# Greater Dublin Area
# Draft Transport Strategy 2011-2030

## 2030 vision

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Údarás
**Náisiúnta** Iompair
National **Transport** Authority

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# Executive Summary


The National Transport Authority (the "Authority") is a statutory body established by the Minister for Transport on 1 December 2009. One of its obligations is the preparation of a Strategic Transport Plan for the Greater Dublin Area (GDA), which comprises the city and county of Dublin, and counties Kildare, Meath and Wicklow. The Strategic Transport Plan for the Greater Dublin Area for the period up to 2030 (the "Strategy") is set out in full in this document.

The Strategy's role is to establish appropriate policies and transport measures that will support the Greater Dublin Area in meeting its potential as a competitive, sustainable city region with a good quality of life for all.

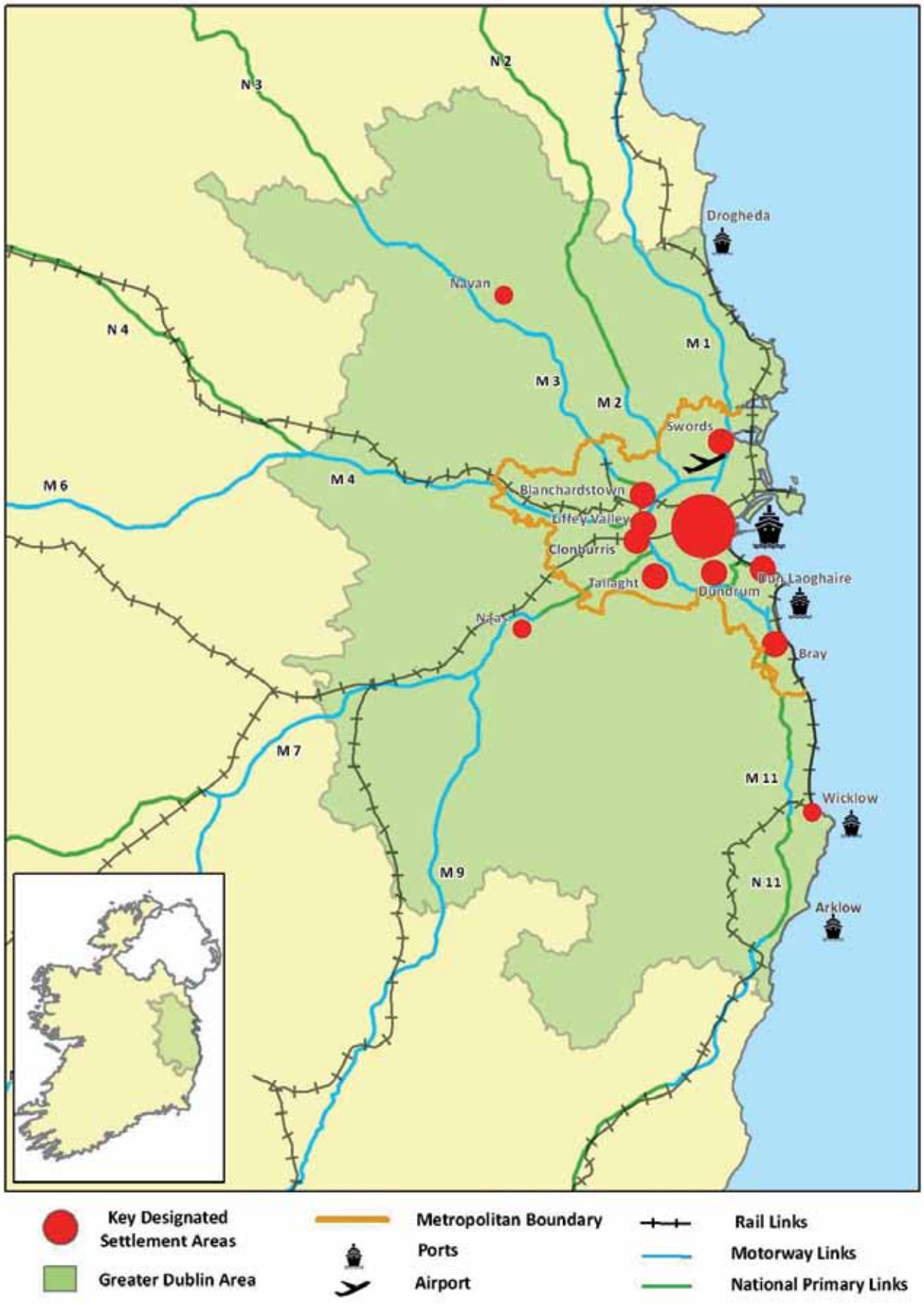
The Strategy is not a standalone document – it is the top level in a hierarchy of transport plans for the GDA that will include an Implementation Plan[1] and Strategic Traffic Management Plan[2], both of which will be published by the Authority after the adoption of this Strategy.

The Strategy vision and objectives and the preparation of the Strategy itself were guided and informed by extensive stakeholder and public consultation. The Strategy preparation was also informed by the outcome of the appraisal of the merits of various potential measures and alternative strategy options that were developed and assessed.

1 Section 13 (1) of DTA Act 2008

2 Section 64 of DTA Act 2008

## The Greater Dublin Area



## Context

This Strategy has been prepared following the publication of the Regional Planning Guidelines (RPGs) for the Greater Dublin Area and the relevant legislation requires that the Strategy and the RPGs are aligned in their objectives and intent. The RPGs in turn were prepared to be consistent with the National Spatial Strategy (NSS), published by the Government in 2002. The NSS provides the policy framework for all regional plans, including this Strategy and the RPGs.

The RPGs break the GDA down into two distinct parts; the Metropolitan area and the Hinterland area. A key policy of the RPGs is the consolidation of development into the Metropolitan area. In the Hinterland, development is to be consolidated into identified key Growth Towns.

*Smarter Travel – A Sustainable Transport Future*, published in 2009 by the Department of Transport, includes a number of key goals and national targets for 2020, including a reduction in Green House Gas emissions from the transport sector from 2005 levels, a reduction in the share of journeys to work by car to 45% of total journeys to work, and a 10% share of all journeys to be by cycling.

The *National Cycle Planning Policy Framework*, also published in 2009, reiterates the target for cycling journeys in Ireland and sets out a series of actions, including improving facilities for cycling, reducing traffic volumes in towns and near schools and improving the integration of public transport and cycling.

Several other key national policy documents such as the National Development Plan, the Infrastructure and Capital Investment 2012-2016 plan, Retail Planning Guidelines, National Climate Change Strategy played a major role in shaping the Strategy objectives and targets.

The Strategy is subject to Strategic Environmental Assessment and a Habitats Directive Assessment in accordance with national and European legislation.

The unprecedented economic circumstances prevailing in Ireland at the time of the adoption of this Strategy, mean that the level of investment in transport provision will be significantly curtailed from that anticipated under prior investment plans and programmes. Accordingly, the delivery of many of the capital intensive projects in the Strategy is unlikely to occur in the short-term and the level of the development and population growth may fluctuate from current predictions.

It is recognised that the Strategy cannot rely on high levels of investment in its early years. In addition, it also needs to be sufficiently flexible to accommodate varying levels of funding availability and to react to changing circumstances during the period of the plan. That is reflected in the spectrum of measures set out in the Strategy – while it includes some necessary capital intensive projects, it also focuses on providing a range of lower cost measures delivering significant benefits for transport throughout the region.

## Strategy vision and objectives

The Strategy vision for the Greater Dublin Area in 2030 is for *"a competitive, sustainable city-region with a good quality of life for all."*

The five overarching objectives for the Strategy to support this vision are:

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| **Objective 1:** Build and strengthen communities |
| **Objective 2:** Improve economic competitiveness |
| **Objective 3:** Improve the built environment |
| **Objective 4:** Respect and sustain the natural environment |
| **Objective 5:** Reduce personal stress |

A set of transport specific sub-objectives were identified associated with each of these higher level objectives.

## Travel in the Greater Dublin Area

The population of the Greater Dublin Area grew by 19% in the ten year period between 1996 and 2006 and 8.3% between 2006 and 2011. Employment grew by 40% between 1996 and 2006. Both population and employment are expected to grow by 39% in the period from 2006 to 2030.

Travel patterns in the GDA are related to development locations, in particular the location of housing relative to jobs, schools, shops and other facilities.

Dublin city's footprint increased dramatically from the early twentieth century onwards as people moved out of the old city (which was largely contained within the Grand and Royal Canals) to more spacious accommodation and in response to easier mobility brought about by the advent of the motor car.

Population growth also contributed to the growth in the size of Dublin. In the last fifteen years the rate of population growth accelerated, particularly in the Hinterland area. In many cases this growth has taken place in smaller towns or villages and rural areas, away from public transport. Forecasts up to 2030 assume 24% of the GDA population will be located in the Hinterland area, but future Hinterland growth is expected to focus much more on larger towns, where public transport is more readily available.

Whereas job growth has also taken place in the Hinterland, most jobs are still located within the Metropolitan area of Dublin, with office based jobs particularly focussed in or close to the city centre. Forecasts up to 2030 assume the large majority of GDA jobs (85%) will continue to be located in the Metropolitan area, with a particularly strong growth in jobs anticipated in the Dublin city centre.

The growth in population and employment in the last fifteen years, and the larger distances between houses jobs, shops and schools has led to a huge increase in demand for travel.

More information is contained in Chapter 4 of the Report.

## Transport challenges

The GDA generates just under half of Ireland's output (in terms of Gross Value Added), and contains Ireland's foremost city of international scale. Its economic well-being is of vital importance to the wider Irish economy.

Because much of the recent population, employment and retail growth in the GDA has taken place at locations remote from public transport, a large share of the associated growth in travel has been by car. This, coupled with increased car ownership and use in established areas, has led to a substantial increase in road congestion over most of the Greater Dublin Area.

Recent major road construction and public transport improvements, coupled with the economic downturn, have resulted in some improvements in congestion. However, forecasts indicate that this alleviation is temporary and without further transport interventions, severe congestion can be expected to return throughout much of the Greater Dublin Area. This has serious implications for businesses and the wider economic competitiveness of the GDA, as well as imposing serious social costs on those caught up in congestion.

Challenges include how to lock in the economic benefits of new transport infrastructure, the identification of network improvements to tackle road congestion and overcrowding on public transport services, and how to encourage some of those using the network at busy times to use more appropriate means of travel or to travel at less congested times.

From a public transport viewpoint, Dublin city centre is the most accessible location in the Greater Dublin Area, as it is where a large number public transport services converge. Improvements to public transport and restrictions in city centre parking have seen the share of travel by public transport, cycling and walking to central Dublin in the morning travel to work period grow from 50% in the late 1990s to 65% in 2007.

Challenges include how to free up road space for economically essential traffic by further increasing the share of travel by means other than the car, particularly to the city centre and other employment centres. We need to consider how to target public transport improvements to areas where access is currently poor. This will increase the labour pool that can access jobs in Dublin city centre and other employment centres, and will allow more people participate in the GDA employment market.

At a local level too, there is a need to connect people to the jobs, shops, schools, health facilities and other essential community services they need, by a range of travel modes, focussing in particular on improving local public transport, cycling and walking facilities. The Strategy needs to pay particular attention to improving connectivity for those living in disadvantaged areas. The Strategy also needs to ensure that transport facilities are designed with the needs of mobility impaired people and people with disabilities in mind.

The current public transport network is not very easy to understand, deterring new users. Simplifications of fares and ticketing and improvements to travel information all need to be addressed. Making the public transport network easier to use needs to be at the heart of the Strategy.

Very good progress has been made in reducing traffic accidents throughout the GDA in recent years. The Strategy needs to build on this further, placing a particular emphasis on improving safety, and perceptions of safety, for those who walk and cycle.

Walking and cycling can contribute to the health and wellbeing of GDA residents and the communities they live in. The Strategy needs to identify how walking and cycling can be encouraged, including for leisure and recreational purposes.

The environmental challenges associated with transport are significant. Overall, Ireland's Green House Gas (GHG) emissions in 2009 were 12% above 1990 levels. GHG emissions in the transport sector were 149% above 1990 levels. The Strategy needs to identify means to stabilise or reduce transport related GHG emissions and the use of fossil fuels to power transport in the GDA.

The hugely varied natural landscape of the GDA is a precious and unique asset which should be valued and maintained. The Strategy needs to minimise its impact on natural amenities.

## Strategy options and assembling the Strategy

In the preparation of the Strategy, various potential measures were identified under the following headings:

- Rail;
- Bus;
- Integration of public transport;
- Cycling;
- Walking;
- Traffic management;
- Freight;
- Integration of transport and land use planning;
- Promotion of non-car travel; and
- Travel demand management measures.

Identified measures were assessed and taken forward where appropriate, based on:

- their technological, political and legal feasibility;
- the contribution they are likely to make in meeting the objectives of the Strategy; and
- their performance, based on a standard approach to transport appraisal set out by the Department of Transport.

Strategy options were formulated from packages of well performing measures. In assembling packages, particular attention was paid to developing and applying measures in the overall GDA context. Public and stakeholder views on the relative merits of particular measures were also taken into account.

Three overall Strategy options were taken forward, each with a particular emphasis or theme that related back to Strategy objectives:

- Economy themed option;
- Society/community themed option; and
- Environment themed option.

The appraisal of options was supported and informed by extensive modelling analysis undertaken using the Authority's multi-modal strategic transport model for the Greater Dublin Area.

While each option attempts to meet all the Strategy objectives and address the transport challenges, each also places a particular emphasis on measures that meet the objectives related to the option theme. So for example, the economy themed option focuses in particular on policies and proposals that would support the economic growth and competitiveness of the GDA, whilst at the same time ensuring that there is not an unduly adverse impact on the other key Strategy objectives of improving the built environment, supporting the natural environment and strengthening communities.

Some policy and integration measures meet all objectives and are, therefore, included in all Strategy options. These measures include planning of new developments to support travel by walking, cycling and public transport, improvements to the walking and cycling environment, improved public transport information and integrated fares and ticketing.

Certain major transport schemes also meet all objectives and were therefore included in all strategy options. These include

- DART Underground (a rail tunnel through south city centre joining Kildare rail services via Heuston, St. Stephen's Green and Pearse rail stations to coastal DART rail services north of Connolly); and
- Metro North (Swords and Airport to O'Connell St. and St. Stephen's Green).

Several other public transport schemes were also included in all options, including Metro West (Tallaght to Metro North via Clondalkin and Blanchardstown), the northward extension of Luas from St. Stephen's Green to Grangegorman and the Maynooth railway line at Broombridge, Luas Lines from city centre to Lucan, Rathfarnham and Finglas, Luas upgrade to Metro from St. Stephen's Green to Cherrywood area and extension to Bray area.

Additional rail Park and Ride sites and further enhancements to the Quality Bus Corridor network were also included in all options.

