buffer of 500m beyond the extent of the Proposed Schemes has been chosen to capture the population that is most likely to interact with the Proposed Scheme, and which could reasonably be exposed to cumulative effects in combination with other developments

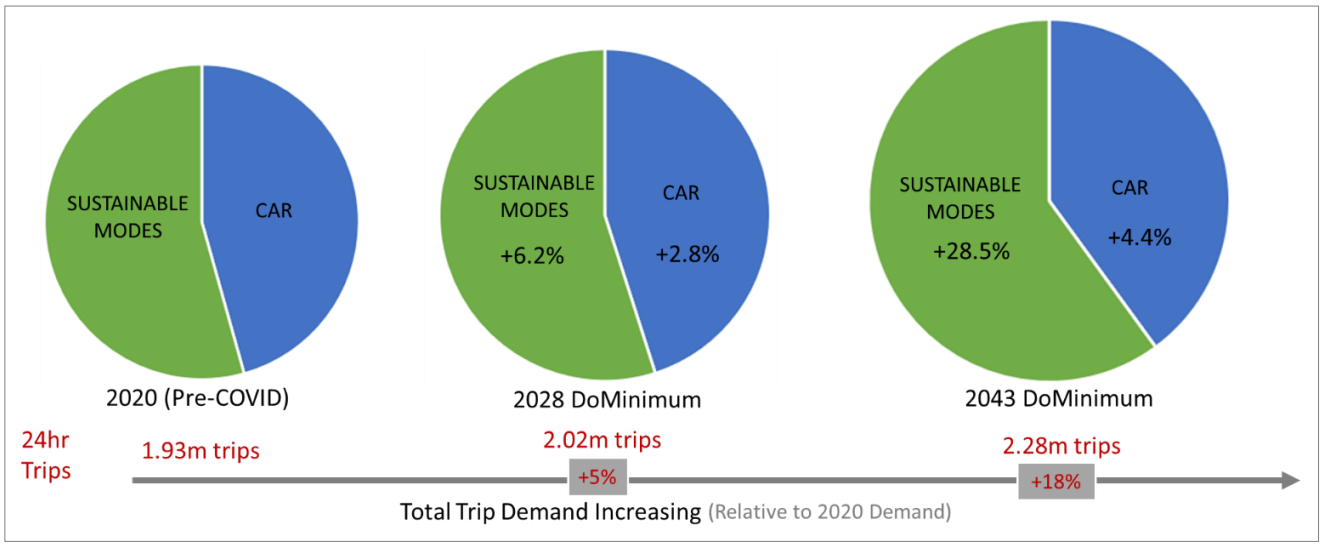

Diagram 7.1: Trip Demand Changes without the Proposed Schemes (in Relation to 2020 Demand)

As shown above, there are 1.93m trips[6] over a 24hr period within 500m of the Proposed Schemes. Total trip demand increases to 2.02m trips (5% increase) in 2028 and to 2.81m trips (+19% increase) in 2043.

In terms of the modal composition of the 5% increase in total demand in 2028, there will be a 6.2% increase in sustainable modes (PT, walk, cycle) and a 2.8% increase in private car demand above 2020 levels, without the Proposed Schemes in place. In 2043, the 18% increase in total trip demand (above 2020 levels) will be made up of a 28.5% increase in sustainable modes demand (PT, walk, cycle) and a 4.4% increase in private car demand, over 2020 levels. The analysis indicates that even without the Proposed Schemes in place, other GDA Transport Strategy measures and road network capacity constraints mean that private car demand is not growing at the same rate as overall travel demand, however, car traffic levels will still increase over current / 2020 traffic levels.

The overall share of Sustainable modes trips on the network will increase from 57% in 2020, to 58% in 2028 and to 62% in 2043 with corresponding reductions in the private car share of overall travel demand.

7.2.3.1.2. Impacts of BusConnects Proposed Scheme Works on Travel Demand Growth

A similar assessment has been undertaken comparing 24-hour car demand with sustainable mode demand (public transport, walking and cycling) for both the 2028 and 2043 Do Something scenarios (i.e., with all Proposed Schemes in place) in relation to the 2020 ERM demand levels (and is shown in Diagram 7.2 below).

[6] Trips to/from ERM zones within a 500m distance from the Proposed Scheme to/from any destination

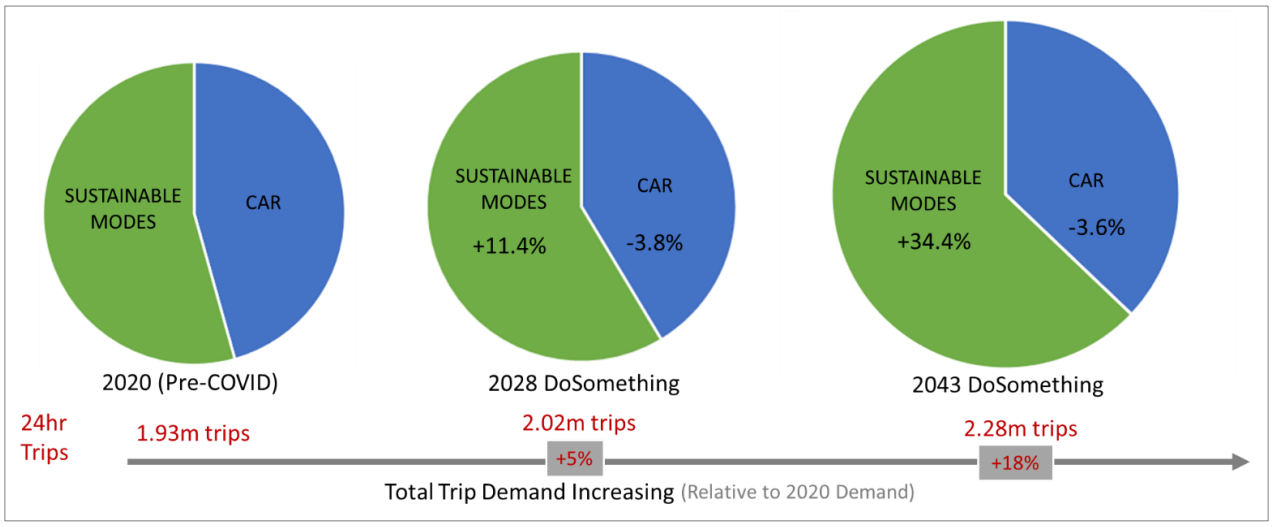

Diagram 7.2: Trip Demand Changes with the Proposed Schemes (in Relation to 2020 Demand)

As shown above, the same level of overall trip demand will occur, however, significantly higher levels of these trips will be made by sustainable modes due to the provision of the BusConnects Proposed Scheme Infrastructure Works. In terms of the modal composition of the 5% increase in total demand in 2028, there will be an 11.4% increase in sustainable modes (PT, walk, cycle) and a 3.8% decrease in private car demand compared to 2020 levels, with the Proposed Schemes in place. In 2043, the 18% increase in total trip demand (above 2020 levels) will be made up of a 33.4% increase in sustainable modes demand (PT, walk, cycle) and a 3.6% decrease in private car demand, compared to 2020 levels. The analysis indicates that the Proposed Schemes will have a significant impact on sustainable mode share. The schemes will prevent any increase in private car traffic within the study area and will instead result in a reduction in car trips below 2020 levels.

With the Proposed Schemes in place, the overall share of Sustainable modes trips on the network will increase from 57% in 2020, to 61% in 2028 and to 65% in 2043 with corresponding reductions in the private car share of overall travel demand.

7.2.4. People Movement

7.2.4.1. Overview

In order to understand the benefit with regards to the Movement of People following the full implementation of all 12 of the Proposed Schemes, a quantitative People Movement assessment has been undertaken using outputs of the modelling suite comparing the Do Minimum and Do Something Peak Hour scenarios for each forecast year (2028, 2043).

The assessment of People Movement includes the following metrics:

- Daily Mode share changes within a 500m catchment[7] of the Proposed Schemes comparing the Do Minimum and Do Something scenarios for trips to the City Centre and trips to any destination in the 2028 and 2043 assessment years;

[7] 500m recommended maximum walking distance to Core Bus Corridors - "Buses In Urban Development", CIHT 2018

- Distance weighted average[8] number of people moved by each mode (Car, Bus, Walking and Cycling) comparing the Do Minimum and Do Something scenarios both in the inbound and outbound direction in the AM and PM Peak Hour periods for each forecast year (2028, 2043). This provides an estimate of the modal share changes on the direct study area, as a result of the Proposed Schemes measures; and
- People Movement by Bus
    - Total Passengers Boarding Buses on bus routes that use any part of the Proposed Schemes for each forecast year (2028, 2043).

7.2.4.2. Daily People Movement by Mode (Mode Share)

Daily (07:00-19:00 – weekday) mode share data has been extracted from the ERM for zones within a 500m catchment of the Proposed Schemes comparing the Do Minimum and Do Something scenarios for each of the forecast years (2028, 2043).

Diagram 7.3 and Diagram 7.4 illustrate the mode share changes (% increase and absolute) comparing the Do Minimum and Do Something (All Proposed Schemes) scenarios for Car, Public Transport and Cycling for the following:

- People travelling from the catchment area of the Proposed Schemes to any destination within the catchment (inclusive of the City Centre) in the Morning Peak period (AM) (07:00-10:00) and All-day (07:00-19:00) period; and
- People travelling from the catchment area[9] of the Proposed Schemes inbound towards the city centre (defined as the Canal Cordon) in the Morning Peak period (AM) 07:00-19:00 period.

[8] The use of a distance weighted average or mean ensures that the central tendency of flows on all road links on the Proposed Scheme by mode are captured. This prevents distortion of the results due to sections with very high or very low flows, where for example, orbital buses may join the route for a short section. It ensures that the overall people movement for the CBC can be captured in a single figure allowing a 'like-for-like' comparison between the Do Minimum and Do Something scenarios.

[9] The analysis includes only trips from the defined catchment i.e., it does not include trips from external areas outside of the catchment that travel to the city centre

