

Draft

Transport Strategy for the Greater Dublin Area 2016 - 2035





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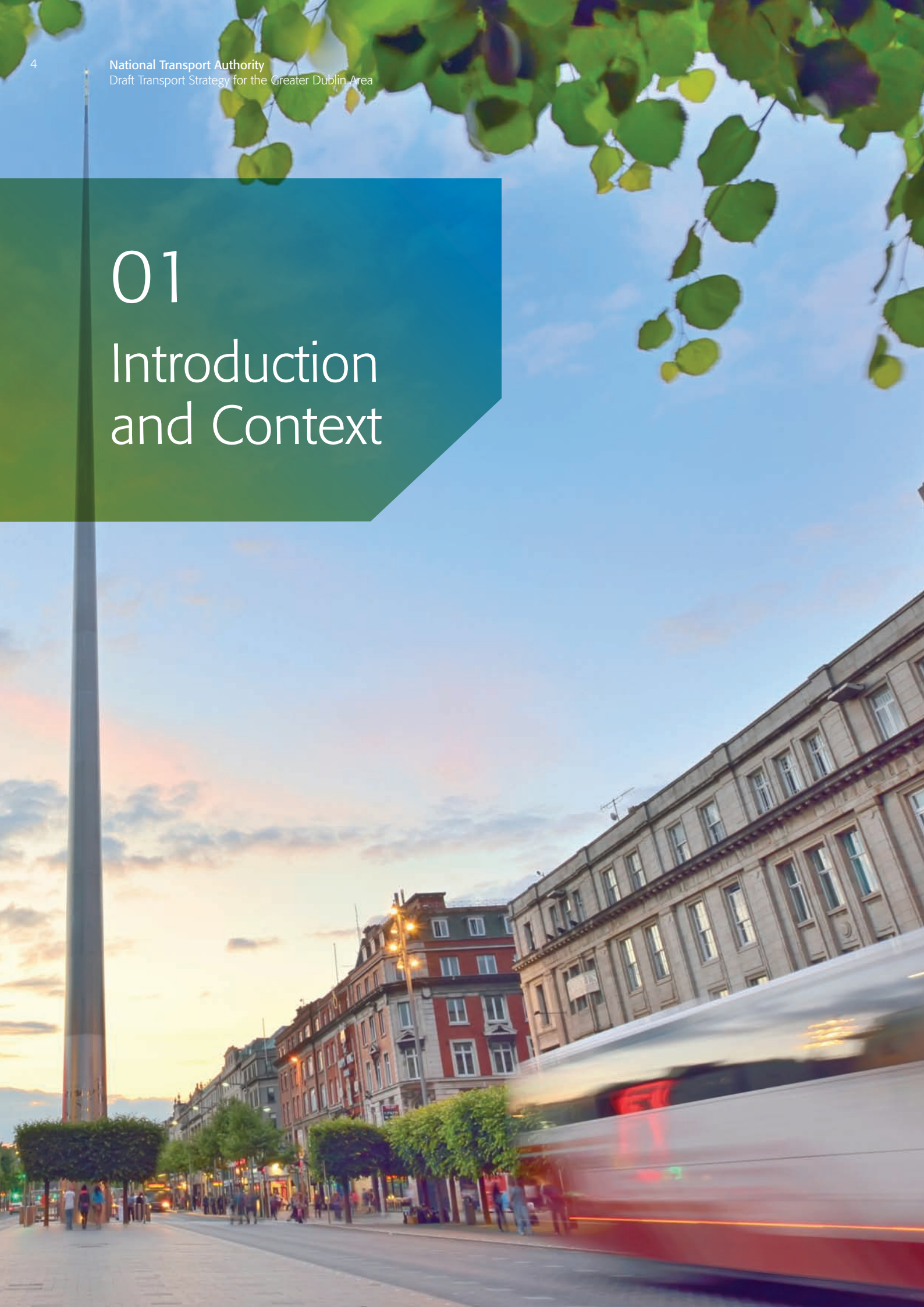
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Strategy Purpose

To contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.

01

Introduction and Context



1. Introduction and Context

1.1 Rationale for the Strategy

This strategy provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades. It also provides a transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water and power, can align their investment priorities. It is, therefore, an essential component, along with investment programmes in other sectors, for the orderly development of the GDA over the next 20 years.

The National Transport Authority (the Authority) published the Greater Dublin Area Draft Transport Strategy 2011-2030 (2011 Draft Transport Strategy) in 2011. The work undertaken at that time has been reviewed and updated, as deemed necessary. While much has changed since the commencement and development of the previous strategy in terms of population and employment, and the associated demand for travel, the long-term 20 year outlook is not radically dissimilar to that envisaged in 2011. As such, while the approach to the review of the Strategy incorporates the latest available forecast data, and environmental baseline data, the nature of many of the transport proposals are similar to those set out in the previous draft Strategy.

This new Strategy, in the simplest sense, presents the transport requirements for the GDA, based on principles of effective, efficient and sustainable travel, for the period up to 2035, insofar as this can be delivered by transport. To view it in financial terms, the infrastructure and associated costs set out in this document represent how much investment will be required in transport, in order to meet the forecast demand for the movement of people and goods in the GDA over the next 20 years.

1.1.1 Content of the Previous Strategy

In terms of infrastructure, the 2011 Draft Transport Strategy reinforced and reiterated the need for many of the proposals from the preceding transport strategy 'A Platform for Change', in addition to some further measures. It set out a suite of transport interventions and supporting policies, aimed at reducing the car mode share to 45% for trips to work in the horizon year (2030). In order to do this, it contained, inter alia, the following transport schemes:

- DART Underground;
- Bus Rapid Transit;
- Dublin Bikes Expansion;
- Commuter Rail Expansion and Electrification;
- Navan Rail Line;
- Metro North;

- › Metro West;
- › Metro South;
- › Luas Cross City;
- › Luas to Lucan;
- › Southwest Luas (as a potential project); and
- › North to South Port Road Link.

These schemes were supported by a broad range of land use policies, integration measures and demand management proposals. While the 2011 Draft Transport Strategy was an ambitious plan, it was developed, following extensive public consultation, and was supported by a detailed environmental, economic and transport assessment.

Subsequent to the submission of the Draft Transport Strategy in 2011, to the Minister for Transport, Tourism and Sport, the focus shifted to the short-term with the adoption of the Integrated Implementation Plan 2013-2018, in accordance with Section 13 of the Dublin Transport Authority Act 2008. This plan set out a 6 year programme for transport investment in the GDA, including provision for Luas Cross City, the Phoenix Park Tunnel Link, and Bus Rapid Transit (BRT).

1.1.2 Transport Achievements since the Previous Strategy

Since 2011, the following have been progressed in the GDA:

- › The commencement of construction of Luas Cross City;
- › The commencement of the project to reopen the Phoenix Park Tunnel to passenger services;
- › The expansion of the Dublin Bikes scheme from 40 stations and 450 bikes to 101 stations and 1500 bikes;
- › The adoption of the GDA Cycle Network Plan, and the commencement of its implementation;
- › On-going increases in the numbers of people cycling;
- › The opening of Marlborough Street public transport bridge;
- › Investment of over €100m in other sustainable transport measures across the region;
- › Development of the Bus Rapid Transit concept for Dublin;
- › The on-going roll-out of Real-Time Passenger Information;
- › The development of a national, unified transport brand – Transport for Ireland;
- › The on-going roll-out and expansion of integrated ticketing – Leap Card; and
- › Increased public transport use in the GDA.

This progress has been made against the backdrop of severe constraints in the availability of funding.

1.1.3 Changes since the Previous Strategy

The process of long term strategic transport planning is one that aims to bring together a number of different elements of people's lives – where people live; where they work; go to school; shop; their recreational activities – and seeks solutions which serve the transport needs associated with these activities. These can be grouped under broadly defined economic, social and environmental factors. This section looks at some of the key changes which have taken place since the previous strategy.

During the preparation of the 2011 Draft Transport Strategy for the GDA, there was a substantial decline in economic activity with a corresponding decline in employment levels and a substantial slowing in population growth. As a result, the demand for travel also reduced substantially. For example, the numbers 'In Employment' in the GDA, according to the CSO's Quarterly National Household Survey (QNHS) fell from 890,000 in 2008 to 767,000 in 2013, a drop of 14%. In transport terms, this had the effect of reducing congestion on the road network for a number of years, but also led to a sharp decrease in patronage on public transport services. As a result of these changes, those people with access to a private car who would previously have chosen to use the bus or rail, due to their ability to avoid delays caused by congestion, may have shifted back to the car, as the road network became less congested. This trend began during the early stages of the economic recession and was reflected in 2011 Census data on travel, where the car mode share for trips to work in the GDA had increased from 59.5% in 2006 to 60.8% in 2011.

In addition, the financial constraints during that period resulted in a substantial reduction in capital investment, particularly in public transport. As a result, no major public transport scheme has been completed in the GDA since the Luas extension to City West in 2011, with Luas Cross City scheduled to be finished in late 2017.

Since 2013, the number in employment in the GDA has risen. According to the QNHS, Q2 2015, there are 824,500 people in employment in the GDA. This trend has been reflected in increased car use and the re-emergence of peak period congestion, coupled with a recovery in the numbers on public transport. Traffic levels on the M50 have continued to grow, even during the economic downturn, and delays on this corridor are now a common feature, despite a near-doubling of its capacity in recent years. This is a critical consideration for both the GDA's and the State's economy, as the economically essential movement of goods and other trips of high economic value may be compromised by commuter-related trips which could potentially be served by modes other than the car, if such options were rendered more attractive or feasible.

1.1.4 Policy Background

In terms of the approach used in the development of the Transport Strategy for the Greater Dublin Area 2016-2035, there is an onus on the Authority to take full account of current prevailing policies and plans made at central government level, in transport, planning, and in other sectors, as well as other regional-level plans. On review of these policies – set out in greater detail in Chapter 2 – the following key messages have emerged:

- Transport must be a key consideration in land use planning;
- In the short term, funding for large-scale transport projects will be limited;

- › Addressing urban congestion is a priority;
- › The capacity of the strategic road network must be protected;
- › A significant reduction in the share of trips undertaken by car is required, particularly in relation to short trips and commuter trips;
- › An associated increase in walking, cycling and public transport is also required;
- › A safe cycling network, with extensive coverage in metropolitan Dublin and in other towns, is needed to cater for the increased use of cycling that is already occurring and to reduce the dominance of the private car in meeting travel needs;
- › The enhancement of the pedestrian environment, including measures to overcome severance and to increase permeability, is a priority; and
- › All-day travel demand from all groups in society must be taken into account – the strategy cannot merely take a peak-hour approach to transport issues.

1.1.5 Challenges for Transport in the GDA

The GDA's transport infrastructure and services must be planned for and invested in on the basis of the following:

- › An assumed return to sustained economic growth;
- › Substantial population growth;
- › Full employment;
- › That no one is excluded from society, by virtue of the design and layout of transport infrastructure and services or by the cost of public transport use; and
- › That the environment in the GDA is protected and enhanced.

There have been only limited additions to the GDA's and the Dublin Metropolitan Area's transport capital stock since economic output peaked in 2007, which at that time was characterised by high levels of peak period traffic congestion; increased capacity constraint, delays and increased journey times across all modes; and increasing levels of personal stress for commuters on a daily basis due to transport shortcomings.

While the commencement of services on Luas Cross City and through the Phoenix Park Tunnel is expected to have some beneficial impact in terms of modal shift, this will be substantially limited to those living, working or going to school and college along those corridors – from Broombridge to Cherrywood and along the Kildare Commuter rail line. Increased potential for interchange with other public transport services is also likely to be a beneficial factor, but not enough to engender a significant mode shift on a regional level.

As such, it is clear that the Authority, in preparing this transport strategy, is required to consider a comprehensive package of further high capacity radial transport network improvements, covering each corridor of the Metropolitan Area.

In association with this, to reduce congestion on the strategically important M50 motorway and other orbital routes in the outer Metropolitan Area, a reduction in car dependency for orbital trips will be required. Whilst the extensive nature of development and the wide distribution of employment destinations in the outer Metropolitan area does present a particular challenge to the provision of alternative mode choices to the car, the provision of alternative public transport mode choices associated with the introduction of complementary travel demand management measures such as parking restrictions, multi-point tolling and ramp metering will be required to meet the orbital demand. This combined approach would serve to discourage the use of the M50 and other orbital routes by car, to increase the attractiveness of public transport alternatives and to render investment in such public transport improvements, more economically viable. Without such interventions, car use in the outer Metropolitan Area will remain high and congestion may continue to increase, putting at risk the substantial investments already made in the M50 and other roads of strategic importance.

One, perhaps unanticipated, but very welcome, development in transport in the GDA over the years since the last Strategy was commenced, has been the significant increase in cycling. Cyclists are once again a very visible presence on the streets of Dublin City and other settlements in the GDA, due to a combination of the Bike to Work Tax Saver Scheme, enhanced network provision for cyclists, and the implementation of the Dublin Bikes rental scheme. Given this continuing growth in cycling numbers, there is a need to develop a network of high quality and safe cycling routes to cater for this demand. As an essentially zero emissions mode, its continued promotion also has an important environmental dimension for the Authority.

The above narrative sets out the background against which the Authority has prepared this transport strategy. Recent years have seen a period of considerable turbulence for the Irish Economy, with years of unprecedented growth followed by a sharp and protracted decline. With the recent resumption in sustained recovery in economic output, it is vital that a coherent, realistic and comprehensive regional transport policy and capital investment framework be developed. This will provide the basis for all agencies charged with land use planning, infrastructure delivery and the operation of public transport services, to plan for, and operate to, in the future.

1.2 Legislative Requirements

1.2.1 Dublin Transport Authority Act

Under section 12 of the Dublin Transport Authority Act 2008, the Authority is required to prepare a Transport Strategy for the GDA. Section 12(3) states that the objective of the strategy shall be to provide a long-term strategic planning framework for the integrated development of transport infrastructure and services in the GDA and, in accordance with section 12(4), shall consider the future development of the transport system in the GDA for a period of not less than 12 years and not more than 20 years.

Section 12(5) states that when preparing a transport strategy the Authority shall have regard to:

- a. the National Spatial Strategy;

- b. the regional planning guidelines in force for the GDA;
- c. the development plans in force in the GDA, the Dublin Docklands Development Authority's master plan and the Grangegorman Development Agency's strategic plan;
- d. Transport 21 or any subsequent capital investment framework for transport published by the Minister or Government;
- e. the Department of Transport's sectoral plan under the Disability Act 2005 or any subsequent sectoral plan under that Act;
- f. demographic, economic, social, travel and transport trends in the GDA;
- g. existing, planned and projected land use developments;
- h. trends and requirements of persons travelling from outside the GDA into the GDA, and vice versa, and the demand for such travel;
- i. any proposals received from public transport authorities and operators; and
- j. such other matters as may be prescribed by the Minister or as the Authority considers appropriate.

The Transport Strategy must also be reviewed every 6 years.

1.2.2 Strategic Environmental Assessment and Appropriate Assessment

In accordance with the EU SEA Directive (2001/42/EC) – on the assessment of the effects of certain plans and programmes on the environment – and national legislation, a Strategic Environmental Assessment (SEA) has been carried out as part of the preparation of the Strategy. This is a formal, systematic evaluation of the Strategy prepared in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (SI No. 435 of 2004), as amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (S.I. No. 200 of 2011).

The objective of the Strategic Environmental Assessment (SEA) Directive is 'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development...' (Article 1 SEA Directive). The SEA Directive requires that an environmental assessment shall be carried out for plans and programmes which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government; and which are required by legislative, regulatory or administrative provisions; and which are likely to have significant environmental effects. The Strategy therefore requires an environmental assessment.

The provisions of the Strategy have been evaluated for potential significant effects, and measures have been integrated into the Strategy on foot of SEA recommendations in order to ensure that potential adverse effects are mitigated. The environmental topics (including interrelationships) which are considered by the SEA are as follows:

- Air and Climatic Factors;
- Population and Human Health;
- Biodiversity, Flora and Fauna;
- Material Assets;
- Soil;
- Water;
- Cultural Heritage; and
- Landscape.

The Environmental Report sets out the findings of the SEA under, inter alia, the following headings:

- Relevant aspects of the current state of the Environment;
- Evaluation of Alternatives;
- Evaluation of Draft Strategy provisions;
- Mitigation Measures; and
- Monitoring Programme.

This is a separate document which should be read and considered in parallel with the Strategy.

The overall findings of the SEA are that:

- The Authority has integrated all recommendations arising from the SEA and Appropriate Assessment (AA) processes into the Strategy;
- The Strategy facilitates significant improvements in sustainable mobility and associated positive effects relating to energy usage, emissions to air (including greenhouse gas emissions and noise) and human health;
- Some Strategy provisions would be likely to result in significant positive effects upon environmental management and protection; and
- Some Strategy provisions would have the potential to result in significant negative environmental effects upon the environment. The integration of detailed mitigation into the Strategy has ensured that these effects are mitigated.

Appropriate Assessment (AA) is a requirement of the EU Habitats Directive (92/43/EEC) – on the conservation of natural habitats and wild flora and fauna - as transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011, which consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010.

The purpose of the AA is to provide a focused and detailed impact assessment of the implications of the Strategy, alone and in combination with other strategic actions and projects, on the integrity of Natura 2000 sites in view of their conservation objectives. Measures have been integrated into the Strategy on foot of AA recommendations in order to ensure that potential adverse effects are mitigated. The AA – which will be updated as the Strategy is being finalised – currently concludes that it is considered that the draft Plan will not have a significant adverse effect on the integrity of the Natura 2000 network of sites.¹

The details of the approach to the AA and the findings are set out in the Natura Impact Report which accompanies the Strategy. In a similar manner to the Environmental Report of the SEA, this is a separate document which should be read and considered in parallel with the Strategy.

1.3 Consultation

The first round of public and stakeholder consultation was undertaken for this Strategy in February 2015. In this round, people were simply asked what they thought should be in the new transport strategy. There were 116 submissions received. Some were focussed on single issues or single locations within the GDA, such as the need for a rail solution for access to Dublin Airport, while others were more broadly based, such as comments on Bus Rapid Transit, the need for better cycling infrastructure, and requests for motorcycle access to bus lanes. On review of the submissions, it is reasonable to state that they represented a wide group, from single individuals who may have never engaged in such a process before, to seasoned campaigners who regularly engage in transport planning in Dublin, with a wide range of stakeholders also involved, from public transport operators to groups representing a diverse range of interests.

Each submission was reviewed and submissions were summarised and the issues raised were collated in order to understand the overall concerns raised by the public and other stakeholders. A wide range of issues were raised and have been considered as part of the Strategy process.

¹ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
a) no alternative solution available;
b) imperative reasons of overriding public interest for the plan to proceed; and
c) Adequate compensatory measures in place.

02

Policy Overview



2. Policy Overview

2.1 Introduction

This chapter sets out the implications of prevailing national and regional policies for the Transport Strategy. They include those directly related to transport and land use planning and those related to other sectors which may interact with, or be indirectly related to transport.

The role of the Strategy in the planning and transport planning hierarchy is set out in the diagram below. This is a regional-level plan, based on the policies and plans in force at the national level, which will shape the plans and projects of local authorities and the Authority at the local level.



2.2 Primary Policy

2.2.1 Climate Action and Low-Carbon Development National Policy Position

In the absence of, and in advance of the development of a set of climate change policies and action plans / roadmaps, it is clear from existing international agreements that Ireland is required to radically reduce dependence on carbon-emitting fuels in the transport sector. The Strategy must therefore, promote, within its legislative remit, transport options which provide for unit reductions in carbon emissions. This can most effectively be done by promoting public transport, walking and cycling, and by actively seeking to reduce car use in circumstances where alternative options are available.

2.3 Transport and Planning Policy

2.3.1 Strategic Framework for Investment in Landside Transport (SFILT), DTTAS 2014

Funding will be a major constraint, particularly in the short to medium-term period of the strategy, with a prioritisation of the maintenance of existing infrastructure and services. In terms of SFILT's priorities 2 and 3, addressing urban congestion will be the critical objective of the Strategy. Guided by this priority, it is clear that new roads are not seen as a solution to congestion, rather new infrastructure and services, combined with demand management, particularly spatial planning measures are required.

2.3.2 Smarter Travel, DoT 2009

Smarter Travel sets clear targets which will guide the making of the Strategy. In particular it established a modal share target of 45% for work-related commuting by car. In order to facilitate this shift, and to cater for additional trips by walking, cycling and public transport, the Strategy will require to propose a comprehensive public transport network and service structure, as well as copper-fastening the role of cycling and walking as feasible alternatives for many trips.

2.3.3 Design Manual for Urban Roads and Streets, DTTAS and DECLG 2012

The Design Manual for Urban Roads and Streets (DMURS) sets out the manner in which roads and streets in urban and suburban areas should be designed in a manner which ameliorates the historic dominance of the private car and other motorised forms of transport. The Transport Strategy is required to put forward complementary policies and objectives, which will, at the regional level, facilitate the implementation of DMURS at the local and district level.

2.3.4 DTTAS Sectoral Plan for Accessible Transport under the Disability Act 2005

While the main focus of the Strategy relates to the provision of the transport network required for the GDA to function up to 2035, a wide range of policy measures related to the workings of the transport system will also be provided in the Strategy. The accessibility element of transport is continually being updated and is being implemented on an ongoing basis by the Authority and public transport operators. The Strategy will provide the Authority with a basis upon which further enhancements can be based.

2.3.5 Sustainable Residential Development in Urban Areas, DECLG 2009

In a similar manner to DMURS, these guidelines are reflected in the policies and objectives of the Transport Strategy by providing supporting and complimentary transport infrastructure, services and policies.

2.3.6 Planning Policy Statement, DECLG 2015

The emerging national planning framework is likely to be developed alongside the Strategy, or follow soon after. As such, the work of the Strategy is likely to comprise an input into the framework. In the interim, the policies of the previous framework, known as the National Spatial Strategy, will form an input into the Strategy, insofar as they are reflected in other, more detailed government documents published since 2002.

2.3.7 Regional Planning Guidelines for the Greater Dublin Area, DRA/MERA 2010

The Transport Strategy is required, by legislation, to be consistent with the Regional Planning Guidelines (RPG). The land use assumptions used in the assessment of the strategy have been based on the RPG population distribution, while the Strategy proposals will reflect the priorities of the RPG.

2.3.8 GDA Retail Planning Strategy, DRA/MERA 2008

Trips to retail form a large part of overall travel demand. The location and scale of retail development will be a determinant in the development of the future transport network.

2.3.9 National Cycle Policy Framework, DTTaS 2009

The objective of the National Cycle Policy Framework is to promote cycling as a normal way to get about, especially for short trips, and that a culture of cycling will have developed in Ireland to the extent that 10% of all trips will be by bike by 2020.

2.3.10 Infrastructure and Capital Investment 2016-2021, DPER 2015

The national, capital plan 'Building on Recovery: Infrastructure and Capital Investment 2016-2021' published by the Government in September 2015, sets out a framework for transport infrastructure investment over a seven year period. It identifies the need for further development of the road, rail and public transport networks and sets out transport implementation priorities for the period of the plan.

2.4 Other Sectors

2.4.1 The National Guidelines on Physical Activity for Ireland, DoHC/HSE 2009

In order to complement these guidelines, the Strategy will be required to set out the framework for the improvement of the walking and cycling networks (better and wider footpaths, continuous and safe provision for cyclists etc.) to the extent that those who currently do not use these active modes, are encouraged to do so as a means of reaching their daily physical activity target.

2.4.2 The National Positive Ageing Strategy, DoH 2013

The Transport Strategy will compliment this strategy by ensuring a certain level of public transport coverage and service frequency across the metropolitan area of Dublin, which will enable people of all ages to access essential services on an all-day basis. For those living in large hinterland towns, the Strategy may set the framework for local bus services which will meet these demands. The Rural Transport Service, which is run by the Authority as a separate function, will form a component part of the Strategy, which will provide the policy framework for its operation and its relationship to mainstream public transport networks and services.

2.4.3 'Education for Sustainability' The National Strategy on Education for Sustainable Development in Ireland, 2014-2020, DoES 2014

Encouraging children to walk and cycle to school is a cornerstone of the Authority's approach to promoting these modes and in reducing car use. The Strategy will set the framework for the creation of safe, convenient and continuous walking and cycling networks in the urban areas of the GDA, linking directly to the Authority's activities around the Green Schools Travel Programme. The Strategy will also contain a clear policy on School Travel Plans.

2.4.4 People, Place and Policy, National Tourism Policy, DTTAS 2015

The Strategy will include proposals which allow interchange between modes as a means of meeting the National Tourism Policy's objective to facilitate inter-modal connectivity for international visitors. This is likely to take the form of an enhanced public transport network which will increase the number of trips that can be made by each mode or a combination of modes within the GDA. A policy on the continued roll-out of Leap card, public transport information portals, and their development will be included.

2.4.5 Healthy Ireland – A Framework for Improved Health and Wellbeing 2013-2025

As a means to contributing to the goals of Healthy Ireland, the Strategy will be required to set out the framework for the improvement of the walking and cycling networks, with the objective of increasing the share of people walking and cycling which provides for healthier forms of travel. The Strategy will set out the means of increasing access to the transport system, thereby maximising the population's mobility, with consequent positive impacts on mental health. By encouraging a mode shift away from the private car, it is anticipated that the threat to human health from pollution will be lessened.

2.5 Summary

It is evident that policies have been in place for many years across many sectors, which aim to increase accessibility, promote active travel modes, and seek to reduce car use by a variety of means and to better integrate land use and transport planning on a national and regional basis. These policies have informed and guided the development of this Transport Strategy.

03

Transport in the Greater Dublin Area



3. Transport in the Greater Dublin Area

3.1 Introduction

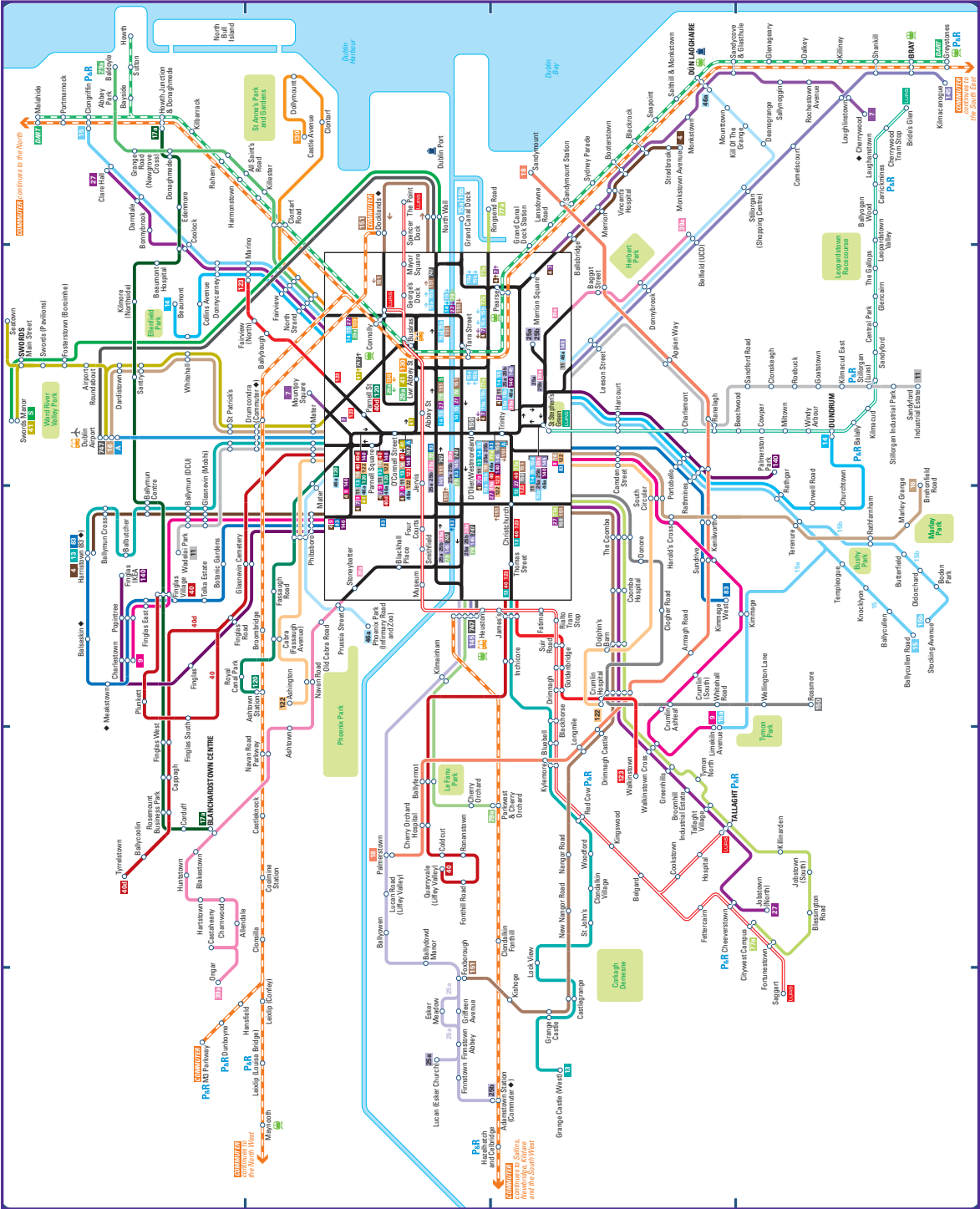
The existing transport system serving the GDA consists of the following networks and services:

- › The Road Network;
- › Bus (publicly subsidised and commercial services);
- › Heavy Rail (DART, Commuter, Intercity);
- › Light Rail (Luas);
- › The Cycling Network;
- › The Pedestrian Network;
- › Small Public Service Vehicles; and
- › Freight Services.