### *The economy themed option*

The emphasis in this option is on measures that support economic growth and competitiveness. The emphasis is on reducing congestion, and improving journey times and reliability, particularly for business travel and the movement of goods.

Further major improvements to transport infrastructure figure prominently in this package, as do traffic management and road pricing measures, aimed at freeing up congested parts of the transport network for economically essential traffic.

### *The society/community themed option*

The particular emphasis in this option is on measures that link communities to each other, and to the activities that they need to access. Measures that improve access for disadvantaged groups are particularly important, with a focus on improving public transport services for those travelling to access health and community services, leisure and recreation facilities, or visit family and friends – particularly outside peak travel to work times.

Additional public transport services are included in this option, particularly between residential areas, town centres and other centres of activity, and particularly outside the peak travel to work period. Lower bus fares would apply at these times, partially funded by an increase in peak fares.

### *The environment themed option*

This option puts a particular emphasis on proposals that improve the built environment or minimise impacts on the natural environment. Proposals that are likely to support the Strategy objective of reducing transport related Greenhouse Gas emissions are included, as are proposals that reduce emissions or reduce local air pollution and noise, minimise impacts on natural amenities and the countryside and improve town and streetscapes.

No new strategic road building proposals are included in this option. In addition, region-wide distance based road pricing is included in this option, at a sufficient level to ensure the Government's Smarter Travel target of reducing car journeys to 45% of all journeys to work is achieved.

This option also includes priority measures for pedestrians and cyclists and restrictions for larger trucks in town centres, restrictions in parking provision at workplaces and other key destinations to discourage car use, and support for the introduction of electric vehicles.

### *Outcome of option appraisal*

Overall, the results of the option appraisal process strongly indicate the Strategy should be based upon the environmentally themed option. The key aspects of the Environment themed option that informed the assembly of the Strategy are:

- Substantially enhanced public transport network coverage, and improvements in public transport journey times, reliability and frequency;
- Only limited strategic road building or upgrades; and
- Demand management including road pricing over a wide geographical area within the GDA, to achieve the mode share targets set out in *Smarter Travel*.

At this point of assembling the strategy, decisions were made on whether forecast passenger demand merited bus or rail based public transport in particular corridors. A number of Luas and Metro lines or line extensions proposed in one or more of the strategy options were not taken forward for inclusion in the Strategy itself, due to low levels of forecast passenger demand. In such cases, bus alternatives were proposed instead.

# The Strategy

## Overview

The Strategy objectives can be grouped into economic, social and environmental categories. The Strategy aims to meet:

- Economic objectives by reducing delays and improving journey time reliability, particularly for business travel and the movement of goods, and by improving access to and within town centres;
- Social objectives by improving safety, reducing travel related stress and reducing the adverse impacts of traffic on neighbourhoods and centres whilst enabling all sectors of society to travel to the destinations they need to reach; and
- Environmental objectives, by giving priority to those means of travel that are less damaging to our natural and built environment.

In developing the Strategy, Government and regional planning policies and Strategy targets also have been taken into account, as well as environmental, physical, financial and other constraints. These include:

- The Government's '*Smarter Travel*' policies and targets, and the related target in the Strategy objectives of reducing transport related Greenhouse Gas emissions in the Greater Dublin Area;
- The need to minimise impacts on environmentally sensitive sites and historic areas;
- The planning policies set out in the Greater Dublin Area Regional Planning Guidelines;
- The cost of providing transport infrastructure and services and the need to ensure value for money; and
- The need to minimise undue disruption to businesses and people either during implementation or operation of a Strategy measure.

A wide range of policies and measures is required to provide the transport solutions for the Greater Dublin Area over the next twenty years. A particular emphasis has been placed on measures that meet the full range of Strategy objectives supporting the region's economy, whilst promoting social equity, and reducing adverse impacts on the built and natural environment.

In keeping with Strategy objectives, a clear hierarchy of transport users is supported, with pedestrians, cyclists and public transport users at the top of the hierarchy. As a general principle, these users should have their needs considered first in the planning of transport provision.

## Planning for sustainable living

The location and design of developments has a major influence on the amount of travel people need to make, and whether journeys need to be made by car. Past trends that created low density settlements remote from town centres and services (schools, shops, employment and leisure facilities), coupled with the dispersed nature of these services, have resulted in unsustainable travel trends that are car dominated. These patterns need to be redressed through a process of development consolidation and the promotion of an appropriate mix of land uses within areas that bring people closer to their needs and allow a high emphasis on walking, cycling and public transport.

The Strategy sets out a three tier settlement hierarchy, linked to the RPG settlement categorisation. The three categories are Dublin City, Designated Towns and Designated Districts. For the purposes of the Strategy, Dublin City refers to the part of Dublin that lies within the two canals and includes the Heuston area and Docklands area. The Designated Towns are the key RPG growth towns in the area, numbering eleven in total. Designated Districts are towns and suburban areas of varying scale and function which, predominately, are intended to link with adjacent Designated Towns.

New development likely to attract large numbers of people, such as shops and offices, needs to be located in Dublin city centre and larger town centres, where public transport accessibility is good, in order to support public transport use, cycling and walking as transport choices. Development densities should be higher in these areas. In addition, intensive development should also take place in areas well served by rail. Development should take place at these locations in advance of other locations.

The Strategy identifies that mixed use development will be the primary pattern of growth in all areas, with an emphasis on commercial uses in centres, and on residential uses in other areas served by public transport.

Local authorities need to support national Smarter Travel objectives, and work with government bodies to ensure there is homogeneity between the hierarchy of urban centres defined in future plans and strategies, which should be related to their accessibility by public transport. Central government design guidance for urban areas should be adhered to.

Local authorities should ensure new developments are permeable for walking and cycling, and that parking or servicing arrangements do not compromise walking, cycling and public transport use.

They should also ensure local facilities are located and designed so that access by walking and cycling from the surrounding area is direct, safe and convenient, and that barriers to convenient pedestrian and cycling movement are removed.

As part of local authority Development Plans and Local Area Plans, local authorities should prepare local transport plans, for Designated Towns and Designated Districts in their area. These transport plans should address access to the centre by all modes of transport, focusing in particular on the provision of direct, safe and attractive walking, cycling and public transport connections from the surrounding area.

Non-residential developments should be subject to defined maximum parking standards at a regional level, with more restrictive standards in many parts of the GDA related to accessibility by public transport. In areas where the highest intensity of development occurs, an upper limit on car parking supply should apply.

## Walking and cycling

The Strategy envisages the Greater Dublin Area becoming a recognised city-region for walking and cycling, with an environment that is attractive, safe and designed with the pedestrian and cyclist in mind at all times.

Increasing the share of people travelling on foot and cycle supports all the objectives of the Strategy, and the success of the Strategy is fundamentally dependent on achieving such an increase.

Strategy measures that support both walking and cycling include:

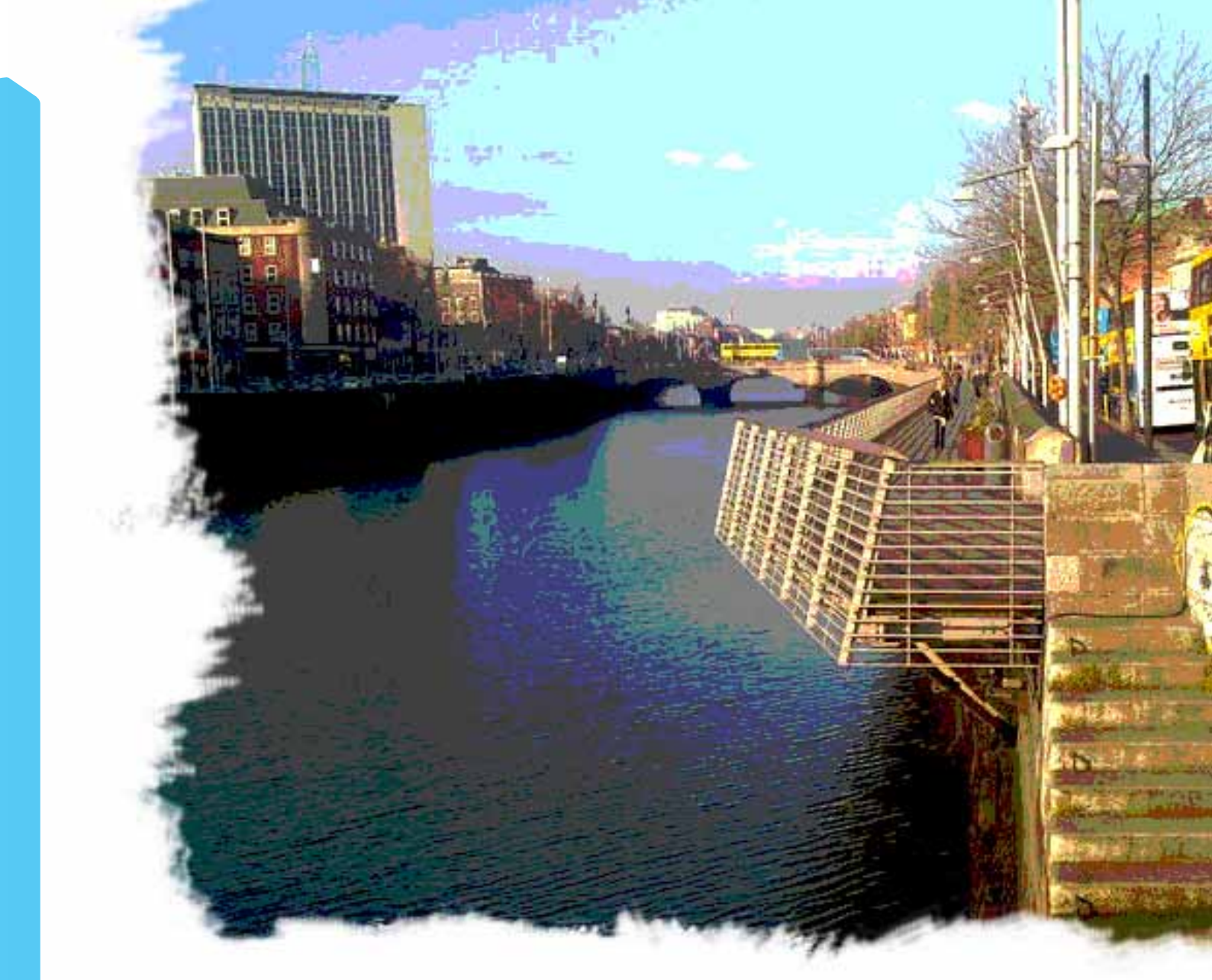
- Restrictions on motorised traffic travelling through the heart of Dublin city centre and other town centres, whilst permitting through movement for cyclists, buses, trams or taxis where necessary;
- Reductions in traffic speeds in town centres, residential and school areas, and reconfigurations of street space in town centres and residential areas to allow for easier people movement, to enhance the quality of the urban realm and to provide more space for people on foot. These improvements can be accompanied by provision of seating, planting and cycle parking as appropriate;
- Better information for those on foot or cycling, including maps, direction signs and online information on walking routes;
- Promotion of the benefits of walking and cycling, working with government departments, local authorities and others to target areas where the potential for additional walking is highest; and
- The enforcement of traffic laws to support pedestrian and cyclist safety.

Strategy measures that specifically support walking include:

- Widening of footpaths, rationalisation of street furniture, poles and signs, and the upgrade of footpath surfaces with higher quality materials where appropriate;
- Reducing crossing delays for pedestrians and additional pedestrian crossing points;
- Preparation by local authorities of streetscape design and maintenance guidelines for town centres, areas of historic or civic importance and elsewhere, as required;
- Improvements to walking and cycling routes especially approaching town centres, public spaces and other areas of civic importance; and
- Additional leisure walking and cycling routes along coastal, river and canal corridors and in the countryside together with improved cycle and pedestrian access to these routes.

Strategy measures that specifically support cycling include:

- Improving the cycling environment starting with Dublin city centre, larger town centres other employment centres and their immediate approaches;
- Provision of high quality cycling corridors, where required, in and on the key radial approaches to Dublin city centre and larger town centres;
- Improving cyclist priority and safety at junctions;
- Providing more direct routes for cyclists, including the introduction of cycle contraflow lanes on one-way streets, the creation of new pedestrian and cycle only links where appropriate, and opening to cyclists of the larger public parks throughout the Greater Dublin Area;
- Providing for a designated National Cycle Network in line with the Department of Transport National Cycle Policy framework, and for safe and attractive cycle links to it;
- Support for the expansion of the city centre cycle hire area;
- Seeking secure cycle parking in Dublin city centre and other town and village centres, in particular close to major retail, leisure or cultural destinations, as well as at workplaces, education facilities and public transport stations and stops; and
- Seeking that cycling education and training becomes part of the school curriculum and facilitating cycle training for schoolchildren and for adults.



## Public Transport

Public transport is essential for the economy of the Greater Dublin Area. It is the only means of transport that can provide the capacity needed to move the large volumes of people who travel to work, education, shops and leisure facilities in the Greater Dublin Area each day. It also enables much of the business and tourist travel in the region.

It reduces transport's impact on the environment by providing an alternative to the car and supports a more consolidated, compact form of development in the Metropolitan Area in particular, which also reduces the need to travel.

Half of Dublin's residents of driving age do not own a car. Public transport meets an essential social need for those without access to a car.

Over the lifetime of the Strategy, bus will continue to be the predominant public transport mode in terms of network coverage throughout the Greater Dublin Area. Outside of the corridors served by rail, buses will be the nucleus of the public transport offering, providing services over a large geographic area.

Bus measures include:

- Regular bus network reviews and commitment to alterations to improve services as required;
- Minimum service frequencies for bus services from Dublin city to larger Metropolitan and Hinterland towns;
- Local bus services for larger towns, linking to the town centre and onward public transport connections, adjacent smaller towns,

employment areas, hospitals, third level institutions and other major activity centres;

- Upgrade of four major Dublin bus corridors to high quality Bus Rapid Transit type operations – Stillorgan Road, Malahide Road, Lucan Road and Navan Road;
- Five further key QBC routes targeted for upgrade, including increased segregation, along with northern and southern orbital routes;
- Improved stop facilities – good quality shelters, real time passenger information, cycle parking, and offbus ticketing machines; and
- Reductions in buses parking in the city centre and rationalisation and sharing of bus stops.

In respect of rail measures, a number of rail projects have been identified for development during the period of the Strategy. Clearly the unprecedented economic circumstances prevailing in Ireland at the time of adoption of this Strategy means funding availability for investment in public transport infrastructure will be limited in the early period of this Strategy. As a result, it will not be possible to progress the delivery of a number of these capital intensive schemes until the later period of the Strategy.

Accordingly, a prioritisation approach has been adopted for the delivery of the major public transport rail infrastructure schemes, with the schemes grouped into categories of short-term, medium-term and long-term periods.