7.2.4.2.1. 2028 Demand Changes by Mode

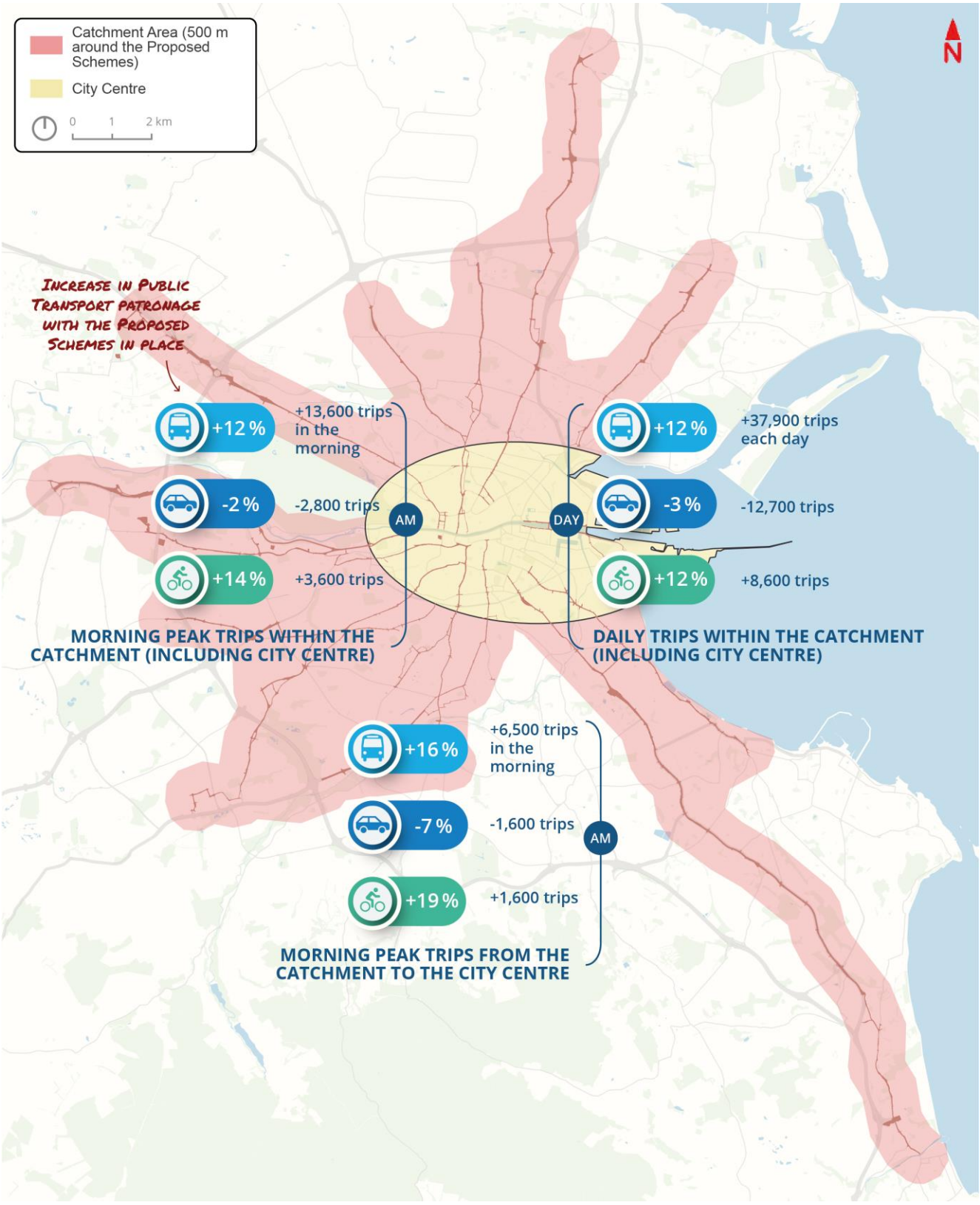

Diagram 7.3: Change in Trips by Mode within a 500m Catchment Area of the Proposed Schemes and the City Centre and Trips Originating from the Catchment Inbound to the City Centre in 2028

As indicated in Diagram 7.3, it is estimated that for people travelling within the 500m catchment area (including City Centre) there will be a 12% increase in public transport trips, 2% decrease in general traffic trips (i.e. motorists) and a 14% increase in cycling trips in the morning peak period and a 12% increase in public transport, 3% decrease in general traffic and a 12% increase in cycling trips each day (07:00-19:00).

It is also estimated that for people travelling inbound to the city centre from the catchment area in the morning peak period there will be 16% increase in public transport trips, 7% decrease in general traffic trips (i.e. motorists) and a 19% increase in cycling trips.

Table 7.1 outlines the difference in trips and modal split between the Opening Year (2028) Do Minimum and Do Something scenarios for people travelling within the Catchment Area and the City Centre in the morning peak period and All-Day (07:00-19:00).

Table 7.1: 2028 Modal Share of Trips within a 500m Catchment Area from of the Proposed Schemes and the City Centre

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Daily Trips	Modal Split (%)	Daily Trips	Modal Split (%)	Daily Trips	Difference (%)
Within Catchment Area and City Centre	AM (07:00-10:00)	Public Transport	111,090	25.5%	124,700	27.7%	13,610	12.3%
		General Traffic	145,560	33.4%	142,730	31.7%	-2,830	-1.9%
		Cycling	25,670	5.9%	29,250	6.5%	3,580	13.9%
		Walking	154,000	35.3%	153,160	34.0%	-840	-0.5%
		Total	436,320	100%	449,840	100%	13,520	3.1%
Within Catchment Area and City Centre	Daily (07:00-19:00)	Public Transport	328,800	24.8%	366,730	27.0%	37,930	11.5%
		General Traffic	435,860	32.9%	423,140	31.2%	-12,720	-2.9%
		Cycling	70,680	5.3%	79,270	5.8%	8,590	12.2%
		Walking	487,880	36.9%	487,400	35.9%	-480	-0.1%
		Total	1,323,220	100%	1,356,540	100%	33,320	2.5%

As shown in Table 7.1, it is expected that there will be an approximate 3% (13,500) increase in People Movement within the Catchment Area (including City Centre) as a result of the Proposed Schemes in the morning peak period. The slight net increase in the total number of trips is due to the improved accessibility and reduced congestion for sustainable mode users provided with the Proposed Schemes in place. Over the whole day, approximately 46,000 additional trips will be made by bus and cycling.

It is also estimated that a modal shift will occur in the morning peak period consisting of an increase in Public Transport mode share from 25.5% to 27.7%, a decrease in general traffic share from 33.4% to 31.7% and an increase in the number of cyclists from 5.9% to 6.5%. The modal shift in the daily trips within the 500m catchment area and the City Centre will consist of an increase in Public Transport users from 24.8% to 27%, a decrease in general traffic share from 32.9% to 31.2% and an increase in the number of cyclists from 5.3% to 5.8%.

The number of walking trips is shown to remain broadly similar in the Do Something scenario. This is mainly due to a mode shift from walking to bus, due to the enhanced public transport provision in the Do Something scenario.

Table 7.2 outlines the difference in trips and modal split between the Opening Year (2028) Do Minimum and Do Something (All Proposed Schemes) scenarios for people travelling from the Catchment Area inbound towards the City Centre in the morning peak period.

Table 7.2: 2028 Modal Share of Trips Originating from a 500m Catchment Area from of the Proposed Schemes to the City Centre

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Daily Trips	Modal Split (%)	Daily Trips	Modal Split (%)	Daily Trips	Difference (%)
Within Catchment Area and City Centre	AM (07:00-10:00)	Public Transport	40,050	48.4%	46,500	52.5%	6,450	16.1%
		General Traffic	23,180	28.0%	21,540	24.3%	-1,640	-7.1%
		Cycling	8,530	10.3%	10,150	11.5%	1,620	19.0%
		Walking	11,030	13.3%	10,450	11.8%	-580	-5.3%
		Total	82,790	100%	88,640	100%	5,850	7.1%

As shown in Table 7.2, the modelling indicates that there will be an approximate 7% (6,000) increase in total People Movement travelling from the Catchment Area to the City Centre as a result of the Proposed Schemes in the morning peak period.

It is also indicated that a modal shift will occur consisting of an increase in Public Transport users from 48.4% to 52.5%, a decrease in general traffic mode share from 28% to 24.3% and an increase in the cycling mode share from 10.3% to 11.5% with the Proposed Schemes in operation.

7.2.4.2.2. 2043 Demand Changes by Mode

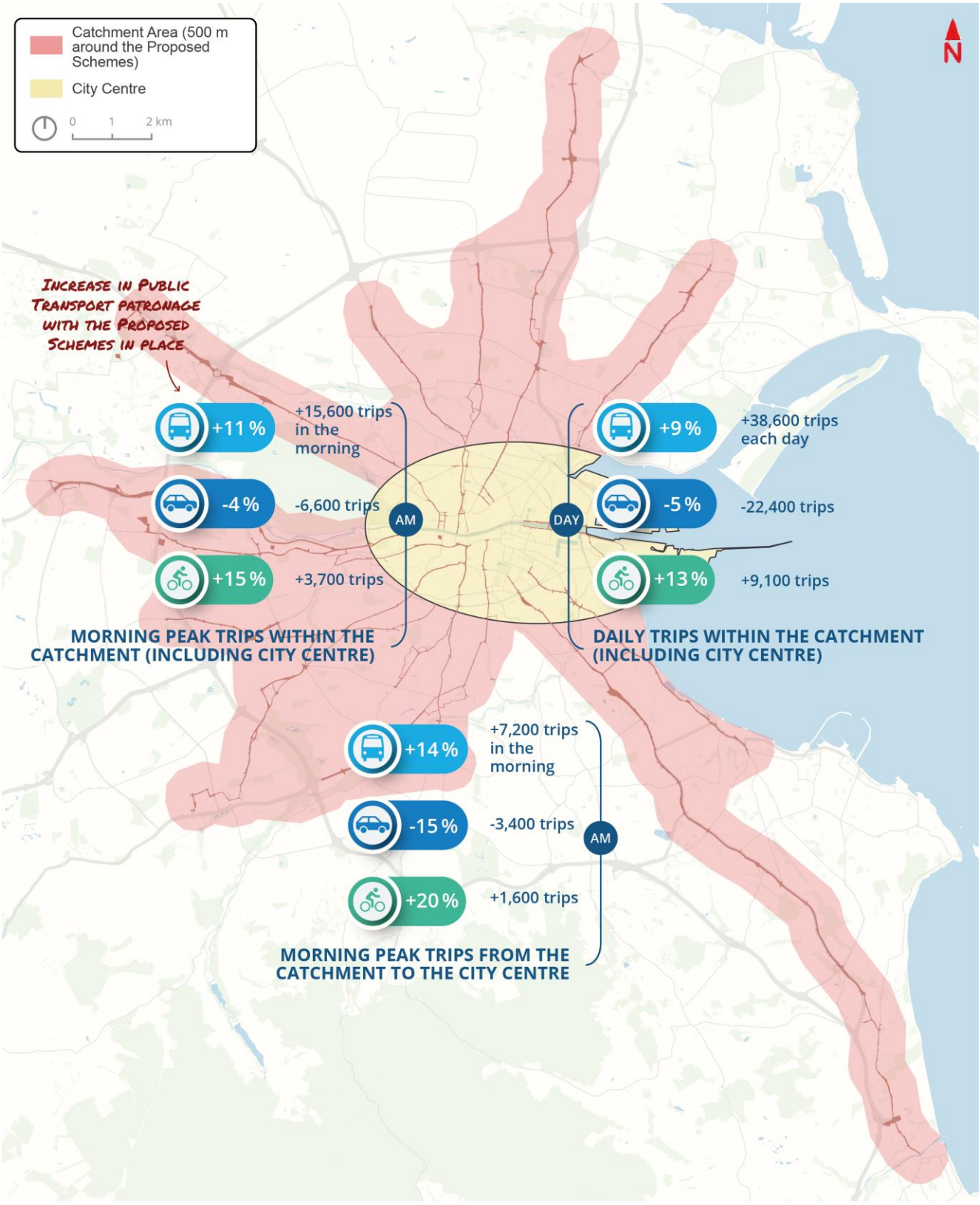

Diagram 7.4: Change in trips by mode within a 500m Catchment Area of the Proposed Schemes and the City Centre and Trips originating from the Catchment inbound to the City Centre in 2043

As indicated in Diagram 7.4, it is estimated that for people travelling within the 500m catchment area (including City Centre) there will be a 11% increase in public transport trips, 4% decrease in general traffic trips (i.e. motorists) and a 15% increase in cycling trips in the morning peak period and a 9% increase in public transport, 5% decrease in general traffic and a 13% increase in cycling trips each day (07:00-19:00).

The modelling shows that for people travelling inbound to the city centre from the Catchment Area in the morning peak period there will be a 14% increase in public transport trips, 15% decrease in general traffic trips (i.e., motorists) and a 20% increase in cycling trips.

Table 7.3 outlines the difference in trips and modal split between the Opening Year (2028) Do Minimum and Do Something (All Proposed Schemes) scenarios for people travelling within the Catchment Area and the City Centre in the morning peak period and All Day (07:00-19:00).