Both the road and the public transport networks are supported by a number of user information services such as a set of websites, mobile apps, on-street signage, timetables and social media portals. In the case of public transport, these passenger information services have all been integrated under the Transport for Ireland brand, developed by the Authority.

The map overleaf was developed by the Authority under the Transport for Ireland brand in order to show all rail services and the most frequent bus services operating in the region. This 2015 transport network may be regarded as the baseline upon which the public transport elements of the Strategy will be built. The following sections describe the transport networks in more detail, and the patterns, trends and issues relating to both the transport demand and the level of service currently provided. This is undertaken at the regional level and at a more localised level.

Figure 3.1 Dublin Frequent Transport Services Map



3.2 Current Transport Supply

3.2.1 Heavy Rail Network

Heavy rail (DART and Commuter Rail) provides the core high capacity infrastructure and services that are central to the Greater Dublin Area's public transport system.

The rail system currently comprises a number of individual rail lines as follows:

- The Northern line, extending northwards from Connolly Station, providing an electrified DART service from Malahide and Howth, diesel Commuter services from Drogheda/Dundalk and an Intercity service linking to Belfast;
- The South-Eastern line, extending southwards from the city centre, providing an electrified DART service as far south as Greystones and diesel Commuter and Intercity services further southwards, serving towns such as Arklow, Gorey, Wexford and Rosslare;
- The Kildare line, providing diesel Commuter services as far southwards as Portlaoise plus Intercity services to Cork, Limerick and Galway; and
- The Maynooth line, providing diesel Commuter services to and from Maynooth, with a lower frequency service extending to Longford, and also providing Intercity services to Sligo. Through a recently constructed spur line, Commuter services are now provided to Hansfield, Dunboyne and Pace.

While the rail network has continued to be developed over recent decades, significant work still remains to be done to create a fully integrated rail network. In particular the Kildare/Cork line terminates on the outskirts of the City Centre at Heuston and does not link into the heart of the city, and to the other three lines, for passenger services.

3.2.2 Light Rail Network

The Dublin Light Rail system (Luas) consists of two lines. The Red Line runs from Tallaght to the Point, with a spur from north of Tallaght to City West at the western end, and from Busáras to Connolly in the city centre. The Green Line runs from Bride's Glen in South Dublin to St. Stephen's Green.

These lines provide a high frequency, high capacity service along these corridors, with trams operating at a frequency of up to every 3 minutes at peak hours.

While this system has been developed in phases since first opening in 2004, with a number of extensions and capacity enhancements, significant investment is required to develop this system into a full network and provide the capacity required in the future, most notably the integration of the Red and Green Lines, and the introduction of Metro services.

In terms of the service provided, Luas is generally regarded as frequent and reliable. Disruptions to the Red line have been common however, particularly in the city centre where motorists have frequently ignored red lights and collided with trams. New cameras – and an associated penalty regime – have been installed to discourage this behaviour.

3.2.3 Bus Network

At present, the GDA is heavily reliant on the bus network. The region's existing bus infrastructure consists of a network of bus lanes of varying standards and of varying levels of continuity. While in certain locations, relatively competitive journey speeds and journey time reliability can be achieved, the network is generally characterised by discontinuity, whereby bus priority is provided only along certain sections of each corridor. This has a major impact on the attractiveness of the bus as a mode of transport, as the delays caused by even a small number of pinch points in specific places can have a significant negative impact on the performance of the affected services as a whole, and discourage people from using the bus.

In recent years, major changes to the core bus routes and in the customer interface have enhanced the image and perception of the bus. However, issues related to frequency and reliability, and the legacy of the overly complex network and fare structures which persisted for many decades up to recent years still remain for many people, particularly potential users.

3.2.4 Cycle Network

As set out in the following sections, there has been a significant increase in the numbers cycling in the GDA, particularly in central areas of Dublin City. This has occurred against a background of sub-optimal infrastructural provision, where there is a lack of safe, convenient and continuous cycle routes, particularly high-quality and/or segregated facilities. While progress has been made in some locations, the concept of a comprehensive cycle network for the GDA has not yet been realised.

3.2.5 Provision for Pedestrians

At present, while footpaths are provided in the vast majority of built-up areas to provide for pedestrian movement, the quality of this provision is often poor. Footpath widths are often substandard and surfaces can be uneven. There are often many obstructions on footpaths such as advertising, redundant poles and other clutter, which causes particular problems for those with mobility impairments or those walking with buggies and prams. At many junctions across the GDA, pedestrian crossings are not provided, or are provided only on some arms. The amount of time given to pedestrians to cross, and the time they must wait to cross, also renders the walking experience sub-optimal. While these issues affect all parts of the GDA, they are particularly critical in Dublin City Centre where the number of pedestrians is highest.

3.2.6 Road Network

Roads are an integral part of the transport system, essential for the efficient functioning of the Greater Dublin Area economy, and the wider national economy. While public transport, walking and cycling will address a large part of the transport needs across the region, car travel will still play a vital role, particularly outside of the Metropolitan Area.

Substantial investment has been made in the road system over the last decade, focussed primarily on the national road system. It is important that the benefits of that investment are not prematurely eroded by allowing the key arteries, which are vital for movement of freight and are essential to commercial activity in the Metropolitan and Hinterland areas, to become overly congested.

Since the mid-1990s, transport policy in the GDA has been directed towards reducing the growth in car travel and increasing the use of public transport, cycling and walking. Complementing this approach has been a policy of not increasing road capacity for private cars on radial roads inside the M50. The basis for these policies is recognition that it is unrealistic and unsustainable to accommodate growth in travel demand across the region through car based movement. Instead, such growth has to be accommodated by other modes and, within the urban areas, the limited road space available has to be used optimally to cater for both car and non-car uses.

However, for large parts of the GDA it is simply not viable to provide public transport services at a frequency and capacity that caters adequately for the needs of the relevant area. In such locations car travel will continue to be the dominant mode of travel and investment in the road network will be an on-going requirement.

3.3 Regional Patterns and Trends

As transport is a derived demand, it is vital, when formulating a long-term transport strategy, that a clear understanding of why people travel in the manner they do, is acquired by the plan makers and the general public. As such, this section seeks to provide this understanding by examining the key factors which affect transport and the key trends which are emerging in the GDA. With this in mind, the following points, relating to the regional-level transport patterns and trends, will be expanded on in this section:

- Suburbanisation and spread of population, employment and other land uses has continued;
- Arising from the above trend, the mode share of car use continues to increase;
- Car ownership – a key determinant of car use – is likely to increase further, up to saturation levels;
- Cycling has increased significantly in numbers and in mode share;
- Recovery is occurring in public transport use, but not in its mode share;
- Encouraging non-car use for trips to education is a significant challenge;
- There is no spare capacity on the M50 motorway;
- Protecting and enhancing access to the ports and Dublin Airport is a strategic priority; and
- Current economic growth will mean that within the next few years, overall levels of travel demand are likely to exceed the travel demand experienced in 2006 and 2007.

3.3.1 Suburbanisation and Spread of Development

Over the next 20 years, transport infrastructure and services must deal with a historical legacy which saw significant levels of growth and migration of land uses to suburban and peri-urban fringe locations, typically at lower densities and unconnected to existing and planned public transport services and facilities. In many cases, central areas, at the same time, either grew at far slower rates or actually experienced a contraction, through population decline and increasing levels of commercial vacancy. As those locations at the edge of the city and beyond are not effectively served by public transport and are

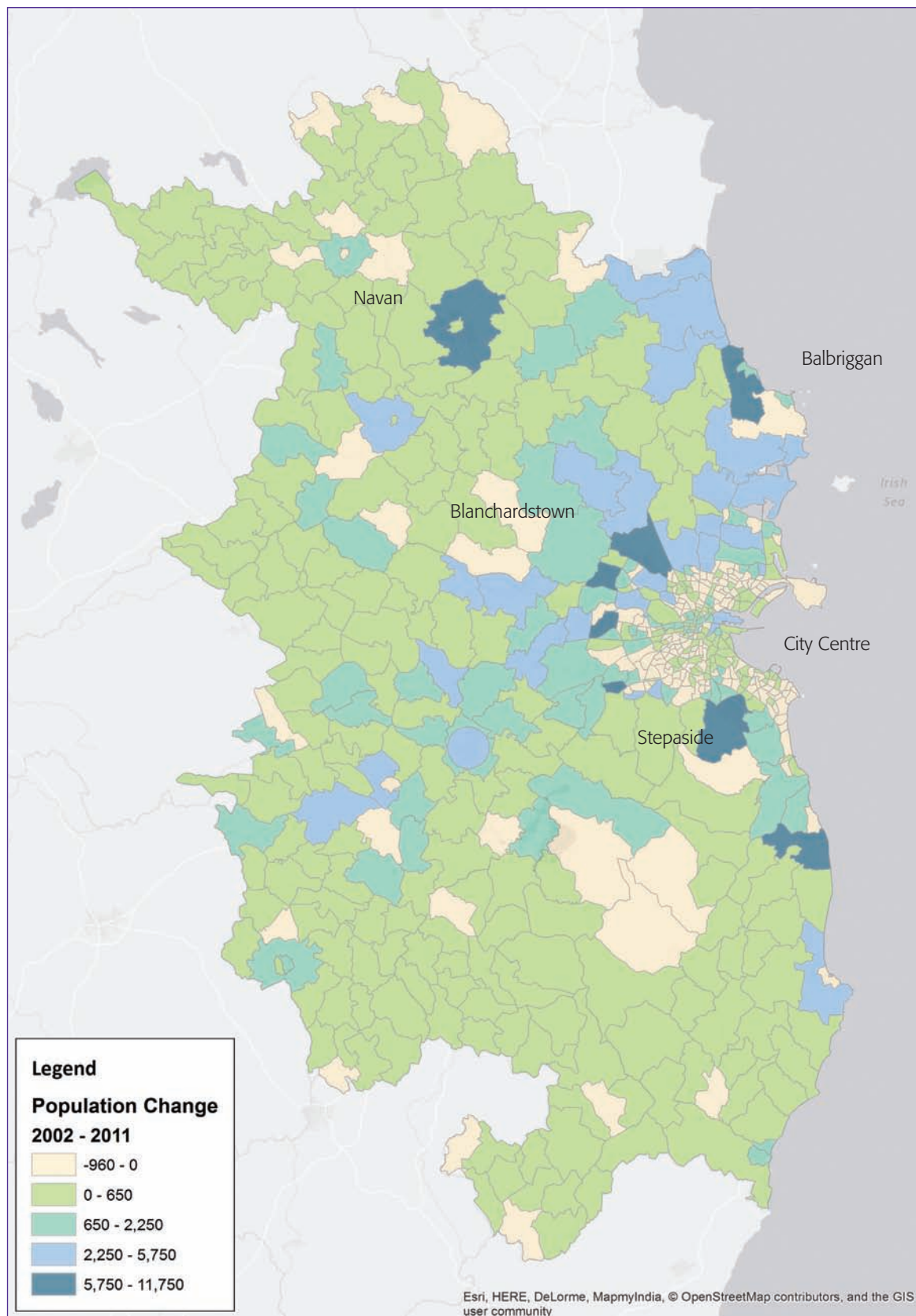
of a layout and density unsuited to its provision, or for walking and cycling, an over-reliance on the private car for all trip purposes has emerged.

This trend is evident in recent censuses. Between 2006 and 2011, the population of the more peripherally located counties of Fingal, Meath and Kildare – grew by 14%, 13% and 13% respectively, while the population of more centrally located Dublin City grew by only 4%. At the regional level, the Mid-East grew by 12% in the same period, while the Dublin region grew by only 7%. This trend has continued, according to the latest CSO 'Population and Migration Estimates' published in August 2014. During this long period of car-based peripheral expansion, those areas in the Dublin Metropolitan Area, designated for growth based on the rail network, have not experienced development or have only been partially developed, for example, Adamstown, Clonburris, Cherrywood, Hansfield, Clongriffin and Pelletstown.

Figure 3.2 shows the distribution of population growth between 2002 and 2011 in the GDA, by Electoral Division (ED). The areas shown in light yellow are those EDs which experienced a population decrease in that period, while the green to dark blue shows population increases. As is clearly evident, areas closest to the city centre, including the inner suburbs, are most likely to have experienced population decline, while the darkest blue areas – those with the highest growth – are typically in peripheral suburban locations such as Stepaside, South Tallaght, Lucan and Blanchardstown, or on the edges of Hinterland towns such as Balbriggan and Navan.



Figure 3.2 – Population Change by Electoral Division 2002-2011



In terms of employment location, the M50 and other parts of the national road network have acted as magnets for large-scale employment developments such as office parks, business parks and industrial estates. Notable examples of this type of development over the last twenty years include the intensification of employment at Sandyford / Leopardstown, Park West, City West, Grange Castle, Greenogue and the large swathe of employment development between the M2 and N3 at Ballycoolin / Damastown to north of Blanchardstown. Much of this growth has occurred in sectors that are unsuited to more central locations due to their particular locational or operational requirements. However, a substantial quantum of office-type development has also occurred on peripheral locations, on stand-alone greenfield sites, which could have been accommodated, more appropriately, in the city centre, or in suburban locations served by public transport.

The city centre has, however, maintained its position as the pre-eminent location for employment location and at the highest levels of intensity. In fact, notwithstanding the trends towards the peripheralisation of employment, the share of employment in the city centre, between 2006 and 2011, grew from 26% of the GDA's jobs to 28%. This can be attributed to a higher rate of employment reduction on the periphery, during the economic downturn, rather than any major upswing in the number of people employed in the city centre. Based on current land use policies, it is likely that economic recovery will reverse this trend, as peripherally located employment sites are re-occupied, their uses intensified and as further new development occurs. The same trend is likely to pertain in the city centre, with Docklands in particular, seeing significant planning and development activity through 2014 and 2015. This trend may be reflected in the continuing migration of technology companies, such as Google and Facebook to high quality office-based accommodation in central, rather than suburban locations. However, the legacy of peripherally-located employment developments over the last twenty years, focused in particular on the national road network, remains a major challenge to the achievement of a stronger public transport focus, for employment intensive uses.

The retail sector also displays this suburbanisation trend very clearly. Since the 1990's a ring of major regional-scale shopping centres have challenged Dublin City Centre as the primary destination for shopping trips. In an anti-clockwise pattern from north Dublin to south, the Pavilions in Swords, IKEA, Blanchardstown Town Centre, Liffey Valley Shopping Centre, the Square Tallaght and Dundrum Town Centre Phase 1 have all opened and / or been extended. Plans have been in place for another major shopping centre in Bray and another between Leixlip and Maynooth, while a large extension to Liffey Valley and Phase 2 of Dundrum are also planned. All of these developments have been accompanied by the extensive provision of car parking, much of which is available free of charge.

3.3.2 The role of the Private Car

Arising from the land use trends outlined above, the dominant role of the private car for trips of all purposes has been maintained and has indeed grown in recent years. Analysis of means of travel to work in the State from Census data going back to 1996 shows a growing reliance on the private car with 63.9% of all trips to work in 2011 using this mode, up from 52.9% in 2006.

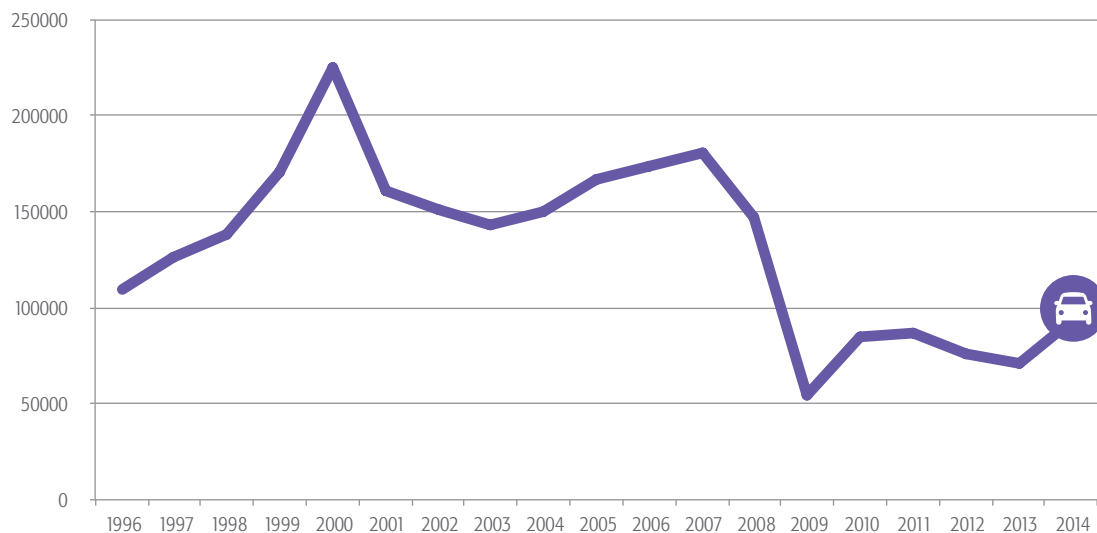
This overall trend, however, masks significant spatial variations that are revealed in analysing the mode share for car at an Electoral Division (ED) level. Data from the 2011 Census shows that within the GDA, the highest levels of car dependency are evident around the outer edge of the Metropolitan area and in peri-urban fringe locations, where more than 7 in 10 people drive to work. This is in contrast to the situation pertaining to the city centre, where less than 1 in 4 people drive to work.

For education trips, the school run has become an increasingly important element in traffic congestion across the region, particularly in the morning peak. The growth in car use for trips to school on a national basis has been dramatic – In 1981, 20% of children aged 5 to 12 were driven to school. This figure in 2011 was 59%. For children aged 13-18 the figures are 8% and 41% respectively, including those who drove themselves to school in 2011.

As an indication of the underlying trends in car ownership, analysis of recent censuses by the Authority, published in the 'Initial Findings from Census 2011' report, showed that the impact of economic growth between the mid-1990's and 2006 is clearly evident. It is also clear that despite the economic downturn between the 2006 and 2011 censuses, car ownership levels continued to rise and only levelled off where they were reaching saturation levels, as was the case in County Meath.

The graph below shows the trends since 2000 in the number of new cars registered nationally per year. While this data does not relate solely to the GDA, it is a very good proxy for both car ownership and propensity for car use in the region. The trend mirrors broader economic trends, with a dramatic drop in 2009, followed by a slow, sporadic recovery, followed by a stronger upward trend in 2014. Recent data for 2015 suggests a continuation of this growth. However, it is unlikely, in the short or medium terms, that the historically high sales of new cars, experienced between 1999 to 2007 will reoccur. With renewed economic growth and increased disposable income in the medium to long-term, the level of car ownership the GDA is expected to experience a further increase, toward saturation ownership levels, particularly in the more car-dependent outer counties.

Figure 3.3 – New Private Cars Registered by Year (national)



While land use patterns have been the critical determinant of the trend towards greater car use and higher car dependency, other contributory factors include a negative perception of public transport, the absence of public transport alternatives for many trips, the availability of car parking at trip origins and destinations, and further socio-economic factors and influences around the desirability of car ownership and use.

3.3.3 Cycling

As noted in Chapter 1, there has been a boom in cycling in Dublin in recent years. A combination of factors, including the Bike to Work Tax Saver Scheme, enhanced network provision for cyclists, and the implementation of the Dublin Bikes rental scheme have led to dramatic, sustained increases in the numbers of people cycling. Cycling was the only mode to show a numerical increase for work trips between 2006 and 2011, with 28,500 people in the GDA cycling to work, up from 23,000 in 2006, despite a significant fall in the numbers travelling to work overall. In 2011, cyclists accounted for over 7% of all work trips to Dublin City Centre, or 1 in every 14 workers. From some parts of the city, up to 16% of people cycled to work in 2011, and it is reasonable to assume that further growth has occurred since then with a continuation of this trend. This is evidenced by the graph, below, from the NTA / Dublin City Council annual Canal Cordon Count. According to this survey, the number of cyclists travelling into the city centre has risen by 114% between 2006 and 2014 from 4,800 to over 10,000, most of which has occurred since 2010. Another critical indicator of cycling’s growth, nationally, is that the share of primary school children cycling to school has shown its first rise in a generation.

All of the above has occurred, despite the continued significant shortcomings for cyclists on the road network, in terms of convenience and safety.

Figure 3.4 – Number of Cyclists Crossing the Canal Cordon in the AM Peak



3.3.4 Public Transport Numbers

As referred to in Chapter 1, the recession led to a significant drop in public transport patronage in the GDA. The number of census respondents working in the GDA, who took the bus to work, fell from 88,500 in 2006 to 74,000 in 2011. According to the CSO's "Transport Omnibus", the total number of passengers on Dublin city bus services fell from 243 million in 2007 to 192 million in 2012. The numbers on DART and Dublin Suburban Rail fell from 34 million to 26 million in the same period. This caused unprecedented difficulties for public transport operators in the region. The Dublin Bus network was required to undergo significant reorientation, much of which was positive, such as the creation of full cross-city routes, made possible by the College Green Bus Gate in 2009. Some other changes, mainly related to the removal of legacy bus routes, were viewed as negative at the time.

A recovery in public transport numbers was recorded in 2014. The NTA / Dublin City Council Canal Cordon count showed a modest increase in Bus passengers (including Bus Éireann and all private operators) and in Luas, while Rail numbers have stabilised. Overall, the number of people crossing the canal cordon by all public transport modes in the AM peak rose by 1.3% between 2013 and 2014. Dublin Bus numbers, overall, grew by 3.4% and the number of passengers on Luas grew by 6.9%, during 2014.

3.3.5 Education

The role of the car for trips to education and the recent increase in cycling to primary schools has been set out in the sections above. While the recent increase in cycling is to be welcomed, it is coming from an extremely low base, as illustrated by the following national statistics:

- In 1981, 20% of children aged 5 to 12 were driven to school. By 2011, this had risen to 59%;
- For children aged 13-18 the figures are 8% and 41% respectively, including those who drove themselves, in 2011;
- In 1981, 47% of children aged 5-12 walked to school. By 2011, this had fallen to just 24%;
- The number of children cycling to school fell from c.74,000 in 1986 to c.11,000 in 2006. Despite a growth in the overall numbers of cyclists from 2006-2011, only 1.6% of children cycled to school in 2011, compared to 8.3% in 1986; and
- The number of girls aged 13-18 cycling to school in the State, has fallen from c.19,000 in 1986 to c.500 in 2011. Over the same period, the cycling mode share has fallen from 11.2% to 0.3%, or from approximately 1 in every 9 girls to close to 1 in every 30.

School travel is a critical factor in GDA transport, particularly in the AM peak hour. School trips are a substantial contributor to local congestion and have a significant impact on travel times by all modes. The Authority has been heavily involved in promoting behavioural change for journeys to school, in association with An Taisce, via the latter's Green Schools' programme. Where this programme has been implemented, it has been successful in reducing car use. However, the context within which it operates is often highly challenging, particularly in regards to recently-built schools, as the fundamental decisions relating to their location have frequently taken little or no account of accessibility by non-car modes.

3.3.6 The M50

The M50 is a road of critical national importance. It is the primary artery for the movement of goods from Dublin Port and Dublin Airport to the rest of Ireland. It connects the national motorway network close to Dublin, allowing business travel to and from all major centres of population and economic activity on the island of Ireland. Its ability to function as a conduit for strategic traffic of high economic value is of paramount importance to the national economy.

On the 12th May 2015, almost 145,000 vehicles used the busiest section of the M50 between the N4 and N7 junctions. In terms of peak travel, there were 33,000 vehicles travelling in both directions in the AM peak from 7:00 to 10:00 and 34,000 in the PM peak from 16:00 to 19:00. The Average Annual Daily Traffic (AADT) in 2013 for this section of the M50 was approximately 118,400 and stood at approximately 128,500 for the first half of 2015, an increase of 8.5%.

While direct historical comparison data is not available for this section of the M50, in 2007, the AADT for the next section, between the N4 and N3, was 87,000 vehicles. For 2015, based on counts to date, the AADT is 117,090, a 35% difference. At this level of traffic, delays are once again becoming a regular occurrence on the M50, where any incident is likely to cause serious delay and the potential to cause outright failure, with associated knock-on effects in terms of journey time reliability and associated economic costs and personal stress. If this trend goes unchecked, it will negatively impact on economic competitiveness within the GDA and the wider national economy.

As such, the trend for increasing traffic on this national artery is unsustainable. Other than on the southern section of the route, further capacity enhancements to the M50 are neither physically possible nor environmentally desirable. A coherent approach to the management of transport demand on the M50 corridor and connecting national roads, combined with the provision of alternative transport modes, are required to ensure that the M50 is allowed to function for its primary intended purposes, as a national road which caters for predominantly non-local trips of high economic value. While the management of the M50 falls within the remit of Transport Infrastructure Ireland (TII), an inter-agency approach, which includes TII, the Authority and the relevant local authorities is required to achieve this.

3.3.7 International Gateways - Dublin Port and Dublin Airport

Related to the previous section, the safeguarding of landside access to the national gateways at Dublin Port and Dublin Airport should be considered as a priority strategic objective for all of the relevant agencies.

Dublin Port handled 31m gross tonnes in 2014 (equalling the port's previous record of 2007). Growth in 2015 will exceed 5% and this growth is expected to continue in future years. In addition to freight, 1.8m passengers passed through the port on ferries and cruise ships. The majority of goods vehicles using Dublin Port are required to travel to and from the port estate via the Dublin Port Tunnel, the M50 and the various national radial routes connecting with the M50. It is, therefore, essential that the capacity of these routes is safeguarded for strategic trips of high economic value, particularly for the movement of goods. A corollary of this is the need to discourage the use of strategic roads by car-based commuters, through the use of demand management measures and the provision of feasible public transport alternatives. The only other access route for goods vehicles to the port estate is via the East Link Bridge and Sandymount Strand, a route which is highly urban in character, with limited capacity and subject to congestion and

delays associated with local traffic. The need to facilitate the expansion of activity at Dublin Port into the future, as both a commercial and passenger port, must, therefore, be supported by the Strategy, through the clear identification and safeguarding of designated access routes.

In 2014, Dublin Airport handled just under 22 million passengers, the third highest figure on record, and is forecast to grow further over the coming years. Serving Dublin Airport with a high-capacity, reliable and frequent public transport service to Dublin City Centre and improved public transport network connectivity at a national level is, therefore, a priority for the transport strategy. In examining this, the Authority has evaluated a number of public transport options that could be developed to improve capacity and connectivity to the Airport and has incorporated the outcome of that evaluation into the Strategy.

In a similar fashion to Dublin Port, Dublin Airport is currently dependent on the M1, M50 and the Dublin Port Tunnel as the principal means of landside access for all passengers and goods. Bus services to the airport, from all other parts of the island of Ireland use these routes, with the Port Tunnel being of particular importance for business travel between the airport, the IFSC and the wider city centre business district.

As such, the current vulnerability of the main access routes to the Port and Airport to congestion associated with general traffic, presents a risk to their functionality and, by association, to the essential role they play as international gateways of high economic importance at both a regional and national level.