In line with the Government's Infrastructure and Capital Investment 2012 – 2016: Medium Term Economic Framework, the first period of the Strategy (up to 2016) will see the development of Luas BXD (St. Stephen's Green to Broombridge). During the medium-term period of the Strategy – between the years 2017 and 2026 – the focus of delivery will be on the two most significant public transport projects proposed in the Strategy, being DART Underground and Metro North.

The remaining major rail capital schemes are classified in the long-term (2027-2030) category, for delivery following DART Underground and Metro North, subject to confirmation of their need and appropriateness. Each of these schemes will be subject to a future assessment of their individual business cases and, prior to construction, a confirmation that they represent the appropriate solution in each particular case. In addition, there are a number of key considerations (other than funding) that pertain to these projects, including the scale and timing of development on their particular corridors and the assessment of Bus Rapid Transit alternatives during the project development process. Key rail projects in the long-term category (2027 to 2030) include:

- Luas to Bray (subject to development in the Bray/Fassaroe area);
- Upgrade of Luas Green line to metro standard (subject to emergence of severe capacity shortfall);

- Luas to Lucan (and possible extension to Poolbeg) (subject to examination of a BRT alternative; Poolbeg section subject to development in Poolbeg Peninsula);
- Luas through south west city (Kimmage) (subject to examination of a BRT alternative);
- Additional tracks on the Northern Rail Line (subject to feasibility study);
- Metro West (Northern section subject to development in North Blanchardstown); and
- Extension of Dunboyne rail line to Navan (subject to development in the Navan area).

Taxi and community transport measures include:

- The implementation of the recommendations of the Taxi Regulation Review published in January 2012 that are within the ambit of the Authority, and supporting the relevant agencies in the implementation of the remaining recommendations; and
- Working in partnership with agencies responsible for the provision of school, community and rural transport to explore the potential to improve integration with scheduled public transport and achieve efficiency savings.

Measures to make public transport easier to use include:

- Introduction and further development/ expansion of Smartcard ticket system;
- Transition to a fare system within the Metropolitan area that facilitates multi-leg and multi-modal journeys;
- Good quality passenger interchange points – including high quality waiting areas, well planned walking connections and integrated service arrivals and departures;
- Better information availability – real time passenger information, timetables, route maps covering all modes and a multi-mode journey planner;
- Providing safe, convenient and secure routes for pedestrians and cyclists to local bus stops, tram stops and rail stations as part of the development planning process;
- Using the development planning process to ensure that no new home in an urban area is more than 800 metres from a bus, tram or rail stop with a shorter distance of 500 metres to be targeted wherever feasible;
- Removal of existing barriers to pedestrians that impose long walk distances to public transport; and
- Development of additional park and ride sites in appropriate locations.

## Roads and traffic management

Following substantial improvements in strategic road provision in the GDA in recent years, only limited road development is envisaged during the period of the Strategy. However, the Strategy recognises the need for some road development to address issues such as safety concerns, provision of space for public transport priority or local servicing of development lands that meet Strategy planning objectives.

Particular measures related to roads and traffic management include:

- Future road development in the GDA should support Strategy objectives and the Government's Smarter Travel policies and targets;
- Development of traffic management arrangements that protect the role of the strategic road network;
- The preservation of the Eastern Bypass corridor and the finalisation and protection of a Leinster Orbital Route corridor, with possible incremental implementation of this road;
- Local accident remedial measures at locations with a poor road safety record; and
- Increased coordination and monitoring of roadworks, and a roadworks permit system

## Freight movement

The Strategy includes the following series of measures to move freight more efficiently and sustainably:

- Identification, as part of the local authority Development Plan process, of appropriate locations for freight intensive activities;
- Preparation and implementation of Construction Logistics Plans and Distribution and Servicing Plans for freight intensive developments;
- Support for the development of a pilot freight centre on the periphery of Dublin for breaking down or consolidation of freight loads before onward delivery in the Dublin urban centres;
- Support the use of rail infrastructure to cater for rail freight movements where feasible and viable; and
- Support HGV Management scheme extensions.

## Managing travel demand

The Government's Smarter Travel policy sets two key targets (i) that overall kilometres of car travel does not increase from 2009 levels; and (ii) that work-related commuting by car is reduced to 45% of overall journeys. Even with all of the other elements of the Strategy in place, these Smarter Travel targets will not be realised without additional measures to manage travel demand being implemented. To achieve these targets the following measures are included:

- Seek the introduction of a road use charging scheme for the GDA prior to 2020. Following public consultation, and as part of a future Implementation Plan, the exact form of the charging scheme, including the structure of the charges and the area to which they are to be applied will be advised;
- Evaluate the feasibility of introducing parking levy proposals for private non-residential parking and further develop on-street parking charges and management; and
- Seek the preparation and implementation of site or area-wide Travel Plans targeted at reducing car use at workplaces, schools and in residential areas.

## Expected outcomes

Part of the process of developing the Strategy involved assessing how it performed in terms of achieving the key Strategy objectives. The appraisal of the Strategy shows that it performs particularly strongly in improving economic competitiveness, improving the built environment and reducing personal stress.

Its implementation would meet Government Smarter Travel targets for the share of journeys to work made by means other than the car. Through the provision of additional infrastructure and services, the Strategy substantially improves the availability, convenience and use of public transport. Walking and cycling levels are enhanced through the various measures that will be implemented. Road congestion is substantially decreased from the situation that would apply in the absence of the Strategy.

The overall delivery of the Strategy will result in reduced transport related CO2 emissions from the situation that would apply in the absence of the Strategy, which will assist Ireland in meeting existing and future commitments related to climate change.

The 85 measures set out in the Strategy comprise of a mix of high cost projects and low cost plus zero cost projects and initiatives. Considered overall, the majority of the Strategy measures are either low cost or, indeed, zero cost proposals, with a limited number of high cost capital projects only proposed where, ultimately, the future transport demands require such investment to deliver the necessary long-term capacity in the transport system. The delivery of many of those high cost schemes can, and will, extend over many years – it is not a prerequisite of the Strategy that they are delivered in the early years of the Strategy.

## Next steps

Within 9 months of the date that the Minister has approved the Strategy, the Authority is obliged to prepare an Integrated Implementation Plan, covering the ensuing 6 year period. This plan will include an infrastructure investment plan and an integrated public transport service plan, and public consultation will take place during the preparation of this Integrated Implementation Plan.

**Our vision** for Dublin 2030 is for a competitive, sustainable city-region with a good quality of life for all

# PART A:
# BACKGROUND AND OPTIONS

# Chapter 1

# Introduction and overview

**In this Chapter:**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## 1.1 Purpose of this document

The National Transport Authority has a statutory obligation to prepare a Strategic Transport Plan for the Greater Dublin Area[3]. This document sets out the National Transport Authority's Strategic Transport Plan for Greater Dublin Area (GDA) for the period up to 2030 (the Strategy).

The GDA encompasses the Dublin and Mid-East Regions, that is, the area represented by the four Dublin local authorities of Dublin City, Dun Laoghaire-Rathdown, Fingal and South Dublin together with the three adjacent counties of Kildare, Meath and Wicklow in the Mid-East Region.

The Strategy has been prepared as part of the ongoing transport planning process for the GDA that began with the publication of the Dublin Transport Initiative (DTI) in 1995. Prior to the establishment of the National Transport Authority (the Authority), the Dublin Transportation Office (DTO) held this remit, and the DTO commenced preparatory work on this Strategy in late 2007, which the Authority took over in December 2009.

## 1.2 The hierarchy of transport plans

The Strategy presented in this document is a strategic transport plan for the GDA for the next 20 years. It is not, however, a standalone document or blueprint to instantly address all transport issues within the GDA. Its purpose is to represent the top level within the hierarchy of transport plans for the region that will include an Implementation Plan[4] and a Strategic Traffic Management Plan[5] both of which will be published by the Authority subsequent to the adoption of the Strategy. The Strategy is not intended to represent a short term solution to transport deficiencies, rather it sets out a longer term framework for transport in the GDA.

The Implementation Plan and Strategic Traffic Management Plan will be vital in ensuring that the policies and objectives of the Strategy as set out in this document are achieved. These two later plans (and the Strategy itself) will be reviewed every 6 years. This will allow for consideration of issues which are constantly changing and which cannot be fully assessed within the Strategy, such as the availability of funding. In addition any changes to current forecasts of population and employment growth will need to be taken into account . The preparation and implementation of the aforementioned plans will be fundamental to the success of the Strategy.

3 Section 12 (1) of DTA Act 2008

4 Section 13 (1) of DTA Act 2008

5 Section 64 of DTA Act 2008

## 1.3 Role of the Strategy

The Strategy is a strategic transport planning document, intended to establish the direction of transport in the Greater Dublin Area for the next 20 years. The Strategy's role is to establish the essential policies and measures required to support the Greater Dublin Area in meeting its full potential, as expressed in the Strategy vision and objectives (set out in Chapter 3 of this report) in a pragmatic and achievable manner. The timing of implementation of the various strategy policies and measures will be addressed later, in a series of Integrated Implementation Plans, the first one of which will be published within 6 months of the publication of this Strategy.

The Strategy does not preclude solutions which can be developed during the 20 year life span of the Strategy as it is flexible enough to accommodate appropriate new measures or solutions. The Strategy will allow for change and amendments, provided these are consistent with the established Strategy objectives.

The Strategy is not simply a list of transport infrastructure measures, such as a new road or train line upgrade. It also proposes changes in the management and operation of the existing transport network in order to optimise and fully exploit the use of existing infrastructure. In addition, it sets out policies that discourage those transport-related activities that undermine the true potential of the GDA or run counter to Strategy objectives. The Strategy also identifies certain land use policies as being essential to achieving the full potential of the region, and these are included in the Strategy.

The major transport infrastructure measures identified in the Strategy need to proceed through various decision points before they can be built. These include route selection, scheme appraisal, environmental assessment, business case approval, planning approval and funding.

The Regional Planning Guidelines (RPGs) for the Greater Dublin Area set out the planning context for the Strategy and as required by legislation, all objectives and policies contained within the Strategy are consistent with the RPGs.[6]

## 1.4 Economic environment and funding

The unprecedented economic circumstances prevailing in Ireland at the time of the adoption of this Strategy, mean that the level of investment in transport provision will be significantly curtailed from that anticipated under prior investment plans and programmes. Accordingly, the delivery of many of the capital intensive projects in the Strategy is unlikely to occur in the short-term and the level of development and population growth may fluctuate from current predictions.

It is recognised that the Strategy cannot rely on high levels of investment in its early years. In addition, it also needs to be sufficiently flexible to accommodate varying levels of funding availability and to react to changing circumstances during the period of the plan. That is reflected in the spectrum of measures set out in the Strategy – while it includes some necessary capital intensive projects, it also focuses on providing a range of lower cost measures delivering significant benefits for transport throughout the region.

Notwithstanding the current economic difficulties it is still important that the Strategy sets out to deliver the needs of the region over the long-term. It will provide a blueprint for the development of transport in the Greater Dublin Area up to 2030. As such, it allows a long-term focus to be given to the needs of the region. Also, in tandem with other policies including, in particular, the Regional Planning Guidelines, it is targeted towards addressing the unsustainable development and commuting patterns that have emerged over recent decades. Reversing many of those untenable trends will take time. Accordingly, this is a Strategy that envisages incremental delivery over and, if necessary, beyond its full lifetime.

It may be that the pace of delivery of the component elements of the Strategy has to be phased over a longer period than might be considered desirable. However, that does not mean that the overall Strategy approach should change; the right solutions to service the overall transport needs of the region will still remain the right solutions even if the delivery timeframe is elongated. But it does mean that a more incremental approach to the overall delivery of the

6 Section 12 (7) and 12 (8) of DTA Act 2008

Strategy will be necessary. Such an arrangement is still consistent with the overall objectives of the Strategy and will ensure that the individual elements that will be developed will, ultimately, still aggregate to deliver a coherent integrated package.

Sections 12.8 and 12.9 in Chapter 12 assess the implications of reduced population and employment scenarios, as well as examining longer term planning horizons. Together with the six yearly reviews of the Strategy required under the applicable legislation, this facilitates a responsive approach to addressing the evolving needs of the region over the full Strategy period.

The next steps in the implementation of the Strategy are set out later in Chapter 13.

### 1.5 Consultation

Comprehensive stakeholder and public consultation has been carried out at key stages during the development of the Strategy, to help ensure that a Strategy that meets desired objectives and addresses key issues is prepared. The consultation informed

- The formulation of the Strategy vision and objectives and identification of key issues that the Strategy should address; and
- The identification of appropriate measures and which ones should be considered for inclusion in options and the Strategy itself.

### 1.6 Strategy appraisal

The Strategy has been fully appraised to determine how well it meets the Strategy vision of a modern European capital city and surrounding region and the key Strategy objectives.

The Strategy was also appraised to determine how well it performs against a set of standard criteria under the headings of Economy, Integration, Safety, Accessibility, Social Inclusion and Environment, based on the Department of Transport's "Common Appraisal Framework" for projects and programmes.

Appraisal of the Strategy took place at key stages in its preparation:

- Following identification of potential transport measures;
- Following assembly of packages of Strategy options; and
- when the Draft Strategy was prepared.

A Strategic Environmental Assessment (SEA) and Habitats Directive Assessment (HDA) of the Strategy have been undertaken. The results of these assessments are set out in a separate document. This complies with the requirements of the SEA Directive (Directive 2001/42/EC of the European Parliament and Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment) and associated legislation.[7]

The manner in which the outcomes of the appraisal, SEA and HDA assessments were taken into account during the preparation of the Strategy is set out later in this document.

### 1.7 Structure of this document

The rest of this document is set out as follows:

*Part A: Background and Options* comprises:

- Chapter 2 providing the policy and legislative context to the Strategy;
- Chapter 3 setting out the Strategy vision and objectives;
- Chapters 4 and 5 describing travel in the Greater Dublin Area and some of the key transport challenges arising; and
- Chapter 6 detailing the strategy options considered and the appraisal process undertaken for these options.