Table 7.3: 2043 Modal Shift of Trips within a 500m Catchment Area from of the Proposed Schemes and the City Centre

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Daily Trips	Modal Split (%)	Daily Trips	Modal Split (%)	Daily Trips	Difference (%)
Within Catchment Area and City Centre	AM (07:00-10:00)	Public Transport	144,880	29.4%	160,480	31.7%	15,600	10.8%
		General Traffic	156,670	31.8%	150,070	29.7%	-6,600	-4.2%
		Cycling	25,670	5.2%	29,410	5.8%	3,740	14.6%
		Walking	165,820	33.6%	165,890	32.8%	70	0.0%
		Total	493,040	100%	505,850	100%	12,810	2.6%
Within Catchment Area and City Centre	Daily (07:00-19:00)	Public Transport	444,900	29.4%	483,530	31.4%	38,630	8.7%
		General Traffic	473,200	31.3%	450,780	29.3%	-22,420	-4.7%
		Cycling	71,350	4.7%	80,400	5.2%	9,050	12.7%
		Walking	523,910	34.6%	526,400	34.2%	2,490	0.5%
		Total	1,513,360	100%	1,541,110	100%	27,750	1.8%

As shown in Table 7.3, it is expected that there will be an approximate 3% (12,800) increase in People Movement travelling within the Catchment Area (including City Centre) as a result of the Proposed Schemes in the morning peak period. The slight net increase in the total number of trips is due to the improved accessibility and reduced congestion for sustainable mode users provided with all the Proposed Schemes in place. Over the whole day, approximately 50,000 additional trips will be made by bus and cycling, which is a significant increase, when considering that other elements of the GDA Strategy will be place in 2043.

It is also estimated that a modal shift will occur in the morning peak period consisting of an increase in Public Transport share from 29.4% to 31.7%, a decrease in general traffic share from 31.8% to 29.7% and an increase in cycling from 5.2% to 5.8%. The modal shift in the daily trips within the 500m catchment area and the City Centre will consist of an increase in Public Transport users from 29.4% to 31.4%, a decrease in general traffic from 31.3% to 29.3% and an increase in cyclists from 4.7% to 5.2%.

General traffic is seen to have much higher levels of reduction in 2043 than when compared to 2028 due to the increased level of non-bus public transport infrastructure (MetroLink, Luas extensions and DART+ from the GDA Strategy) in tandem with the road capacity reduction measures as part of the Proposed Scheme leading to increased usage on all public transport modes. The number of walking trips is shown to remain broadly similar in the Do Something scenario. This is mainly due to a mode shift from walking to bus, due to the enhanced public transport provision in the Do Something scenario.

Table 7.4 outlines the difference in trips and modal split between the Opening Year (2028) Do Minimum and Do Something (All Proposed Schemes) scenarios for people travelling from the Catchment Area inbound towards the City Centre in the morning peak period.

Table 7.4: 2043 Modal Shift of Trips originating from a 500m Catchment Area from of the Proposed Schemes to the City Centre

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Daily Trips	Modal Split (%)	Daily Trips	Modal Split (%)	Daily Trips	Difference (%)
Within Catchment Area and City Centre	AM	Public Transport	51,700	55.1%	58,880	59.8%	7,180	13.9%
		General Traffic	22,930	24.4%	19,490	19.8%	-3,440	-15.0%
		Cycling	7,940	8.5%	9,510	9.7%	1,570	19.8%
		Walking	11,240	12.0%	10,660	10.8%	-580	-5.2%
		Total	93,810	100%	98,540	100%	4,730	5.0%

As shown in Table 7.4, the modelling indicates that there will be an approximate 5% increase in total People Movement travelling from the Catchment Area to the City Centre as a result of the Proposed Schemes, in the morning peak period.

It is also indicated that a modal shift will occur consisting of an increase in Public Transport mode share from 55.1% to 59.8%, a decrease in general traffic mode share from 24.4% to 19.8% and an increase in the cycling mode share from 8.5% to 9.7%.

7.2.4.3. Peak Hour People Movement along the Proposed Scheme

To determine the cumulative impact that the Proposed Schemes will have on modal share changes on the direct study areas as a result of their implementation, the weighted average number of people moved by each mode (Car, Bus, Active Modes) has been extracted from the modelling suite. The analysis compares the Do Minimum and Do Something (All Proposed Schemes) scenarios both in the inbound and outbound direction in the AM and PM Peak Hour periods for each forecast years (2028, 2043).

7.2.4.3.1. 2028 AM Peak Hour People Movement

Diagram 7.5 illustrates the average People Movement by mode, across the Ballymun and Finglas Proposed Schemes, inbound towards the City Centre during the AM Peak Hour in 2028.

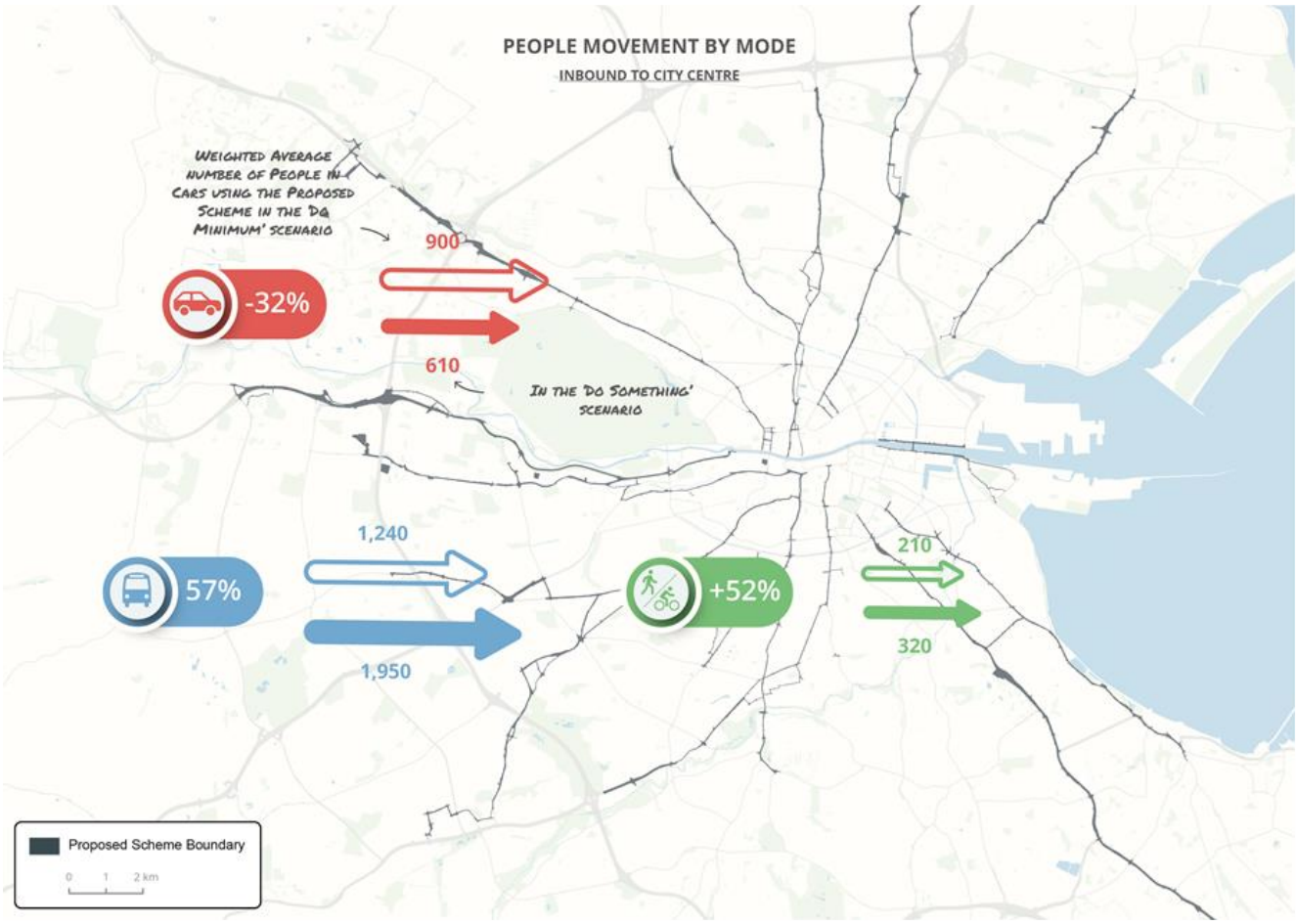

Diagram 7.5 Average People Movement by Mode travelling along the Proposed Scheme during 2028 AM Peak Hour

As indicated in Diagram 7.5, on average across the Ballymun and Finglas Proposed Schemes, there is a reduction of 32% in the number of people travelling via car, an increase of 57% in the number of people travelling via bus and an increase of 52% in people walking or cycling along the Proposed Scheme during the AM Peak Hour. It must be noted that the model predicts limited change in total walking trips between each scenario. This is due to the fact that walking trips in the Do Minimum scenario are also transferring to public transport and cycling due to the improved provision with any new walkers transferring from car replacing these trips.

The Proposed Scheme will facilitate a step change in the level of segregated cycling provision in comparison with existing conditions along the entire length of the corridor. The transport modelling undertaken, is therefore conservative in terms of the predicted cycling mode share. The Proposed Scheme has been designed to cater for much higher levels of cycling uptake and this will provide the opportunity for a significant increase in the movement of people travelling sustainably along the corridor, which would otherwise not be achieved in the absence of the Proposed Scheme.

The contents of Table 7.5 outline the difference in modal split between the Do Minimum and Do Something scenarios for each mode of transport in both directions during the AM Peak Hour. The results indicate a 23% increase in people moved as a result of the Proposed Scheme and a 57% increase in people moved by sustainable modes (Public Transport, Walk, Cycle).

Table 7.5: Modal Shift of 2028 AM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Inbound towards the City Centre	AM Peak Period	General Traffic	900	38%	610	21%	-290	-32%
		Public Transport	1,240	53%	1,950	68%	710	57%
		Walking	140	6%	140	5%	0	0%
		Cycling	70	3%	180	6%	110	157%
		Combined Walking/Cycling	210	9%	320	11%	110	52%
		Sustainable Modes Total	**1,450**	**62%**	**2,270**	**79%**	**820**	**57%**
		Total (All modes)	**2,350**	**100%**	**2,880**	**100%**	**530**	**23%**

7.2.4.3.2. 2028 PM Peak Hour People Movement

Diagram 7.6 illustrates the average People Movement by mode, across the Ballymun and Finglas Proposed Schemes, outbound from the City Centre during the PM Peak Hour in 2028.