3.4 Patterns and Trends by Area

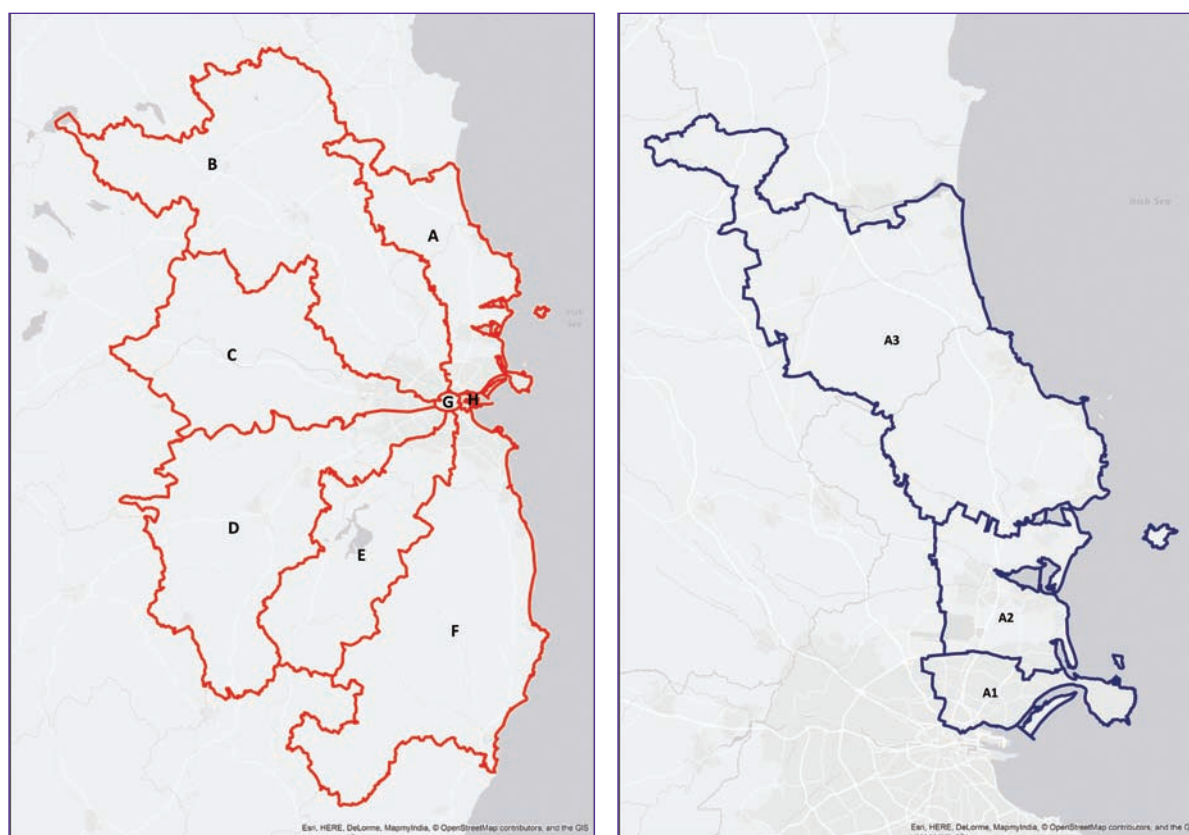
To facilitate further analysis of travel patterns in the GDA, the region was divided into a number of corridors based on the national and regional transport networks. The corridors are shown in Figure 3.5 and named using the letter A to H. These corridors are primarily used to describe radially-based trips, which represents the most dominant trip pattern within the Greater Dublin Area.

To analyse orbital trips and to establish a greater understanding of the origin and destination of trips relating to each corridor, it is necessary to subdivide the corridors into segments, as follows:

- Segment 1 - covering the area between the City Centre and the M50;
- Segment 2 - covering the area between the M50 and the boundary of the Metropolitan Area, as defined in the Regional Planning Guidelines for the Greater Dublin Area; and
- Segment 3 - covering the area between the boundary of the Metropolitan Area and the boundary of the GDA.

The maps below show the transport corridors and as an example, the segments from Corridor A.

Figure 3.5 – Corridors and Segments



The highest proportion of trips in each corridor are generally those whose origin and destination are both within the same corridor, that is, trips which are wholly internal to the corridor. These trips are mainly local in nature and would typically include trips to schools, shops and other local services and so generally occur within settlements or towns. Therefore, the analysis of trip patterns within the six radial corridors, is particularly focused on the individual settlements within them.

3.4.1 Patterns and Trends by Corridor

The GDA has been divided into the following corridors, shown on Figure 3.6.

Radial

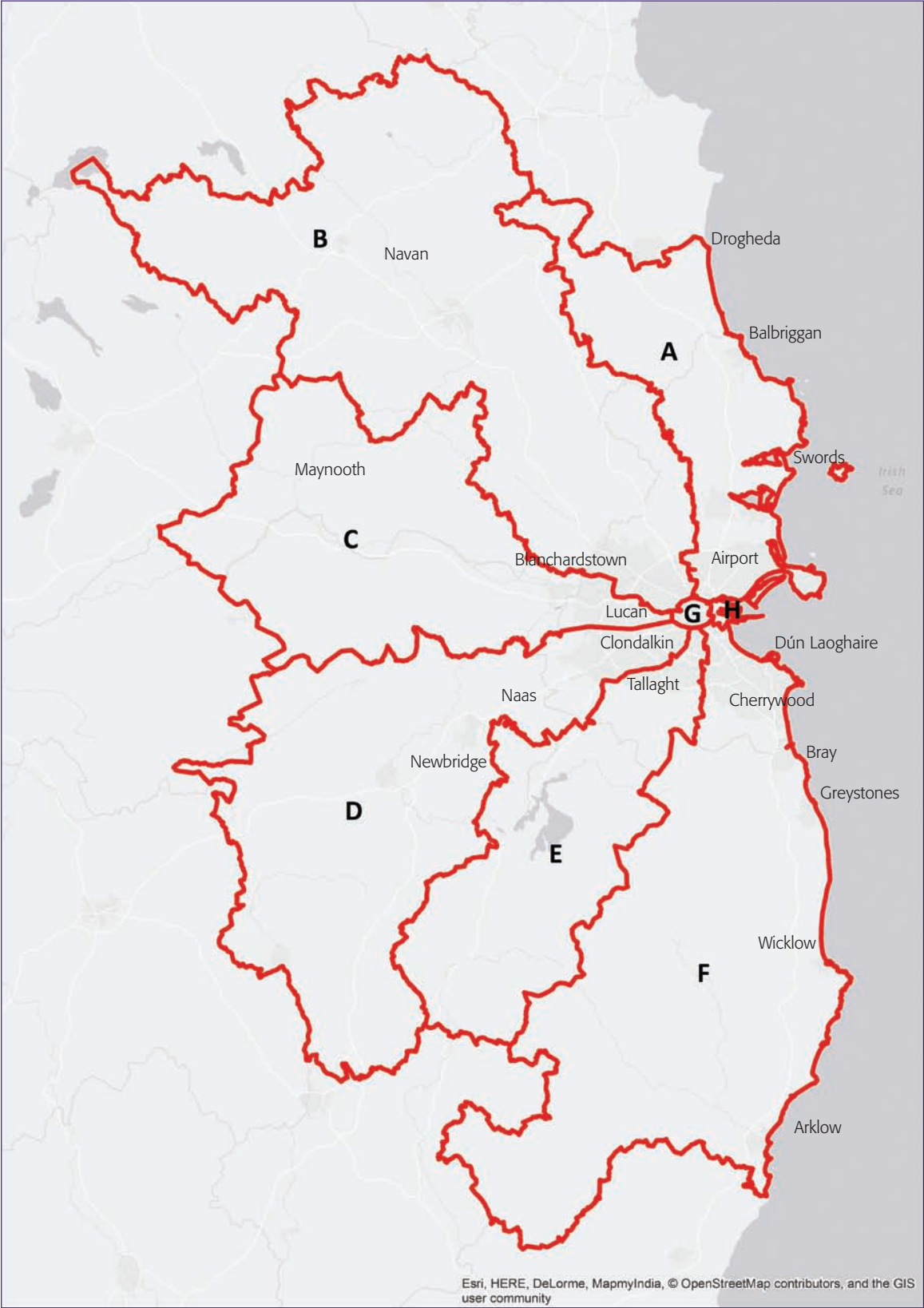
- Corridor A – Drogheda – Balbriggan - Swords – Airport – North Inner City – to Dublin City Centre;
- Corridor B – Navan – Dunboyne – Blanchardstown – to Dublin City Centre;
- Corridor C – Maynooth – Leixlip – Lucan – to Dublin City Centre;
- Corridor D – Newbridge – Naas – Clondalkin – North Tallaght – to Dublin City Centre;
- Corridor E – N81 Settlements - South Tallaght – to Dublin City Centre; and
- Corridor F – Arklow – Wicklow – Greystones – Bray – Cherrywood – Dundrum – Dún Laoghaire – to Dublin City Centre.

Central

- Corridor G – Dublin City Centre
- Corridor H – Dublin Docklands

This section focusses on the issues pertaining to the six radial corridors, A-F, between the City Centre core and the GDA boundary.

Figure 3.6 – GDA Corridors



Corridor A - Drogheda – Balbriggan – Swords – Airport – North Inner City – to Dublin City Centre

- › The car mode share, for all trip purposes is 72%.
- › The public transport mode share for all trip purposes is 12%.
- › There is a significant amount of population and employment growth planned for the larger urban areas within this corridor, including Swords, Balbriggan, South Drogheda, Clongriffin, Ballymun, Donabate and the Airport environs.
- › The NRA's "National Roads Traffic Management Study" identifies this corridor as having among the highest forecast growth in transport demand up to 2025; however, there is limited scope for increases in radial road capacity along this corridor.
- › Capacity constraints have emerged at the Malahide Road junction with the R139 at Clare Hall.
- › With the limited scope for further increases in road capacity, it will be necessary for the anticipated growth in trips crossing the M50 and the Royal Canal, to be mainly catered for by public transport.

Corridor B – Navan – Dunboyne – Blanchardstown – to Dublin City Centre

- › The car mode share for all trip purposes is 74%.
- › The public transport mode share for all trip purposes is 8%.
- › The corridor's largest urban settlements (Blanchardstown and Navan) are projected to grow significantly up to 2035.
- › In relation to radial city centre-bound trips, the southern part of Blanchardstown is currently served by the Maynooth Rail Line and a number of radial bus services. Dunboyne and the Hinterland Area beyond it are served by commuter rail services from the M3 Parkway and Dunboyne rail stations and a number of longer distance commuter bus services.
- › There are large areas of Blanchardstown that are currently not served by high capacity public transport. The anticipated growth in radial demand from the Blanchardstown area up to 2035 will be difficult to service by public transport, without a substantial increase in the extent and capacity of public transport services.
- › Within this corridor, a significant proportion of the population is located outside of the larger urban settlements and as such it would be difficult to effectively serve on the basis of conventional public transport solutions.
- › Inside the M50, current development proposals for the Phoenix Park Racecourse and Pelletstown will yield substantial population growth in the future, both of which are located within the local catchment of the Maynooth Rail Line.
- › This corridor contains two major Inter-Urban roads, the N/M2 and the N/M3. Given the limited role of rail in meeting the demand for radially-based trips within this corridor, the management of transport demand across a range of modes on these inter-urban roads will be of critical importance in catering efficiently for future demand.

Corridor C – Maynooth – Leixlip – Lucan – to Dublin City Centre

- › The car mode share for all trip purposes is 72%.
- › The public transport mode split for all trip purposes is 8%.
- › Outside of the M50, there is significant radial demand generated from within the Metropolitan Area. The main urban settlements are Lucan, Leixlip, Celbridge, Maynooth and Kilcock.
- › A number of these urban settlements are located within the catchment of stations on the Maynooth rail line.
- › The southern part of Lucan, Ronanstown and Celbridge, fall within the catchment of stations on the Kildare line, on which commuter rail services operate into Heuston Station. Rail services on this line will also serve the planned for population growth in the areas of Adamstown, Kishogue and Clonburris. These areas are also served by a number of city bus routes. The proposed opening of the Phoenix Park Rail Tunnel will deliver further improvements in public transport accessibility by allowing for commuter rail services to operate from these areas in the more centrally located rail stations within the largest employment areas on the eastern side of the City Centre.
- › The considerable population in Corridor C, located outside of the local catchment of the Maynooth Line and Kildare Lines, is currently served by a number of city bus services and longer distance commuter bus routes.
- › Inside the M50, there is considerable radial trip demand into the city centre. In terms of public transport, this is served by both rail and bus, with one rail station on the Kildare Line located within this segment (Cherry Orchard/ Parkwest) and a number of city bus services, with most areas falling within the local catchment of either bus or rail. Critically, most of the largest development areas within the segment are located within the Kildare Line's local catchment. Given the growth in transport demand on Corridor C, from outside of the M50, additional capacity will be required on radially-based public transport services operating from this area, which will put greater pressure on the residual available capacity of these services in areas such as Palmerstown and Ballyfermot.
- › Increasing levels of congestion are occurring on strategic and urban distributor roads within Corridor C, particularly on the orbital north-south routes, linking the N4 with the N7 and on adjoining local roads. This has a negative impact on the reliability of bus services during the peak periods.

Corridor D – Newbridge – Naas – Clondalkin – North Tallaght – to Dublin City Centre

- › The car mode share for all trip purposes is 77%.
- › The public transport mode share for all trip purposes is 8%.
- › Outside the Metropolitan Area, Corridor D contains a number of large urban settlements, including Naas, Newbridge, Athy and Kildare, all of which are served by commuter and/ or intercity rail services, on both the Kildare and Waterford lines and by longer distance commuter bus services. However, much of the more recent growth of these towns is located outside of the local catchment of the rail stations which serve them, with bus often serving a more extensive catchment. It is

intended to deliver further improvement to both bus and rail services from these towns into Dublin City Centre, as further population growth occurs.

- › Inside the Metropolitan Area, but outside of the M50, Tallaght and Clondalkin are the largest urban settlements, with the highest rate of population growth currently occurring in new development areas on their peripheries. The current and anticipated demand profile should allow these areas to be largely serviced by the existing pattern of public transport services, albeit at a higher level of service to reflect increasing demand.
- › Inside of the M50 there are low growth population areas which have an existing deficit in public transport services serving radial demand.
- › Congestion has emerged as a significant problem along the M/N7 from south of Naas towards the M50, mainly associated with the large volume of car-based commuting into the Metropolitan Area. While the upgrading of Newlands Cross to a grade-separated interchange has alleviated this to an extent, congestion on the M7 and connecting roads in the vicinity of Naas is a growing problem and will need to be addressed, to mitigate the negative impact of local and commuter traffic, on the N/M7's primary intended function in catering for strategic trips of high economic value.

Corridor E – N81 Settlements - South Tallaght – Rathfarnham – to Dublin City Centre

- › The car mode share for all trip purposes is 73%.
- › The public transport mode share for all trip purposes is 9%.
- › The principal areas of transport demand in Corridor E, outside of the M50, are concentrated in the southern part of Tallaght, beyond which there are few settlements of significant size and relatively low rural population densities. Up to 2035, the population growth in this corridor as a whole, is expected to be low, by comparison with most other corridors.
- › Further development on Tallaght's southern fringe, including Ballycullen and Oldcourt area, is constrained by the limited road network capacity.

Corridor F – Arklow – Wicklow – Greystones – Bray – Cherrywood – Dundrum – Dun Laoghaire – to Dublin City Centre.

- › The car mode share for all trip purposes is 70%.
- › The public transport mode share for all trip purposes is 11%.
- › Outside of the M50 there are significant capacity constraints on providing for further growth in radial demand on the strategic road network. There is also limited scope for delivering further capacity in heavy rail due to the single line nature of the route south of Bray.
- › Congestion on the N/M11 route is increasing, particularly around the M50/M11 merge, during the peak periods. Capacity on this route will need to be protected through appropriate demand management, in order to safeguard its strategic function. As such, the Strategy will seek to achieve an appropriate balance with the competing demands of strategic movement of high economic value and more locally based commuter traffic.

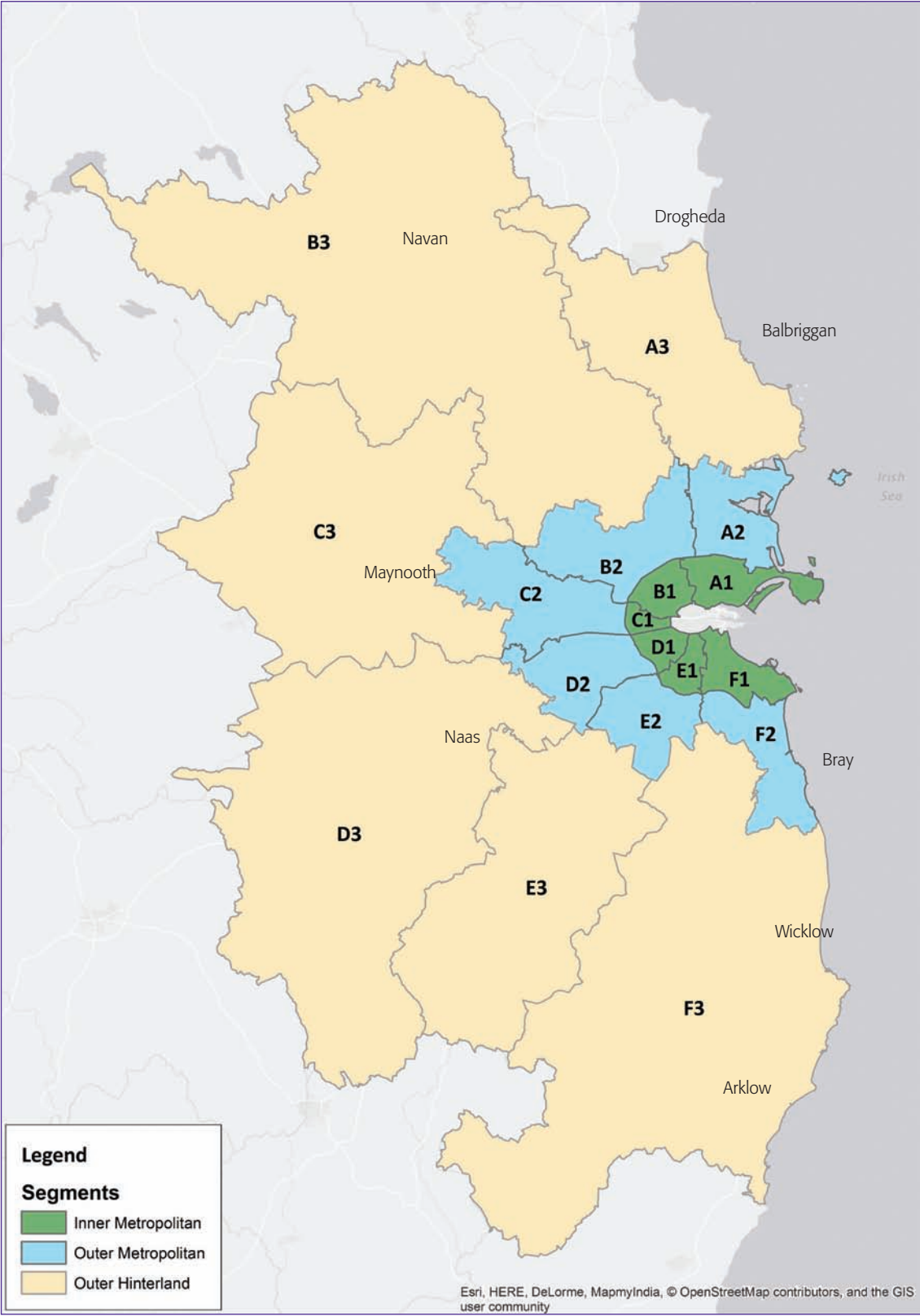
- › North of Bray, there is considerable scope to increase line capacity on the DART. This, along with other, bus-based options will be required to accommodate the bulk of the anticipated growth in demand within this corridor.
- › The existing Luas Green Line could deliver a limited increase in line capacity. Currently, the line is operating close to its maximum theoretical capacity during the peak demand periods.

3.4.2 Patterns and Trends by Segment

The more detailed split of the corridors into segments is shown in figure 3.7:



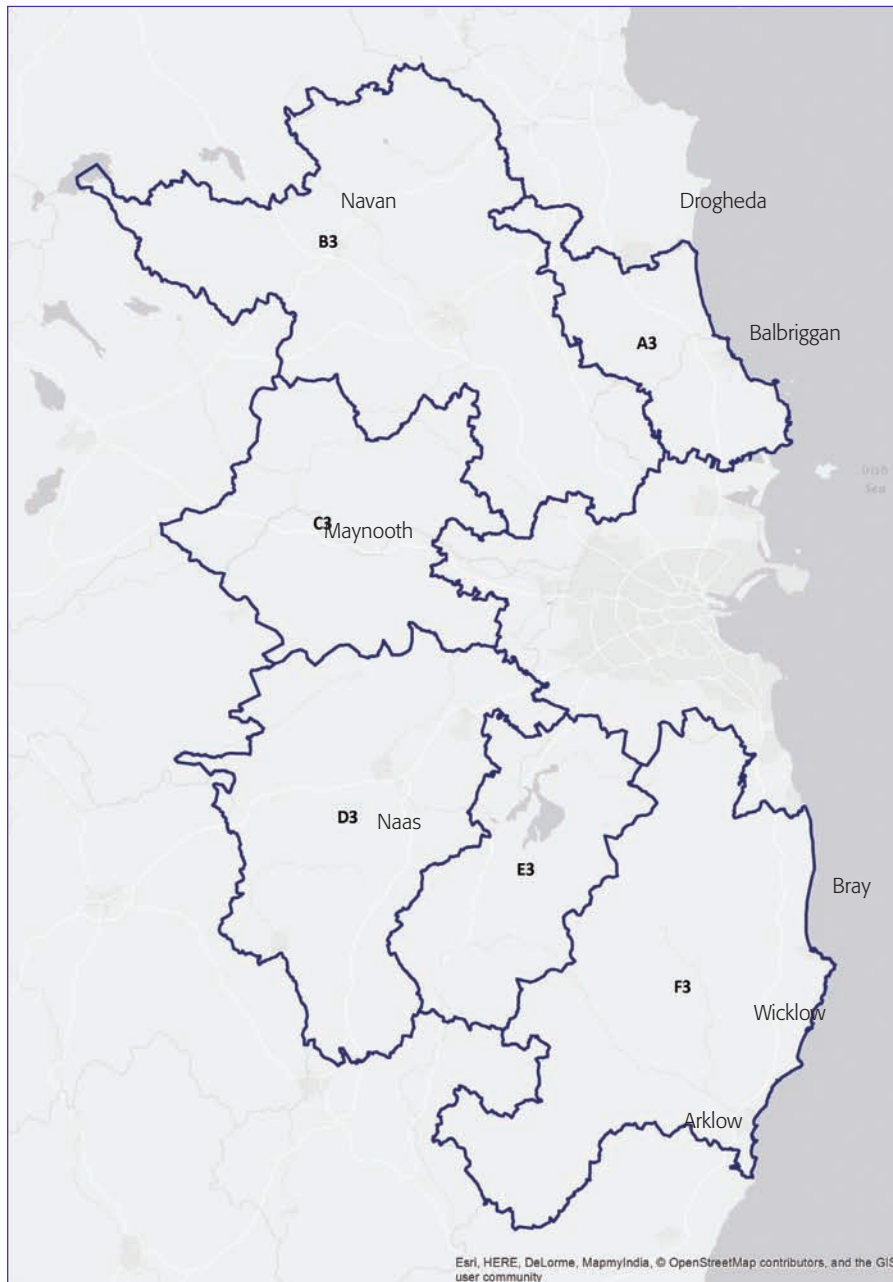
Figure 3.7 – GDA Segments



Instead of outlining the issues for each segment individually, this section treats each segment type together, i.e. the Outer Hinterland segments A3 to F3, Outer Metropolitan segments A2 to F2 and the Inner Metropolitan segments A1 to F1.

Outer Hinterland Segments – A3 to F3

Figure 3.8 – Outer Hinterland Segments



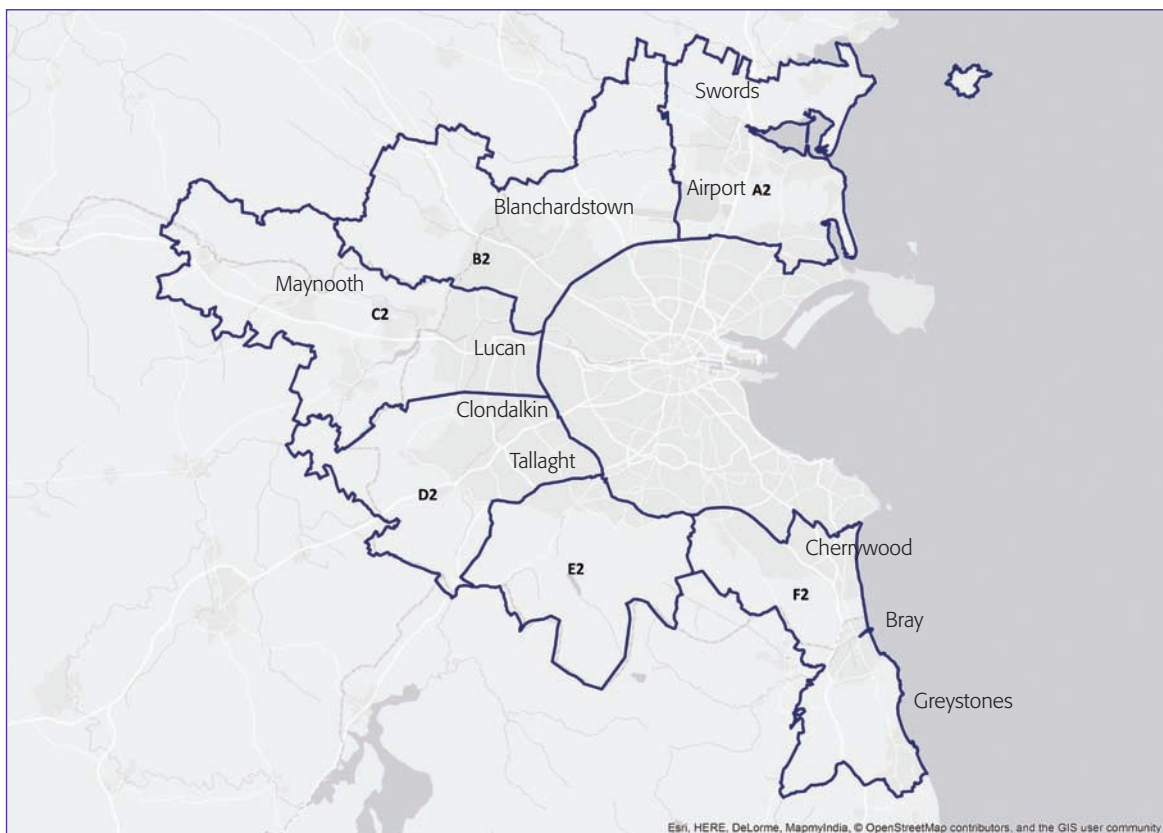
In the Hinterland area segments of each corridor (A3-F3), the car mode split for all trip purposes ranges between 81% to 87%, with segment B3 (M3 corridor in Meath) having the lowest car mode share.

The availability of rail services into Dublin city centre is shown to have a major bearing on the public transport mode share, with the three highest mode shares for public transport corresponding to this accessibility attribute, with A3 the highest at 9% and F3 and C3 at 7% public transport.

The cycling mode share is very low in the Hinterland area segments, at between 1 and 2% of all trips. For walking, however, the average is 8% across the outer segments, with the highest in B3 at 11% and the lowest in C3 (north Kildare / south Meath), at 5%.

Outer Metropolitan Segments – A2 to F2

Figure 3.9 – Outer Metropolitan Area Segments



The car mode share for all purposes ranges from 71% to 75%. While this shows that these areas are less car-dependent than the Hinterland area segments, it is still very clear that car is the dominant mode of transport.

As with the Hinterland area segments, the availability of rail services into the centre of Dublin has a direct bearing on the public transport mode share. Segments A2 and F2 have the highest public transport mode share at 12% and 11% respectively. These segments are served by DART. The average public transport mode share is 9% for the six segments, combined.

Walking features more prominently than in the Hinterland area segments, with an average mode share of 15%, compared to 8%. Segment B2 has the highest walking mode share at 18%, while segment A2 has the lowest at 10%, well below the average.

Cycling mode share remains low among these segments with the highest mode share in E2, at 4%.

Inner Metropolitan Area Segments – A1 to F1

Figure 3.10 – Inner Metropolitan Segments



The car mode share for trips for all purposes, ranges from 57% in segment C1 to 68% in segment E1. The average car mode share in this segment band is 65%.

The public transport mode share is similar to that of the Outer Metropolitan segments, ranging from 9% to 13% with an average of 11%. Again, the effect of accessibility to heavy rail services is evident, with A1 and F1 having the highest mode share at 13% in each.

The walking mode share is also similar to that of the Outer Metropolitan Area segments, ranging from 15% to 19% with the exception of C1, where the mode share is 31%. This relatively high mode share is likely to be associated with specific, localised issues.

Cycling begins to play a role here, with a 6% mode share in 4 of the 6 segments in this band. This figure is still substantially below the national target of 10% as set out in 'Smarter Travel'.