7 Article 6(3) and 6(4) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, as amended by Council Directive 97/62/EC

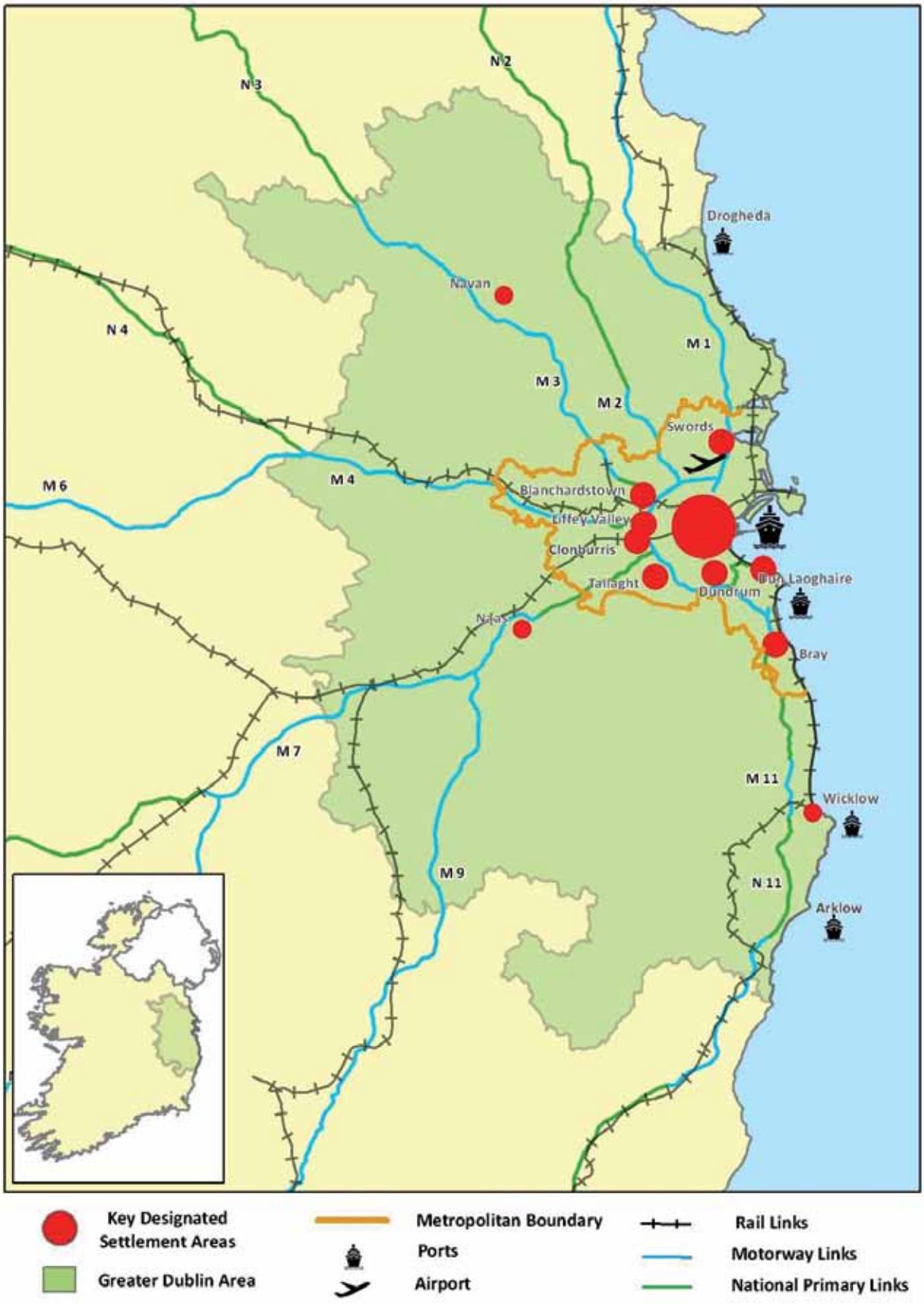
*Part B: The Strategy* comprises:

- Chapter 7 setting out an overview of the Strategy;
- Chapter 8 containing land use planning recommendations aimed at better integrating transport and land use planning;
- Chapter 9 setting out the Strategy approach in relation to walking and cycling;
- Chapter 10 describing the public transport elements of the Strategy including measures to make public transport easier to use; and
- Chapter 11 dealing with roads, freight movement and demand management.

*Part C: Outcomes and Next Steps* comprises:

- Chapter 12 describing the appraisal of the Strategy and key expected outcomes; and
- Chapter 13 setting out the next steps in the implementation of the Strategy.

**Figure 1.1: The Greater Dublin Area**



# Chapter 2

# Context

**In this Chapter:**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## 2.1 Introduction

This chapter sets out the transport planning and transport investment programme framework in which the Strategy was prepared. It also describes the planning and legislative context governing the Strategy's development, and which was taken into consideration during the preparation of the Strategy.

## 2.2 Previous transport strategies for the Greater Dublin Area

Following the publication of the Dublin Transport Initiative (DTI) report in 1995, the Government established the Dublin Transportation Office to continue the on-going transport planning process for the Greater Dublin Area. The first update of DTI was published in 2001 in the DTO report 'A Platform for Change'. This was an integrated transport strategy for the period up to 2016 and contained two interdependent elements:

- A comprehensive public transport network that would provide an attractive alternative to the car for most people within the GDA; and
- Travel demand management measures aimed at reducing the growth in travel and encouraging a transfer from car to more sustainable modes of travel.

The DTO and its functions were subsumed into the National Transport Authority in December 2009.

## 2.3 Investment Framework

### *Infrastructure and Capital Investment 2012-2016: Medium Term Economic Framework*

The Government published its Infrastructure and Capital Investment 2012-2016: Medium Term Economic Framework in November 2011, setting out the funding priorities for the five year period covered by this plan. Addressing the dramatically changed fiscal and budgetary situation of Ireland, it focuses on prioritising spending "to ensure maintenance of existing investment and to advance a small number of important projects which can add value to the existing network".

The plan sets out investment proposals for transport over the five year period covered by the plan. In the context of reduced resources, the plan recognises that larger public transport projects proposed for the Greater Dublin Area (such as Metro North and DART Underground) cannot proceed during the period of this plan. However, the plan confirms that these projects will be reconsidered for development in subsequent investment plans, when fiscal and market conditions improve, and remain key elements of the overall integrated transport strategy for the region. For the Greater Dublin Area, the plan sets out that the overall transport integration agenda will be progressed through commencing construction of the LUAS Broombridge (Line BXD) project, during the period of the investment plan.

In relation to the road network, the plan states that the key challenge in current circumstances is to ensure adequate maintenance of the national road network in order to protect the value of previous investments and to target the improvement of specific road segments where there is a clear economic justification. Within the Greater Dublin Area, the investment framework anticipates the development of the N11 Arklow-Rathnew scheme and the N7 Newlands Cross Interchange scheme, as a bundle of two projects being progressed under a public private partnership process.

## 2.4 Legislative context

### *Dublin Transport Authority Act 2008*

In accordance with Section 12 (1) of the DTA Act 2008 the Authority is statutorily obliged to make a strategic transport plan for the GDA every six years. The Authority is required to publish its first transport strategy not later than one year following the review of the Regional Planning Guidelines for the GDA, which was completed in June 2010.

Legislation[8] stipulates that the Strategy should be consistent with the Regional Planning Guidelines for the GDA, that it should prepared in such form or manner as may be directed by the Minister for Transport, and that in preparing the Strategy, the Authority should consult with and consider the views of a range of stakeholders and the wider public.

### *Strategic Environmental Assessment*

In accordance with EU Directives (2001/42/EC) 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).

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 ... with a view to promoting sustainable development' (Article 1 SEA Directive). The SEA Directive requires that certain plans and programmes, prepared by statutory bodies, which are likely to have a significant impact on the environment, be subject to the SEA process. The Strategy therefore requires an SEA. The policies and measures contained within the Strategy have been assessed against a scenario with minimal new transport interventions and, where necessary, mitigation measures have been included.

The Environmental Report sets out the findings of the SEA and should be read and considered in parallel with the Strategy.

### *Habitats Directive Assessment*

The Habitats Directive Assessment (HDA) is a requirement of the EU Habitats Directive (92/43/EEC) – the Conservation of Natural Habitats and Wild Flora and Fauna - as transposed into Irish law through the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997). The purpose of the HDA is to determine whether the Strategy will have implications for any Natura 2000 sites in the GDA, to ascertain whether there will be adverse impacts on the integrity of these sites and to recommend, where appropriate, mitigation measures or identify the need for alternative solutions in order to avoid any potential impacts. The details of the approach to the HDA and the findings are set out in the Habitats Directive Assessment Report which accompanies the Strategy. This should be read and considered in parallel with the Strategy.

## 2.5 European policy context

A number of EU policies relating to transport are relevant to the development of the Strategy.

8 Section 12(7) and 12(8) of DTA Act 2008

### *EU Climate Change Programme*

Following agreement on internationally binding targets of reducing greenhouse gas (GHG) emissions and the adoption of the Kyoto Protocol in December 1997, the EU launched its first European Climate Change Programme in June 2000. Subsequently, in March 2007, the EU commission pledged that EU states would achieve a reduction of 20% reduction on 2005 levels of GHG emissions by 2020. As the transport sector is a major contributor to GHG emissions, the emission reduction targets set out in the EU Climate Change Programme establish important targets for transport policy and planning across all EU states.

### *European Transport White Paper*

The Transport White Paper 'Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system' was published by the European Commission in March 2011. A key aim of the paper is to reduce the transport system's dependence on oil without sacrificing its efficiency and compromising mobility.

The EU Transport White Paper provides an important policy context for the GDA transport strategy in that it clearly identifies transport issues that are common to all member states.

## 2.6 National policy context

The National Transport Authority is required[9] to ensure that the Strategy is consistent with relevant regional planning guidelines for the GDA, and to have regard to a number of national and regional plans and programmes – the main ones of which are described briefly below:

### *National Climate Change Strategy 2007 – 2012*

The National Climate Change Strategy is an important policy context for transport plans nationally.

The strategy clearly identifies transport as a key sector contributing to climate change and a sector where major changes in current trends and behaviour will be necessary if Ireland is to meet its international commitments in this area.

### *National Energy Policy*

The National Energy Efficiency Action Plan 2009 – 2020 sets out a strategy to reduce the State's dependence on imported fossil fuels, improve energy efficiency across a number of sectors and ensure a sustainable energy future.

### *Smarter Travel – A Sustainable Transport Future 2009*

Smarter Travel is a national policy document which sets out a broad vision for the future and establishes objectives and targets for transport. The aim is that by 2020 future population and economic growth will have to predominantly take place in sustainable compact areas, with a consequent reduction in dispersed development and long distance commuting. It establishes key policy objectives and targets for all regional policies and plans.

In order to address the unsustainable nature of current travel behaviour, Smarter Travel sets down a number of ambitious goals and targets for 2020, including:

- Total vehicle kilometres travelled by car will not significantly increase above 2009 levels;
- Levels of congestion will be significantly reduced below 2009 levels;
- Work-related commuting by car will be reduced from 65% to 45%;
- 10% of all trips will be by cycling; and
- The efficiency of the transport system will be significantly improved.

If the ambitious targets set out in Smarter Travel are to be achieved nationally they would have to be significantly exceeded within the major urban areas of the GDA, where the majority of the population already has much greater access to sustainable modes of travel and alternatives to the use of the car, than are available in other regions of the country.

9 Section 12(7) of the DTA Act 2008

### *National Spatial Strategy*

The National Spatial Strategy (NSS) 2002 to 2020 is a twenty year national planning framework designed to deliver more balanced social, economic and physical development between regions. Key elements of the NSS include:

- The need for Ireland to renew, consolidate and develop its existing cities, towns and villages – keeping them physically compact, public transport friendly and minimising urban sprawl;
- Balanced regional development, encouraging each region to reach its full potential and contribute to the overall performance of the State on a sustainable economic, social and environmental basis; and
- Strategic planning guidance for a range of Government policies and regional and local plans.

The NSS provides the policy framework for all regional and local plans, including the RPGs for the Greater Dublin Area (see below).

### *National Cycle Planning Policy Framework 2009-2020*

Ireland's first National Cycle Policy Framework was launched in April 2009. It outlines 19 specific objectives, and details 109 individual but integrated actions. The National Cycle Policy Framework aims to ensure that a cycling culture is developed in Ireland to the extent that, by 2020, 10% of all journeys will be by bike.

### *Draft Guidelines for Planning Authorities - Retail Planning*

These draft Retail Planning Guidelines provide a comprehensive policy and practice framework to guide regional policy, development plans and development proposals.

The draft Retail Planning Guideline's fundamental objectives include, protecting, supporting and promoting the continuing role of city and town centres and promoting forms of development which are easily accessible – particularly by public transport – and located in such a manner as to encourage multi-purpose trips.

### *Spatial Planning and National Roads - Guidelines for Planning Authorities*

These guidelines set out planning policy considerations relating to development affecting national primary and secondary roads, including motorways and associated junctions, outside the 50-60 kph speed limit zones for cities, towns and villages.

The following key principles have guided the development of these guidelines:

- Land-use and transportation policies are highly interdependent;
- Proper planning is central to ensuring road safety;
- Development should be plan-led;
- Development Management is the key to Plan Implementation; and
- Planning Authorities and the National Roads Authority and other public transport bodies must work closely together.

## 2.7 Regional policy context

### *Regional Planning Guidelines for the Greater Dublin Area*

The Regional Planning Guidelines (RPGs) for the GDA covers the two planning regions of Dublin and the Mid-East. It is a policy document that aims to direct the future growth of the GDA over the medium to long term, and works to implement the strategic planning framework set out in the NSS. The RPGs inform and direct the City or County Development Plans for each of the local authorities in the GDA. The current RPGs provide the regional planning framework for the period 2010 to 2022.

Among the principles of the RPGs are:

- Dublin as the capital city and a major European centre will grow and progress, competing with other cities in the EU and serving a wide range of international, national, regional and local needs;
- The Dublin and Mid-East regions will be attractive, vibrant locations for industry, commerce, recreation and tourism and will be a

major focus for economic growth within Ireland; and

- Development in the GDA will be directly related to investment in integrated high quality public transport and focused on achieving a compact urban form.

In setting out planning policy for the region, the RPGs break the GDA into two distinct areas – i.e. the Metropolitan and the Hinterland areas. A key policy of the RPGs is the consolidation of development in the Metropolitan area which will have a greater population served by a much enhanced public transport system. In the Hinterland, development is to be consolidated into key identified Growth Towns.

The RPGs set out population and housing targets for each of the GDA counties and defines a settlement hierarchy for the GDA.

The RPGs establish the regional planning context for the Strategy. The RPG 2022 population and housing forecasts for each of the GDA local authorities (extrapolated to 2030) are the main demographic forecasts on which the Strategy is based. The Strategy establishes the GDA transport networks, services and supporting transport policies that support the RPG planning framework for the region. It is a requirement of the legislation establishing the Authority that the Strategy is consistent with the RPGs.

### *Retail Planning Strategy for the Greater Dublin Area 2008-2016*

The Retail Planning Strategy for the Greater Dublin Area 2008-2016 (RPSGDA) was published by the Regional Planning Guidelines Office in July 2008. It is a non-statutory document which sets out an analysis of the future retail needs of the people in the GDA up to 2016 and seeks to give guidance to the local authorities on where future retail facilities should be provided and what issues need to be addressed.

Core elements of the RPSGDA include:

- Encouraging local shopping provision for lower order goods to reduce trip lengths; and
- The linking of provision of new retail facilities to public transport nodes.