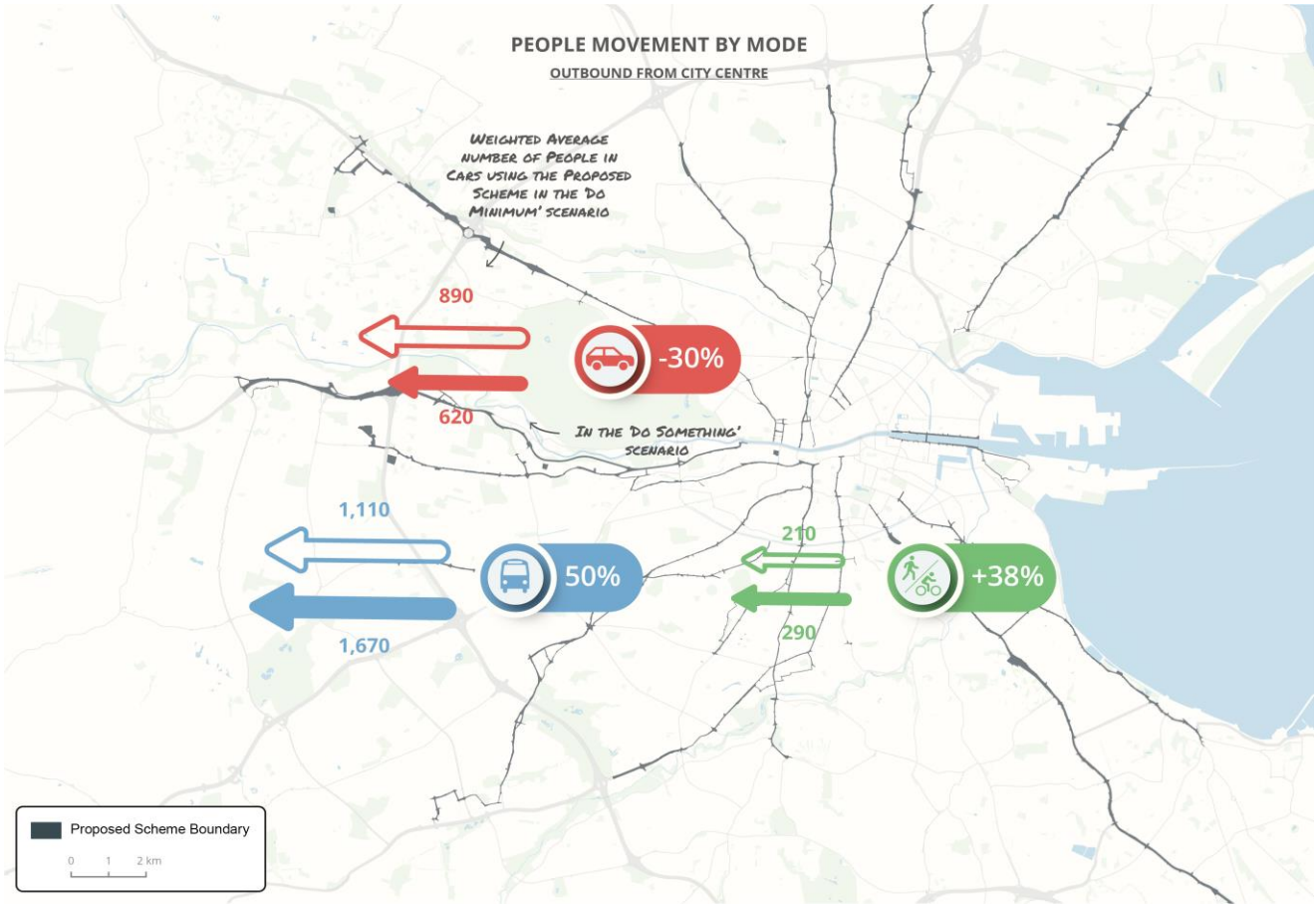

Diagram 7.6: Average People Movement by Mode travelling along the Proposed Scheme during 2028 PM Peak Hour

As indicated in Diagram 7.6, on average across the Ballymun and Finglas Proposed Schemes, there is a reduction of 30% in the number of people travelling via car, an increase of 50% in the number of people travelling via bus and an increase in 38% in the number of people walking or cycling along the Proposed Scheme during the PM Peak Hour.

Table 7.6 outlines the difference in modal split between the Do Minimum and Do Something scenarios for each mode of transport in both directions during the PM Peak Hour. The results indicate a 17% increase in people moved as a result of the Proposed Scheme and a 48% increase in people moved by sustainable modes (Public Transport, Walk, Cycle).

Table 7.6: Modal Shift of 2028 PM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Outbound from the City Centre	PM Peak Period	General Traffic	890	40%	620	24%	-270	-30%
		Public Transport	1,110	50%	1,670	65%	560	50%
		Walking	150	7%	140	5%	-10	-7%
		Cycling	60	3%	150	6%	90	150%
		Combined Walking/Cycling	210	10%	290	11%	80	38%
		Sustainable Modes Total	**1,320**	**60%**	**1,960**	**76%**	**640**	**48%**
		Total (All modes)	**2,210**	**60%**	**2,580**	**76%**	**370**	**17%**

7.2.4.3.3. 2043 AM Peak Hour People Movement

Diagram 7.7 illustrates the average People Movement by mode, across the Ballymun and Finglas Proposed Schemes, inbound towards the City Centre during the AM Peak Hour in 2043.

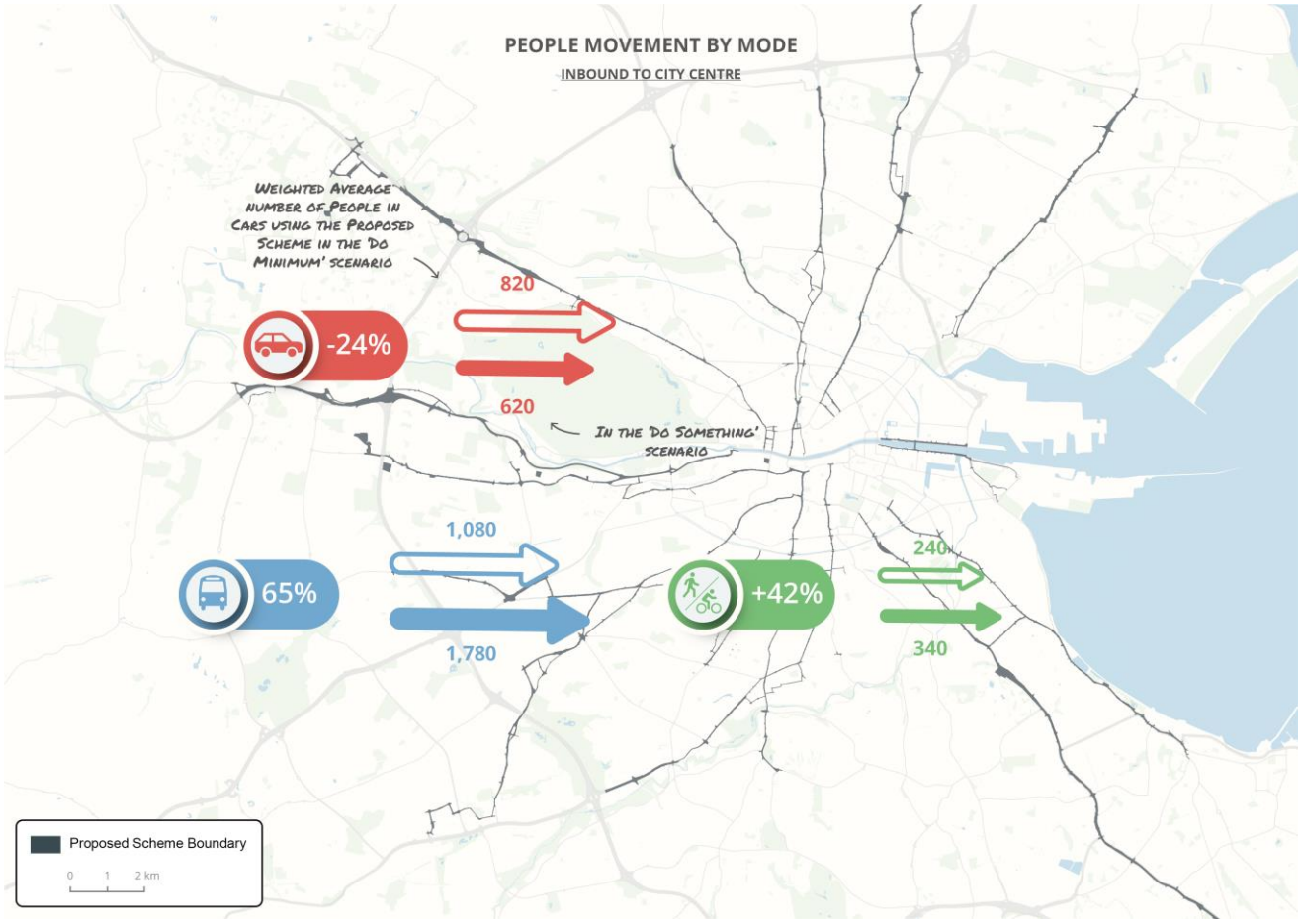

Diagram 7.7: Average People Movement by Mode travelling along the Proposed Scheme during 2043 AM Peak Hour

As indicated in Diagram 7.7, on average across the Ballymun and Finglas Proposed Schemes, there is a decrease of 24% in the number of people travelling via car, an increase of 65% in the number of people travelling via bus and an increase of 42% in the number of people walking and cycling along the Proposed Scheme during the AM Peak Hour.

The contents of Table 7.7 outline the difference in modal split between the Do Minimum and Do Something scenarios for each mode of transport in both directions during the AM Peak Hour. The results indicate a 28% increase in people moved as a result of the Proposed Scheme and a 61% increase in people moved by sustainable modes (Public Transport, Walk, Cycle). The bus loadings in 2043 are lower in comparison to the Opening Year (2028) scenario due to the inclusion of MetroLink and the DART Underground scheme in the vicinity of the corridor by 2043.

Table 7.7: Modal Shift of 2043 AM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Bi-directional	AM Peak Period	General Traffic	820	38%	620	23%	-200	-24%
		Public Transport	1,080	50%	1,780	65%	700	65%
		Walking	170	8%	160	6%	-10	-6%
		Cycling	70	3%	180	7%	110	157%
		Combined Walking/Cycling	240	11%	340	12%	100	42%
		Sustainable Modes Total	**1,320**	**62%**	**2,120**	**77%**	**800**	**61%**
		Total (All modes)	**2,140**	**100%**	**2,740**	**100%**	**600**	**28%**

7.2.4.3.4. 2043 PM Peak Hour People Movement

Diagram 7.8 illustrates the average People Movement by mode, across the Ballymun and Finglas Proposed Schemes, outbound from the City Centre during the PM Peak Hour in 2043.

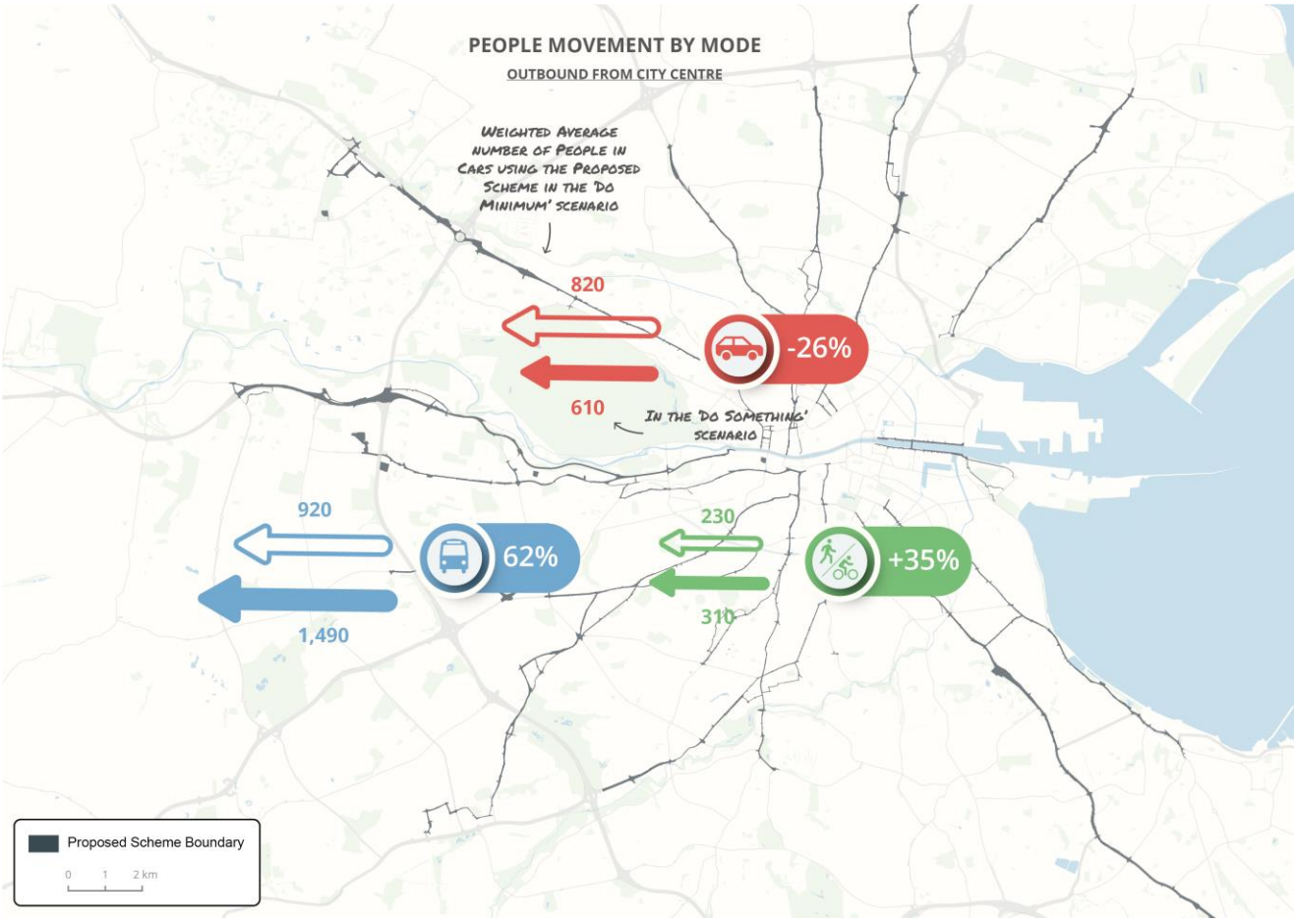

Diagram 7.8: Average People Movement by Mode travelling along the Proposed Scheme during 2043 PM Peak Hour

As indicated in Diagram 7.8, on average across the Ballymun and Finglas Proposed Schemes, there is a decrease of 26% in the number of people travelling via car, an increase of 62% in the number of people travelling via bus

and an increase of 35% in the number of people walking and cycling along the Proposed Scheme during the PM Peak Hour.