3.5 Transport Shortcomings

The above sections set out existing transport supply and the existing transport demand it seeks to serve. As can be seen, demand at present is not being fully met by the available transport system in a manner which will facilitate long-term economic growth and the meeting of social and environmental objectives, and the underlying land use patterns which have driven transport demand are compounding this position. When setting out the transport shortcomings in the GDA here, the Authority emphasises the need to again consider the wider background trends. The region is still in an era of high unemployment where economic activity and other activity is suppressed. As such, transport deficits are in fact understated at present and are expected to widen significantly as the recovery continues. As an insight in to how the transport network in the GDA may perform into the future without investment, it may be more useful to consider how it performed during the economic boom and subsequent years up to 2008. Notwithstanding such predictions, the mismatch between demand and supply can be generally summarised as follows:

- › Unreliable and uncompetitive bus and rail journey times compared to the car;
- › Improved but still overly complex bus network;
- › Overly complex public transport fare structure;
- › Perception of poor, and deteriorating, value for money on public transport;
- › Frequent disruptions to rail services;
- › Poor integration between modes and service providers;
- › Substandard passenger support services, such as shelters and waiting areas;
- › Unreliable and inconsistent passenger information;
- › Major delays in the provision of new infrastructure;
- › Congestion on the strategic road network;
- › Severe local congestion in certain locations;
- › Substandard – and in places dangerous – cycling environment; and
- › Substandard provision for pedestrians, particularly in central areas.

3.6 Considerations for the Strategy

The transport patterns and trends evident from the wide range of data sources, and the shortcomings in supply, point to the following considerations for the successful implementation of a transport strategy for the Greater Dublin Area:

- › The zoning and development of land needs to be carried out in a manner which promotes walking,

cycling and public transport for all trips and reduces the need for commuting by private car, particularly zoning for schools and large workplaces;

- The legacy of historical development patterns will act as a significant constraint on the development of an optimal transport network in the future;
- Addressing car dependency and use will be a major challenge, particularly in low density peripheral areas outside the M50;
- Cyclists must be provided with a safe and convenient metropolitan cycle network;
- Improvements to the quality of the public transport system, and how it is perceived, are essential to attract more passengers;
- The collapse in the use of sustainable modes for school travel is a critical cross-sectoral concern, which can only be partially addressed by transport;
- Without action in the short term, the M50 will no longer be able to perform its primary function;
- Significant public transport capacity deficits exist for radial trips into Dublin city centre along a number of strategic corridors; and
- Deficits in terms of orbital movement also exist, particularly closer into the city centre.

These patterns and trends set the stage for the next sections of the Strategy, whereby proposed responses to the challenges described above are set out.

04

Development of the Strategy



4. Development of the Strategy

This chapter takes the patterns, trends and issues from Chapter 3 and sets out the transport proposals for each Corridor in the GDA. In preparing the Strategy, a number of studies were undertaken to assess the transport options for each corridor and to examine a number of supporting transport policy measures. In these studies, all of the transport demand and supply issues were examined and the transport interventions required to meet future demand were derived. The recommendations from these studies have been taken on board in the formulation of the Strategy and this chapter reports on the outcome of this analysis. The approach to SEA Alternatives is also outlined. The overarching principle guiding the development of the Strategy was to meet existing and future demand with a sustainable, effective and efficient transport system.

4.1 Appraisal for Options Common to all Corridors

There are a number of networks and proposals which have emanated from work undertaken in the past by the Authority and other agencies which apply to several, or all, parts of the region. These relate mainly to bus and cycling proposals examined in other studies and plans, and are described below.

The Authority published a report in October 2012 entitled “Bus Rapid Transit – Core Dublin Network” which recommended the progression of two cross city routes and identified the potential for Bus Rapid Transit (BRT) as an interim solution to serve the Swords/ Airport to the City Centre corridor. In 2014, the Authority launched a public consultation on proposals for a BRT network for Dublin known as ‘Swiftway’. This network has been incorporated into the Strategy.

In advance of preparing the Strategy, the Authority prepared a report on the Core Bus Network for the Dublin Metropolitan Area, which identified those routes upon which there will be a focus on high capacity, high frequency and reliable bus services, and where investment in bus infrastructure should be prioritised and concentrated.

During the preparation of the Strategy, the Authority also undertook two orbital public transport studies, the Dublin Orbital Movement Study and the Dublin Metropolitan Inner Orbital Corridor Study, to inform the longer term 2035 orbital bus network. This built upon the work undertaken by the Authority in preparing the Core Bus Infrastructure Network Report. Details of the proposed Core Bus Network and orbital networks are presented in Chapter 5.

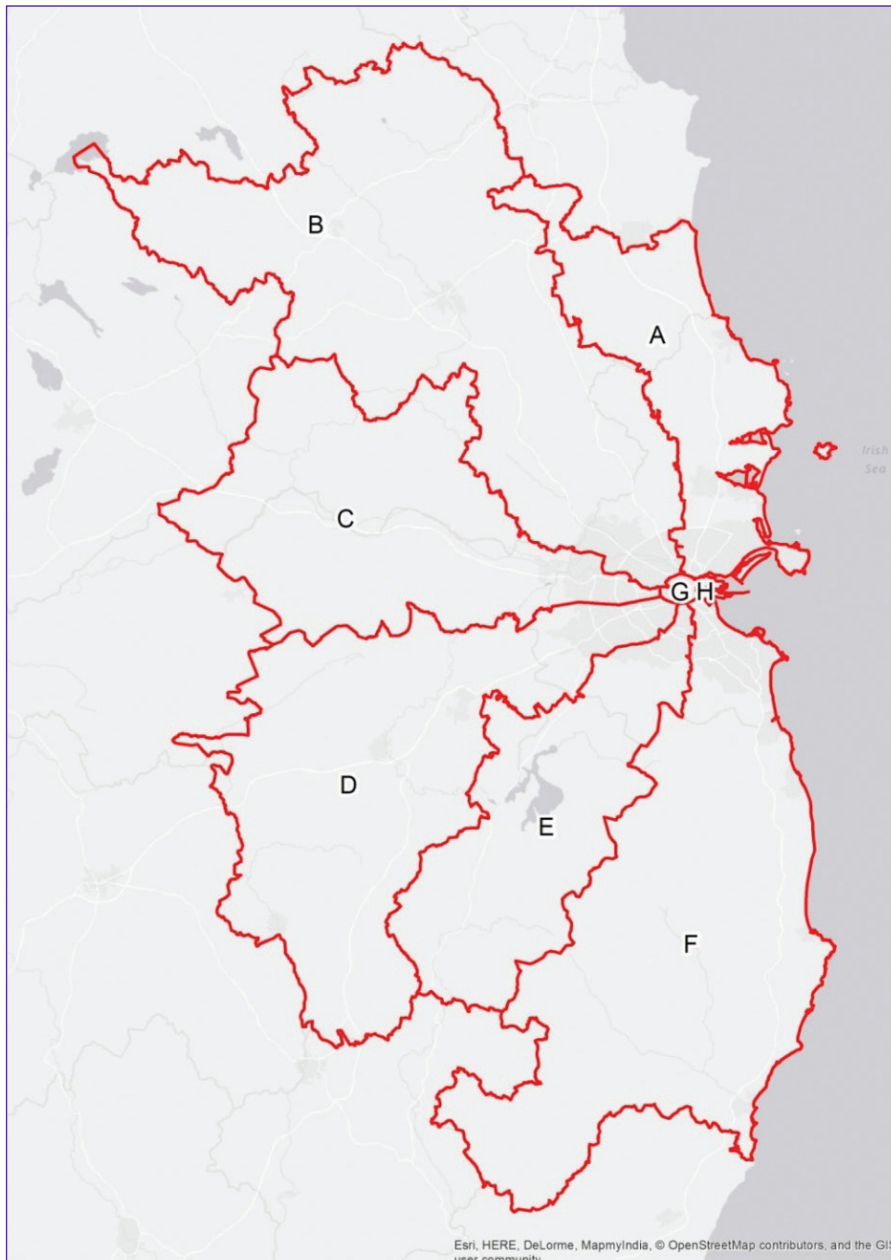
The GDA Cycle Network Plan was adopted by the Authority in 2013. This project was undertaken in collaboration with the seven local authorities in the Greater Dublin Area. The cycle network outlined in the plan will expand the urban cycling network to over 1,485 kilometres in length, and will provide over 1,300 kilometres of new cycling connections between towns in the rural areas of the Greater Dublin Area. This plan has been incorporated into the Strategy and is described in Chapter 5.

A number of other aspects of transport demand and supply are applicable to several parts of the region, and the appraisal process by corridor has identified the following proposals which are applicable to, and will be brought forward, for each corridor:

- Strategic rail-based Park and Ride will be provided to facilitate those living beyond the immediate catchment of rail to access destinations through the public transport network; and
- Walking and cycling improvements are required at the local level to cater for short trips to neighbourhood and district centre facilities, such as schools, convenience shopping and social services.

The following sections set out the outcome of the transport assessment for each of the six radial corridors in the GDA, and the reasoning behind the choice of transport solution to meet demand in each corridor is set out.

Figure 4.1 - The Radial Corridors of the GDA



4.2 Options Appraisal by Corridor

4.2.1 Corridor A – Drogheda – Balbriggan – Swords – Airport – North Inner City – to Dublin City Centre

As part of the economic corridor from Belfast to Dublin, including the national gateway at Dublin Airport, Corridor A will see significant development and associated growth in travel demand into the future, and will require a level of investment which reflects this role.

The Authority commissioned an independent separate report into this corridor in late 2014, with the objective of identifying the optimum long term public transport solution to connect Dublin City Centre, Dublin Airport and Swords. This study reviewed a range of heavy rail, light rail and bus rapid transit options and recommended new Metro North, a scheme that follows the same alignment as the previously proposed Metro North scheme, but which incorporates a number of significant variations, including shorter platforms permitting smaller stations, reduced rolling stock, fewer stations and vertical alignment changes. This recommendation was based on forecast travel demand, feasibility, and the potential benefits. This scheme will address radial demand in the central spine of the corridor.

In order to accommodate growth in the eastern parts of Corridor A, it is recommended that the capacity of the Northern Rail line is increased². Alternative schemes, such as enhanced bus would not provide sufficient capacity and the exploitation of existing transport assets would be a prudent approach, in any case. This will be achieved through, inter alia, the electrification of the rail line from Malahide to Drogheda as part of the DART Expansion Programme, and the provision of high frequency DART services on this line, extending to Drogheda.

Corridor A will therefore be provided with 2 high-capacity rail lines serving the majority of its radial demand. In advance of the new Metro North being constructed, it will be necessary to provide a higher level of public transport capacity than the existing provision, along the corridor linking Swords and the Airport to the city centre. This will take the form of the provision of a BRT service or a BRT type service, or a conventional QBC type upgrade along the route or parts of the route. The final arrangement would be designed to be complementary to the new Metro North project. A second BRT line along the Malahide Road to Clongriffin will also be provided as a means of upgrading the existing bus corridor to provide for additional demand not readily served by DART at locations such as Donnycarney, Artane, Coolock and Darndale.

From a roads perspective, it is intended to develop a distributor road on the western side of Swords, in addition to a distributor road around Donabate. The intersection of the Malahide Road with the east-west R139 at Balgriffin / Clare Hall is a major source of delay on both routes. It is intended to implement road proposals to address these deficiencies. Other road schemes and upgrades will also be implemented, in line with the principles for road development set out in Chapter 5.

4.2.2 Corridor B – Navan – Dunboyne – Blanchardstown – to Dublin City Centre

The M/N3 Corridor includes the settlement of Blanchardstown, Dublin's most populous suburb and the location of strategic employment zones at Ballycoolin, Damastown and the town centre. Navan is the county town of Meath and, while providing important services within Meath, it also has many commuters who travel to metropolitan Dublin on a daily basis.

² Subject to compliance with the EU Habitats and Birds Directives.

The extension of the commuter rail line to Navan has been previously proposed and has been assessed in the examination of this corridor. Based on population and employment forecasts, the level of travel demand between Navan, Dunshaughlin and various stations to the city centre is insufficient to justify the development of a high-capacity rail link. Instead, it is therefore proposed to provide an enhanced bus service along the M/N3 which is sufficient to meet the future demand up to 2035 in conjunction with the development of a bus hub in Navan. Bus services on the N2 will also be enhanced and a core bus corridor will be provided to Tyrellstown via Ballycoolin from the N2 at Finglas.

In terms of metropolitan rail services, increased use of the existing asset of the Maynooth Line would have many advantages, particularly in the context of development at locations such as Hansfield and Pelletstown. As such, it is proposed to extend DART to Maynooth by electrifying this line and by removing the level crossings. In addition it is also proposed to extend Luas Cross City further northwards, to serve the Finglas area and a strategic Park and Ride site at the N2/M50 junction.

While DART will be a major boost for transport in this corridor, areas along the N3 spine into the city centre, including the bulk of Blanchardstown's existing population, will also require improved transport provision. As such, it is proposed to construct a Bus Rapid Transit line along the N3 and Navan Road directly into the south of the city centre. A core bus corridor will also be developed through Finglas along the N2, facilitating high frequency bus services.

To cater for growth in vehicular traffic along Corridor B, the capacity of the N3, between Mulhuddart and the M50, will be increased through additional lanes and junction upgrades. Along the N2, a bypass of Slane is also proposed as a means of enhancing safety in the town centre by removing through traffic, particularly heavy goods vehicles, while also improving journey times along the corridor. Other road schemes and upgrades will also be implemented, in line with the principles for road development set out in Chapter 5.

4.2.3 Corridor C – Maynooth – Leixlip – Lucan – to Dublin City Centre

The N4 corridor contains two of the region's most important future residential and commercial development areas at Clonburris and Adamstown, both based on the Kildare rail line. Major employers are also located in this corridor in Leixlip and Celbridge.

Several options for addressing travel demand were examined here. The expansion of the DART network to Maynooth will have an impact on the northern part of the corridor containing Maynooth itself as well as Leixlip. Associated with this, DART will also be extended to Hazelhatch along the Kildare line, serving south Lucan and the new development areas mentioned above. This will require new tracks between Heuston and Cherry Orchard, which will also form part of the investment in the DART Expansion Programme.

In terms of new infrastructure, the requirement to serve north and central Lucan, as well as areas such as Ballyfermot, has led to the proposal for a new Luas line linking to Dublin City Centre. The demand along this corridor was too high to be accommodated by a BRT solution and, as such, light rail will be required to be developed.

These 3 rail corridors will be supplemented with 2 core bus corridors. The first, along the N4 will cater for demand close to Lucan Village as well as from Palmerstown. The second, within Ballyfermot, is intended to cater for any specific demand that will not be catered for by the new Luas line, and will aim to link origins and destinations not served by the fixed rail line.

It is intended to enhance orbital road movement through this corridor, outside of the M50, and linking with the road network in Corridors B and D, which will improve linkages with the N7, N4 and N3 national routes. Other road schemes and upgrades will also be implemented, in line with the principles for road development set out in Chapter 5.

4.2.4 Corridor D – Newbridge – Naas – Clondalkin – North Tallaght – to Dublin City Centre

This corridor is based around the N/M7 national road. This route is the busiest radial route into and out of Dublin and connects the capital with the regional cities of Limerick, Cork and Waterford. It is part of the economic spine running from Belfast to Cork, via Dublin, connecting the island's biggest settlements.

This corridor will benefit from the improvements to the Kildare rail line set out above, even if the line itself is outside the corridor. Options to extend a Luas or BRT line into south Clondalkin to supplement the DART and the existing Luas were not seen as feasible. Instead, to provide for the majority of growth in radial trips within the Metropolitan Area, two core radial bus corridors will be provided along the N7/Clondalkin and along Greenhills Road and Crumlin Road. This will improve capacity, speed and reliability of buses operating along this corridor.

These routes will be complemented by enhancing the capacity of the Red Luas Line through the provision of extra rolling stock, while Tallaght town centre is to be provided with a BRT, although the main benefit of this route will accrue in Corridor E.

In addition, it is intended to widen the M7 to three lanes in each direction between Naas (Junction 9) and the interchange with the M9 at Junction 11, along with revisions to Junction 10 (Naas South / Newhall) and the addition of a new junction at Osberstown linking to a bypass of Sallins. It is also intended to reconfigure the N7 from the M50 to Naas. Other road schemes and upgrades will also be implemented, in line with the principles for road development set out in Chapter 5.

4.2.5 Corridor E – N81 Settlements – South Tallaght – Rathfarnham – to Dublin City Centre

Corridor E is made up of generally suburban residential development and is not defined on the basis of a major transport route, road or public transport service. It presents a challenge in that respect as it is more difficult to serve with high capacity public transport than other corridors, which are defined by multi-lane roads and / or dual carriageways, and contain existing or proposed rail lines.

As limited growth in radial trips along Corridor E outside of the Metropolitan Area is anticipated, it is not proposed to implement significant public transport infrastructure improvements. Bus capacity will be increased to meet demand along the N81.

For the Metropolitan parts of this corridor, the performance of the Rathfarnham Quality Bus Corridor is poor relative to others and requires enhancement. As such, a number of options, including Light Rail, have been examined. However, due to the land use constraints in the corridor and owing to the pressure on the existing road network, a Luas line was not deemed feasible. Instead, the emerging solution comprises a BRT to Tallaght via Rathfarnham and Terenure. This will result in a significant increase in capacity and reliability compared to existing public transport services and will balance public transport requirements with those of the private car. The BRT will be supplemented by a core radial bus corridor between Rathfarnham, Rathmines and the City Centre.

Two new roads are to be built within this corridor, a South Tallaght link road from Oldcourt Road to Kiltipper Road, and a public transport bridge over the Dodder to the east of Tallaght from Firhouse Road to the N81. Other road schemes and upgrades will also be implemented, in line with the principles for road development set out in Chapter 5.

4.2.6 Corridor F – Arklow – Wicklow – Greystones – Bray – Cherrywood – Dundrum – Dun Laoghaire – Dublin City Centre.

Corridor F stretches from the south east business districts to Wicklow, based around the N/M11 route and containing both the DART and Luas Green Line. The Strategic Development Zone of Cherrywood is in this corridor.

During the preparation of the Strategy, the Authority prepared a report on the South East corridor. This study primarily aimed to identify public transport options that could effectively meet the growth in travel demand to year 2035, between the South East Study Area and Dublin City Centre. A number of options to cater for transport growth were examined. This included the upgrading of the Green line to Metro standard all the way to a point in Bray. Other options included focussing on the DART and a combination of BRT and bus priority to service growth, including a BRT network linking to the upgraded Metro at Bride's Glen or Sandyford.

Given the need to accommodate expected growth in demand between segments along Corridor F, as well as from these segments to the city centre, a number of schemes are proposed. The capacity of the South Eastern rail line will be increased³ through enhancements to the existing rail line, incorporating city centre signalling and extra rolling stock. DART Underground will also enable increases in capacity along this corridor. This will facilitate faster and more frequent intercity, regional and DART services to be provided on this line.

While these schemes focus on the coastal areas, the western parts of the corridor, including Cherrywood and other potential development areas, will require high capacity public transport. It is, therefore, proposed to upgrade the Luas Green Line to Metro standard from the city centre, where it will link into the new Metro North, as far as its current terminus at Bride's Glen. From this point to Bray, a new Luas line is proposed. This will provide a new north-south inland rail axis from Swords to Bray. These rail services will be supplemented by the proposed BRT on the N11 from UCD to Blanchardstown, and the core radial bus corridors on the N11, south of UCD, and on the Rock Road.

To provide for growth in vehicular trip demand and improve road safety, the N11 and M50 between Newtownmountkennedy and Sandyford (including the M11/M50 junction) will be upgraded. Additionally, Loughlinstown roundabout will be improved, while a distributor road network will be developed to service development lands at Kiltiernan / Glenamuck. Other road schemes and upgrades will also be implemented, in line with the principles for road development set out in Chapter 5.

4.3 Options Appraisal for Local Movement

As set out in Chapter 3, the Authority broke the GDA further down into segments and settlements. The latter category is particularly useful for appraising options for local movement. Settlements relate to towns and suburbs – areas focussed on local services and commercial centres. A key requirement of the

³ Subject to compliance with the EU Habitats and Birds Directives.

Strategy is to ensure a framework is in place to maximise the accessibility to such services provided at the local level.

Options for facilitating movement at this level include: local road capacity improvements; increased parking levels at destinations such as shops and schools; enhanced cycle provision; improvements to the footpaths and pedestrian crossings; and local public transport.

In order to maximise accessibility for as many people as possible at the local level, the Strategy proposes significant improvements to the walking and cycling network within settlements. As part of the Authority's on-going work with local authorities in the region, key linkages will be identified, with a priority to connect residential communities to their local services and, as required, to strategic public transport. This will include the implementation of the GDA Cycle Network Plan, improvements to pedestrian crossings and footpaths and the provision of destination cycle parking. In 2015, the Authority published a best practice guide for providing permeability in existing urban areas, with the aim of preventing the closure of pedestrian and cycle links and the creation of new links, as a means of overcoming severance and promoting these modes for local trips, and enhancing access to public transport services.

Local public transport options are also required to link settlements into the integrated transport network proposed. This new integrated public transport system will ensure that the settlements have access to all other parts of the region either by direct services or through interchange. In Metropolitan Dublin, this will be done by the general transport network proposed, but in the hinterland, the potential for local town services will be taken forward as part of the implementation of this Strategy.

The management and use of the vehicular network is also central to improving accessibility within settlements. Local traffic congestion has become a significant problem within the GDA, particularly in relation to school travel, general commuting, and in the vicinity of local retail centres. The use of the car will always be an important mode of transport, particularly for trips not suited to other modes such as bulky goods shopping or 'out of hours' travel. In order to facilitate these trips, it is essential to reduce local congestion by encouraging the use of other modes for discretionary trips. As such, it is intended to focus on the provision of the necessary infrastructure and services to facilitate more local movement by sustainable transport modes.

4.4 SEA Alternatives Assessment

The strategy has been subject to a Strategic Environmental Assessment (SEA) and its publication is accompanied by an Environmental Report. In line with legislation governing SEA, a number of reasonable alternative strategies have been devised and assessed, taking into account the objectives and the geographical scope of the strategy. Due to the close relationship between transport and land use, it was deemed necessary to consider the relationship between these when devising alternatives. As such, while varying effects on the land use patterns are considered arising from the variance in proposed transport infrastructure; all alternatives maintain the overall thrust and principles of the Regional Planning Guidelines. These alternatives, examined in greater detail in the Environmental Report, are as follows:

4.4.1 Alternative 1 – Orderly Provision of Transport

In this alternative, all elements of the transport strategy are implemented in line with land use development according to prevailing policy and current plans which are in force across the region. The

principles of land use and transport integration hold and those schemes which support sustainable development are constructed and become operational in a timely fashion.

4.4.2 Alternative 2 – Uneven Provision of Transport

Most major elements and targets of the Transport Strategy are implemented with some significant delays or omissions that tend to concentrate development into the immediate hinterland of the M50 and into the coastal strip to take advantage of existing transport assets, including the national road network. This scenario envisages significant congestion and delay issues at critical points within the M50 – both at major junctions, especially along the M50, as well as over-crowding on key public transport routes.

This may require alternative means of managing demand to enable the deferral, combination, or alternative implementation of elements of the Strategy. This alternative scenario may change the priorities, sequence or composition of the Strategy.

4.4.3 Alternative 3 – Development-led Provision of Transport

Due to the delay or failure to implement high capacity systems, such as Metro and DART, there is less consolidation of development than in Alternative 1 or 2. Development will therefore leapfrog the outer suburban rail-based development areas, with much of the growth instead occurring in the wider hinterland.

As such, significant levels of economic and demographic development are concentrated into east Leinster outside Dublin in circumstances where development of critical elements of high-capacity transportation infrastructure has been delayed or disrupted. There are high levels of conflict between land-use planning and a resurgent property development sector.

This alternative scenario may exhibit 'asymmetries' involving the 'clumping' of projects and services in some developer-led areas and the delay and absence of projects in other areas of equal need, but with less influence.

05

The 2035 Transport Network



5. The 2035 Transport Network

5.1 Introduction

This chapter outlines the strategic transport infrastructure that is proposed to be delivered within the lifetime of the Strategy. The proposals set out in this chapter follow on from the analysis of the issues, patterns and trends in Chapter 3, and have been derived from the various supporting studies and assessments referred to in Chapter 4.

The Strategy infrastructure proposals are presented by mode of transport, as follows:

- › Heavy Rail Infrastructure;
- › Light Rail Infrastructure;
- › Bus Infrastructure;
- › Cycling Infrastructure;
- › Walking; and
- › Road Network.

Additional sections address the issues of freight movement, parking provision, the provision of park & ride sites and transport demand management.

5.2 Heavy Rail Infrastructure

As part of this Strategy it is intended to:

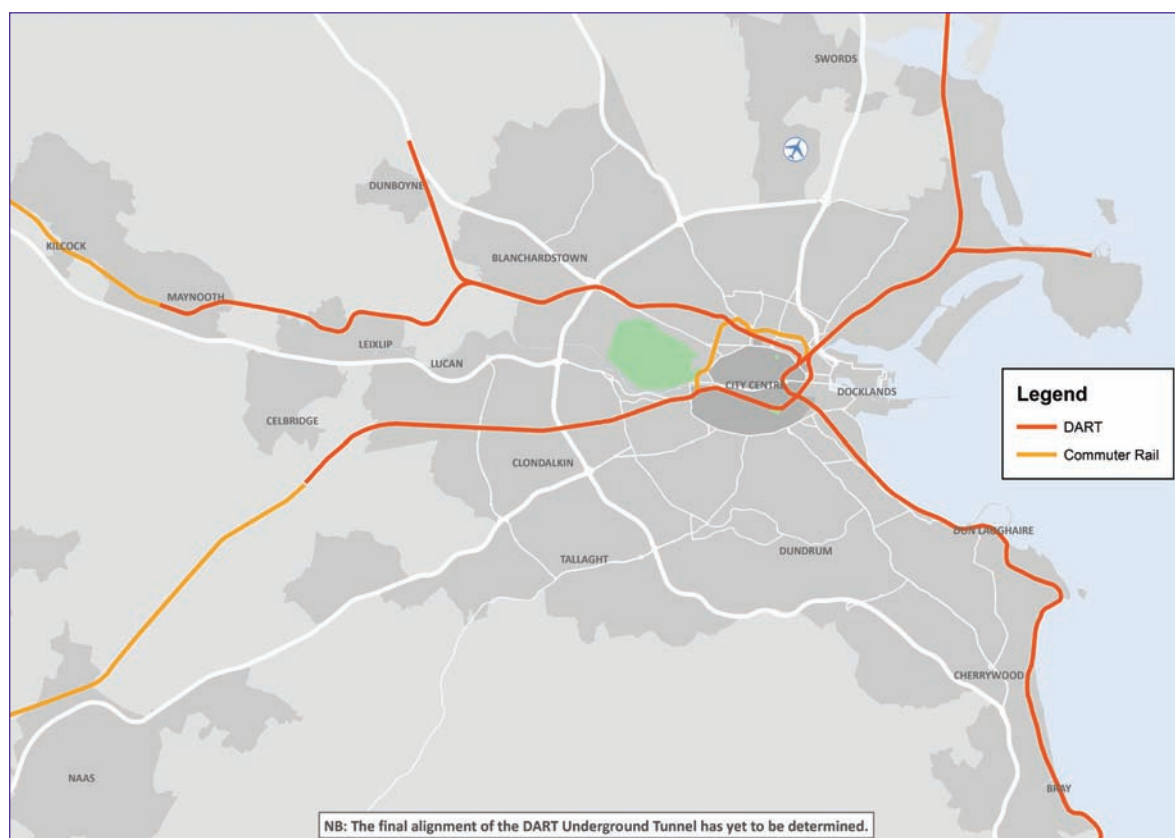
- › Reopen the Phoenix Park Tunnel Link for passenger services, which will link the Kildare/Cork line to the city centre;
- › Complete the City Centre Resignalling programme, which will provide additional train paths through the city centre section of the rail network;
- › Implement the DART Expansion Programme, which will provide DART services as far north as Drogheda; to Hazelhatch on the Kildare Line (including a tunnel connection from the Kildare Line to link with the Northern / South-Eastern Line); to Maynooth in the west and to the M3 Parkway;
- › Develop a new train control centre to manage the operation of the rail network;
- › Construct additional train stations in developing areas with sufficient demand;

- Implement a programme of station upgrades and enhancement; and
- Ensure an appropriate level of train fleet, of an appropriate standard, to operate on the rail network.