The RPSGDA is the basis used for forecasting the location and scale of retail development throughout the GDA for the Strategy forecast year 2030. In turn this enables the forecasting of the number of shopping trips that will need to be served by the transport networks and services included in the Strategy.

# Chapter 3

# Strategy vision and objectives

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| 3.3 | Strategy objectives | 1 |
| 3.4 | Strategy sub-objectives | 2 |
| 3.5 | Top down approach and implications for the Strategy | 3 |


### 3.1 Drafting the strategy vision and objectives

At the outset of the Strategy preparation process in late 2007, stakeholder Consultative Panels were established and they were consulted on a draft Strategy vision and a set of high-level objectives. The draft vision and objectives were then put out to wider public consultation.

The views of the Consultative Panels were sought again on transport-specific sub-objectives and the issues the Strategy should address (in April 2008) Following this, a six-week public and stakeholder consultation took place.

The stakeholder and public consultations identified a need for the Strategy objectives to integrate better with national objectives contained in the National Spatial Strategy. They also resulted in identifying a new high-level objective "to reduce personal stress", and identified transport related sub-objectives that would help meet this objective (for example more reliable journey times and making public transport easier to use).

The Strategy Steering Group (comprising of representatives from relevant public bodies) and the DTO Steering Committee considered consultation feedback and the following vision and objectives were agreed.

### 3.2 Strategy vision

The agreed vision for the Strategy is as follows:

> Our vision for Dublin 2030 is for a competitive, sustainable city-region with a good quality of life for all.

### 3.3 Strategy objectives

Five overarching objectives were agreed for the Strategy.

- Build and strengthen communities
- Improve economic competitiveness
- Improve the built environment
- Respect and sustain the natural environment
- Reduce personal stress

## 3.4 Strategy Sub-objectives

The following transport-specific sub-objectives were identified, associated with the high level objectives. Although each sub-objective has been associated with one high-level objective, in many cases a sub-objective will contribute to the achievement of more than one high-level objective.

| High level objective | Sub-objective | |
|---|---|---|
| 1 – Build and strengthen communities | 1.1 | Improve accessibility to work, education, retail, leisure and other activities. |
| | 1.2 | Improve access for disadvantaged people (including physical access for mobility impaired people). |
| | 1.3 | Improve links between communities within the region. |
| | 1.4 | Improve links to the rest of the island of Ireland. |
| 2 – Improve economic competitiveness | 2.1 | Improve journey time reliability for business travel and the movement of goods. |
| | 2.2 | Reduce overall journey times for business travel and the movement of goods. |
| | 2.3 | Ensure value for money of transport expenditure. |
| | 2.4 | Support business agglomeration and competition. |
| | 2.5 | Improve access to GDA ports and Dublin airport. |
| | 2.6 | Provide for efficient goods distribution, servicing and access to materials. |
| 3 - Improve the built environment | 3.1 | Improve and maintain the environment for people movement (e.g. better quality design of streets and open spaces). |
| | 3.2 | Improve the quality of design and maintenance of transport infrastructure and vehicles. |
| | 3.3 | Minimise physical intrusion of motor traffic. |

| High level objective | Sub-objective | |
|---|---|---|
| 4 - Respect and sustain the natural environment | 4.1 | Minimise the impact of transport on air quality. |
| | 4.2 | Minimise the impact of transport on water quality. |
| | 4.3 | Reduce greenhouse gases associated with transport. |
| | 4.4 | Improve efficiency in the use of natural resources, especially non-renewable ones (e.g. land, materials, fuels). |
| | 4.5 | Minimise the impact of noise and vibration. |
| | 4.6 | Minimise adverse impact of transport on biodiversity and natural amenities. |
| 5 - Reduce personal stress | 5.1 | Improve journey time reliability for personal travel. |
| | 5.2 | Reduce overall journey times for personal travel. |
| | 5.3 | Improve travel information. |
| | 5.4 | Improve ease of use of public transport system. |
| | 5.5 | Promote healthier forms of travel and use of public space. |
| | 5.6 | Improve travel safety. |
| | 5.7 | Improve travel comfort and the sense of personal security. |

### 3.5 Top down approach and implications for the Strategy

The success of the Strategy will be judged on how well it contributes to achieving the vision and meeting the Strategy objectives and sub-objectives.

This 'top-down' approach has implications for the types of possible measures that can be considered for inclusion in the Strategy. Measures that meet some Strategy objectives can be rejected on occasion, where they run counter to other objectives. Valid measures are those that, at best, contribute to the achievement of all objectives, and at worst, do not significantly impede achieving any objective.

At the outset, there is no inherent ranking or relative weighting of importance implied in the list of objectives. Hence proposals considered for inclusion in the Strategy are appraised against objectives and other criteria without the use of weightings. Decisions on the contents of the Strategy are also influenced by feedback from previous public and stakeholder consultations, and consideration of external constraints (legal, financial, environmental) that need to be taken into account. These constraints can assign implicit weightings to Strategy objectives.

# Chapter 4

# Travel in the Greater Dublin Area

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This chapter reviews some of the key influences on travel in Dublin and the surrounding counties, and looks at recent trends and forecast growth in travel in the region.

## 4.1 Transport and the development of Dublin

Development patterns have a fundamental influence on the need for people to travel and how they make each journey. The built up area of Dublin has expanded dramatically since the advent of the car over 100 years ago, but the last 20 years have seen perhaps the most rapid expansion to date.

### *The Metropolitan Area*

Within the GDA, a distinction can be made between the existing built up area of Dublin and its immediate environs, called the Metropolitan Area, and a Hinterland Area with extensive areas of countryside and a range of towns of various sizes. The following areas are located within the Metropolitan area:

#### The city centre

Up to about 1900, most of the city's population lived and worked within the area bounded by the Grand and Royal Canals (the city centre) Population densities were high, and most employment and other services were within walking distance. From the 1920s onwards, most of the traditional city centre dwellers were re-housed in new suburbs and the share of the population living in the city centre declined dramatically. This city centre population decline has been reversed only in the past fifteen years, mainly through large-scale private sector apartment building.

#### The inner suburbs

The city's footprint increased dramatically throughout the early twentieth century as people moved out of the old city to more spacious accommodation and in response to the advent of the motor car, bus and tram which made travel to work in the centre from further afield more viable. By the 1970s the area now bounded by the M50 was largely developed, but at a far lower density than the city centre. Although provision was made for car use, new housing estates were also more accessible for those on foot, and local services and bus stops to the city centre were usually within walking distance.

## The outer suburbs

In the 1960s, plans for new stand-alone towns in Tallaght, Clondalkin and Blanchardstown were developed, and in the following forty years major growth in population took place in and around these towns. The Maynooth/Celbridge/Leixlip/Lucan, Swords and Sandyford/Dundrum areas also grew substantially. Much of the new housing, especially in the 1980s and 1990s , was built at lower densities and planned with the car in mind, with long cul-de-sacs that are difficult for buses to access. This development was also characterised by walled off estates that imposed long walks for residents wishing to reach bus stops or train stations.

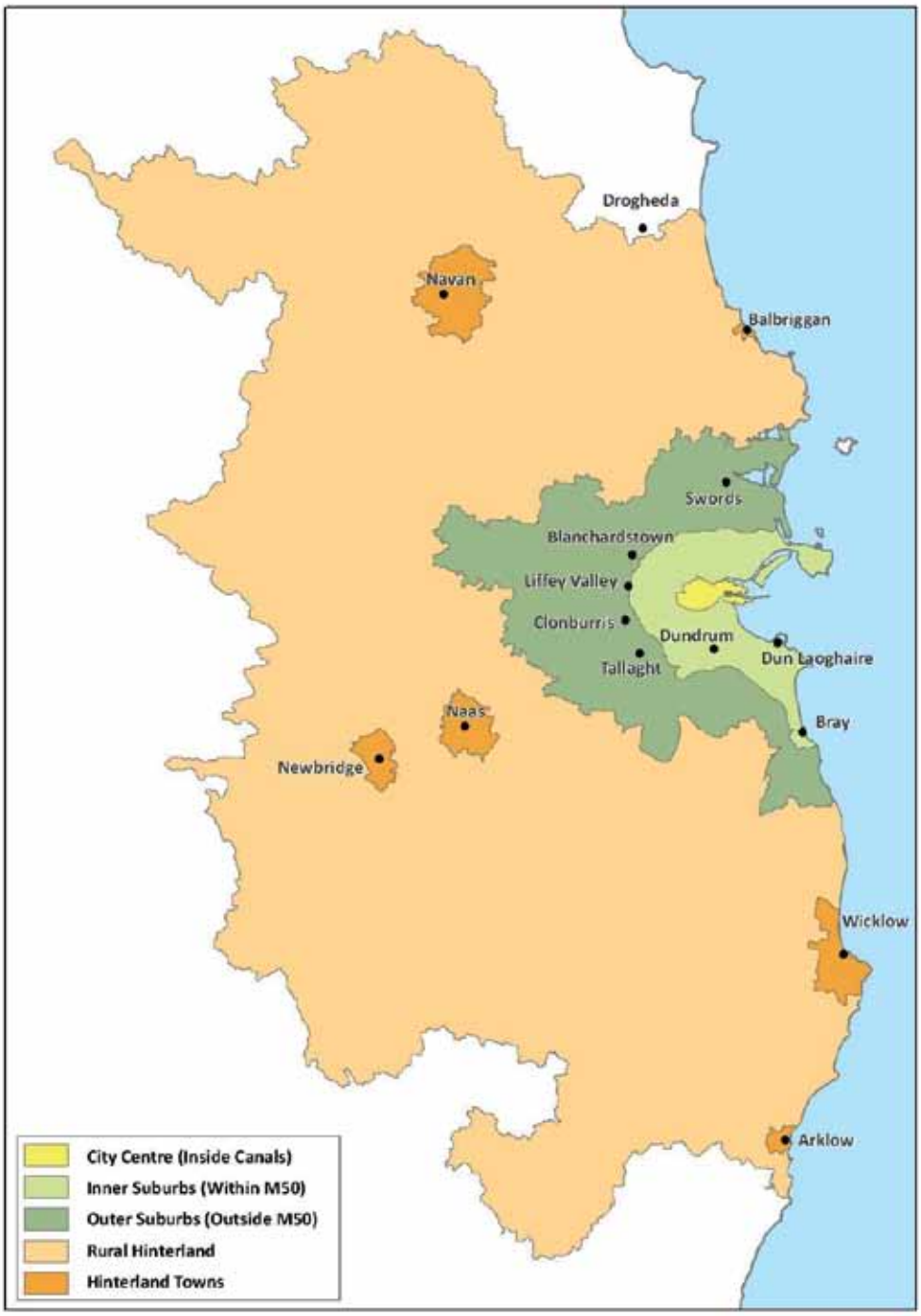
Town centre type facilities lagged behind population growth in these areas. In the last twenty years, major retail and employment growth has taken place in and around these areas, with the building of large shopping centres and office park developments close to the newly constructed M50 and other national roads or motorways.

In the last ten years, significant pockets of higher density housing, more focussed on local centres and public transport have begun to emerge in both the inner and outer suburbs.

### *The Hinterland*

The Hinterland is the area outside the Metropolitan area of Dublin. Most of the Hinterland remains rural in nature, however there are a number of larger towns, such as Naas, Navan and Wicklow, which have grown substantially in the last ten years. Much of the new housing is occupied by people commuting to work in Dublin, built at lower densities and planned with the car in mind, with long cul-de-sacs and walled off estates creating obstacles to public transport access. These larger towns have relatively frequent bus or rail services to Dublin city, however local public transport is less developed. Rural areas and smaller towns and villages in the Hinterland, have also seen substantial population growth. Employment, schools, shops and other services are limited or absent in many of these areas and, with poor public transport, car is the only viable travel choice.

**Figure 4.1: Greater Dublin Area development**



## 4.2 Population growth and settlement patterns

In 2011, the population of the GDA was 1.8 million, up approximately 8.3% on the 2006 population of 1.66 million. The population of the GDA accounts for approximately 39% of the State's population.

In the ten year period to 2006, the rate of population growth in the Mid East (37%) was three times the rate of growth in the Dublin Region (12%). Between 2006 and 2011, the rate of population growth in the Mid East (12%) outpaced the growth in the Dublin Region (7%). Between 1996 and 2006, the rate of growth in the Hinterland Area was three times the rate of growth of the Metropolitan area. During the period 2006 to 2011, the rate of growth in the Hinterland Area was twice the rate of growth of the Metropolitan area.

The rate of population growth in the GDA Hinterland away from larger towns accelerated dramatically in the four year period up to 2006.

In terms of population growth, the forecasts used in the Strategy are based on a number of projections and targets produced by others.

The primary information was taken from regional population projections produced by the Central Statistics Office (CSO)[10] and the subsequent circular from the Department of the Environment and Local Government (DOEHLG)[11].

The CSO Population and Labour Force Projections 2011 to 2041 M2F1 (Traditional scenario) figure was used to estimate the population for 2030 (this involved interpolating between 2026 and 2031).

Although adjustments in population growth have recently taken place associated with the economic downturn, the forecasts estimate that by 2030 the population of the GDA will grow to 2.29 million, representing an increase of 39% over 2006 levels[12].

The population forecasts used in the Strategy assume that the 2030 share of the state's population living in the GDA will remain constant at the 2006 (and 2011) share of 39%.

In terms of forecasting settlement patterns within the GDA, two distinct distribution scenarios were explored; Scenario A – "Compliance with minimum RPG targets and policies" and Scenario B – "Large town and rail focussed development, also compliant with RPG policies".

Scenario A reflects the minimum targets set out in the RPG settlement strategy allowing for significant population growth in the Metropolitan Area and larger Hinterland towns up to 2022, as well as growth in smaller towns and the rural Hinterland. Post 2022, a restriction on population growth in the rural Hinterland was assumed.