The contents of Table 7.8 outline the difference in modal split between the Do Minimum and Do Something scenarios for each mode of transport in both outbound directions during the PM Peak Hour. The results indicate a 22% increase in people moved as a result of the Proposed Scheme and a 57% increase in people moved by sustainable modes (Public Transport, Walk, Cycle).

Table 7.8: Modal Shift of 2043 PM Peak Hour along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Outbound from the City Centre	PM Peak Period	General Traffic	820	42%	610	25%	-210	-26%
		Public Transport	920	47%	1,490	62%	570	62%
		Walking	180	9%	180	7%	0	0%
		Cycling	50	3%	130	5%	80	160%
		Combined Walking/Cycling	230	12%	310	13%	80	35%
		Sustainable Modes Total	**1,150**	**58%**	**1,800**	**75%**	**650**	**57%**
		Total (All modes)	**1,970**	**58%**	**2,410**	**75%**	**440**	**22%**

7.2.4.4. Movement of People by Bus

The following section presents the modelling outputs for the Movement of People by Bus. The results indicate that the improvements in bus priority infrastructure with the Proposed Schemes in place results in a substantial increase in Bus patronage during the Peak Hours and throughout the day.

Diagram 7.9 to Diagram 7.12 present the difference in passenger loadings (Do Something minus Do Minimum loadings) on the Proposed Schemes in 2028 and 2043, AM and PM Peak Hours.

7.2.4.4.1. 2028 AM Peak Hour Bus Passengers

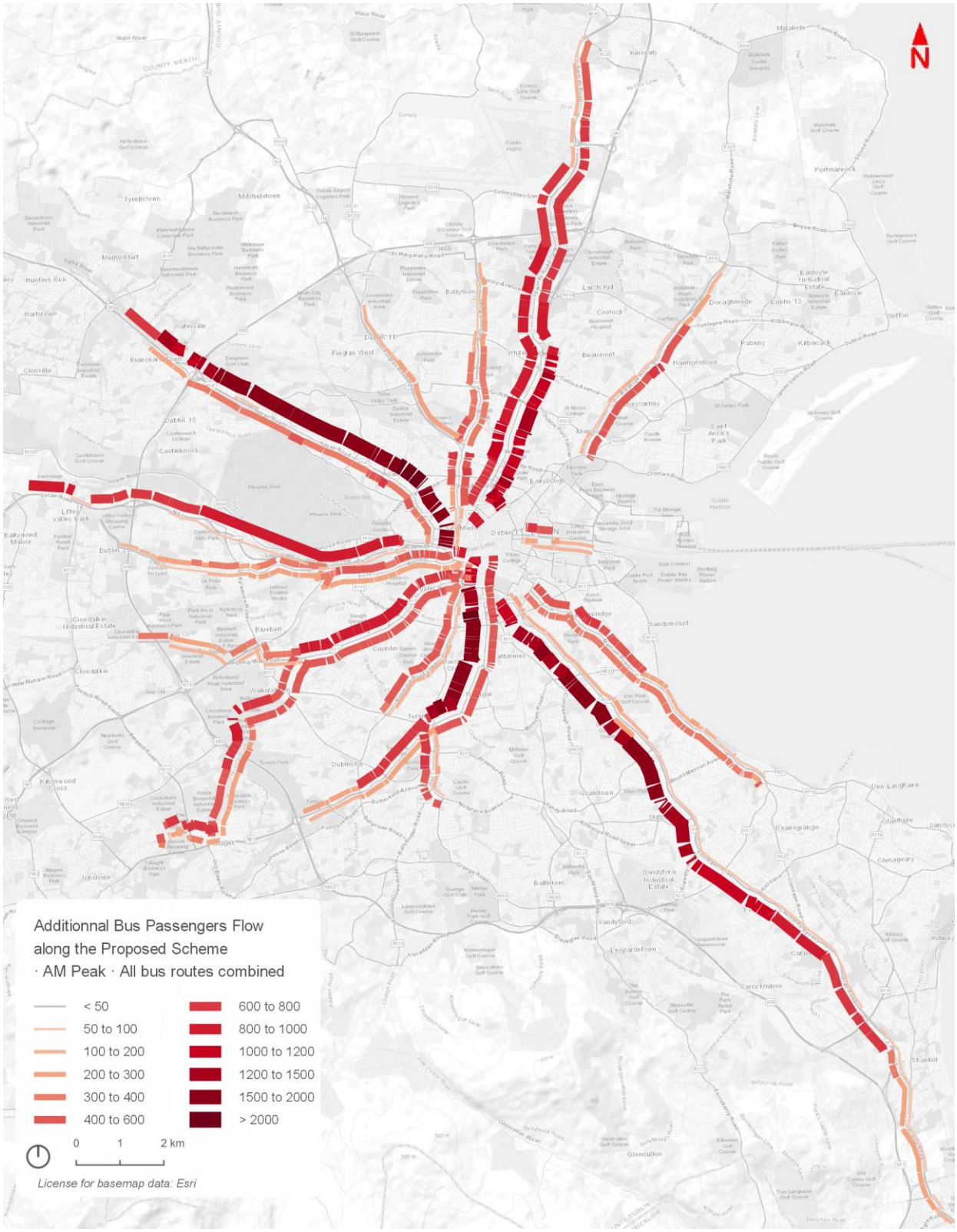

Diagram 7.9: AM Peak Hour Total Bus Passenger Flows Along the Proposed Schemes (All Bus Routes Combined)

As indicated in Diagram 7.9, there is a high growth in bus patronage along all the Proposed Schemes in the AM Peak Hour. Some of the bigger increases occur in the inbound direction on the Blanchardstown to City Centre,

the Rathfarnham to City Centre and the Bray to City Centre schemes where the loadings reach more than 2,000 additional passengers per hour compared to the Do Minimum scenario. The Ballymun/Finglas to City Centre Scheme shows an increase of approximately 700 passengers in the inbound direction in the 2028 AM Peak Hour.

Since many bus services commence and end further away from the direct alignment of the Proposed Schemes, but still benefit from the improvements provided, an assessment has been undertaken to compare the total passengers boarding bus routes that use any part of the Proposed Scheme (including those stops not directly on the Proposed Scheme) in both 2028 and 2043 forecast years. Table 7.9 below displays the results for the 2028 AM Peak Hour for the Ballymun/Finglas to City Centre Scheme as well as for all Proposed Schemes.

Table 7.9: 2028 AM Peak Hour Bus Boardings on Routes using the Proposed Schemes (inc. boarding at stops outside Proposed Schemes)

Scheme	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Ballymun/Finglas to City Centre Scheme	17,330	20,410	3,080	17.8%
All Schemes	85,990	101,760	15,770	18.3%

As shown in Table 7.9, As shown above there will be a 17.8% increase in people boarding bus routes which use any part of the Ballymun/Finglas Scheme during the AM Peak Hour. This represents an addition of 3,080 passengers.

There will be a 18.3% increase in people boarding bus routes which use any part of the Proposed Schemes, representing an additional 15,770 passengers due to the bus priority improvements.

7.2.4.4.2. 2028 PM Peak Hour Bus Passengers

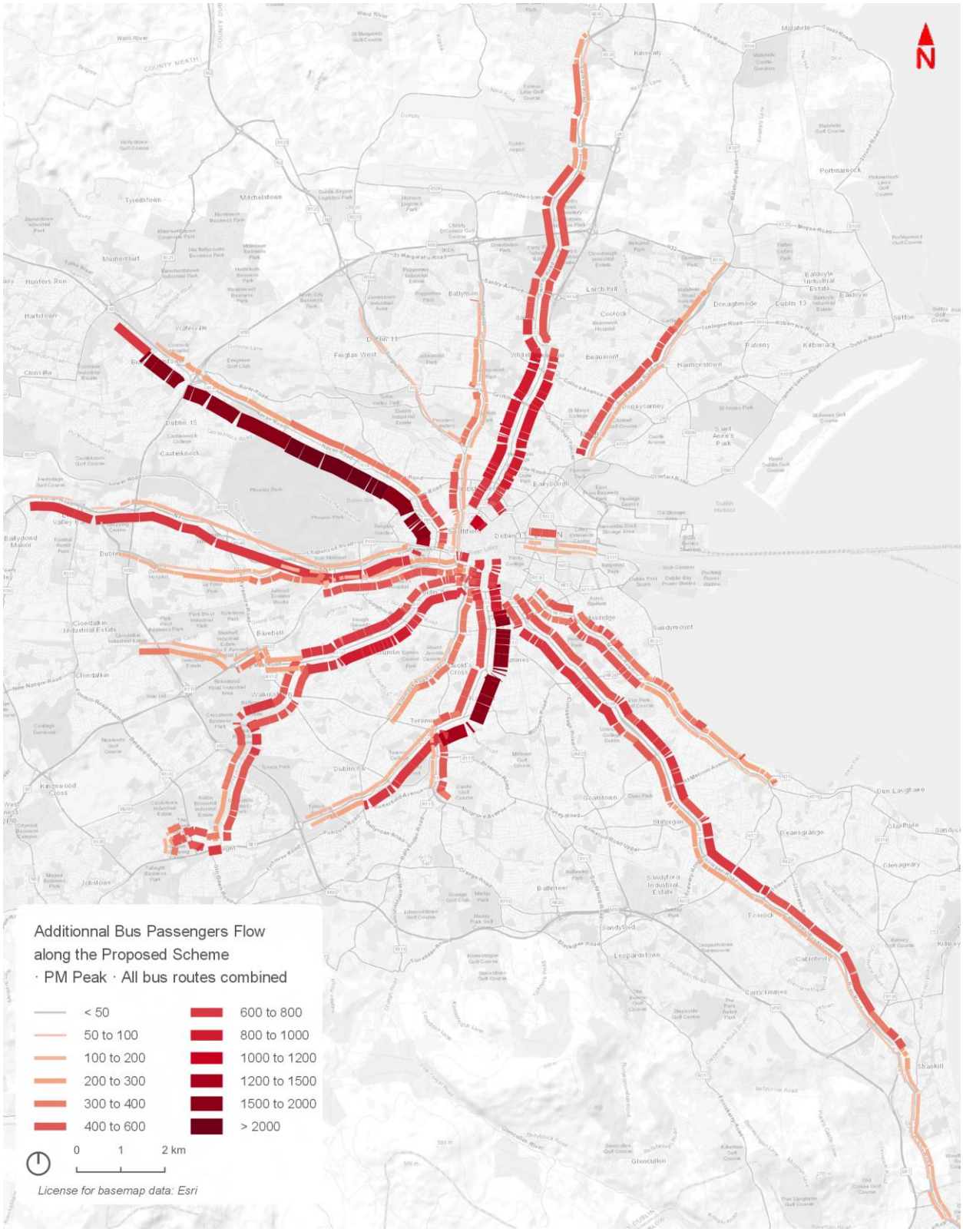

Diagram 7.10: PM Peak Hour Total Bus Passenger Flows Along the Proposed Schemes (All Bus Routes Combined)

As indicated in Diagram 7.10, there is a high growth in bus patronage along all the Proposed Schemes in the PM Peak Hour. Some of the bigger increases occur in the outbound direction on the Blanchardstown to City Centre

and the Rathfarnham to City Centre where the loadings reach more than 2,000 additional passengers per hour compared to the Do Minimum scenario. The Ballymun/Finglas to City Centre Scheme shows an increase of approximately 400 passengers in the outbound direction.