These enhancements will create a full Metropolitan area DART network for Dublin with all of the lines linked and connected. This integrated rail network will provide the core high capacity transit system for the region and will deliver a very substantial increase in peak-hour capacity on all lines from Drogheda, Maynooth, Hazelhatch and Greystones.

The 2035 Heavy Rail Network is shown in the maps below, the first focussing on the Metropolitan Area and the second on the region as a whole.

Figure 5.1 – 2035 Metropolitan Heavy Rail Network



A map of the Dublin region illustrating the proposed rail network. The map shows various towns and cities, including Kells, Navan, Trim, Drogheda, Balbriggan, Lusk, Rush, Donabate, Swords, Dunboyne, Blanchardstown, Leixlip, Lucan, Celbridge, Clondalkin, Tallaght, Dundrum, Dún Laoghaire, Cherrywood, Bray, Greystones, Newtownmountkenny, Wicklow, Arklow, Blessington, Naas, Newbridge, Kildare, Monasterevin, Kilcullen, and Athy. A legend in the top right corner identifies two types of rail services: DART (represented by a red line) and Commuter Rail (represented by an orange line). The DART route is shown as a red line starting from Drogheda, passing through Balbriggan, Lusk, Rush, Donabate, Swords, Dunboyne, Blanchardstown, Leixlip, Lucan, Celbridge, Clondalkin, Tallaght, Dundrum, Dún Laoghaire, Cherrywood, Bray, Greystones, and ending at Wicklow. The Commuter Rail route is shown as an orange line starting from Drogheda, passing through Balbriggan, Lusk, Rush, Donabate, Swords, Dunboyne, Blanchardstown, Leixlip, Lucan, Celbridge, Clondalkin, Tallaght, Dundrum, Dún Laoghaire, Cherrywood, Bray, Greystones, and ending at Wicklow. A note at the bottom states: "NB: The final alignment of the DART Underground Tunnel has yet to be determined."

Details of the individual proposals are set out in the following sections.

5.2.1 Phoenix Park Tunnel Link

The Phoenix Park Tunnel Link is a proposal to bring back into passenger use the existing rail connection that links Heuston and Connolly Stations. This connector runs from Islandbridge junction, just west of Heuston Station, to Connolly Station and the North Wall, via the Phoenix Park Tunnel, a 692 metre long tunnel constructed in 1877, and connecting to the Maynooth Line at Glasnevin Junction.

The completion of the City Centre Resignalling project will provide extra train paths through Connolly Station. For the period prior to the construction of the DART Underground Project, it is intended to utilise a portion of these additional train paths to facilitate the use of the Phoenix Park Tunnel for the running of through services from the Kildare line to Connolly and through to Grand Canal Dock.

5.2.2 DART Expansion Programme

The DART Expansion Programme which is a cornerstone project of the strategy, will see the DART system expanded, providing fast, high-frequency electrified services to Drogheda on the Northern Line, Hazelhatch on the Kildare Line, Maynooth on the Maynooth/Sligo Line, while continuing to provide DART services on the South-Eastern Line as far south as Greystones.

The DART Expansion Programme also incorporates the DART Underground Project, which is an underground rail link through the City Centre, allowing DART services to operate on the Kildare line and travel through the tunnel, enabling passengers to connect with DART services on the other three rail lines.

5.2.3 City Centre Re-signalling

One of the key constraints existing on the rail network is the limitation on train paths through the city centre section, between Connolly and Grand Canal Dock stations. The City Centre Resignalling project will provide for significant capacity enhancement through this section by upgrading signalling and turn-back facilities to accommodate approximately 50% more train paths per direction per hour in the critical city centre area. It is a key project aimed at unlocking the existing major bottleneck in the city centre, which will allow higher frequency rail services to be provided, including accommodating services accessing the city centre through the Phoenix Park Tunnel Link.

5.2.4 Train Control Centre

Much of the rail network in Ireland is controlled and managed from a 'Central Traffic Control' centre located at Connolly Station in Dublin.

The existing Central Traffic Control facility is approaching the limit of its capacity with systems and equipment nearing the end of their useful lives. Given the importance of ensuring the safety of the rail network, it is intended to develop a replacement control centre to cater for both the immediate and future rail control requirements of the rail network. It is proposed to either upgrade the existing facility or provide a new facility in an alternative location.

In tandem with the development of a new control centre, consideration will be given to enabling the co-location of other transport related control centres in the same building, with the objective of achieving enhanced co-ordination between the different transport modes.

5.2.5 Additional Rail Stations

Over the period of the Strategy, a number of additional stations will be added to the network in developing areas which have a sufficient level of demand to support the provision of a train station. Exact locations will be determined at the relevant time, but likely locations include Pelletstown on the Maynooth Line and Woodbrook on the South-Eastern Line.

5.2.6 Station Upgrades and Enhancement

The appearance, quality, accessibility and security of rail stations all influence usage of the rail network and impact significantly on passenger satisfaction with rail transport. While much has been done over recent years to develop new stations and refurbish some existing stations, more still needs to be done in this area.

During the period of the Strategy a continuous programme will be put in place to carry out the appropriate station improvements that can contribute so much to enhancing the overall image and attractiveness of the rail service. As part of these on-going refurbishment and renewal works, enhanced passenger information provision and other passenger focussed facilities that improve the attractiveness and convenience of the rail system will be included.

5.2.7 Train Fleet

With a growing number of rail passengers anticipated, and an enlarged electrified rail system, significant investment will be required in the rail fleet. Additionally, much of the existing DART fleet dates back to the 1980s. During the period of the Strategy it is intended to replace and/or refurbish the majority of the existing DART fleet and to acquire additional fleet as necessary to provide the required services on the expanded network.

5.2.8 Other Rail Investments

While the above projects set out the main activities in relation to the rail network, other smaller interventions will be undertaken during the period of the Strategy. These include:

- Renewal, replacement, upgrading of ticketing systems;
- Platform changes / additions at stations;
- Additional track works to enhance service efficiency;
- Rail safety systems; and
- Passenger information systems.

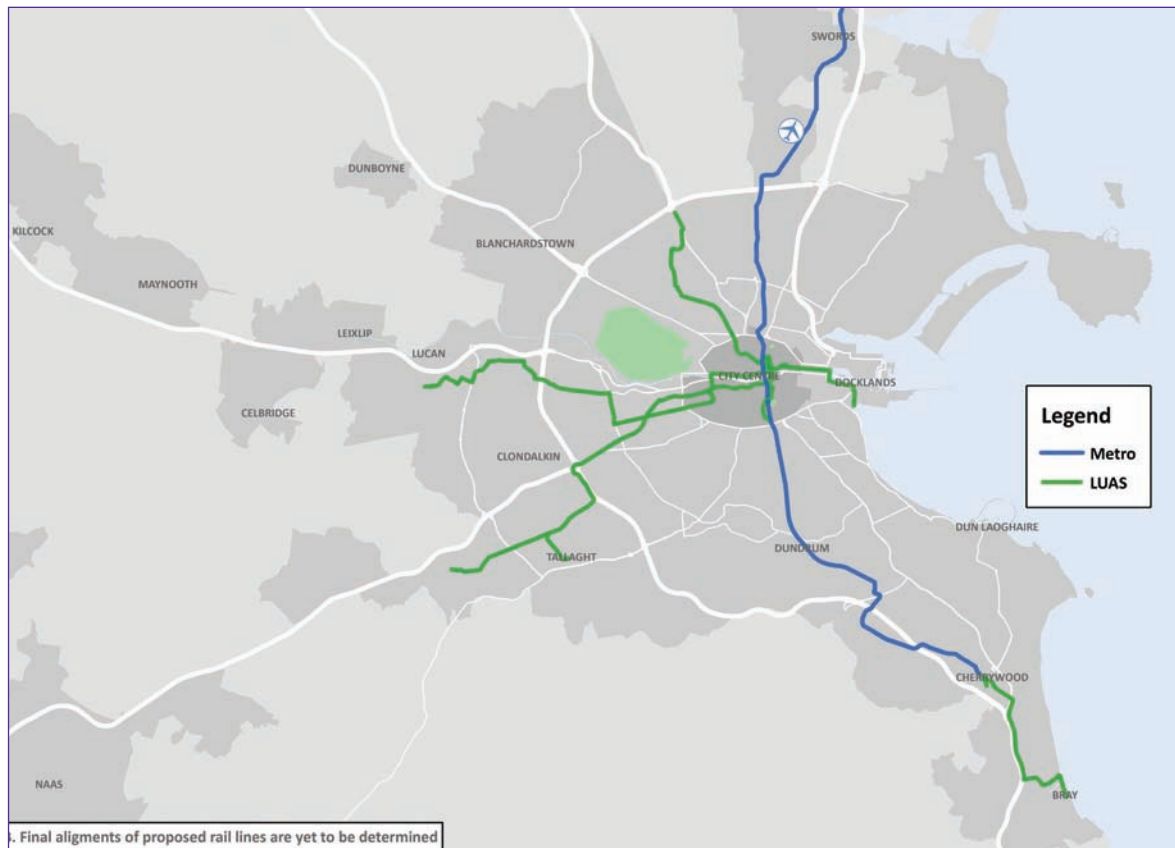
5.3 Light Rail Infrastructure

It is intended to further develop the light rail network in the GDA through the implementation of the following projects:

- New Metro North - light rail link from St. Stephen's Green to Swords and serving Dublin Airport, operating in tunnel under Dublin City Centre, and providing a high frequency, high capacity service;
- Green Line Capacity Enhancement - capacity enhancements to the Luas Green Line between St. Stephen's Green and Bride's Glen (in advance of Metro South) allowing longer and higher capacity trams to be brought into service on this line;
- Metro South - Luas Green Line Capacity Upgrade from St. Stephen's Green to Bride's Glen, completing a full north-south high-capacity high-frequency cross-city rail corridor through the central spine of the Metropolitan Area;
- Luas Cross City connecting St. Stephen's Green to Broombridge and intersecting with the Red Line at Abbey Street;
- Extension of Luas Green Line to Bray, providing a second rail alternative to this large town, connecting to the city centre and major destinations along the corridor at Cherrywood, Sandyford and Dundrum;
- Extension of Luas Cross City to Finglas, utilising the new Luas Cross City line to provide a light rail link to the Finglas area;
- Luas to Lucan, providing a high capacity link into the centre of Lucan's large residential areas to the south of the N4 national road, and connecting to the city centre; and
- Luas Red Line extension to Poolbeg, linking the north Docklands to this new development area south of the Liffey.

The 2035 Light Rail Network is shown in the map below:

Figure 5.3 – 2035 Metropolitan Light Rail Network



Details of the individual proposals are set out in the following sections.

5.3.1 New Metro North - Metro from St. Stephen's Green to Swords

New Metro North is a modified version of the original Metro North proposal which proposes providing a similar service at significantly reduced costs.

This new metro line will provide a high-speed, high-capacity, high-frequency public transport link from the city centre to Dublin Airport and Swords. New Metro North will serve a large number of significant destinations, including Ballymun, Dublin City University and the Mater Hospital, and will interchange with other rail and bus services at Drumcondra, O'Connell Street and St. Stephens Green.

5.3.2 Luas Green Line Capacity Enhancement

The Luas Line from St. Stephen's Green to Bride's Glen has seen significant passenger growth over the last few years. In order to accommodate a continuation of that growth in advance of Metro South, the capacity of the Green Line will need to be increased by transitioning to 50+ metre trams. To accommodate these longer trams, platforms from Stillorgan to St. Stephen's Green will have to be lengthened and new tram fleet acquired, together with power system upgrades and modifications to depot arrangements.

5.3.3 Metro South - Luas Green Line Capacity Upgrade

While the Luas Green Line Capacity Enhancement project will provide an additional level of passenger capacity, a significant further uplift will be required to cater for the longer term usage forecasts. This will require an upgrading of the line to metro standard through the extension of new Metro North southwards, via a tunnel, to join the Green line in the Ranelagh area. This will enable the through running of Metro trains from Swords to Bride's Glen.

The upgrading of the Luas Green Line to Metro will ensure that growth along this corridor can be accommodated and, in combination with new Metro North to Swords, will provide Dublin with a high-capacity, high-frequency cross-city rail corridor serving critical destinations at Dublin Airport, Dublin City University, the City Centre and Sandyford directly.

5.3.4 Luas Cross City

Luas Cross City comprises a broadly north / south Luas line extending from St. Stephen's Green in the south to connect to the Maynooth Rail line at Broombridge in Cabra at its northern end. It will provide an interchange link between the existing Red and Green Luas lines and will serve the new DIT campus at Grangegorman. The line is expected to come into service in 2017 and will significantly enhance accessibility, to and within, the core of the city centre area.

5.3.5 Finglas Luas

It is intended to extend Luas Cross City from its terminus at Broombridge to the north of Finglas. This will provide a high capacity radial service from this large suburb into the city centre. It is also intended to provide a strategic park and ride at the terminus of this line on the N2 national road close to the M50. These proposals will serve the significant levels of forecast travel demand from this corridor to the city centre and Grangegorman.

5.3.6 Extension of Luas Green Line to Bray

Subsequent to the Green Luas Line being upgraded to Metro in order to provide the necessary passenger capacity, the Luas line will be extended from Cherrywood to Bray Town Centre. While a decision on the final alignment has yet to be made, it is likely to run to Bray DART station via Shankill and the former golf club lands. It will provide a high frequency, high capacity link between Bray and the key employment areas of Sandyford, Dundrum and Cherrywood, in addition to connecting to the City Centre.

5.3.7 Lucan Luas

It is intended to develop an east-west Luas line, commencing in the residential areas of Lucan to the south of the N4 national road, and connecting into Dublin City Centre. This will provide a high capacity radial service from this area to the City Centre, sufficient to cater for the high transport demand along this corridor, and will serve Lucan, Liffey Valley and Ballyfermot along its route.

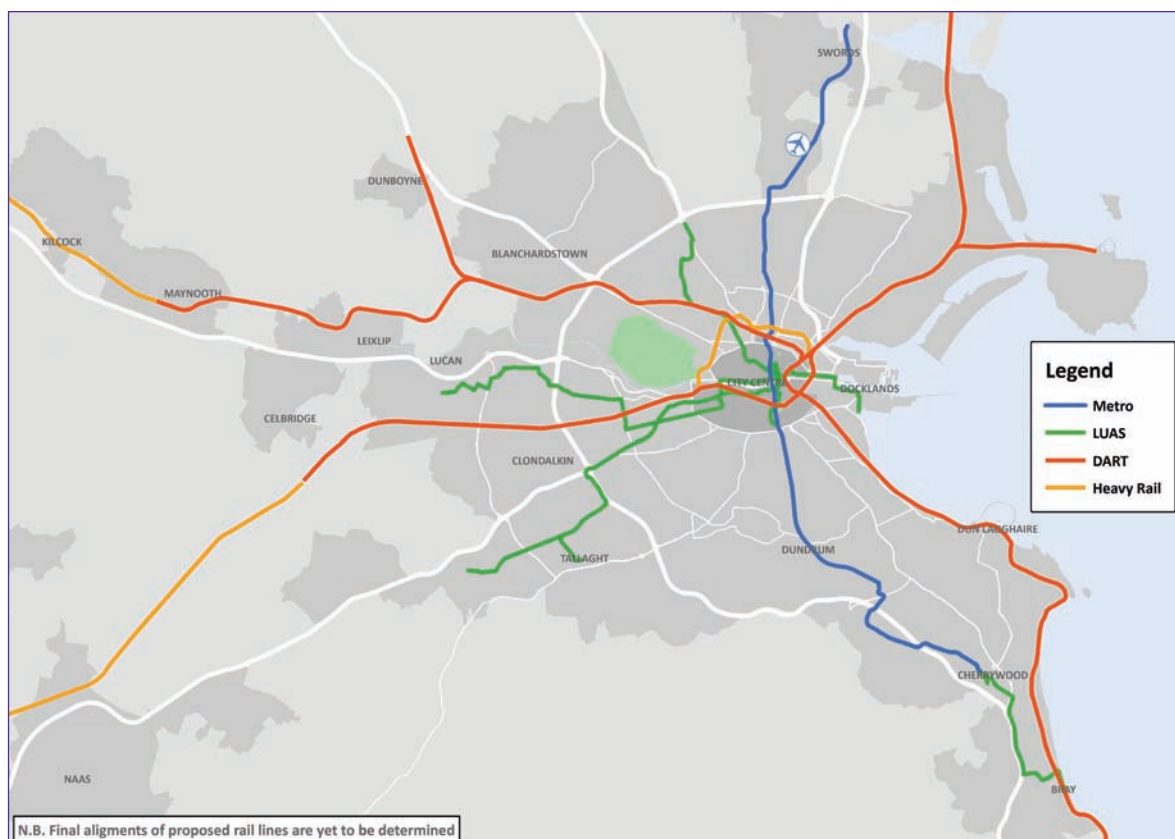
5.3.8 Poolbeg Luas

To serve the future development area of Poolbeg, in addition to Ringsend and Irishtown, it is intended to extend the Luas Red Line south of the River Liffey at its eastern end. Crossing the Liffey on a new bridge in the vicinity of existing East Link Bridge, Luas services would be extended past the Point, continuing onto Poolbeg. This extended link will provide a fast and convenient connection from this area into the City Centre and westwards.

5.4 Combined Rail Network

When light rail is taken in combination with the heavy rail network outlined in the previous section, the concept of the full Dublin rail network begins to emerge. Interchange, in the city centre in particular, begins to become attractive, meaning all parts of the core area – from Docklands and Poolbeg in the east, to Heuston in the west, and from Grangegorman in the north, to St. Stephens Green in the south – will be highly accessible to most parts of the Dublin Metropolitan Area, including Dublin Airport, with one interchange. This combined rail network is shown below:

Figure 5.4 – 2035 Combined Metropolitan Heavy and Light Rail Network



5.5 Bus Infrastructure

As part of the Strategy process, a number of studies have been undertaken which have identified those routes where the demand for travel necessitates significant levels of infrastructural investment in order to minimise delays to bus services.

Arising from this analysis, a “Core Bus Network” was identified for the overall region. This core network represents the most important bus routes in the region, and are generally characterised by a high frequency of bus services, high passenger volumes and with significant trip attractors located along the route. The identified core network comprises sixteen radial bus corridors, three orbital bus corridors and six regional bus corridors. While this network represents the core high frequency bus routes, it is supplemented by other bus services operating on lower frequency routes and by local buses running on other routes.

The Core Bus Network will serve significant origins and destinations in the Dublin Metropolitan Area and throughout the GDA, particularly those locations not directly served by rail and light rail. It will also provide greater opportunity for reliable and convenient interchange with these services.

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. This will mean enhanced bus lane provision on these corridors, removing current delays on the bus network in the relevant locations and enabling the bus to provide a faster alternative to car traffic along these routes, making bus transport a more attractive alternative for road users. It will also make the overall bus system more efficient, as faster bus journeys means that more people can be moved with the same level of vehicle and driver resources.

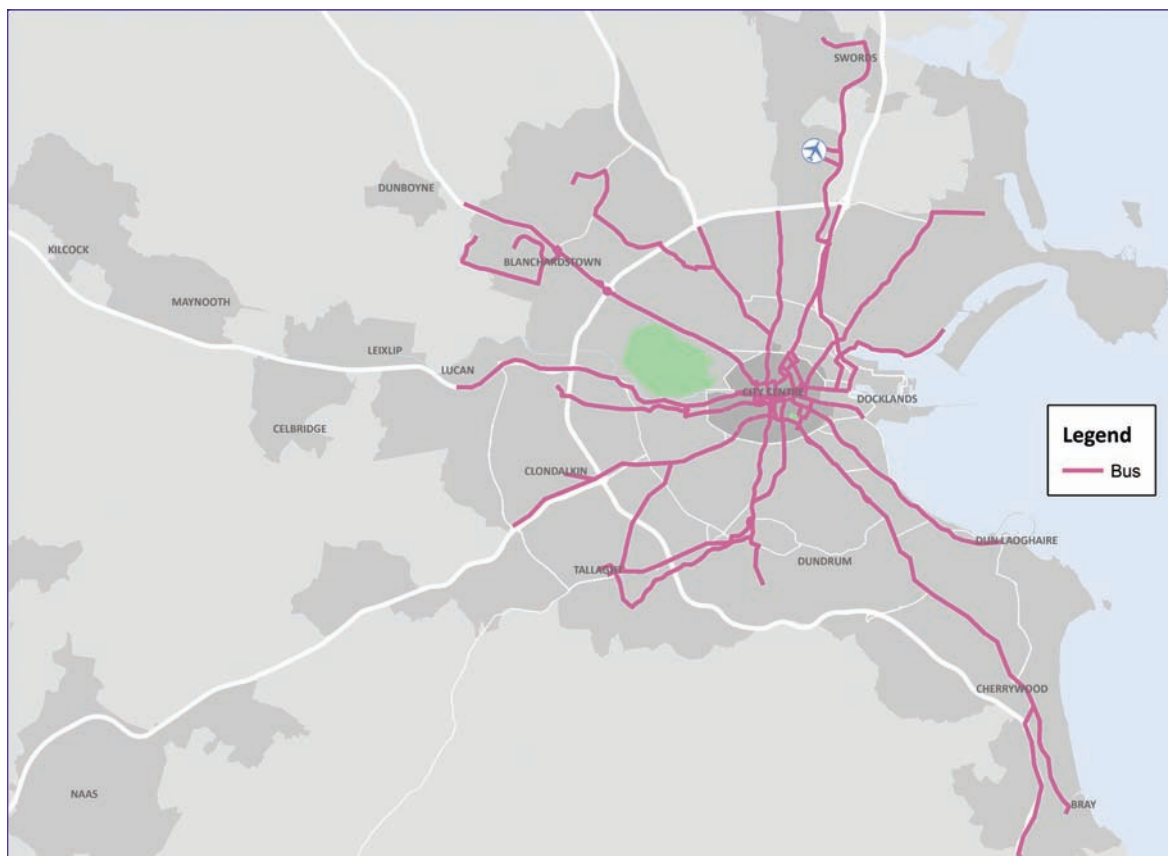
5.5.1 Core Radial Bus Network

The core radial bus corridors forming the Core Bus Network for the region comprise the following routes:

- Clontarf – East Wall;
- M1/ M50 – Dublin Port Tunnel;
- Clongriffin – Artane – Fairview;
- Swords – Airport – Drumcondra;
- Ballymun – Phibsboro;
- Finglas – Phibsboro;
- Blanchardstown – Cabra – Stoneybatter;
- Lucan – Palmerstown – Kilmainham;
- Liffey Valley – Ballyfermot;
- N7/Clondalkin – Crumlin;
- Tallaght – Walkinstown – Crumlin;
- Tallaght – Rathfarnham – Terenure;
- Marley Park – Rathmines;
- Bray/N11 – UCD – Donnybrook;
- Dun Laoghaire – Blackrock – Ballsbridge; and
- Ringsend – Pearse Street.

A map of the Core Bus Network Radial Corridors is shown below.

Figure 5.5 – 2035 Core Bus Network – Radial Corridors



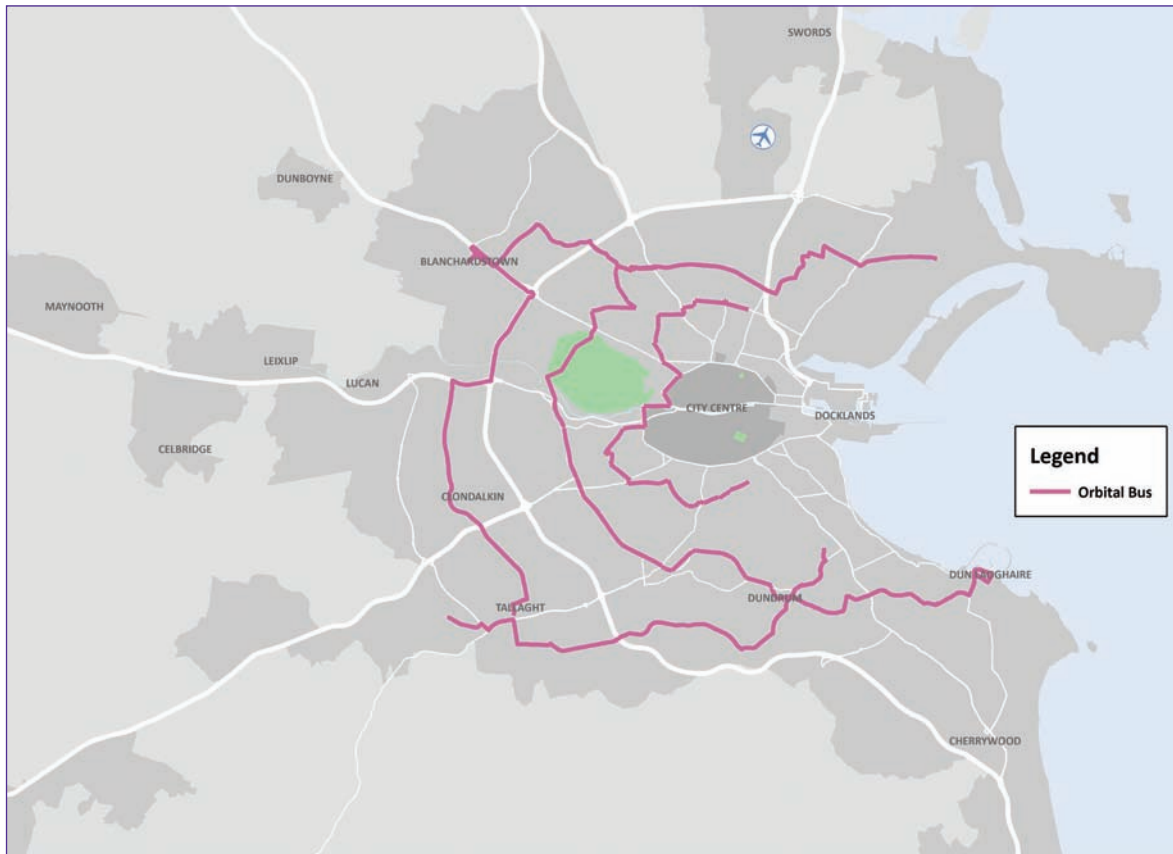
5.5.2 Core Orbital Bus Network

A number of orbital routes will comprise an important element of the Core Bus Network, ensuring that more trips within the Metropolitan Area can be undertaken by public transport in a convenient and efficient manner. Six orbital routes are proposed for inclusion in that core network, comprising:

- › Dún Laoghaire – Dundrum;
- › Dundrum / UCD – Tallaght;
- › Dundrum – Finglas;
- › Ranelagh – Drumcondra;
- › Tallaght – Blanchardstown; and
- › Blanchardstown – Kilbarrack.

A map of the Core Bus Network Orbital Corridors is presented below.

Figure 5.6 – 2035 Core Bus Network – Orbital Corridors



5.5.3 Core Regional Bus Network

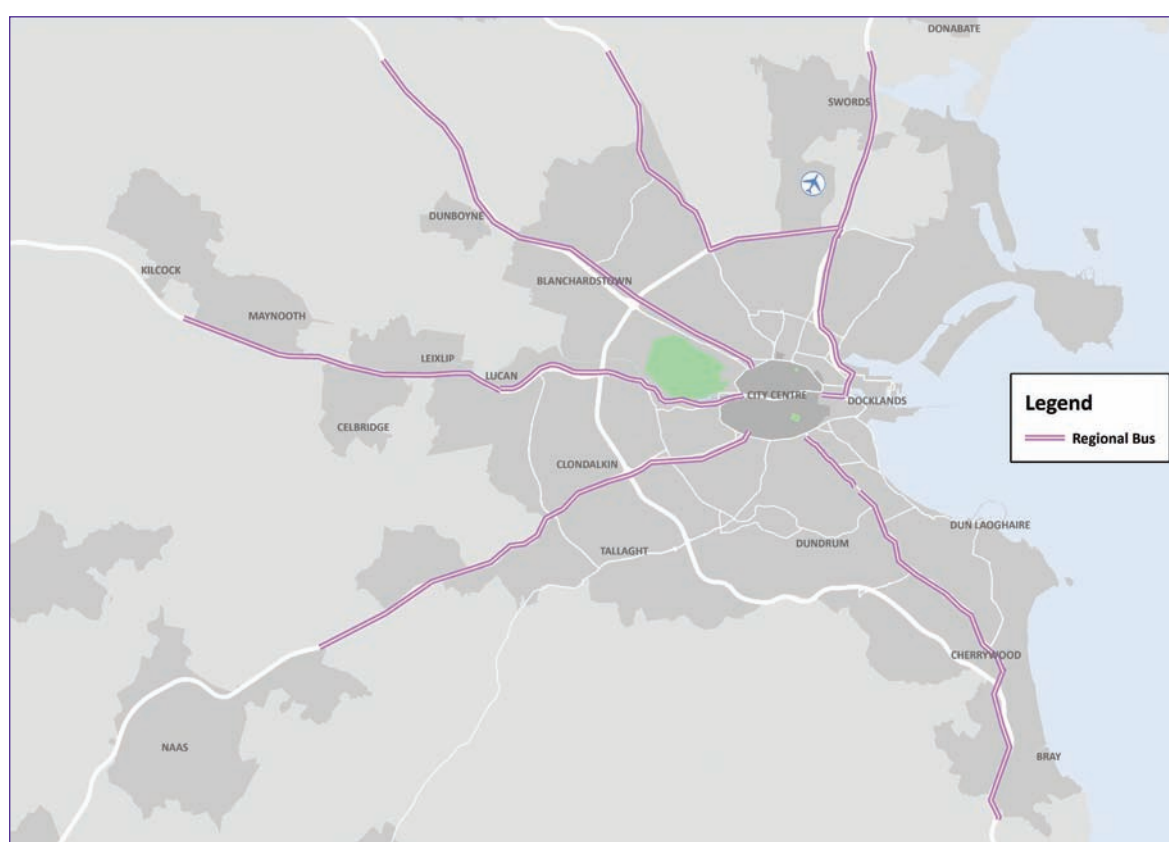
Six regional bus corridors have been identified as forming part of the Core Bus Network. These are:

- M1, via Dublin Port Tunnel
 - Serves long distance bus routes from Belfast, Dundalk, Derry, Monaghan and Drogheda; and
 - Serves other regional bus routes from Balbriggan, Skerries and East Meath.
- M2, via Dublin Port Tunnel
 - Serves regional bus from Ashbourne and Slane.
- M3/ N2, via Navan Road
 - Serves regional bus from Cavan, Navan, Trim, Dunshaughlin, Kells; and
 - Serves longer distance bus from Donegal.
- M4/ N4, via Chapelizod Bypass
 - Serves longer distance bus from Galway, Mayo, Sligo and Midlands; and
 - Serves regional bus along M4 corridor.