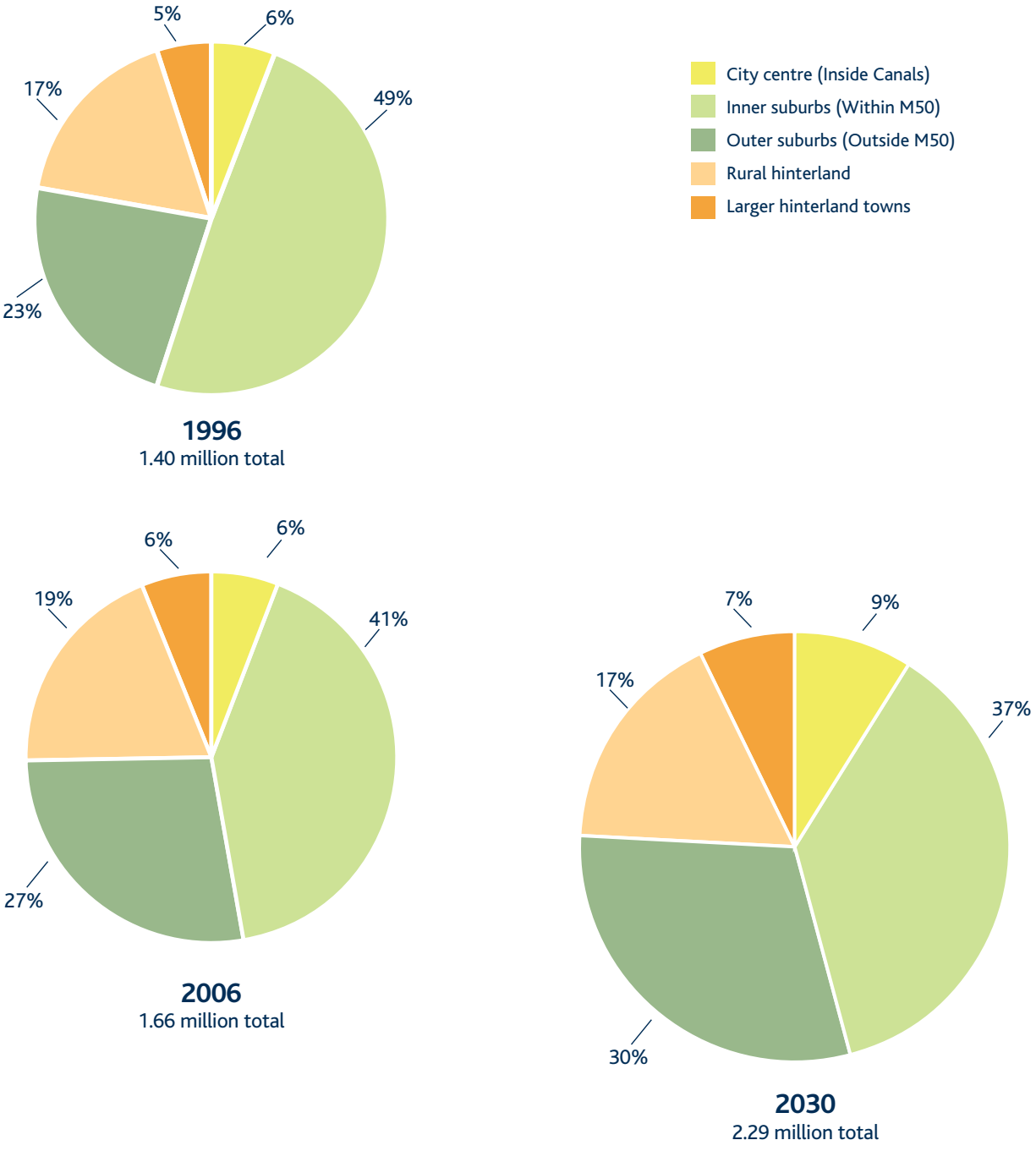
Scenario B – Large town and rail focussed development, whilst remaining consistent with the RPGs, assumes a greater consolidation of population within the Metropolitan area and Large Growth Hinterland Towns, particularly in the vicinity of rail stations. It also assumes greater consolidation of employment in the city centre, around rail in the Metropolitan area and in larger growth towns in the Hinterland area. As such, it is more likely to support the sustainable integration of transport and land use and therefore Scenario B was used for forecasts of growth distribution and settlement patterns.

10 CSO Regional Population Projections 2011-2026 (Dec 2008) & Population and Labour Force Projections 2011-2041

11 DOEHLG National Population Projections and Regional Population Targets 2010 To 2022 (Jan 2009)

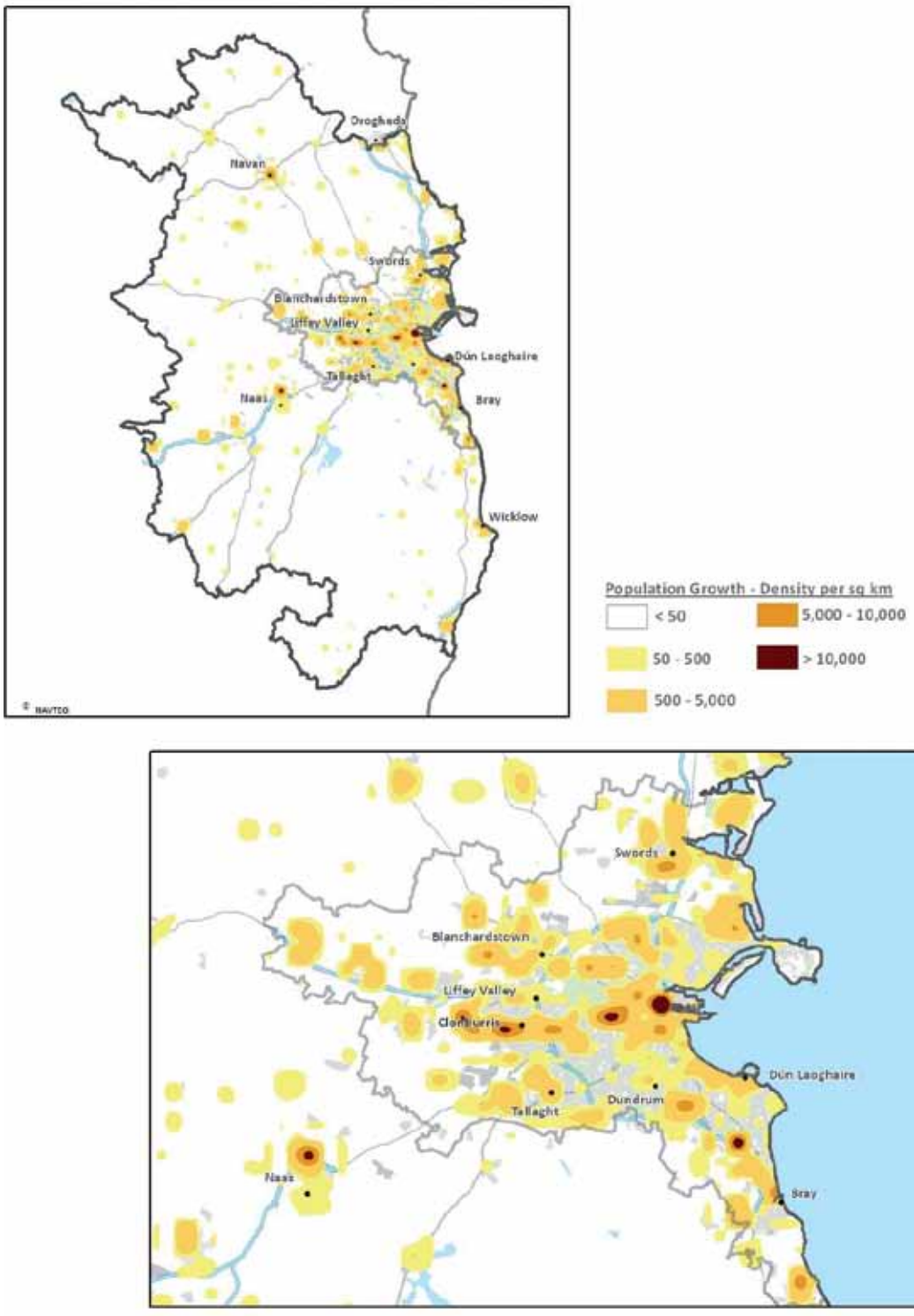
12 GDA forecast based on DoEHLG regional forecasts to 2022 (2008), Metropolitan and Hinterland distributions are based on DoEHLG Gateway targets (October 2009) and NTA interpretation of RPG policies. Scenarios with lower overall population forecasts (-20%) have also been examined.

**Figure 4.2: Population share by area**




In the period up to 2030, all areas of the GDA are expected to see a growth in population, with the fastest rate of growth expected in the city centre and the Metropolitan outer suburbs. In addition, the share in the rural Hinterland and lower order Hinterland towns is expected to be lower and this would be a significant change, when compared with recent trends in Hinterland growth.

**Figure 4.3: Projected distribution of population growth up to 2030**[13]




13 Strategy 2030 Distribution Scenario B – based on DoEHLG 2022 regional forecasts and Draft RPGGDA county level distributions up to 2022, extrapolated by NTA to 2030. Population growth locations are indicative.

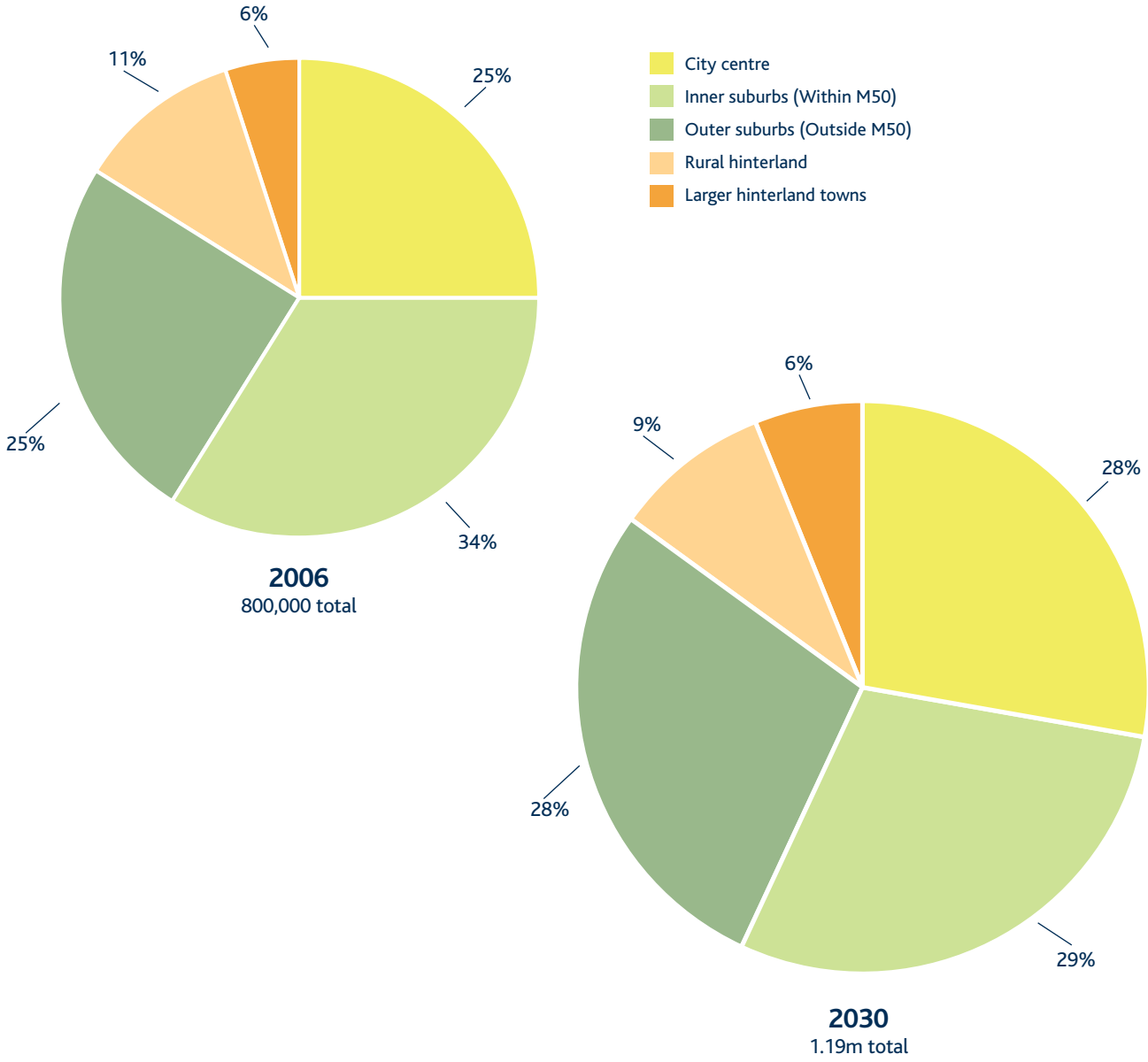
## 4.3 Employment growth

800,240[14] residents of the GDA were in employment in 2006, an increase of over 40% on the previous ten years. The largest growth took place in the inner and outer suburbs, in areas which have poorer public transport accessibility compared to the city centre. Since 2006, employment has contracted due to the economic downturn with 724,800 people in employment in the third quarter of 2011[15].

The employment forecasts used in the Strategy assume that the 2006 ratio of employment to population will remain constant up to 2030 at national and GDA level. This means that for the GDA an increase in employment of 39% over 2006 levels is expected.[16] Growth in jobs is expected in all locations up to 2030.

In terms of the location of jobs, the fastest rate of jobs growth is expected to take place in the city centre and the Metropolitan Area outside the M50. Figure 4.4 represents the distribution of jobs within the GDA inclusive of people commuting into the GDA.