Table 7.10 presents the total passengers boarding bus routes that use any part of the Proposed Scheme (including those stops not directly on the Proposed Scheme) in the 2028 PM Peak Hour for the Ballymun/Finglas to City Centre Scheme as well as for all Proposed Schemes.

Table 7.10: 2028 PM Peak Hour Bus Boardings on Routes using the Proposed Schemes (inc. boarding at stops outside Proposed Schemes)

Scheme	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Ballymun/Finglas to City Centre Scheme	13,360	15,360	2,000	15.0%
All Schemes	71,280	85,170	13,890	19.5%

As shown in Table 7.10, there will be a 15% increase in people boarding bus routes which use any part of the Ballymun/Finglas to City Centre Scheme during the PM Peak Hour. This represents an addition of 2,000 passengers.

There will be a 19.5% increase in people boarding bus routes which use any part of the Proposed Schemes, representing an additional 13,890 passengers due to the bus priority improvements.

7.2.4.4.3. 2043 AM Peak Hour Bus Passengers

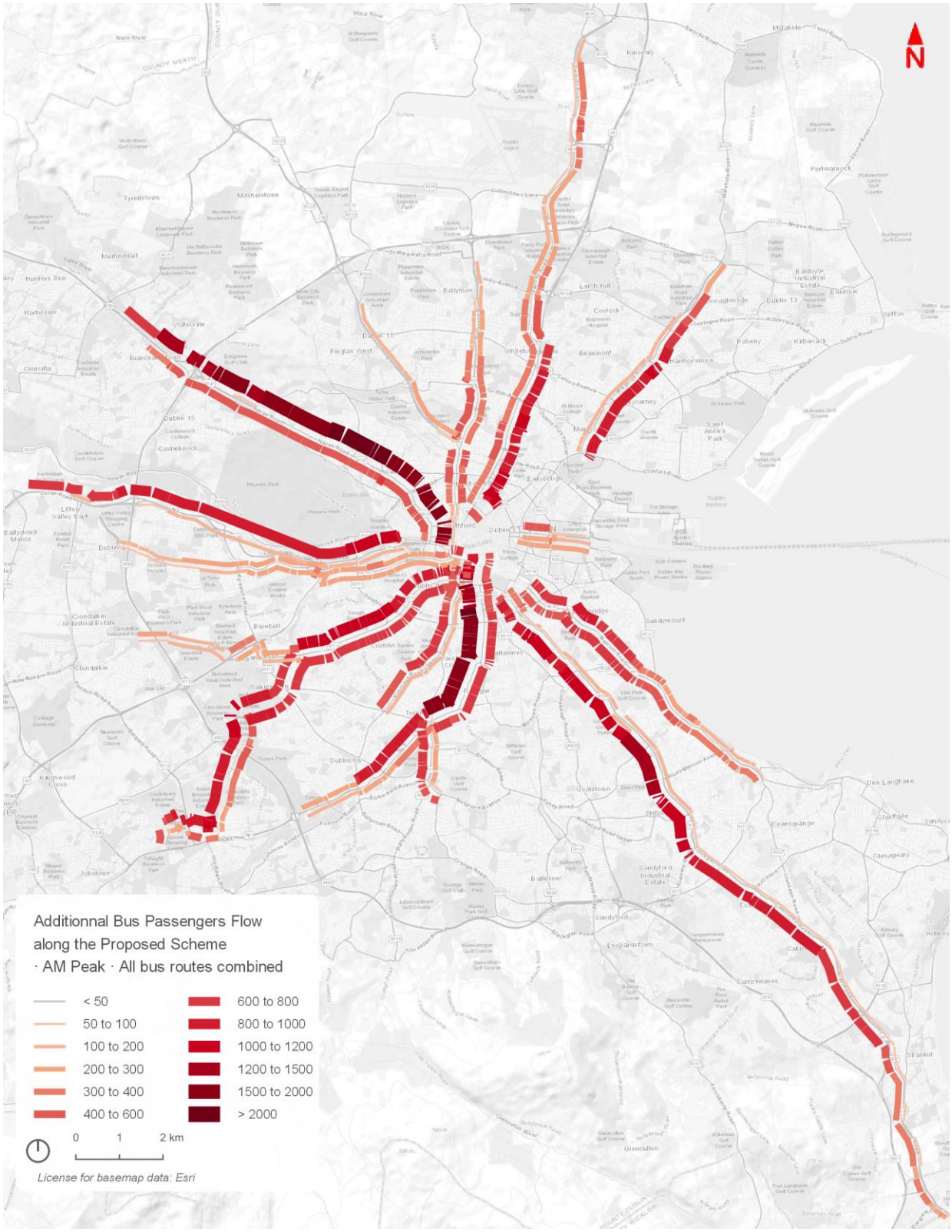

Diagram 7.11: AM Peak Hour Total Bus Passenger Flows Along the Proposed Schemes (All Bus Routes Combined)

As indicated in Diagram 7.11, there is a high growth in bus patronage along all the Proposed Schemes in the 2043 AM Peak Hour. Some of the bigger increases occur in the inbound direction on the Blanchardstown to City

Centre and the Rathfarnham to City Centre where the loadings reach more than 2,000 additional passengers per hour compared to the Do Minimum scenario. The Ballymun/Finglas to City Centre Scheme shows an increase of approximately 600 passengers in the inbound direction.

Table 7.11 presents the total passengers boarding bus routes that use any part of the Proposed Scheme (including those stops not directly on the Proposed Scheme) in the 2043 AM Peak Hour for the Ballymun/Finglas to City Centre Scheme as well as for all Proposed Schemes.

Table 7.11: 2043 AM Peak Hour Bus Boardings on Routes using the Proposed Schemes (inc. boarding at stops outside Proposed Schemes)

Scheme	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Ballymun/Finglas to City Centre Scheme	17,040	20,360	3,320	19.5%
All Schemes	86,380	106,040	19,660	22.8%

As shown in Table 7.11, there will be a 19.5% increase in people boarding bus routes which use any part of the Ballymun/Finglas to City Centre Scheme during the AM Peak Hour. This represents an addition of 3,320 passengers in the AM Peak Hour.

There will be a 22.8% increase in people boarding bus routes which use any part of the Proposed Schemes, representing an additional 19,660 passengers due to the bus priority improvements.

7.2.4.4.4. 2043 PM Peak Hour Bus Passengers

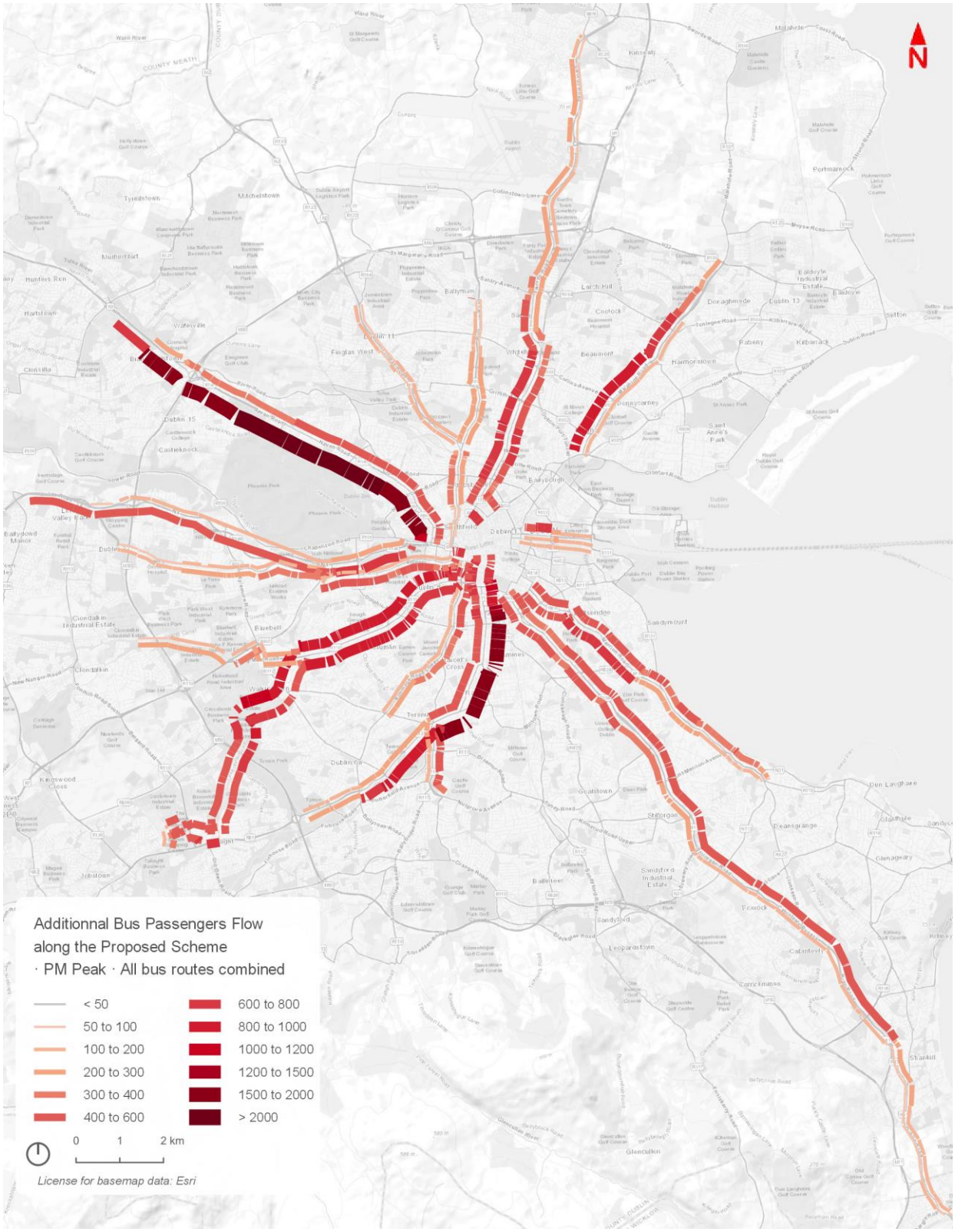

Diagram 7.12: PM Peak Hour Total Bus Passenger Flows Along the Proposed Schemes (All Bus Routes Combined)

As indicated in Diagram 7.12, there is a high growth in bus patronage along all the Proposed Schemes in the PM Peak Hour. Some of the bigger increases occur in the outbound direction on the Blanchardstown to City Centre

and the Rathfarnham to City Centre where the loadings reach more than 2,000 additional passengers per hour compared to the Do Minimum scenario. The Ballymun/Finglas to City Centre Scheme shows an increase of approximately 300 passengers in the outbound direction.

Table 7.12 presents the total boardings on bus routes that use any part of the Proposed Scheme (including those stops not directly on the Proposed Scheme) in the 2043 PM Peak Hour for the Ballymun/Finglas to City Centre Scheme as well as all Proposed Schemes.

Table 7.12: 2043 PM Peak Hour Bus Boardings on Routes using the Proposed Schemes (inc. boarding at stops outside Proposed Schemes)

Scheme	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Ballymun/Finglas to City Centre Scheme	13,620	15,710	2,090	15.3%
All Schemes	72,910	89,280	16,370	22.5%

As shown in Table 7.12, there will be a 15.3% increase in people boarding bus routes which use any part of the Ballymun/Finglas to City Centre Scheme during the PM Peak Hour. This represents an addition of 2,090 passengers in the AM Peak Hour.