- M7/ N7, via Long Mile Road
 - Serves longer distance bus from Cork, Limerick, Waterford; and
 - Serves regional bus from Kildare.
- M11/ N11
 - Serves longer distance bus from Wexford; and
 - Serves regional bus from Arklow, Wicklow and N11 corridor.

The regional bus corridors forming part of the Core Bus Network are shown in Figure 5.7:

Figure 5.7 – 2035 Core Bus Network – Regional Corridors



5.5.4 Bus Rapid Transit

A number of the Core Radial Bus Corridors are proposed to be developed as Bus Rapid Transit routes, where the passenger numbers forecast on the routes are approaching the limits of conventional bus route capacity.

Bus Rapid Transit (BRT) is a high-quality bus based transit system that delivers a service with higher speeds and quality of service than traditional bus services. This is achieved by improved road infrastructure, the provision of appropriate vehicles, rapid and frequent operations, fast boarding/alighting and a strong focus on marketing plus customer service.

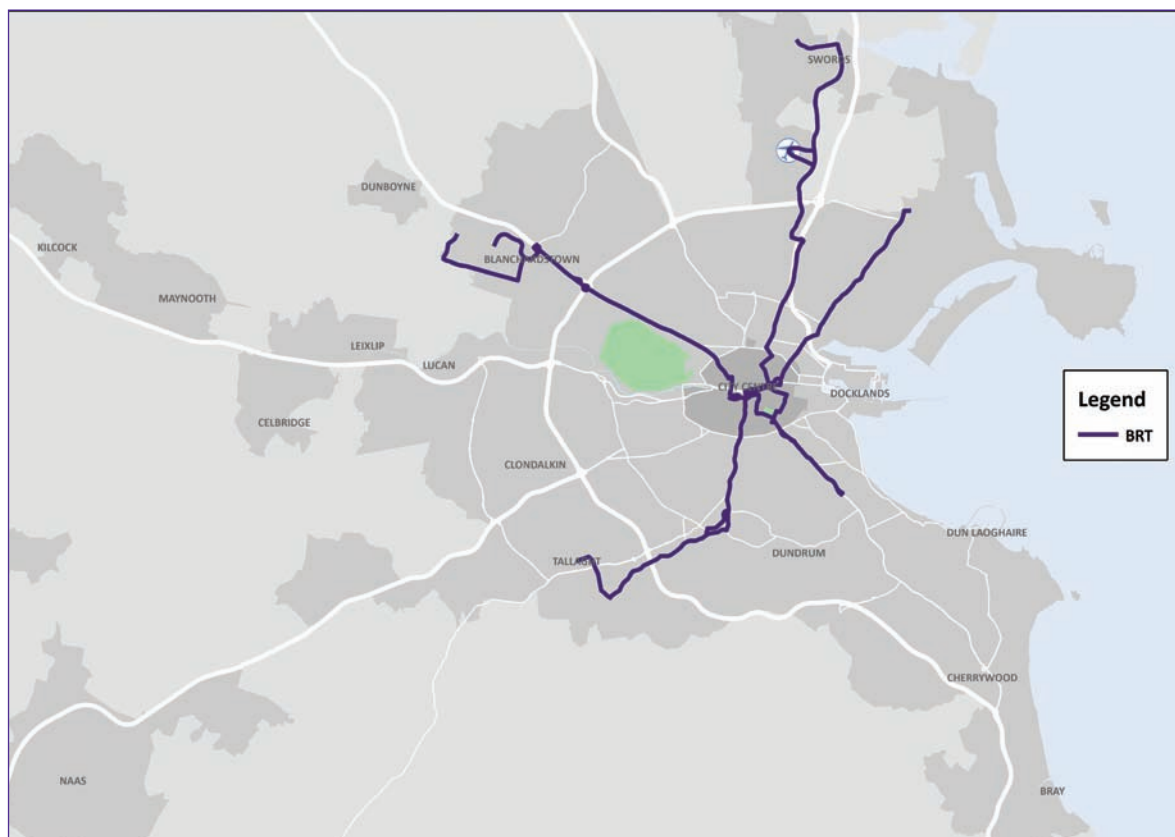
BRT would represent a major step-change in the provision of bus services on some of the busier bus corridors in the GDA. Representing a cost investment significantly less than light rail or heavy rail systems, it can provide greater passenger carrying capacity than conventional bus services at an affordable cost.

As part of the Strategy it is intended to develop a number of BRT schemes along routes forming part of the Core Bus Network. Two cross-city BRT schemes are proposed:

- Blanchardstown to UCD; and
- Clongriffin to Tallaght.

In addition, on the Swords/Airport to City Centre corridor, it will be necessary to provide a higher level of public transport capacity than the existing provision, both in advance of new Metro North and also to serve areas south of the M50 subsequent to the implementation of new Metro North. This additional capacity will take the form of a BRT service or a BRT type service or a conventional bus corridor upgrade along this route or parts of this route. The exact arrangements to be implemented will be determined in conjunction with the development arrangements for new Metro North, and will be designed to be complementary to the new Metro North proposal. Accordingly, a BRT scheme is included for development along the Swords / Airport to City Centre corridor, but its extent may be reduced or it may be modified to a conventional bus corridor upgrade, in conjunction with the development of the new Metro North project.

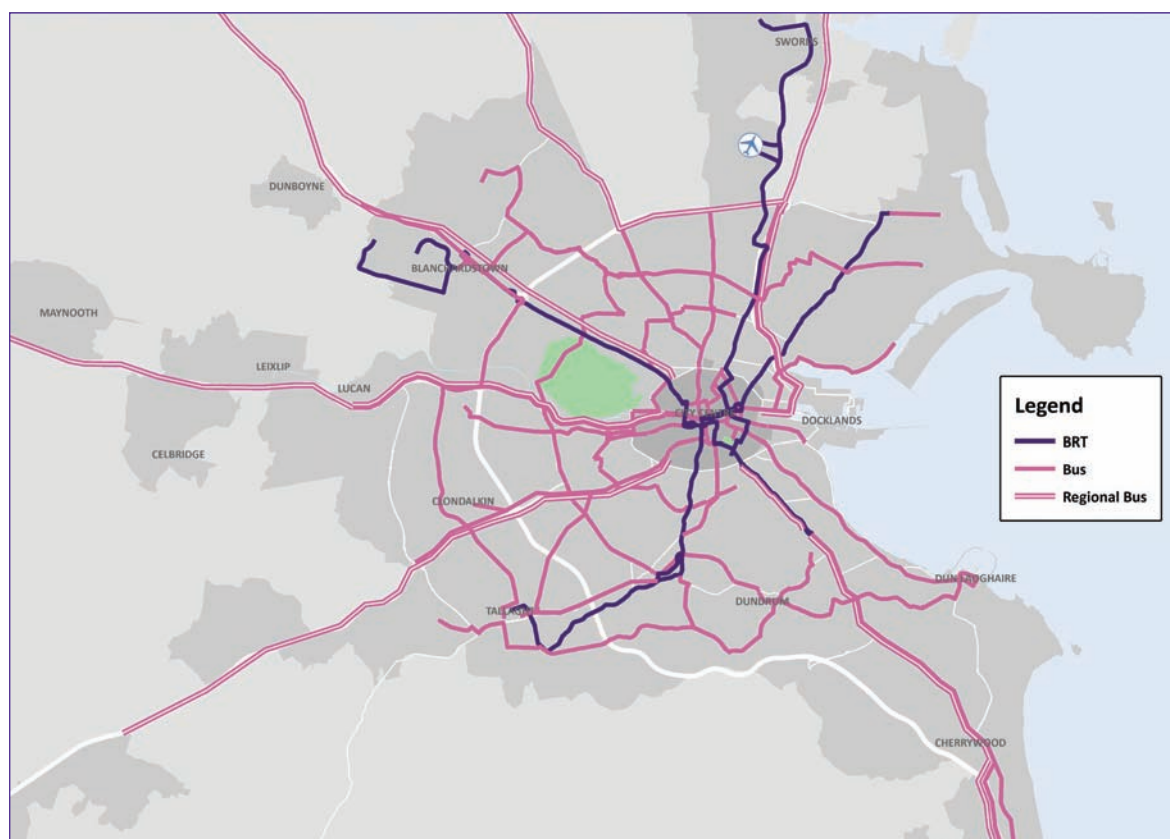
Figure 5.8 – 2035 Bus Rapid Transit Network



5.5.5 Combined Core Bus Network

A map of the overall Core Bus Network for the GDA is shown below.

Figure 5.9 – Overall Core Bus Network



5.5.6 Other Bus Related Measures

Outside of the Core Bus Network, it is intended to seek the provision of necessary bus priority measures at locations where a large number of buses are likely to be delayed or where substantial delays are likely to occur to a smaller number of buses.

In addition, a programme of improvements to bus facilities and stopping areas will be undertaken, comprising:

- › The development of a coach parking facility in Dublin City Centre, to facilitate the removal of on-street coach layover;
- › New bus station facilities to provide for intercity and regional buses which serve Dublin City Centre;
- › Continual replacement and upgrading of the bus fleet with vehicles that meet or exceed EU emissions standards;

- Rationalisation of stop poles and sharing of nearby bus stops between operators;
- Installation of enhanced standardised bus stops, with a single, uniform style of bus stop pole, flag (the plate on top of the bus pole) and information carousel;
- Provision of enhanced travel information including stop specific timetables, route maps and real time bus arrival information;
- Installation of bus shelters, incorporating seating, in high usage locations, where space permits; and
- Implementation of cycle parking facilities where appropriate.

5.6 Cycling Infrastructure

As set out in section 4.1, the Greater Dublin Area Cycle Network Plan proposes to expand the urban cycle network to over 1,485 kilometres in length, and will provide over 1,300 kilometres of new connections between towns in the rural areas of the GDA. The network is intended to provide a quality of service sufficient to attract new cyclists, as well as catering for the increasing numbers of existing cyclists.

This network will comprise primary routes, which will cater for the highest demand, supported by secondary routes and feeder routes which are forecast to have lower levels of demand. The plan also proposes a number of Greenways – fully segregated off-road routes along canals, rivers and disused railway lines. In the case of the built-up area, these Greenways will also perform a vital commuter function and will effectively form a significant part of the primary network.

As well as setting out the proposed cycle network in the Metropolitan Area, the Greater Dublin Area Cycle Network Plan also establishes the cycle network for the main towns across the region, in addition to setting out the inter-urban cycle network connecting these towns with each other and with the Metropolitan Area.

Recognising the need for a safe cycling network, it is intended that many of the key cycling routes will be developed as segregated facilities, with cyclists separated from vehicular traffic through the use of kerb separators or by having the cycleway at a higher level than the road carriageway. Complementing these facilities will be a corresponding level of priority given to cycle movements at road junctions.

The full details of the proposed cycle network across the region are set out in the Greater Dublin Area Cycle Network Plan. As part of the Strategy it is intended to implement this network⁴ in full, delivering safe, high quality cycle facilities, which will be designed and constructed in accordance with the principles set out in the National Cycle Manual.

The Primary, Secondary and Greenway elements of the Greater Dublin Area Cycle Network Plan are shown in the map below.

4 Subject to compliance with the EU Habitats and Birds Directives.

5.7 Walking

To address the issues raised in Section 3.2.5 relating to provision for pedestrians, it is intended to:

- Provide a safer, more comfortable and more convenient walking environment for those with mobility, visual and hearing impairments, and for those using buggies and prams;
- Improve footpaths by widening them where appropriate, resurfacing where necessary and by removing unnecessary poles, signs, advertising and other clutter, particularly in Dublin City Centre and other urban centres, in conjunction with the local authorities;
- Support local authorities in the implementation of pedestrianisation schemes, particularly in central areas of high pedestrian footfall, such as shopping streets;
- Revise road junction layouts, where appropriate, to provide dedicated pedestrian crossings, reduce pedestrian crossing distances, provide more direct pedestrian routes, and reduce the speed of turning traffic;
- Reduce waiting time for pedestrians at crossings in Dublin City Centre and other urban centres;
- Liaise with local authorities to deliver pedestrian information and wayfinding signage in urban centres across the GDA;
- In conjunction with local authorities and An Garda Síochána, evaluate, and where appropriate seek the introduction of, lower speed limits on residential streets; and
- Cooperate with other agencies in the enforcement of laws in relation to parking on footpaths.



5.8 Road Network

The following sections set out the proposals in respect of national, regional and local roads.

5.8.1 National Roads:

During the period of the Strategy it is intended to further develop and enhance the national road network including the delivery of the following projects:

- › Reconfiguration of the N7 from its junction with the M50 to Naas;
- › Junction upgrades and other capacity improvements on the M1 motorway;
- › Widening of the M7 between Junction 9 (Naas North) and Junction 11 (M7/M9);
- › Widening of the M50 to three lanes in each direction between Junction 14 (Sandyford) and Junction 17 (M11) plus related junction and other changes;
- › Reconfiguration of the N4 from its junction with the M50 to Leixlip;
- › Capacity enhancement and reconfiguration of the M11/N11 from Junction 4 (M50) to Junction 14 (Ashford);
- › Enhancements of the N2/M2 national route inclusive of a bypass of Slane;
- › Widening of the N3 between Junction 1 (M50) and Junction 4 (Clonee), plus related junction and necessary changes to the existing national road network;
- › Development of a road link connecting from the southern end of the Dublin Port Tunnel to the South Port area;
- › Provision of additional service areas on the national road network in line with national policy;
- › Provision of necessary upgrades to the national secondary road network, including bypasses, in line with the “Principles of Road Development” set out in Section 5.8.3; and
- › Various signage, safety interventions, junction improvements and local reconfigurations on the national road network.

The Leinster Orbital Route is an orbital road proposal extending from Drogheda to the Naas/Newbridge area with intermediate links to Navan and other towns. It would provide connections between these towns, currently poorly served by direct linkages, supporting their economic development and improvements in orbital public transport connectivity. While this project is not planned for implementation during the period of the Strategy, the finalisation of the route corridor and its protection from development intrusion is recommended.

Similarly, in the case of the Eastern Bypass, while the section of the route from the Dublin Port Tunnel to the South Port area is included for delivery in this Strategy, the remainder of the route is not proposed for development during the Strategy period. However, the retention of a route corridor for this scheme is recommended, to facilitate the possible future use of the corridor for transport provision.

5.8.2 Regional and Local Roads

Regional and local roads make up the vast majority of the road network in the Greater Dublin Area. In relation to this network it is intended to:

- Enhance orbital movement, outside of the M50 C-Ring, between the N3, the N4 and N7 national roads, by the widening of existing roads and the development of new road links;
- Develop orbital roads around town centres accompanied by and facilitating enhanced public transport, cycling and pedestrian facilities in the relevant centre;
- Develop appropriate road links to service development areas;
- Implement necessary upgrades to the regional and local road network in line with the “Principles of Road Development” set out in Section 5.8.3;
- Enhance pedestrian and cycle safety through the provision of safer road junctions, improved pedestrian crossing facilities and the incorporation of appropriate cycle measures including signalised crossings where necessary;
- Address localised traffic delay locations, including on radial routes inside the M50 C-Ring, in cases where the primary reason for intervention is to address safety or public transport issues at such locations; and
- Implement various junction improvements and local reconfigurations on the regional and local road network.

Given that many of the proposed road schemes are relatively small and localised it is not intended to establish an exhaustive list of such schemes for development over the period of the Strategy. Instead, it is intended that each road scheme is developed in accordance with the principles set out in this Strategy and that confirmation of consistency with the Strategy is obtained from the Authority in advance of a road authority seeking development consent for a particular road scheme.

5.8.3 Principles of Road Development

Given that national transport policy seeks a reduction in the growth in car travel and an increase in the use of public transport, cycling and walking, it is important that certain principles are reflected in the development of individual road projects within the Greater Dublin Area. Accordingly, it is intended that road development in the Greater Dublin Area will be undertaken in accordance with the following principles:

- That there will be no significant increase in road capacity for private vehicles on radial roads inside the M50 motorway;
- That each proposed road scheme is consistent with this Strategy and with Government policies related to transport;
- That the demand needs or the development needs giving rise to the road proposal are in accordance with regional and national policies related to land use and development planning;

- That the development of the road scheme does not diminish in any significant way the expected beneficial outcomes of the Strategy;
- That the road scheme, other than a motorway or an express road proposal, will be designed to provide safe and appropriate arrangements to facilitate walking, cycling and public transport provision; and
- That alternative solutions, such as public transport provision, traffic management or demand management measures, cannot effectively and satisfactorily address the particular circumstances prompting the road proposal or are not applicable or appropriate.

5.8.4 Freight Movement

Efficient freight transport is essential for economic activity. Factories and production units need reliable transport connections for the movement of supplies and output; shops and retail outlets need dependable distribution systems to manage stock levels and provide customer deliveries. In summary, all businesses need efficient freight movement to operate effectively.

Given the geographic size of Ireland and the proximity of Dublin Port to the various centres in the GDA, movement by road is, and will continue to be, the dominant mode of freight transfer in the region, and throughout the wider State. Accordingly, the management of the strategic (national) road network within the GDA is critical to the overall efficiency of freight movement. While movement of freight by rail will continue to be supported and encouraged, the Strategy has to address the reality that most freight movement will be by road. In the area of freight it is intended to:

- Implement demand management measures on the M50 motorway to ensure that it retains sufficient capacity to fulfil its strategic functions, including freight movement;
- Implement, when appropriate, demand management measures on the radial national routes approaching the M50 motorway (M1, M2/N2, N3/M3, N/M4, N/M7, M11) to ensure that these routes retain sufficient capacity to fulfil their strategic functions, including freight movement;
- Ensure that the Dublin Port Tunnel continues to perform its primary function of providing access to Dublin Port for freight traffic;
- Provide for the continuation of the current Dublin City HGV Management Strategy and for its further expansion to other vehicle types, potentially with an expanded exclusion area;
- Assess the potential for, and, if appropriate, introduce, similar HGV management measures in other town centres in the GDA;
- Support the provision of goods vehicle parking facilities at on-line motorway service areas and other appropriate locations within the GDA;
- Support the clear identification in development plans of appropriate locations for freight intensive developments, and seek the implementation of Distribution and Servicing Plans for such developments as part of the planning process;

- Seek the introduction of specific delivery arrangements in large urban centres, including Dublin City Centre, which targets deliveries outside of peak commuting hours and, preferably, outside of daytime business hours; and
- Support the introduction of low impact delivery schemes in Dublin City Centre and other town centres, for example, by using smaller, quieter and lower emissions vehicles.

5.9 Demand Management

The Strategy aims to provide an efficient and effective transport system across the region and to accommodate future travel growth in a managed and balanced way. Increased public transport provision, coupled with enhanced cycling and walking facilities in the urban areas, will provide the means to cater for much of the increased travel demand. However, without complementary demand management measures the full benefits of the Strategy will not be achieved.

Accordingly, it is intended to:

- Encourage land use policies which support the provision of development in locations and at densities which enable the efficient provision of public transport services;
- Seek the application of maximum parking standards for all new developments, with the level of parking provision applied being based on the level of public transport accessibility;
- Seek reductions in the availability of workplace parking in urban centres to discourage car commuting, where alternative transport options are available;
- Seek the implementation of demand management measures on the M50 motorway to ensure that it retains sufficient capacity to fulfil its strategic functions;
- Seek the implementation, at the appropriate time, of demand management measures to address congestion issues on the radial national routes approaching the M50 motorway, to ensure that these routes retain sufficient capacity to fulfil their strategic functions;
- Support the introduction or expansion of on-street parking controls, and charging structures, that seek to reduce commuter parking and which contribute to greater parking turnover for non-commuting purposes;
- Assess the need for the introduction of parking charges at out-of-town retail centres, to reduce the congestion potential at these locations; and
- Support and facilitate the implementation and expansion of:
 - Workplace Travel Plans for all large employers;
 - Tailored travel planning information provision for residential areas;
 - Travel Plans for schools, colleges and all education campuses; and
 - Car club schemes and car sharing.

5.10 Park and Ride

Park and Ride serves to provide the opportunity for modal transfer from the private car to the public transport network, for trips where car use is necessitated at the point of origin.

Park and Ride facilities will be provided to facilitate those living beyond the local walking catchment of rail, or feasible alternative public transport services, to access destinations through the public transport network.

An essential prerequisite of park and ride provision is that such facilities improve public transport accessibility without unduly worsening road congestion, or increasing the total distance travelled by car. In practice, this means that park and ride car parks should be located in areas where the road network has the capacity to absorb the impact of car traffic and should not be located where they might encourage people who would otherwise access public transport locally, to drive further to access a site, thus adding to congestion.

Also, any necessary improvement to the capacity of the onward public transport service will need to be identified and developed in conjunction with any decision to proceed with a park and ride facility.

Complementary parking controls, or charging, for on-street parking on roads within the walking catchment of park and ride car parks, may be required, particularly in the case where the car park is charged for, or has the potential to be oversubscribed.

In regard to the above objectives, it is intended to:

- Develop a network of strategic rail-based park and ride facilities at appropriate points where rail services intersect with the national road network, adjacent to, or outside of, the M50. These facilities are, or would be, located at Swords, Finglas, Dunboyne, Liffey Valley, Naas Road, and Greystones (see Figure 5.11);
- Further develop the provision of local park and ride facilities at appropriate locations on the rail network in the outer parts of the Metropolitan Area and in the Hinterland area, where they improve public transport accessibility without worsening road congestion, or increasing car travel distance;
- Consider the potential for bus-based park and ride, in particular, close to high quality road corridors leading from Hinterland towns, with good bus priority to commuter destinations in the Metropolitan area; and
- Implement suitable charging structures for park and ride facilities to make it more likely that those who most need the service (i.e. those outside walking distance and where alternative public transport options are not available), will obtain parking.

The map displays the Dublin region with various transport routes. A legend in the top right corner identifies the following:

- Strategic Park & Ride:** Indicated by red square markers at locations such as Dunboyne, Blanchardstown, Lucan, Clondalkin, Tallaght, Ballybride, and Bally.
- Metro:** Represented by blue lines, primarily running through the city center and connecting to the airport.
- LUAS:** Represented by green lines, showing tram routes in the central and southern parts of the city.
- DART:** Represented by orange lines, connecting the city center to coastal areas like Dún Laoghaire and Howth.
- Heavy Rail:** Represented by yellow lines, showing long-distance routes extending to places like Kildare and Wicklow.

Other labeled locations include Naas, Celbridge, Maynooth, Kildare, and the Dublin City Centre. A note at the bottom states: "N.B. Final alignments of proposed rail lines are yet to be determined".

The supply and management of parking at destinations is central to the management of travel demand. It has a critical influence on mode choice for all journey purposes. It also has a critical influence on congestion, the design of new development, operation of all transport modes, and the allocation and design of space in urban areas.

- Seek the implementation of common maximum standards for a range of consistently-defined land use types within the GDA regional land use hierarchy;
- Seek reductions in the availability of workplace parking in urban centres to discourage car commuting, where alternative transport options are available;
- Promote area-based parking cap in locations where the highest intensity of development occurs and is promoted, such as Dublin City Centre, town / district centres and higher-order public transport nodes;
- Promote the provision and management of destination parking in areas of high trip demand, subject to appropriate pricing and locational criteria; and
- Provide appropriate parking arrangements for specific user requirements including disabled drivers, motorcycles and scooters in Dublin City Centre and other centres of activity, as well as at public transport nodes, in line with demand, and having regard to the needs of other modes.

06

Transport Services and Integration



6. Transport Services and Integration

Modern transport infrastructure must be accompanied by an efficient, integrated and appropriate network of transport services. Focussing specifically on public transport, that network needs to:

- › Provide appropriate coverage of the region;
- › Increase opportunities to transfer between modes and services;
- › Provide fast and convenient access to major travel destinations throughout the region;
- › Be easily understood to both local and visiting passengers;
- › Deliver reliable and predictable journey times;
- › Charge simple, affordable fares which enable transfers between services without unnecessary penalty;
- › Provide easy-to-use cashless payment systems, where feasible;
- › Be accompanied by comprehensive information, both during and prior to the journey; and
- › Provide comfortable and convenient journeys to the maximum number of passengers.

The addition of new transport infrastructure and a need for increased transport capacity during the period of this Strategy will necessitate on-going review and development of the overall network of public transport services. The following sections set out the key proposals proposed for implementation in each area.

6.1 Bus Services

The following will be implemented for bus services:

- › As passenger demand increases, additional capacity will be added to the bus network where it is required;
- › Radial bus services on the routes forming the Core Radial Bus Network will be operated at a high frequency, generally at a ten minute frequency during peak hours and a fifteen to twenty minute frequency for most off-peak hours;
- › Orbital bus services on the routes forming the Core Orbital Bus Network will be operated at a matching frequency to the core radial services to ensure that they offer an attractive alternative to the private car and to facilitate ease of interchange with radial services;

- › Express services will be provided from the major towns in the GDA hinterland to Dublin City Centre at a frequency which meets demand, including a bus every 30 minutes during peak travel periods from the RPG Growth Towns of Navan, Naas and Wicklow; and
- › Bus services will be regularly reviewed by the Authority in collaboration with the relevant bus operators and amended as necessary to take account of changing development and travel patterns to ensure that services operate optimally.

6.2 Bus stops and Bus Shelters

It is intended that:

- › A standardised style of pole, flag (head plate at top of pole) and information panel, under the Transport for Ireland brand, will be used at all bus stops in the region;
- › There will be a rationalisation of bus stop poles and sharing of nearby bus stops between operators; and
- › Key bus stop locations, being busy bus stops and key interchange locations, will be equipped with bus shelters, where space permits, incorporating comprehensive information panels and appropriate seating.

The Authority will prepare and issue design guidelines for bus stopping areas, to ensure a consistent standard and high quality approach in the provision of bus stopping facilities.

6.3 Rail Services

It is proposed that:

- › Luas services will be re-configured in order to maximise the opportunities provided by Luas Cross-City, and will include the introduction of longer (and higher capacity) trams on the Green line;
- › Metro services will be introduced as demand increases and the infrastructure and rolling stock are commissioned;
- › The DART services will operate to a high frequency with adequate capacity to cater for the passenger demand. It is anticipated that DART services in the city centre section of the network will operate to a regular ten minute service frequency in the peak hours from 2016 and will transition to a five minute service frequency following the completion of the DART Expansion Programme;
- › Increased passenger capacity will be provided on the South East Rail Line through the provision of shuttle commuter train services operating south of Greystones, which will interchange with DART services at Greystones; and
- › Services on the Luas / Metro network will be operated in alignment with passenger demand, and are likely to operate on a 3 minute frequency in peak hours.

6.4 Fares

It is proposed that:

- A simplified fare system will be introduced in the Greater Dublin Area, covering bus, rail, Luas and Metro services, which will also facilitate multi-leg and multi-modal journeys in a cost effective manner;
- All bus services will migrate to a cashless system, to facilitate driver safety and faster passenger boarding times; and
- The current Leap card system will be further developed with new products and services added and will, over time, transition to an account based system using mobile phones and/ or other payment methods as new technologies mature.