**Figure 4.4: Distribution of jobs within the GDA**

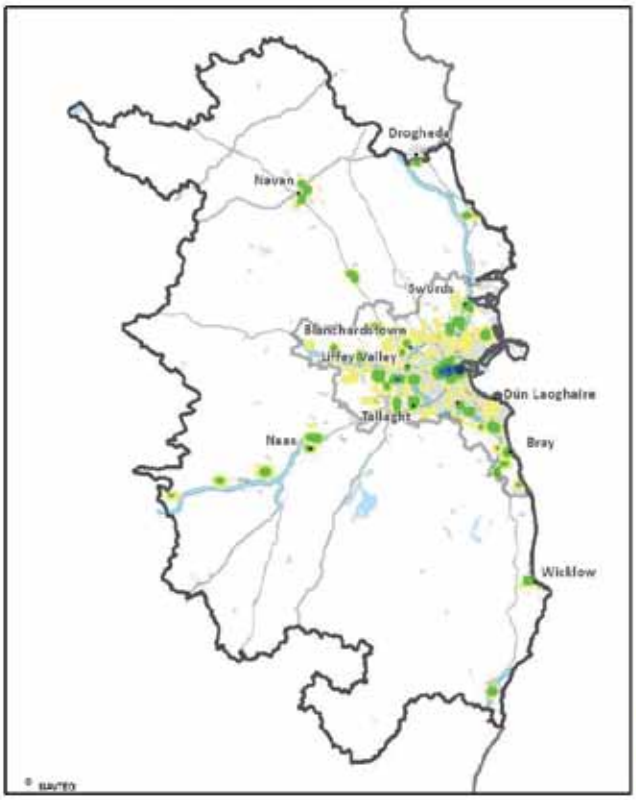


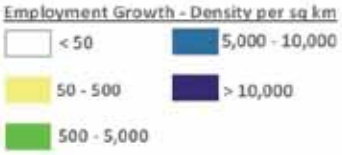

14 CSO Census of population 2006

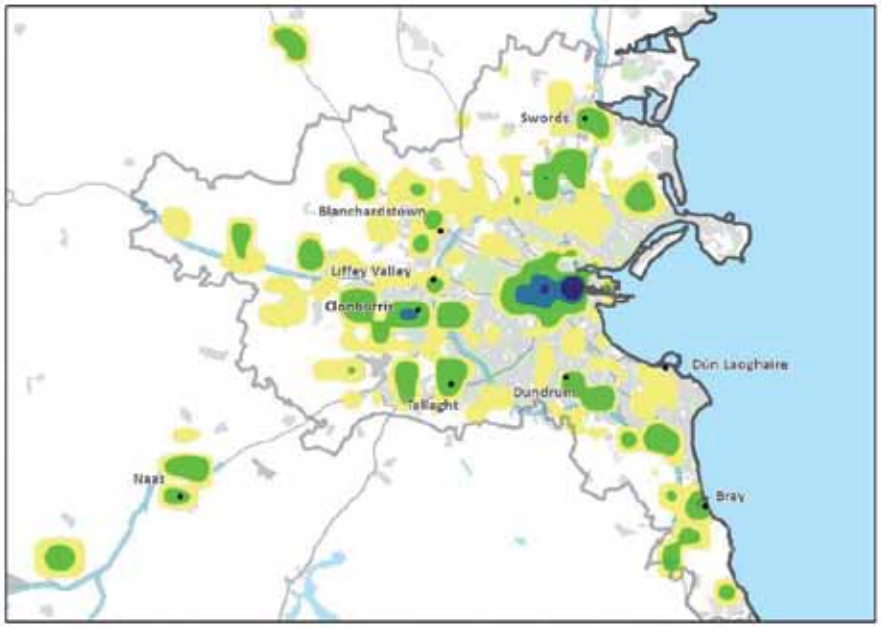
15 CSO Quarterly National Household Survey Quarter 3 2011

16 Scenarios with lower 2030 employment forecasts (-20%) were examined.

**Figure 4.5: Projected distribution of employment growth up to 2030**



## 4.4 Additional forecast scenarios

For sensitivity testing, a scenario where population and employment in 2030 are both 20% lower than the above forecasts was also developed. This would result in a net increase of only 11% in population and employment in 2030 compared to 2006 levels. This growth approximately equates to the lowest of a range of forecast scenario for the Greater Dublin Area prepared by the Central Statistics Office[17].

Finally, a scenario for 2050 was developed that assumed additional population and employment growth beyond the 2030 Strategy planning horizon, with a view to understanding whether the major proposals in the Strategy have sufficient capacity to provide for the longer term travel needs of the GDA.

Tests of the performance of the Strategy with these alternative forecast scenarios were undertaken, and the results are summarised in Chapter 12 of this Report.

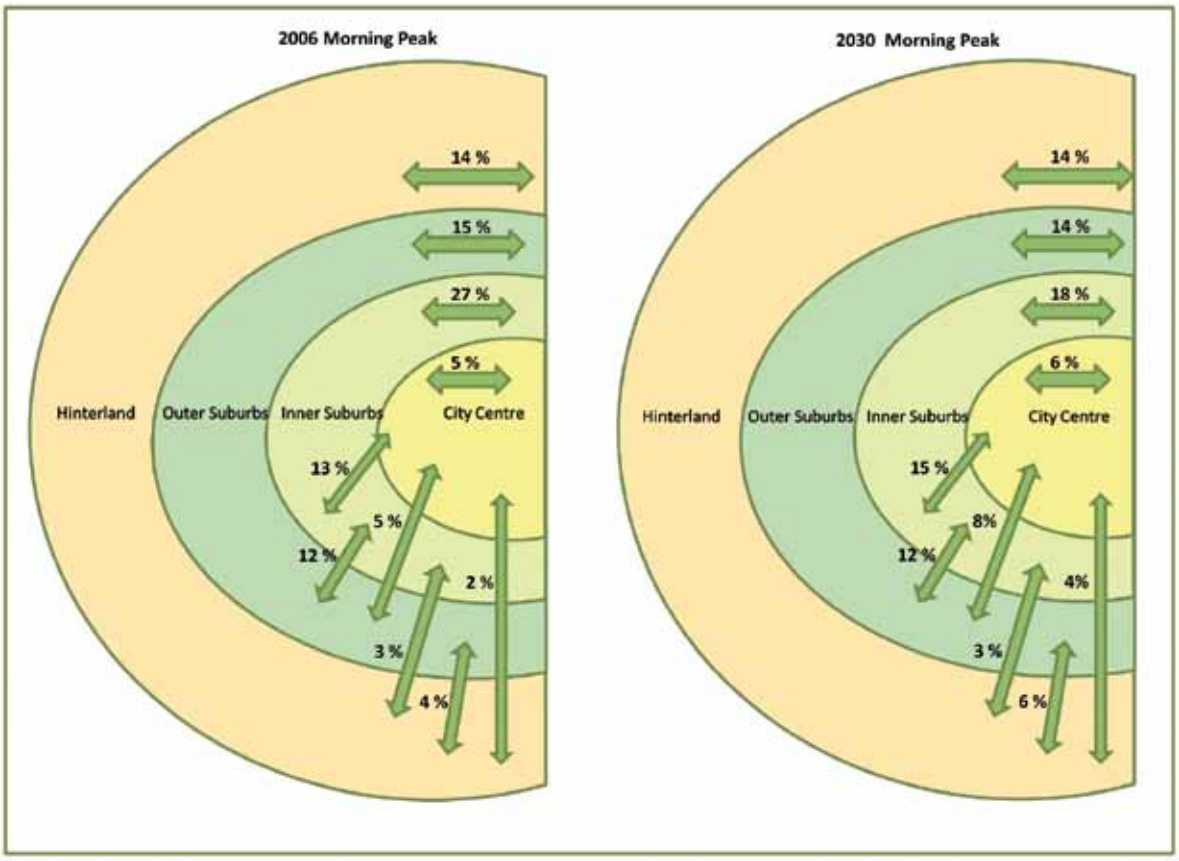
## 4.5 Travel Demand

It is estimated that over 4.5 million journeys were made by people in the GDA on a typical weekday in 2006. Approximately 80% of vehicles on GDA roads in 2006 were cars or taxis, and 20% were vans, lorries or buses.[18]

As noted in section 4.2 the GDA population is forecast to grow to 2.28 million by 2030, representing a 39% increase on 2006 levels and a 27% increase on 2011 levels. On the basis that travel demand is largely dependent on the population, it can be estimated that the number of journeys that will be made by people within the GDA each weekday in 2030 will be in excess of 6 million.

The existing and forecast pattern of travel in the Greater Dublin Area is shown below.

**Figure 4.6 Travel patterns in the Greater Dublin Area (morning peak period)**




17 http://www.cso.ie/releasespublications/documents/population/current/poppro.pdf

18 Source: NTA estimate from traffic counts

## 4.6 Journey purposes

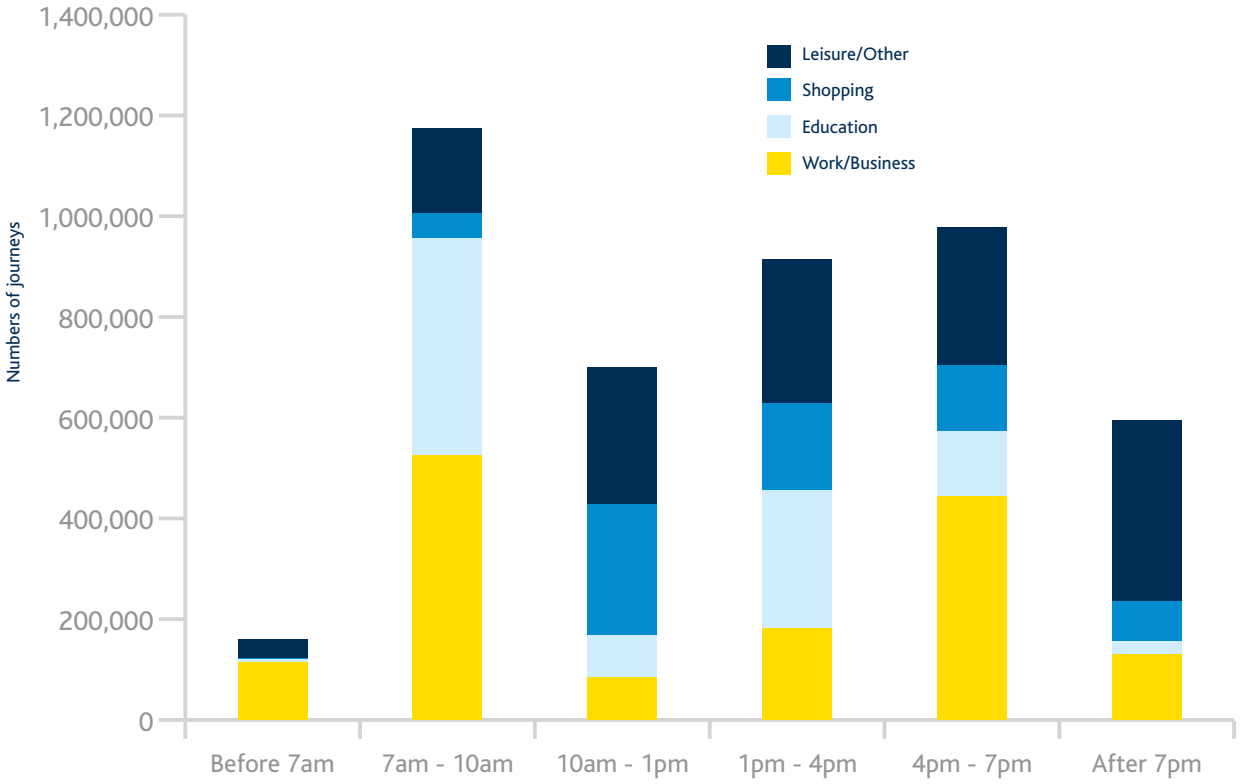
### *Purpose by time of day*

The busiest time for travel is the morning peak period from 7am to 10am, with a lower evening peak from 4pm to 7pm. Work and education trips dominate the morning peak (82% of all trips), however the evening peak also includes a large share of shopping and leisure travel (40% of trips).

### *Purpose and distance travelled*

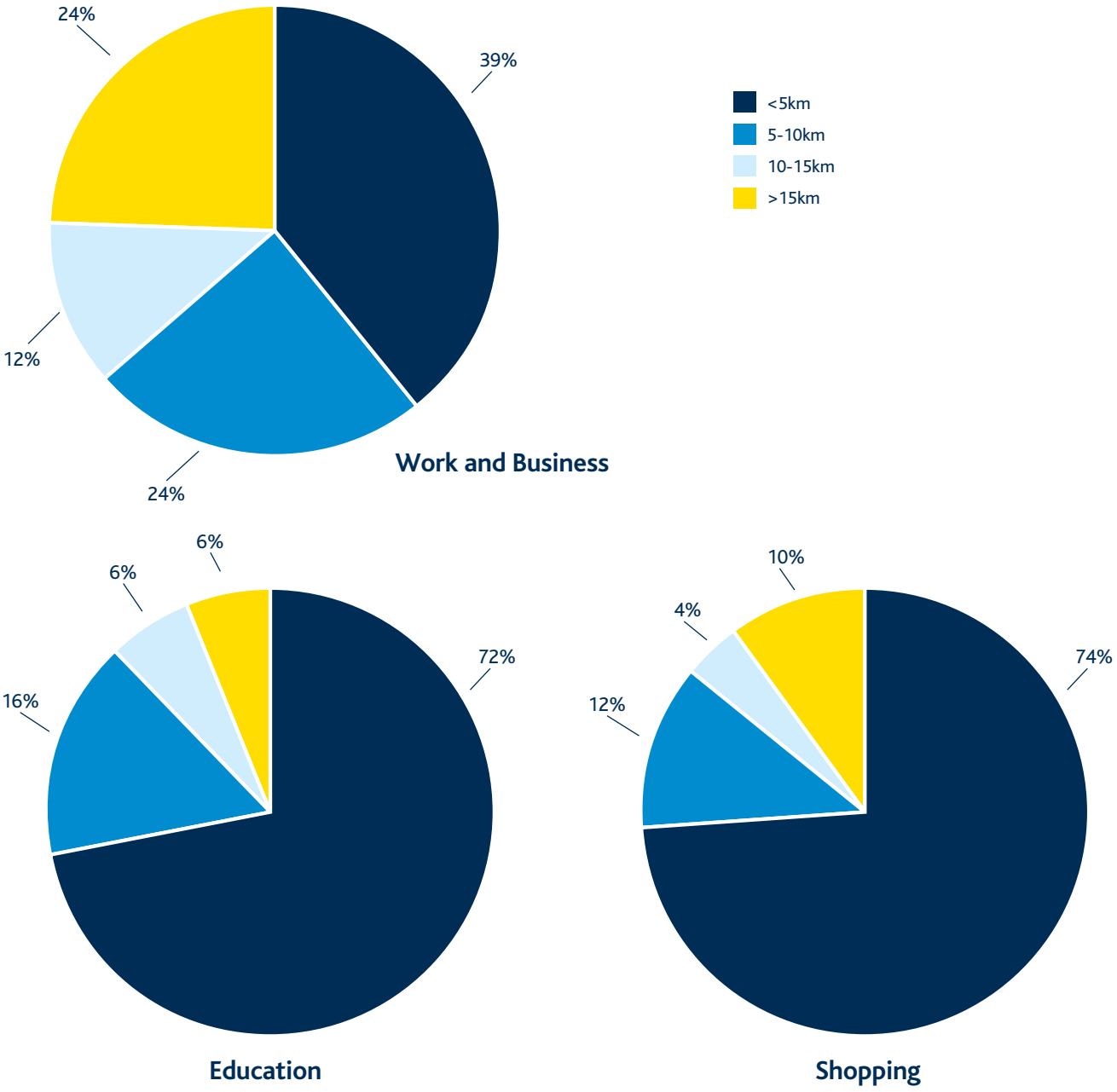
Journeys to work/business are much longer on average than other journey purposes. Nearly three quarter of trips for education or shopping purposes are less than 5km in length.