There will be a 22.5% increase in people boarding bus routes which use any part of the Proposed Schemes, representing an additional 16,370 passengers due to the bus priority improvements.

7.2.5. Integration with Other Public Transport Modes

The aim of the Proposed Scheme is to provide improved walking, cycling and bus infrastructure, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor. In tandem with this aim a key objective of the Works applicable to the Proposed Scheme is to:

- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services.

The modelling suite has been used to assess the change in connectivity and integration with other public transport services and the following section presents this assessment based on the following metrics:

- Total Boardings by Public Transport (PT) Mode (including non-bus modes);
- Level of interchange with other public transport services; and
- Average Public Transport Networkwide Travel Speeds.

7.2.5.1. Passenger Boardings by Public Transport Mode

The following section presents the number of passenger boardings by each of the PT sub-modes (Rail, Luas, Bus and Metro) within the Study Area. The results are presented in Table 7.13 for the Do Minimum and Do Something scenarios for the 2028 and 2043 assessment years in the AM and PM Peak Hour periods.

Table 7.13: 2028 AM Peak Hour PT Boardings

Public Transport Mode	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Rail	26,060	25,820	-240	-1%
Luas	25,930	25,070	-860	-3%
Bus	81,790	95,710	13,920	17%
Total	**133,780**	**146,600**	**12,820**	**10%**

As presented in Table 7.13 with the Proposed Schemes in place, there will be an estimated 10% more passenger boardings across all PT services and 17% more boarding on bus services in the AM Peak Hour. The improved

bus infrastructure results in slight reductions in boardings on Rail and Luas services, which will help provide additional resilience for these modes to accommodate future travel demand growth.

Table 7.14: 2028 PM Peak Hour PT Boardings

Public Transport Mode	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Rail	30,150	30,990	840	3%
Luas	21,520	20,740	-780	-4%
Bus	72,370	85,730	13,360	18%
Total	**124,040**	**137,460**	**13,420**	**11%**

As presented in Table 7.14 with the Proposed Schemes in place, there will be an estimated 11% increase in total passengers boarding PT services and 18% more boardings on buses services in the PM Peak Hour in 2028. The improved bus infrastructure results in a slight reduction in boardings on Luas services, which will help provide additional resilience for this mode to accommodate future travel demand growth in the PM peak period.

Table 7.15: 2043 AM Peak Hour PT Boardings

Public Transport Mode	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Rail	47,040	49,210	2,170	5%
Luas	37,560	34,890	-2,670	-7%
Bus	79,830	97,830	18,000	23%
Metro	18,520	17,960	-560	-3%
Total	**182,950**	**199,890**	**16,940**	**9%**

As presented in Table 7.15, with the Proposed Schemes in place, there will be a predicted 9% increase in total passengers boarding PT services and a 23% increase in boardings on bus services in the AM Peak Hour in 2043. The improved bus infrastructure results in slight reductions in boardings on Luas and MetroLink services, which will help provide additional resilience for these modes to accommodate future travel demand growth.

Table 7.16: 2043 PM Peak Hour PT Boardings

Public Transport Mode	Do Minimum	Do Something	Difference in Boardings	Difference (%)
Rail	55,240	56,730	1,490	3%
Luas	31,620	30,640	-980	-3%
Urban Bus	73,160	88,970	15,810	22%
Metro	14,290	13,760	-530	-4%
Total	**174,310**	**190,100**	**15,790**	**9%**

As presented in Table 7.16, with the Proposed Schemes in place, there will be an estimated 9% increase in total passengers boarding PT services and a 22% increase in boardings on bus services in the PM Peak Hour 2043. The improved bus infrastructure results in slight reductions in boardings on Luas and MetroLink services, which will help provide additional resilience for these modes to accommodate future travel demand growth.

7.2.5.1.1. Public Transport Interchange

To determine the impact the Proposed Schemes will have on the integration and complementarity between the different PT modes, the number of transfers between each PT modes (Bus, Rail, Luas and Metro) has been extracted from the modelling suite. The analysis compares the Do Minimum and Do Something in the AM Peak Hour period for each forecast year (2028, 2043).

Table 7.17: 2028 AM Peak Hour Transfers between PT Modes

	Do Minimum					Do Something			
To:	**Bus**	**Rail**	**Luas**	**Total**		**Bus**	**Rail**	**Luas**	**Total**
Bus	3,840	3,330	6,900	**14,070**		4,500	3,350	7,020	**14,870**
Rail	3,710	60	1,800	**5,570**		4,080	60	1,560	**5,700**
Luas	5,090	450	400	**5,940**		5,280	340	310	**5,930**
Total	**12,640**	**3,840**	**9,100**	**25,580**		**13,860**	**3,750**	**8,890**	**26,500**

As shown in Table 7.17, the total number of transfers between PT modes will increase by 4% from 25,580 in the Do Minimum scenario to 26,500 in the Do Something scenario, Transfers from Rail and Luas to buses will increase by 6% from 8,800 to 9,360 with the Schemes in place. This highlights the increased level of accessibility and transfer opportunities facilitated by the Proposed Schemes.

The Proposed Scheme interfaces with the heavy rail at Drumcondra Junction, it is estimated that there will be approximately 800 transfers between rail and buses at this station, representing an 11% increase, with the Scheme in place in 2028, compared to the Do Minimum scenario.

The contents of Table 7.18 present the predicted AM Peak Hour transfers between each PT Mode (including Metrolink) in 2043.

Table 7.18: 2043 AM Peak Hour Transfers between PT Modes

	Do Minimum					Do Something				
To:	**Bus**	**Rail**	**Luas**	**Metro**	**Total**	**Bus**	**Rail**	**Luas**	**Metro**	**Total**
Bus	2,690	4,680	5,600	4,420	**17,390**	3,670	5,480	6,130	4,520	**19,800**
Rail	3,390	3,970	2,430	1,670	**11,460**	4,720	4,010	2,220	1,590	**12,540**
Luas	4,530	1,230	430	1,650	**7,840**	4,780	980	370	1,360	**7,490**
Metro	2,940	960	1,320	0	**5,220**	3,270	830	1,090	0	**5,190**
Total	**13,550**	**10,840**	**9,780**	**7,740**	**41,910**	**16,440**	**11,300**	**9,810**	**7,470**	**45,020**

As shown above, with the roll out of the GDA Strategy the level of interchange increases substantially in the period from 2028 to 2043 without the Proposed Schemes. The total number of transfers between PT modes is expected to increase by 7% from 41,910 in the Do Minimum scenario to 45,020 in the Do Something scenario (with the Proposed Schemes in place) with transfers from Rail, Luas and Metrolink to buses predicted to increase by 18% from 10,860 to 12,770. This highlights the increased level of accessibility and transfer opportunities facilitated by the Proposed Schemes.

The Ballymun/Finglas Scheme has significant interaction with MetroLink and heavy rail stations in 2043. At Glasnevin, it is estimated that there will be approximately 420 transfers between Metrolink, representing an 7% increase, with the Scheme in place in 2043, compared to the Do Minimum scenario. It is also estimated that there will be approximately 360 transfers between Metrolink and buses at Drumcondra Junction, representing an 65% increase.

7.2.5.2. Average Public Transport Network Wide Travel Speeds

In order to assess the travel time and integration efficiencies provided by the Proposed Schemes, an average per passenger PT network-wide travel speed metric has been extracted from the modelling suite[10]. The metric considers the average speed across all public transport modes for the entire Study Area which covers all Proposed Schemes.

Table 7.19: 2028 AM Peak Hour Average Journey Speed per PT Passenger (km/h)

Scenario	Do Minimum	Do Something	Speed Difference (%)
Ballymun/Finglas to City Centre Scheme	21.13	21.30	+0.8%
All Schemes Scenario	21.13	23.08	+9.2%

As presented in Table 7.19, the average networkwide speed per PT passenger is expected to grow by 0.8%, with the Ballymun/Finglas Scheme only in operation in the AM Peak Hour in 2028. With all Proposed Schemes operational, the average speed per PT passenger is expected to grow by 9.2%, representing a substantial increase in the average travel speeds for all PT users in 2028.

Table 7.20: 2043 AM Peak Hour Average Journey Speed per PT Passenger (km/h)

Scenario	Do Minimum	Do Something	Speed Difference (%)
Ballymun/Finglas to City Centre Scheme	21.18	21.34	+0.7%
All Schemes Scenario	21.18	23.14	+9.3%

As presented in Table 7.20, the average networkwide speed per PT passenger is expected to grow by 0.7%, with the Ballymun/Finglas Scheme only in operation in the AM Peak Hour in 2043. With all Proposed Schemes operational, the average speed per PT passenger is expected to grow by 9.3%, representing a substantial increase in the average travel speeds for all PT users in 2043.

7.2.6. People Movement – Cumulative Impact Summary

The cumulative impact for the movement of People Movement by sustainable modes with the Proposed Schemes in place has been appraised as a qualitative assessment, taking into account the changes in mode share, demand changes by mode along the Proposed Schemes as well as bus usage and integration with other public transport modes, as presented above. The Proposed Schemes have been adjudged to deliver a high positive overall impact on People Movement by sustainable modes. The Proposed Schemes can be shown to deliver significant improvements in People Movement by sustainable modes along the direct Proposed Scheme alignments, particularly by bus and cycling, with reductions in car mode share due to the enhanced sustainable mode provision. The Proposed Schemes provide for enhanced integration and efficiencies for all public transport modes by facilitating substantial increases in public transport average network wide travel speeds.

[10] This metric combines Public Transport Passenger Travel Time and Travel Distance and removes the variation in the number of trips between each scenario providing an indication of the overall efficiency of the PT network for each scenario.

8. Summary and Conclusions

The aim of the Proposed Scheme is to provide enhanced walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor. The objectives of the CBC Infrastructure Works, applicable to the traffic and transport assessment of the Proposed Scheme, are to:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements;
- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable;
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets;
- Enable compact growth, regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of safe and efficient sustainable transport networks;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services; and
- Ensure that the public realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible.

The Proposed Scheme comprises the development of improved bus priority along the entire route of both the Ballymun and Finglas Sections. Furthermore, a mixture of cycle infrastructure facilities such as cycle tracks, cycle lanes and quiet street cycle routes in which local traffic and cyclists share priority on local carriageways, are proposed throughout the entire route in order to provide adequate cycle facilities in both directions. comprises the development of improved bus priority along the entire route.

This TIA provides a robust assessment of the Proposed Scheme through qualitative assessment and quantitative analysis using a suite of multi-modal transport modelling tools.

The impacts during the Construction Phase are outlined in Table 8.1. During the Construction Phase, the Proposed Scheme will have **Low Negative** and temporary impacts to pedestrian access and parking and loading whilst it will have **Medium Negative** and temporary impacts to bus and cyclist access. General traffic redistribution is not anticipated to be a significant issue during the Construction Phase. However, there will be a requirement for some localised temporary road closures for short durations of the daytime and / or night-time. Therefore, the impact on general traffic redistribution is anticipated to be a **Medium Negative** and temporary impact. The impact of construction traffic is anticipated to result in a **Medium Negative** and temporary impact due to the low numbers of vehicles anticipated which are below the thresholds set out in the Transport Assessments Guidelines (TII 2014).