6.5 Passenger Information Systems

As part of this Strategy it is proposed to:

- Increase the availability of on-street Real Time Passenger Information (RTPI) at bus, BRT and Luas stops;
- Enhance the availability and quality of on-vehicle information systems, to provide accurate visual and audio information in relation to next stops and route information;
- Provide and further develop passenger assistive information, such as easy to use journey planners, fare information, high quality route maps and comprehensive route timetables, and make these conveniently available across print and electronic channels;
- Use new and emerging technologies to make additional travel information available to passengers and intending passengers in an easily accessible and convenient manner;
- Further develop the Authority's 'Transport for Ireland' brand and use it for all passenger information, including bus stops, in addition to its use for bus and train livery for Authority contracted services; and
- Provide on-street directional signage to public transport facilities.

6.6 Optimising Interchange and transport facilities

It is intended to:

- Provide high quality passenger interchange points, which facilitate convenient transfer between public transport services, in various town centres throughout the region and at key transport locations in the Dublin Metropolitan Area;
- Ensure that such transport interchanges are developed in a manner where service schedules are optimally coordinated, where distances between connections are minimised to the extent

practicable, where good directional signage for connections is provided and where necessary operating facilities are provided to facilitate connectivity;

- › Provide secure and comfortable waiting facilities for passengers, with shelters and seating within a well-lit environment, and support facilities such as toilets and refreshments where deemed necessary;
- › Provide, outside of Dublin City Centre, drop-off facilities and taxi ranks at key train stations and Luas stops;
- › Ensure that secure cycle parking facilities are provided at all train stations, and that cycle parking stands are provided at all Luas and BRT stops outside of the core city centre area; and
- › Subject to demand and available space, provide cycle parking stands at key bus stops.

6.7 Accessibility

It is intended to:

- › Ensure that all of the buses operated under contract to the Authority will be accessible to mobility impaired persons, with space for at least one occupied wheelchair in all vehicles;
- › Ensure that all of the trams and trains operated under contract to the Authority will continue to be fully accessible for wheelchair users and that all train stations and tram stops in the region can allow wheelchair users to access the vehicles;
- › Ensure that all buses, trams and trains are equipped with audio and visual 'next stop' announcements to assist persons with visual or hearing difficulties;
- › To increase the level of wheelchair accessible vehicles in the small public service vehicle fleet; and
- › Undertake all written, printed, online and verbal communication of travel information and other news to the public in a clear, legible and easily understood manner using plain language.

6.8 Small Public Service Vehicles (Taxis, Hackneys and Limousines)

It is intended to:

- › Achieve a target of 10% of the small public service vehicles (taxis and hackneys only) being wheelchair accessible by 2020, with the full taxi and hackney fleet to be wheelchair accessible by 2035;
- › To seek and support the implementation of additional taxi ranks at appropriate locations within Dublin City and other centres of activity within the Greater Dublin Area where demand exists;
- › Improve the integration of small public service vehicles into the overall public transport network through better interchange opportunities and information provision;

- › Implement changes to taxi rank locations and access arrangements which are necessary to facilitate additional public transport infrastructure and services; and
- › Encourage the provision of local area hackney services in areas where conventional taxi and hackney services are generally unavailable.

6.9 Local Transport Services

Local transport services generally do not operate on fixed routes, serve designated stops or operate to published timetables and are accessed by pre-booking in advance of the day of operation. This more tailored flexible door-to-door service has been deployed in rural areas within the GDA and nationally in order to address transport needs that are not possible to serve by conventional bus services. It is intended to:

- › Identify areas across the GDA where local transport could improve mobility for the population and enhance the level of service that people living in rural areas derive from public transport overall, including pockets of transport deficit and niche demands within the Dublin Metropolitan Area;
- › Improve the integration of local transport services into the overall public transport network, through better interchange opportunities and information provision;
- › Ensure a greater level of co-ordination between local transport services and longer distance scheduled bus and rail services; and
- › Ensure a greater level of co-ordination between local transport services and other transport related services such as hospital and medical transport services.

6.10 Environmental

It is an objective of the Authority to:

- › Cooperate with the local authorities in allocating existing on-street parking spaces in city and town centres for the exclusive use by low and zero emissions vehicles;
- › Seek provision for a minimum percentage of destination car-parking to be allocated to low and zero emission vehicles within existing local authority development plan parking standards; and
- › Monitor emissions from transport, in conjunction with relevant agencies, and develop proposals to address any issues which may emerge.

07

Land Use Integration and Behavioural Change



7. Land Use Integration and Behavioural Change

7.1 Land Use Integration

Land use and the manner in which it is developed is the primary influencing factor for travel demand. A closer relationship between how transport demand is created and how it can be catered for is provided for in the Dublin Transport Authority Act 2008 and the Planning and Development Act 2000, which state that the Regional Spatial and Economic Strategies (formerly Regional Planning Guidelines⁵), Development Plans and Local Area Plans in the GDA must be consistent with the Authority's Transport Strategy. All of these plans are also subject to Strategic Environmental Assessment and Appropriate Assessment. This section sets out both the process by which this closer integration will occur, and the principles which will guide this interaction.

7.1.1 Process of Integrating the Strategy with Land Use Policy

Regional Planning Guidelines 2010-2022

The Regional Planning Guidelines (RPG) for the Greater Dublin Area set out the strategic planning principles and the medium-term economic development and settlement strategies, including the population targets, for each local authority. The most recent RPG for the GDA was adopted by the Dublin and Mid-East Regional Authorities in 2010 and outlines the policies guiding development in the region up to 2022. The population distribution assumed for use in the strategy modelling was derived from the RPG, in combination with local authority Development Plan Core Strategies and Local Area Plans. The distribution of employment and other destination land uses was also informed by these sources. As such, because the RPG pre-dated the Strategy, it was regarded as incumbent on the latter to demonstrate consistency with the former, insofar as is feasible. The Strategy has taken into account the policies and objectives of the RPG and has, as part of its development, ensured that it is fully consistent with the RPG.

Regional Spatial and Economic Strategies

In 2014, local and regional government structures were reformed and the regional authorities were dissolved. The Greater Dublin Area was subsumed into the new Eastern and Midland Regional Assembly. This new assembly is to produce a Regional Spatial and Economic Strategy (RSES) in the coming years. The legislation governing this new arrangement maintains the requirement whereby the new regional assemblies shall ensure that the RSES is consistent with the Authority's transport strategy.

As such, the Authority anticipates that the settlement hierarchy – and associated population distribution, and the economic strategy – with its associated employment distribution, proposed in the RSES up to 2028 and beyond will reflect the nature, scale and location of large-scale transport investment proposed in the strategy.

⁵ The Greater Dublin Area Regional Planning Guidelines 2010-2022 (Volume I & II) are still in force and will be until they are replaced by the Regional Spatial & Economic Strategy for the Eastern and Midland Regional Assembly.

County Development Plans and Local Area Plans

By ensuring consistency at the regional level, and in combination with the separate requirement of the seven local authorities to demonstrate consistency with the RSES, it is anticipated that all lower-level statutory plans made by each local authority will be fully consistent with this strategy. It is a requirement of the legislation that the local authorities deal directly with this issue and demonstrate that any concerns raised by the Authority in its submissions on draft plans are addressed.

In summary, the legislative context within which this strategy is made – provided by both the Dublin Transport Authority Act 2008 and the Planning Acts – places great emphasis, with associated powers, on the integration of land use planning and transport planning in the GDA. It should also be noted that there exists now a wide range of national policy and guidance which, while not specifically aimed at transport, does support this same aim, including the Department of Environment, Community and Local Government's "Sustainable Residential Development in Urban Areas" and "Design Manual for Urban Roads and Streets".

To date, and despite the absence of an adopted transport strategy, the Authority has worked very closely with all other agencies responsible for land use planning in order to ensure that the purpose of this legislation is given full expression in all statutory publications. The next section sets out the principles governing this relationship.

7.1.2 Principles of Land Use and Transport Integration

In meeting the need to travel, the primary goals of land use and transport integration may be summarised, in order, as follows:

- Reducing the need to travel;
- Reducing the distance travelled;
- Reducing the time taken to travel;
- Promoting walking and cycling; and
- Promoting public transport use.

The following land use principles should, therefore, guide development in the GDA. Local and regional authorities should demonstrate how these principles are being applied in their plans in order to ensure their consistency with this strategy:

Strategic Planning Principles

- Residential development located proximate to high capacity public transport should be prioritised over development in less accessible locations in the GDA;
- To the extent practicable, residential development should be carried out sequentially, whereby lands which are, or will be, most accessible by walking, cycling and public transport – including infill and brownfield sites – are prioritised;

- High volume, trip intensive developments, such as offices and retail, should primarily be focussed into Dublin City Centre and the larger Regional Planning Guidelines (RPG) higher order centres within the GDA;
- Except in limited circumstances, trip intensive developments or significant levels of development should not occur in locations not well served by existing or committed high capacity public transport;
- The strategic transport function of national roads, including motorways, should be maintained by limiting the extent of development that would give rise to the generation of local car-based traffic on the national road network;
- All non-residential development proposals in the GDA should be subject to maximum parking standards and based on public transport accessibility;
- In locations where the highest intensity of development occurs, an approach that caps car parking on an area-wide basis should be applied; and
- For all major employment developments and all schools, travel plans should be conditioned as part of planning permissions and be carried out in a manner consistent with existing NTA guidance.

Local Planning Principles

- Planning at the local level should promote walking, cycling and public transport by maximising the number of people living within walking and cycling distance of their neighbourhood or district centres, public transport services, and other services at the local level such as schools;
- New development areas should be fully permeable for walking and cycling and the retrospective implementation of walking and cycling facilities should be undertaken where practicable in existing neighbourhoods, in order to give a competitive advantage to these modes;
- Where possible, developments should provide for filtered permeability. This would provide for walking, cycling, public transport and private vehicle access but at the same time would restrict or discourage private car through trips; and
- To the extent practicable, proposals for right of way extinguishments should only be considered where these do not result in more circuitous trips for local residents accessing public transport, or local destinations.

At the most strategic level, the principles above support the development of areas such as the North Fringe / Clongriffin, Hansfield, Adamstown, Clonburris, Stepside, Cherrywood and all locations inside the M50, for residential development throughout the period of the Strategy. In terms of employment growth, the city centre and Docklands will be most suitable for highest-intensity employment, while areas around transport interchanges would also be desirable for some large-scale development, for the period of the Strategy. The Authority's interaction with the regional and strategic planning process in the GDA will be governed by these principles.

In terms of local planning, the Authority will engage with the Local Authorities in the GDA, through its statutory role in Development Plans, Local Area Plans and Planning Schemes, to ensure that the local planning principles above are implemented. It is through the application of these local level principles that the strategic principles will be given effect on the ground.

7.2 Behavioural Change Programmes

Behavioural change, as it applies to transport, is about making people aware of the range of travel choices available for the variety of trips which they make on a daily basis and encouraging the use of more sustainable travel choices where they are feasible. The measures involve the targeted promotion of public transport, walking, cycling and car sharing as alternatives to single occupancy private car use. They can be implemented at various locations and at varying scales, e.g. workplaces, schools and neighbourhoods. They comprise a highly personalised approach aimed at engaging a group of people, making them think about their travel choices, providing them with full information, and encouraging and incentivising the use of alternatives.

In recent years, fostered by the Government's Smarter Travel policy document and supporting initiatives, and work undertaken by a number of agencies, increased emphasis has been placed on capturing the benefits that such programmes can deliver. To this end, the Authority is responsible for the management of the Smarter Travel Workplaces and Campuses Programme and administers the Green Schools Travel Module on behalf of the Department of Transport, Tourism and Sport. In addition to these two core programmes, the Authority, from time to time, funds behavioural change initiatives via the Sustainable Transport Measures Grant in the Greater Dublin Area. These programmes have been highly successful in reducing car use in many locations across the country and if maintained and expanded, can be predicted to have a regional-level impact on travel behaviour in the GDA. As an example, the recent rise in cycling to primary school between 2006 and 2011 – the first such rise in a generation – occurred at the same time as Green Schools Travel began to roll out on a significant scale.

The Authority regards such programmes as a core element of this Strategy and as such, commits to the continued implementation and support for Smarter Travel Workplaces and Campuses and a School Travel programme up to 2035.

08

Environmental Protection and Management



8. Environmental Protection and Management

As detailed under Section 1.2 of this Strategy, a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) have been undertaken alongside the preparation of the Strategy. All recommendations arising from the SEA and AA processes have been integrated into the Strategy.

Many of these recommendations have been set out in the Environmental Report; however some of the more strategic recommendations are detailed below. Compliance with these measures will facilitate environmental protection and management.

8.1 Regulatory Framework for Environmental Protection and Management

In implementing this strategy, the Authority will cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management and will ensure that plans, programmes and projects comply with EU Directives - including the Habitats Directive (92/43/EEC, as amended), the Birds Directive (2009/147/EC), the Environmental Impact Assessment Directive (85/337/EEC, as amended) and the Strategic Environmental Assessment Directive (2001/42/EC) – and relevant transposing Regulations.

8.2 Lower-level Decision Making

Lower levels of decision making and environmental assessment should consider the sensitivities identified in Chapter 7 and Appendix B of the SEA Environmental Report, including the following:

- › Candidate Special Areas of Conservation and Special Protection Areas;
- › Features of the landscape that provide linkages/connectivity to designated sites (e.g. watercourses, areas of semi-natural habitat such as linear woodlands etc)
- › Salmonid Waters;
- › Shellfish Waters;
- › Freshwater Pearl Mussel catchments;
- › Nature Reserves;
- › Natural Heritage Areas and proposed Natural Heritage Areas;
- › Areas likely to contain a habitat listed in annex 1 of the Habitats Directive;

- › Entries to the Record of Monuments and Places and Zones of Archaeological Potential;
- › Entries to the Record of Protected Structures;
- › Un-designated sites of importance to wintering or breeding bird species of conservation concern;
- › Architectural Conservation Areas; and
- › Relevant landscape designations.

8.3 Corridor and Route Selection Process

The following Corridor and Route Selection Process will be undertaken for relevant new infrastructure:

Stage 1 – Route Corridor Identification, Evaluation and Selection

- › Environmental constraints (including those identified in Chapter 7 and Appendix B of the SEA Environmental Report) and opportunities (such as existing linear infrastructure) will assist in the identification of possible route corridor options;
- › Potentially feasible corridors within which infrastructure could be accommodated will be identified and these corridors assessed. The selection of the preferred route corridor will avoid constraints and meet opportunities to the optimum extent, advised by relevant specialists; and
- › In addition to the constraints identified above, site specific field data may be required to identify the most appropriate corridors.

Stage 2 – Route Identification, Evaluation and Selection

- › Potentially feasible routes within the preferred corridor will be identified and assessed. The selection of preferred routes will avoid constraints and meet opportunities to the optimum extent, advised by relevant specialists, taking into account project level information and potential mitigation measures;
- › In addition to the constraints identified above, site specific field data may be required to identify the most appropriate routes; and
- › In addition to environmental considerations, the identification of route corridors and the refinement of the route lines is likely to be informed by other considerations.

8.4 Appropriate Assessment

All projects and plans arising from this Strategy will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and a Stage 2 Appropriate Assessment where necessary, that:

- › The Plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or

- The Plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or
- The Plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.

8.4.1 Protection of Natura 2000 Sites

No projects giving rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Strategy (either individually or in combination with other plans or projects)⁶.

⁶ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
a) no alternative solution available,
b) imperative reasons of overriding public interest for the project to proceed; and
c) Adequate compensatory measures in place.

09

Summary of Outcomes



9. Summary of Outcomes

9.1 Introduction

Chapter 1 states that the Strategy presents the transport requirements for the GDA, based on principles of effective, efficient and sustainable urban and rural living, for the period up to 2035. This chapter presents an overview of how the strategy performs with regard to these principles, based on a set of transport indicators. It provides a summary how the strategy will meet the demand for travel in 2035; how the revised networks are expected to perform; and the benefits which will accrue from the implementation of the Strategy. A detailed analysis is provided in the technical note “Strategy Modelling Report” and the corridor studies undertaken as part of the strategy.

9.1.1 Meeting Travel Demand

In advance of setting out the results of the assessment of the Strategy, an overview of the demand it seeks to serve is required. It is anticipated that travel demand will increase by 25% between 2011 and 2035. The following map illustrates the spatial distribution of growth in the GDA, with each red dot corresponding to a settlement (as defined in Chapter 3), while the graph below shows the growth in trips per corridor.

Figure 9.1 – Growth in Travel Demand in the GDA

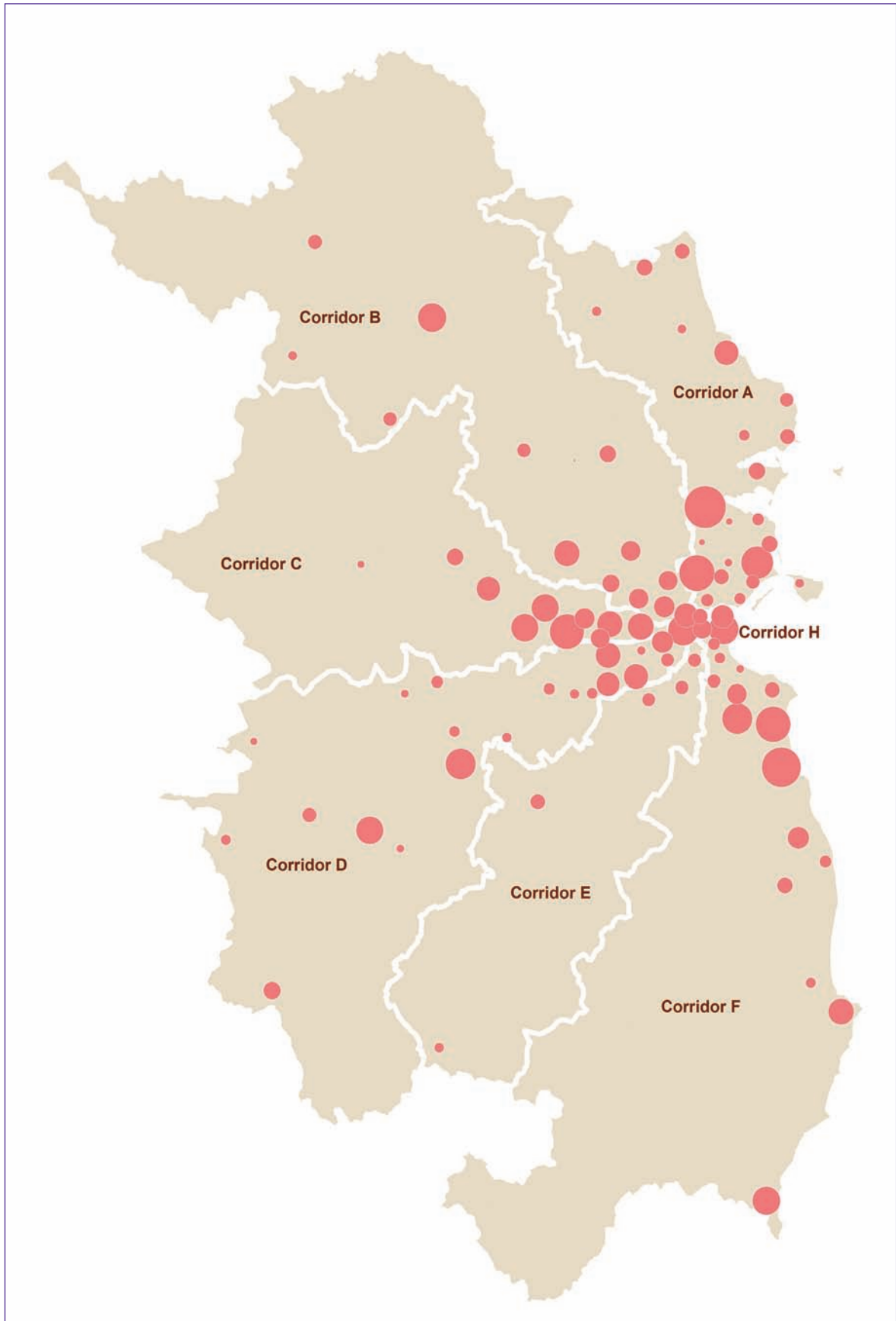
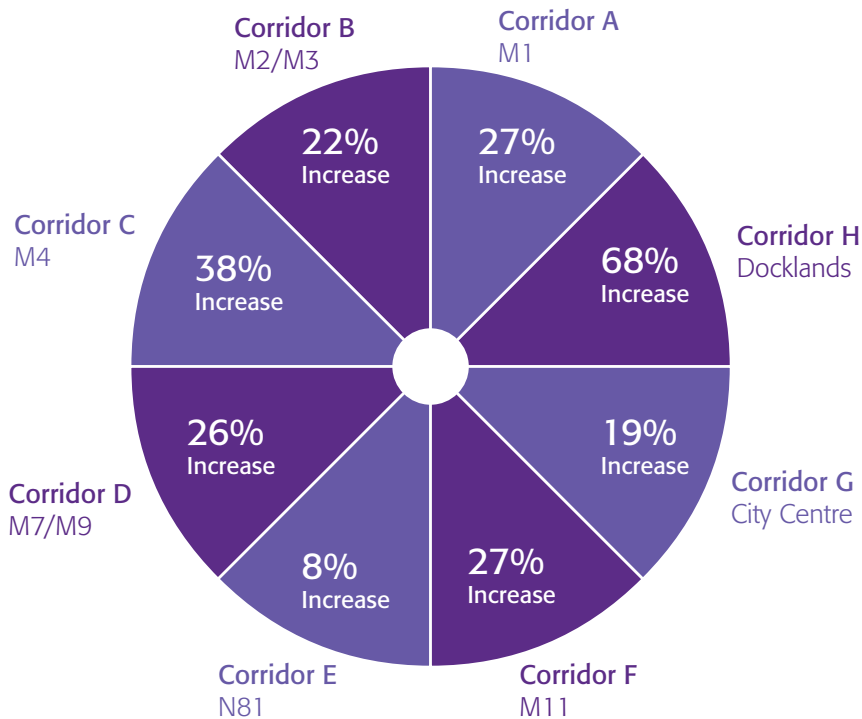


Figure 9.2 – Growth in Travel Demand in the GDA by Corridor



9.2 Performance of the Transport Network

To meet the forecast growth in travel demand, a number of network improvements are proposed, particularly in relation to public transport, but also in order to facilitate an increase in the level of walking, cycling and car use. While the emphasis is on public transport for trips over 3km, additional road capacity is essential to support the investment in strategic National Roads and to facilitate increased speed and convenience for public transport, walking and cycling. As such, a number of road schemes form part of the Strategy, however, the bulk of the increase in travel demand will be catered for by non-car modes.

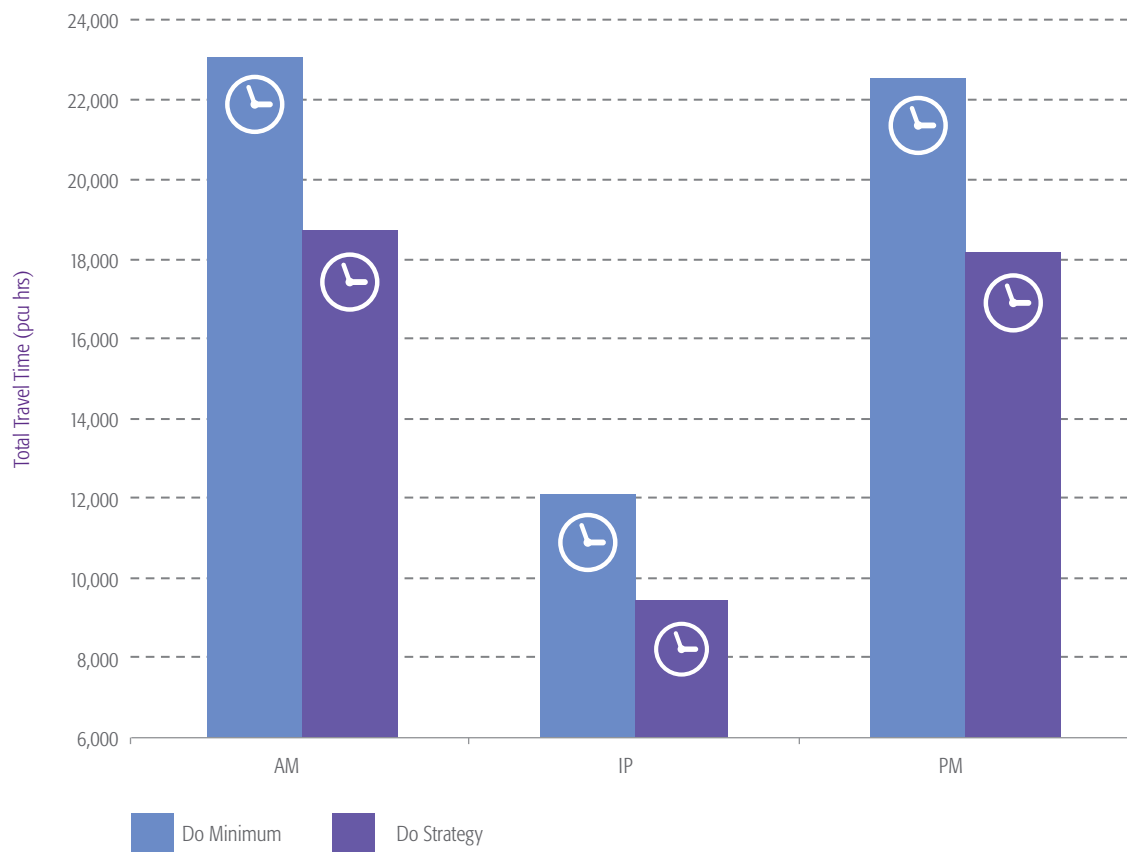
9.2.1 Performance of the Road Network

The Strategy aims to facilitate the forecast growth in travel demand without significantly impacting on the road network. In this regard, the road network was assessed to examine how efficiently the function and capacity of the existing roads would be maintained and enhanced with the implementation of the Strategy.

The following graphs show the change in level of congestion and the improvements in travel time compared to the Do-Minimum (the 'Do Minimum' represents the likely situation in 2035 in the absence of the new infrastructure proposed in the Strategy). In general, the performance of road network in the GDA will improve. A comparison of the travel time on the strategic road network and on city centre roads is presented below. Figure 9.3 compares the AM, Interpeak (IP) and PM peak hour travel time between the Do Minimum and Do Strategy model scenarios for the strategic road network, and Figure 9.4 sets out a similar comparison of the AM, IP and PM peak hour travel time for the city centre.

Figure 9.3 – Peak hour Travel Time between the Do Min and Do Strategy model scenarios – Strategic Road Network

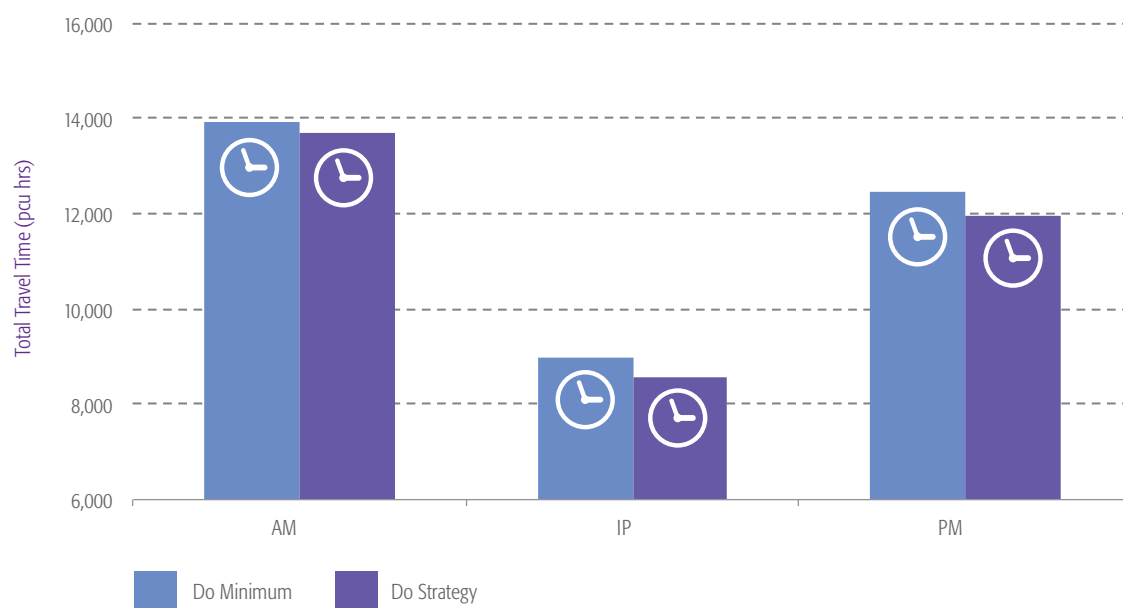
Total Travel Time on the Strategic Road Network



The analysis indicates that with the Strategy in place, travel time on the strategic road network reduces by approximately 18% in the AM, 21% in the IP and 19% in the PM. It is also worth noting that under the Do-Min scenario without the Strategy, the operational efficiency of the motorway network will be compromised, and as such, the Strategy interventions are required to maintain its capacity.