Table 8.1: Summary of Construction Phase Predicted Impacts

Assessment Topic	Effect	Predicted Impact
Pedestrian Access	Restrictions to pedestrians along Proposed Scheme.	Low Negative
Cycling Access	Restrictions to cyclists along Proposed Scheme.	Medium Negative
Bus Access	Restrictions to bus services and infrastructure along Proposed Scheme.	Medium Negative
Parking and Loading	Restrictions to parking and loading bays along Proposed Scheme.	Low Negative
General Traffic	Restrictions to general traffic along Proposed Scheme.	Medium Negative
	Additional construction traffic flows upon surrounding road network.	Medium Negative

During the Operational Phase, the Proposed Scheme will deliver a positive impact in terms of people movement, bus network performance and pedestrian, cycling and bus infrastructure. These improvements will help to provide an attractive alternative to the private car and promote modal shift to walking, cycling and public transport, allowing for greater capacity along the corridor to facilitate the movement of people. Some negative impacts for general traffic and parking / loading availability may be anticipated. However, the Proposed Scheme has been designed and outlined within this assessment to take cognisance of relevant traffic and transport guidelines. The assessment demonstrates that the Proposed Scheme can be readily utilised by sustainable modes and that the surrounding road network has the capacity to accommodate the associated traffic and transport impacts.

The TIA demonstrates that the Proposed Scheme will result in the following impacts:

- **Pedestrian Infrastructure:** The Proposed Scheme consists of measures to enhance the existing pedestrian infrastructure along the direct study area. A LoS junction assessment was undertaken using a set of five criteria to determine the impact that the Proposed Scheme has for pedestrians. The results of the impacted junctions demonstrate that the LoS during the Do Minimum scenario consists of ratings predominantly ranging from C to F (with four junctions scoring B). During the Do Something scenario (i.e. following the development of the Proposed Scheme), the LoS consists of ratings predominantly ranging from A to B (with two junctions scoring C). Overall, the improvements to the quality of the pedestrian infrastructure will have a **Low Positive** impact along the Proposed Scheme;
- **Cycling Infrastructure:** The Proposed Scheme also consists of measures to enhance the existing cycling infrastructure along the direct study area. A LoS assessment was undertaken using an adapted version of the NTA's National Cycle Manual (NTA 2011) Quality of Service (QoS) Evaluation criteria. The results of the assessment demonstrate the LoS during the Do Minimum scenario consists predominantly of C and D ratings, with the exception of some A and B ratings along section of the Finglas Proposed Scheme. During the Do Something scenario, the LoS consists predominantly of A and B ratings, with the exception of a few C and D ratings. Overall, the improvements to the quality of the cycling infrastructure will have a **Low Positive** impact along the Proposed Scheme;
- **Bus Infrastructure:** The implementation of the Proposed Scheme will result in improvements in the quality of bus infrastructure provision along the direct study area. A qualitative impact assessment has been undertaken based on the provision of bus priority, pedestrian accessibility and changes to the bus stop facilities. Overall, the improvements to the quality of bus infrastructure will have a **Medium Positive** impact along the Proposed Scheme;
- **Parking and Loading:** A qualitative impact assessment has been undertaken of the Proposed Scheme impacts on the existing parking and loading. The results of the assessment demonstrate that the changes to the parking and loading provision will result in an overall loss of 70 parking and loading spaces. Overall, the changes to the quality of parking and loading spaces range from having a medium negative to low positive impact, which for the majority of the Proposed Scheme is **Negligible**;
- **People Movement:** Given the proposed amendments to the pedestrian, cycling, bus and parking / loading infrastructure outlined above, the Proposed Scheme will have greater capacity to facilitate movement of people travelling through the corridor. A quantitative impact assessment has been undertaken using outputs from the NTA's ERM and LAM, comparing the Do Minimum and Do Something peak hour scenarios for each forecast year (2028, 2043). The results of the assessment demonstrate that there will be an increase in 23% and 26% of people travelling by sustainable modes through the Proposed Scheme during the 2028 AM and PM Peak Hours respectively. During the 2043 scenario there will be an increase in 30% and 42% of people travelling by sustainable modes through the Proposed Scheme during the AM and PM Peak Hours.

  The analysis also shows that there will be an increase in 7.8% and 8.4% of passengers boarding buses during the 2028 AM and PM Peak Hours respectively. During the 2043 scenario there will be an increase in 6.4% and 5.7% of passengers boarding buses during the AM and PM Peak Hours respectively. Overall, it is anticipated that the increases in people movement by sustainable modes and the reductions in car mode share along the direct study will have a **High Positive** impact.
- **Bus Network Performance Indicators:** The Proposed Scheme will also benefit from improvements to the capacity of the road network to cater for future bus services accessing the Proposed Scheme. A micro-simulation model assessment has been developed to extract network performance indicators of the bus operations along the 'end to end' corridor. The findings of the bus user

assessment shows that the Proposed Scheme fully aligns with the aims and objectives of the CBC Infrastructure Works, to '*Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements*'.

The significance of impact on bus users of the Proposed Scheme has been appraised using a qualitative assessment, taking the changes in journey time and journey reliability metrics presented above into consideration. The Proposed Scheme is considered to deliver a **Medium Positive** impact overall;

- **General Traffic Network Performance Indicators:** There will be an overall reduction in operational capacity for general traffic along the direct study area, given the proposed infrastructural changes to the existing road layout outlined above. This reduction in operational capacity for general traffic will create traffic redistribution from the Proposed Scheme onto the surrounding road network.

  The LAM Opening Year (2028) model results were used to identify the impact in traffic flows between the Do Minimum and Do Something scenarios. A reduction in general traffic flows along a road link has been described as a positive impact to the environment. The significance of the impact has been described in terms of the loss in traffic flows.

  An increase in general traffic flows along a road link has been described as a negative impact to the environment. Reference has been given to TII's Traffic and Transport Assessment Guidelines (TII 2014) as an indicator for best practice, to determine the key road links that require further traffic analysis due to the increase in traffic. Operational capacities were extracted from the LAM at the associated junctions of the key road links to identify the impact that the Proposed Scheme will have on the V / C ratios. The results are presented in terms of the significance of the impact to the V / C ratio for each junction based on its sensitivity and magnitude of impact.

  The results of the assessment predict that the surrounding road network largely has the capacity to accommodate the redistributed general traffic as a result of the Proposed Scheme. The majority of assessed junctions that required further traffic analysis have V / C ratios that are broadly similar before and after the Proposed Scheme.

  Overall, it is determined that there will be a **Low Negative** impact from the redistributed general traffic as a result of the Proposed Scheme. Given that the redistributed traffic will not lead to a significant deterioration of the operational capacity on the surrounding road network, no mitigation measures have been considered to alleviate the impact outside of the direct study area;
- **Network Wide Performance Indicators:** Given the impacts to the traffic conditions outlined above, there will be a knock-on effect to the operational efficiency of the road network beyond the direct and indirect study areas. A quantitative impact assessment has been undertaken using outputs from the NTA's ERM and LAM to determine the conditions to queuing, travel times, travel distances and network speeds during the Do Minimum and Do Something scenarios. The results of the assessment demonstrate that the impacts to the network performance indicators range between -0.91% and 3.72%, therefore will have a **Low Negative** impact; and
- **Cumulative Assessment:** In general, total trip demand (combining all transport modes) will increase into the future in line with population and employment growth. A greater share of the demand will be by sustainable modes (public transport, walking, cycling).

  The analysis indicates that the 12 BusConnects Proposed Schemes in place, there will be a high positive impact on sustainable mode share. The Proposed Schemes will prevent any increase in private car traffic within the study area and will instead result in a reduction in car trips below 2020 levels.

  In the Opening Year (2028) scenario, it is estimated that for people travelling within the 500m catchment area (including the City Centre) there will be a 12% increase in public transport trips, 2% decrease in general traffic trips (i.e. motorists) and a 14% increase in cycling trips in the AM Peak Hour and a 12% increase in public transport, 3% decrease in general traffic and a 12% increase in cycling trips each day. In the Design Year (2043) scenario, it is estimated that for people travelling within the 500m catchment area (including the City Centre) there will be a 11% increase in public transport trips, 4% decrease in general traffic trips (i.e. motorists) and a 15% increase in cycling trips in the morning peak period and a 9% increase in public transport, 5% decrease in general traffic and a 13% increase in cycling trips each day.

  General traffic is seen to have much higher levels of reduction in 2043 than when compared to 2028 due to the increased level of non-bus public transport infrastructure (MetroLink, Luas extensions

and DART+ from the GDA Strategy) in tandem with the road capacity reduction measures as part of the Proposed Scheme leading to increased usage on all public transport modes.

The modelling outputs for the Opening Year (2028) scenario demonstrate that there is a high growth in bus patronage along all the Proposed Schemes in the AM Peak Hour. The bigger increases occur in the inbound direction on the Blanchardstown to City Centre, the Rathfarnham to City Centre and the Bray to City Centre schemes where the loadings reach more than 2,000 additional passengers per Hour compared to the Do Minimum scenario.

In the Opening Year (2028) AM Peak Hour scenario with the Proposed Schemes in place, there will be an estimated 10% more passenger boardings across all public transport services and 17% more boarding on bus services. In the Opening Year (2028) PM Peak Hour scenario with the Proposed Schemes in place, there will be an estimated 11% increase in total passengers boarding public transport services and 18% more passengers boarding buses services.

In the Design Year (2043) AM and PM Peak Hour scenarios, increase in total passengers boarding all public transport services will be 9% respectively, and the increase in passengers boarding bus services will increase by 23% and 22% respectively.

Overall, the Proposed Schemes are expected to deliver a **High Positive** impact to People Movement by sustainable modes.

The impacts during the Operational Phase are summarised in Table 8.2.

Table 8.2:Summary of Potential Operational Phase Impacts

Assessment Topic	Effect	Potential Impact
Pedestrian Infrastructure	Improvements to the quality of the pedestrian infrastructure along the Proposed Scheme.	Low Positive
Cycling Infrastructure	Improvements to the quality of the cycling infrastructure along the Proposed Scheme.	Low Positive
Bus Infrastructure	Improvements to the quality of the bus infrastructure along the Proposed Scheme.	Medium Positive
Parking and Loading	A total loss of 70 parking / loading spaces along the Proposed Scheme.	Low Negative
People Movement	Increases to the total number of people travelling through the Proposed Scheme.	High Positive
Bus Network Performance Indicators	Improvements to journey time and reliability indicators for bus users along the Proposed Scheme.	Medium Positive
General Traffic Network Performance Indicators	Reduction in general traffic flows along the Proposed Scheme.	Medium Positive
	Redistributed general traffic along the surrounding road network in the indirect study area as a result of the reduction of reserve capacity along the Proposed Scheme.	Low Negative
Network Wide Performance Indicators	Deterioration to the network-wide queuing capacity, travel times, travel distances and average network speeds beyond the direct and indirect study areas.	Low Negative
Cumulative Assessment	The Proposed Scheme in tandem with other Core Bus Corridors and GDA Strategy schemes will facilitate substantial mode shift from car to sustainable modes.	High Positive

The Proposed Scheme will address sustainable mode transport infrastructure deficits while contributing to an overall integrated sustainable transport system as proposed in the GDA Transport Strategy. It will increase the effectiveness and attractiveness of bus services operating along the corridor and will result in more people availing of public transport due to the faster, more reliable journey times which the Proposed Scheme provides. This in turn will support the future increase to the capacity of the bus network and services operating along the corridor and thereby further increasing the attractiveness of public transport. In addition to this, the significant segregation and safety improvements to walking and cycling infrastructure that is a key feature of the Proposed Scheme will further maximise the movement of people travelling sustainably along the corridor. All of these changes combined will therefore cater for higher levels of future sustainable population and employment growth.

In the absence of the Proposed Scheme bus services will be operating in a more congested environment, leading to higher journey times for and lower reliability for bus journeys. This limits their attractiveness to users which will lead to reduced levels of public transport use, making the bus system less resilient to higher levels of growth and leading to increased levels of car use and congestion. The absence of walking and cycling measures that the Proposed Scheme provides will also significantly limit the potential to grow those modes into the future.

On the whole, the Proposed Scheme will make a significant contribution to the overall aims of BusConnects, the GDA Transport Strategy and allow the city to grow sustainably into the future, which would not be possible in the absence of the Proposed Scheme.

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