Figure 9.4 – Peak hour Travel Time between the Do Min and Do Strategy model scenarios – City Centre

Total Travel Time on City Centre Roads

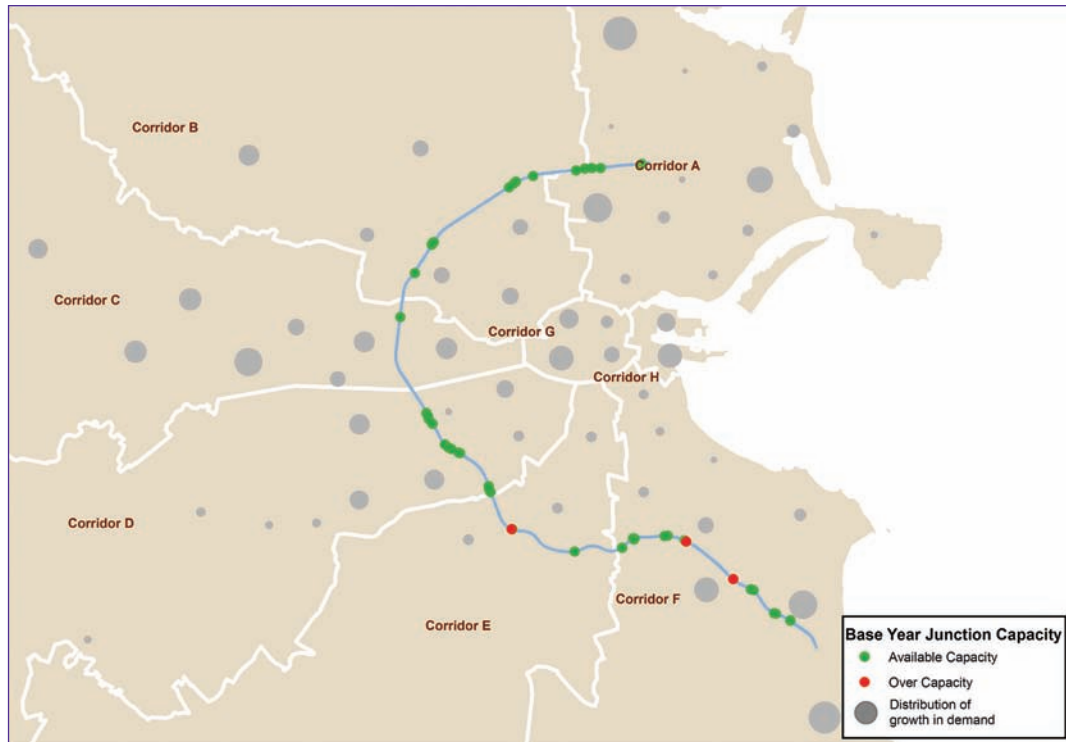


The analysis indicates that with the Strategy in place, travel time on the City Centre road network reduces by approximately 2% in the AM, 5% in the IP and 4% in the PM.

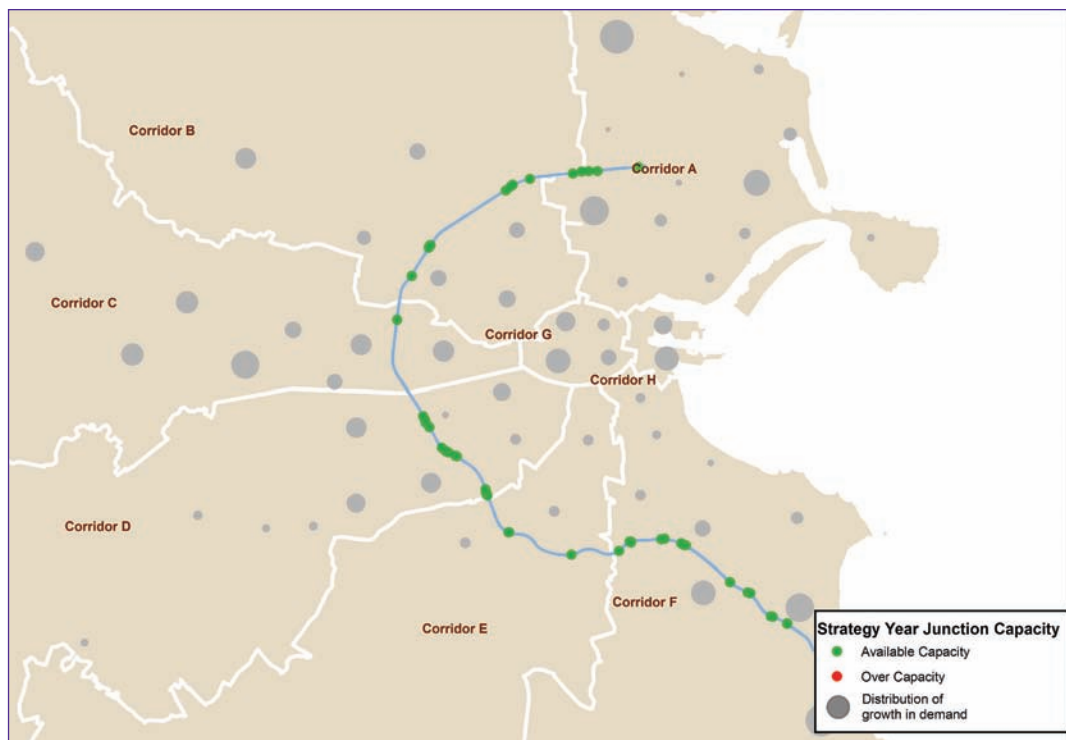
Looking at the M50 motorway, it is possible to analyse the impacts the Strategy will have on specific junctions based on the Volume / Capacity (V/C) Ratio. Figure 9.5 illustrates the relative change in the V/C Ratio on M50 Junctions between the base year and Strategy Scenarios. In general there is no significant change.

Figure 9.5 – Changes in V/C between Base Year and Strategy Scenario for M50 Junctions.

Base Year



Strategy Year



9.2.2 Performance of the Public Transport Network

The Strategy proposes a considerable expansion of the GDA's public transport network. The following maps show the extent of the rail and light rail network and the quality of service provided, based on the ratio of passengers to total capacity. Figure 9.6 shows this relationship in 2011 and Figure 9.7 shows the same for 2035, but for a much improved and more extensive network.

Figures 9.6 and 9.7 show the ratio of load to capacity over the entirety of the morning peak hour (8-9 am). Although survey data shows that some parts of the public transport network are at or above capacity at certain times within the peak hour; over the entire peak hour period there is available capacity on all parts of the network.

Figure 9.6: High capacity public transport capacity 2011 (Volume/Capacity Ratio)

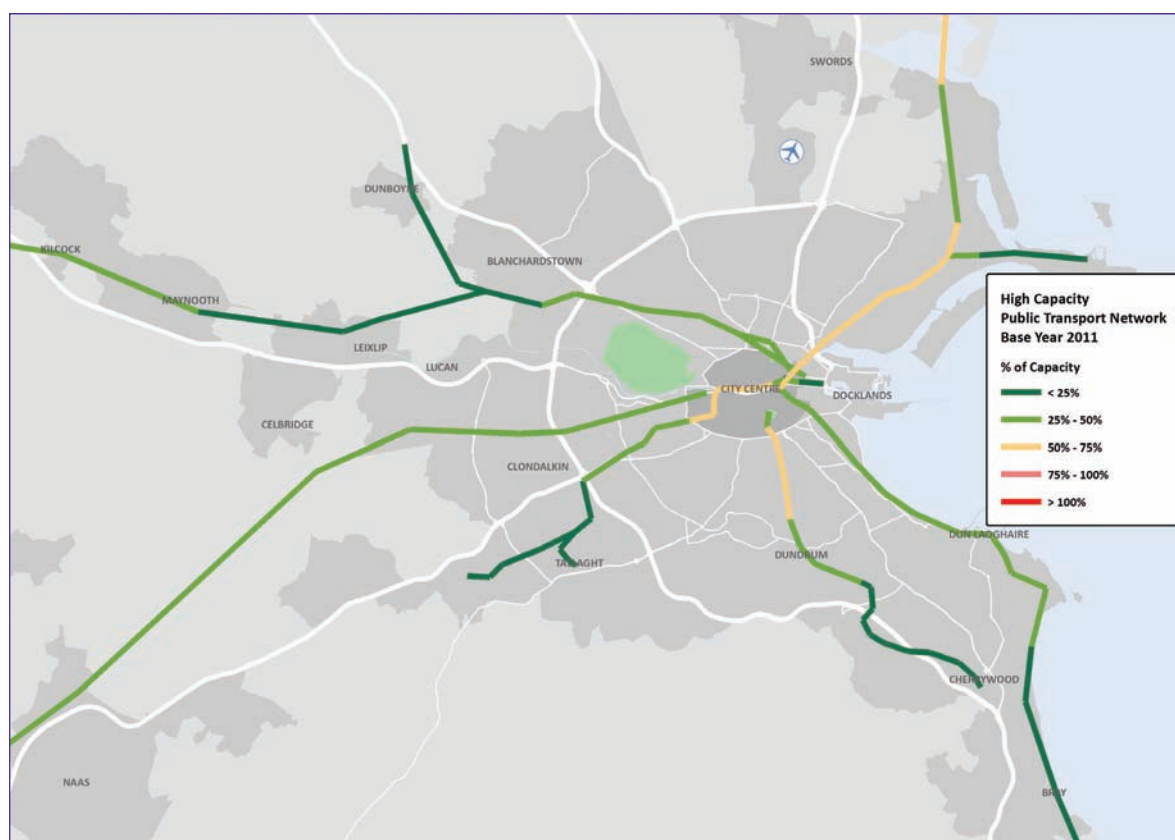
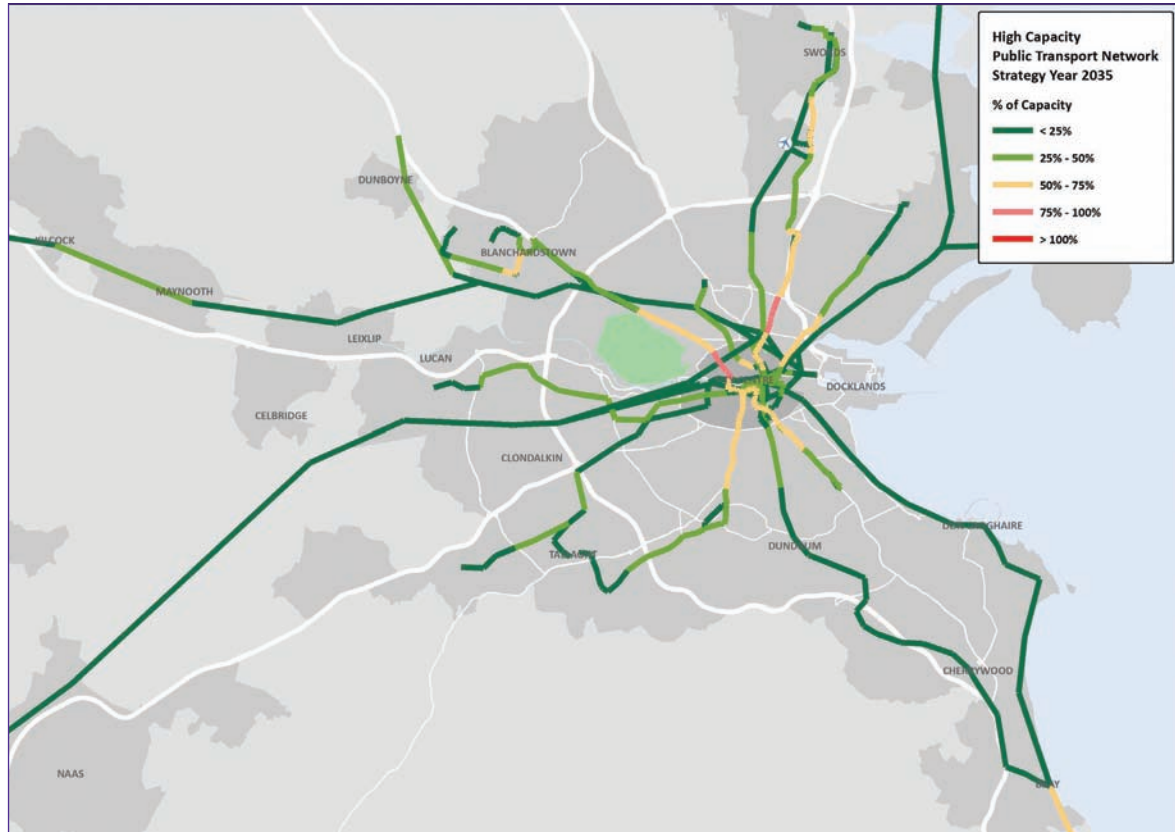


Figure 9.7: High capacity public transport capacity 2035 (Volume/Capacity Ratio)



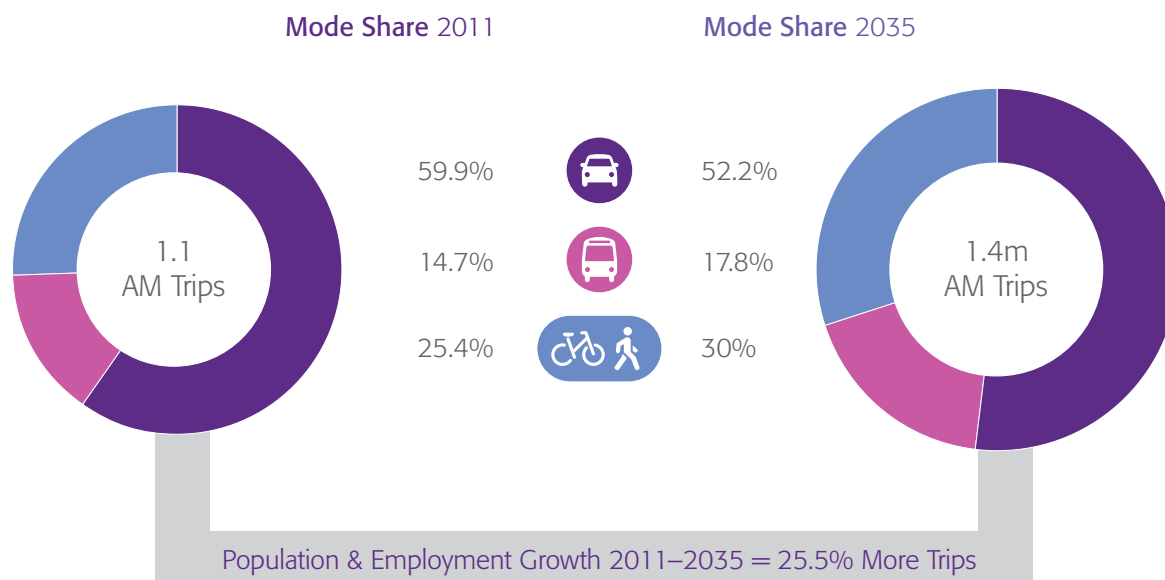
9.3 Benefits of the Transport Strategy

9.3.1 Mode Share - All Trips

The implementation of the Strategy will have a significant positive impact on the objective of reducing the proportion of all trips undertaken by private car from 59.9%, in 2011, to 52.2% in 2035⁷, with a corresponding positive impact on the proportions using public transport, walking and cycling. Figure 9.8 below shows the change in mode share from the base year following the implementation of the Strategy.

7 Transport model output for all trip purposes, AM peak (2011 & 2035)

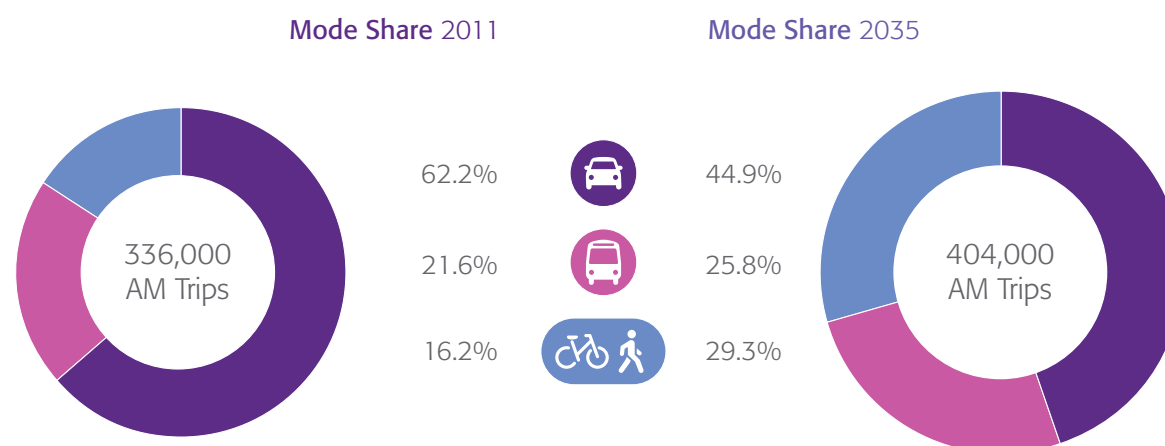
Figure 9.8 – Mode Split – Base Year 2011 and 2035 with Strategy



9.3.2 Mode Share - Work Commuting Trips

In relation to commuting to work journeys, Figure 9.9 sets out the change in mode share for the 7am to 10am peak period between the base year and the Strategy year of 2035. Commuting to work by car reduces to just under 45%, from a base year figure of 62.2%. The mode share for walking and cycling shows a very significant increase, up from 16.2% to 29.3%, almost double the base year value. Overall, the implementation of the Strategy will have a significant positive impact on transference to sustainable transport modes, with an overall 17.3% movement from car commuting trips onto other modes.

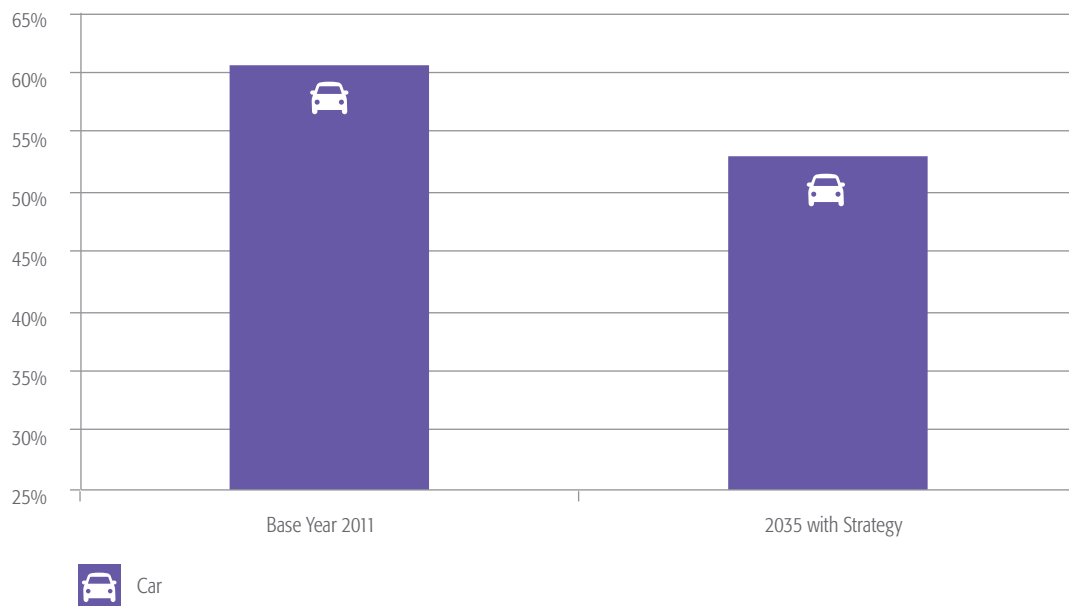
Figure 9.9 – Mode Split (Commuting to Work) – Base Year 2011 and 2035 with Strategy



9.3.3 Metropolitan Orbital Trips

A key outcome for the Strategy relates to the provision of a feasible alternative to the private car for orbital trips within Metropolitan Dublin, i.e. those whose origins and destinations are within the contiguous built-up area, but outside the city centre. As such, the mode split for these trips is an important indicator of the Strategy. The Strategy will lead to a significant shift towards non-car modes as shown in Figure 9.10, which shows the decrease in car mode share for such trips from 60.5% to 53.0%.

Figure 9.10: Car Mode Share for all Metropolitan Orbital Trips



9.3.4 Journey Time

Figure 9.11 shows the journey time bands by public transport to the city centre in 2011. Figure 9.12 shows the same for 2035. As evident, the area within 1 hour's travel time to the city centre is far more extensive in the future and accordingly, the areas within shorter journey times are correspondingly greater. Of particular note, is the impact of new Metro North on the northern corridor, including Dublin Airport.

Figure 9.11: Travel Time by Public Transport to the City Centre 2011

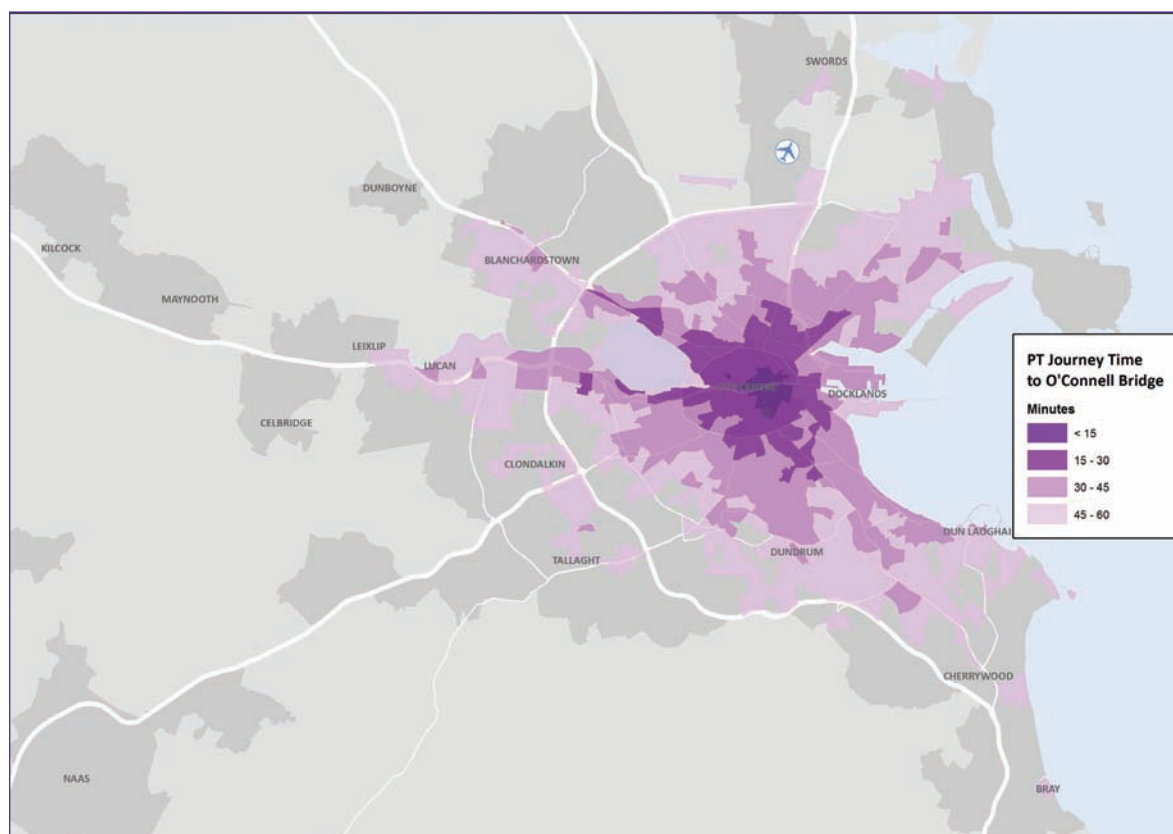
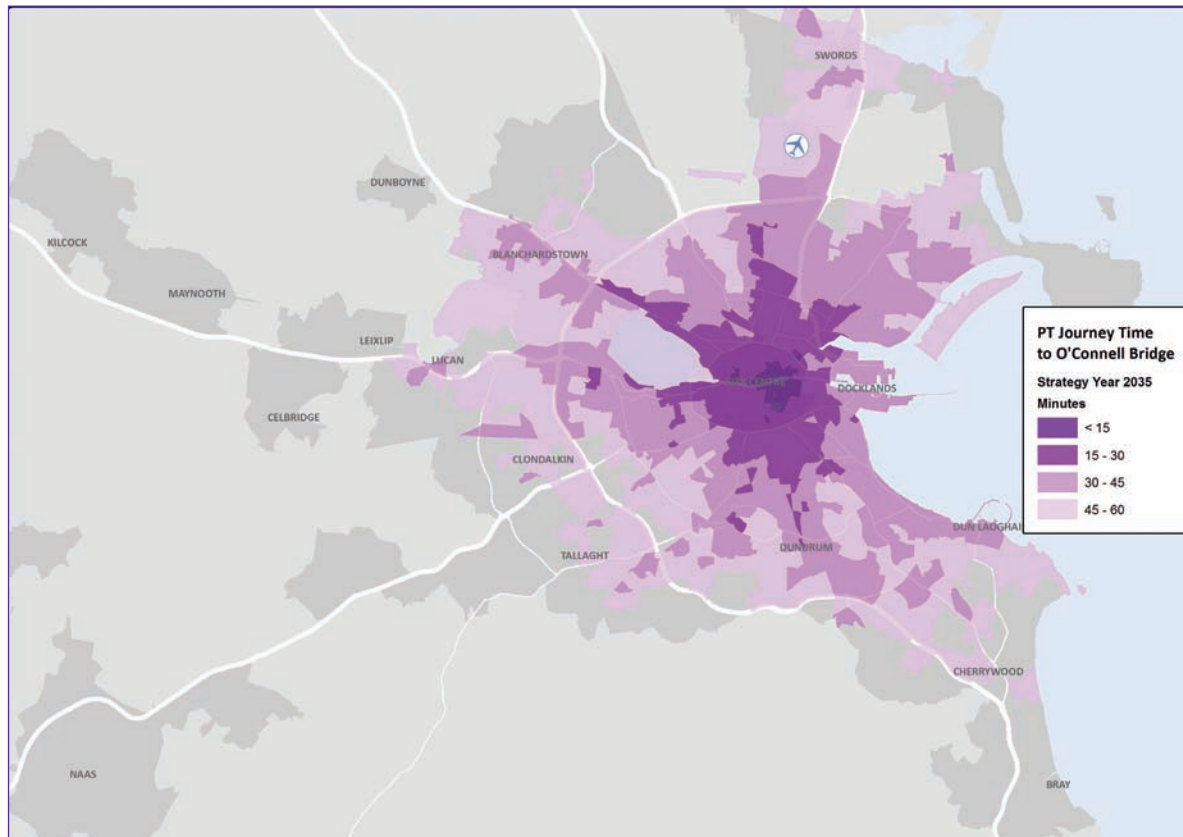


Figure 9.12 – Travel Time by Public Transport to the City Centre in 2035 (with Strategy)



9.3.5 Land Use Benefits

The implementation of the Strategy will facilitate a more efficient use of land within the GDA and will improve the accessibility of central areas, which will potentially lead to the greater consolidation of trip intensive developments such as employment and retail into locations served by public transport. The implementation of the Strategy will complement and facilitate the implementation of the strategic policies and recommendations of the Regional Planning Guidelines for the Greater Dublin Area and the plans and programmes of the Local Authorities.

9.3.6 Economic Benefits

An assessment of the transport user benefits of the Strategy has been undertaken. This provides a high level indication of the economic viability of the Strategy and is set out in the technical note "Outline Transport Users Benefit Assessment". The estimated transport user benefits of the Strategy are forecast to exceed the estimated outline strategy costs with a benefit to cost ratio of 1.3:1. This figure only accounts for direct transport benefits, predominately travel time savings, and does not include the wider economic benefits that will be delivered through the Strategy. It indicates that the Strategy is economically beneficial from a regional and national perspective, and provides confirmation of the overall economic justification for its implementation.

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