**Figure 4.7: Journey purpose and time of travel**[19]




19 DTO Household Survey 2006 (average weekday)

**Figure 4.8: Journey purpose and distance travelled[20]**

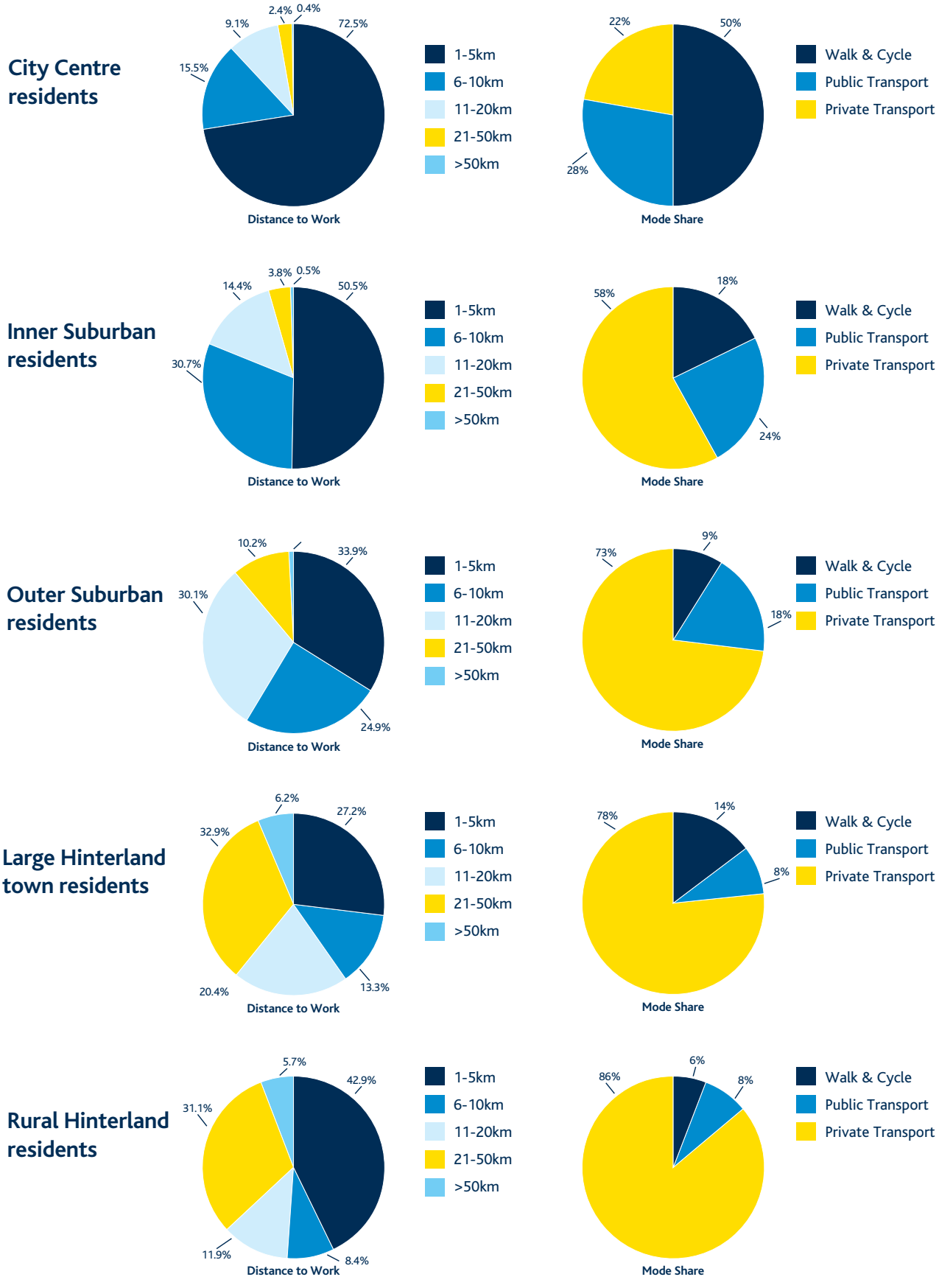



## 4.7 Distance travelled and mode share

The places in which people live in the GDA have a major influence on how far they travel to work, education or other activities, and how they get there. The majority of people inside the M50 (city centre and inner suburbs) travel less than 5km to work, whereas in the Hinterland area, most people travel over 10km to work. Around 50% of those living within the M50 use the car to travel to work. In the Hinterland area, that figure rises to over 80%.

20 DTO Household Survey 2006

**Figure 4.9: Mode share and distance travelled to work[21]**




21 CSO population census 2006

## 4.8 Conclusions

The projected growth in population and employment over the next 20 years, and the recent trends in movement of large numbers of people to live in outer parts of the GDA where travel options are more limited present considerable challenges for the Strategy. The next chapter examines these challenges more closely.

# Chapter 5

# Transport challenges

**In this Chapter:**


5.1 Supporting the economy 1

5.2 Serving communities 6

5.3 Improving the environment 7

5.4 Constraints 8

People travel to access essential services (work, education, shops), or to satisfy other social, personal or leisure needs, and transport solutions should address these needs. However, the types of solution adopted will, in turn, have economic and social impacts, as well as consequences for the natural and built environment.

## 5.1 Supporting the economy

In a modern economy, it is essential that businesses can move their goods and services to market, consumers can access shops and other services and people can reach their jobs in a reasonable and reliable time. Strategic road and rail corridors function as national and regional arterial routes for the movement of goods, services and people between larger settlements within and outside the GDA. This requires an efficiently functioning transport network.

The GDA accommodates 39% of the population of Ireland, generates just under half of Ireland's Gross Value Added (GVA)[22], and contains Ireland's foremost city of international scale. The National Competitiveness Council sees the GDA as the 'power house' of the national economy and notes its economic success.

In particular, the success of the metropolitan core is critical to the future performance of the national economy and its return to growth, following the recent economic downturn.[23]

The economic strategy set out in the GDA Regional Planning Guidelines (RPGs) seeks to:

- Ensure that the GDA can continue to compete on a global stage – attracting several types of activity to Ireland for which no alternative locations exist elsewhere on the island but only in the metropolitan regions of other countries[24];
- Protect and enhance the performance of the GDA as an engine of growth for the national economy;
- Ensure that the GDA continues to play a leading role as a focus for knowledge generation, knowledge dissemination and innovative activity – essentially what NESC (2008) have termed a 'theatre of experimentation'; and
- Ensure that the potential of the entire GDA is maximised so that the whole of the region (and the other regions in Ireland) can contribute to and benefit from positive economic outcomes.

22 Gross Value Added is a measure of economic value and is used in the estimation of Gross Domestic Product (GDP). It measures the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used in production.

23 See NCC (2009: 7) *Our Cities: Drivers of National Competitiveness*

24 See NESC (2008:196) *The Irish Economy in the Early 21st Century*

Travel and economic activity are closely linked. Significant population growth and inward-migration associated with economic growth led to a 30% increase in peak travel demand in the GDA in the ten year period up to 2006. Following the recent economic downturn, there has been a significant decline in travel, influenced by reductions in employment and business and shopping activity in the Greater Dublin Area. However, travel in the GDA is still far in excess of levels seen prior to the economic boom.

The sharp contraction in the economy has coincided with the completion of several major new and upgraded roads, and upgrades to public transport.

The decline in travel demand coupled with additional road capacity has led to significant reductions in journey times by road. However, it is envisaged that with a recovery in economic conditions these reductions in travel times will be relatively short-lived.

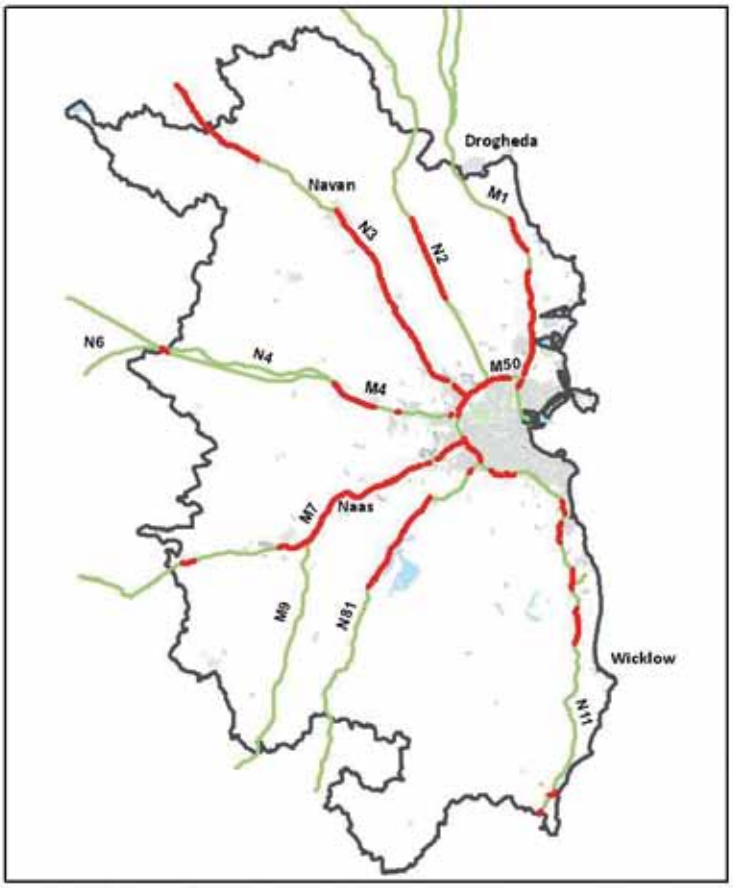
### *Challenges*

The scale of population and jobs growth that is forecast for the next twenty years indicates that without appropriate interventions, with today's infrastructure and services coupled with currently committed transport investment ('Do Minimum' scenario), congestion will be a serious issue for private and public transport users in many parts of the GDA by 2030. Congestion delays and the associated journey time unreliability imposes direct costs on businesses and the local economy, as well as imposing social costs.

The Strategy will need to target improvements to the transport network to tackle road congestion and overcrowding on public transport services.

In addition, the Strategy will need to identify means of encouraging those using certain parts of the network at busy times to use more appropriate travel modes or to travel at less congested times of the day.

**Figure 5.1: Forecast road congestion 2030 – 'Do Minimum' scenario (morning peak travel period)**




2030
Do Minimum Transport Network

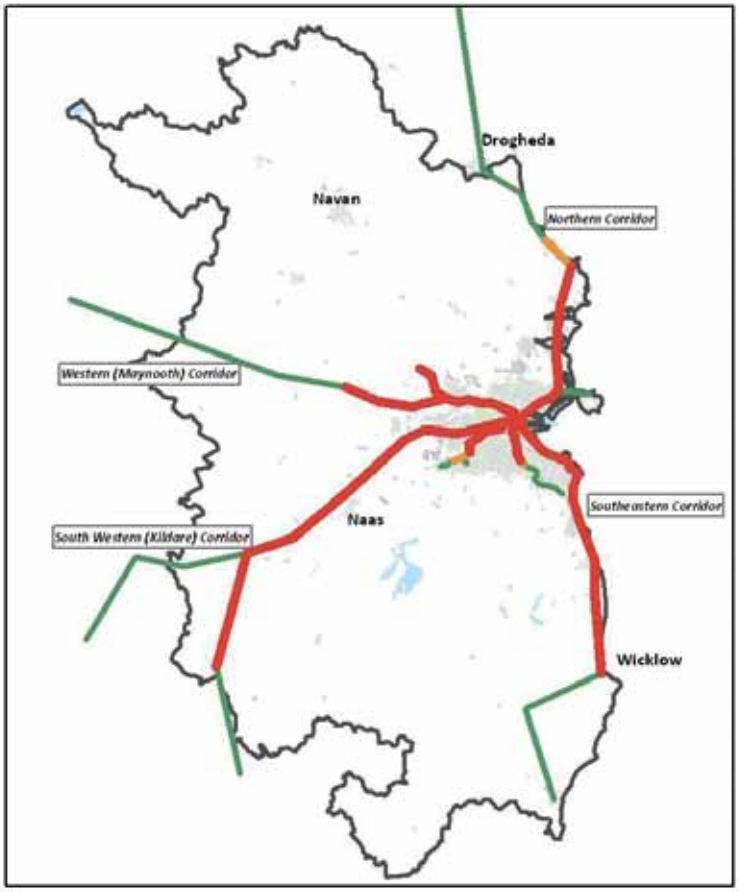
Peak Congestion Occurs

Uncongested

Do minimum network is the transport network in place, assuming completion of currently funded schemes (as of 2010)


Note: The above graphics represent abstractions from the strategic transport model used for the development of the Strategy. Because of the strategic regional nature of the transport model, the exact details for any particular road link are indicative only.

**Figure 5.2: Forecast rail crowding 2030 - 'Do Minimum' scenario (morning peak travel period)**

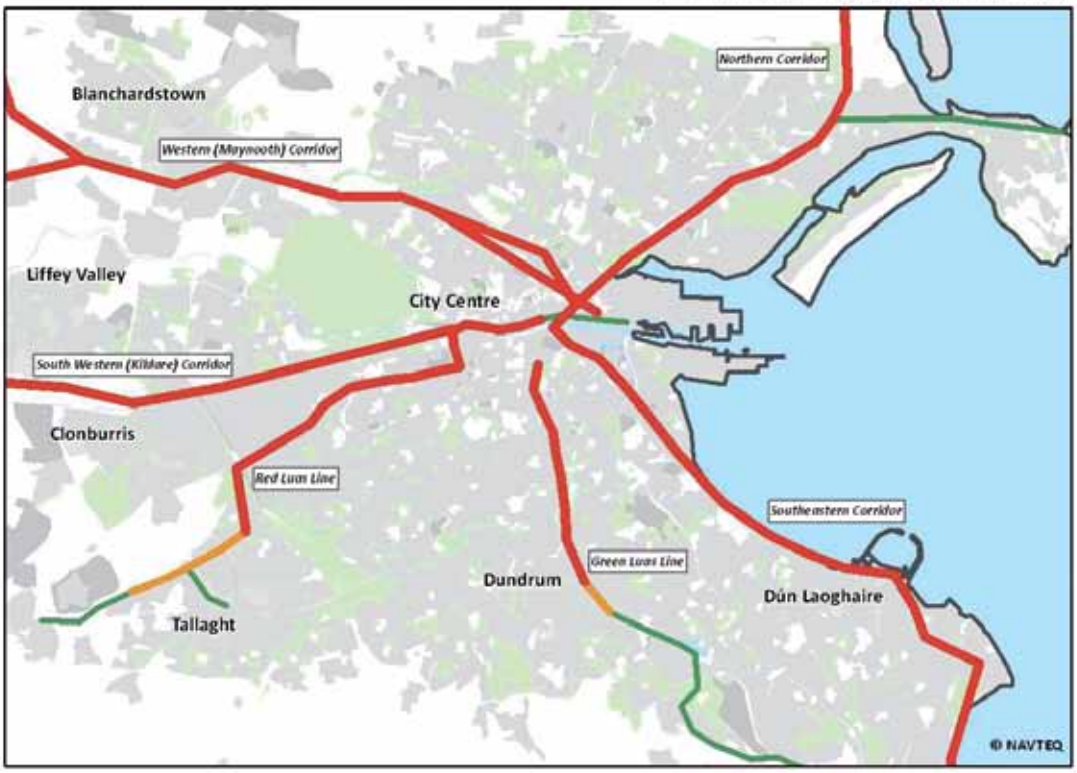



2030
Do Minimum Transport Network

Rail - Ratio of Load : Crush Capacity

- Severely Crowded
- Moderately Crowded
- No Serious Passenger Crowding

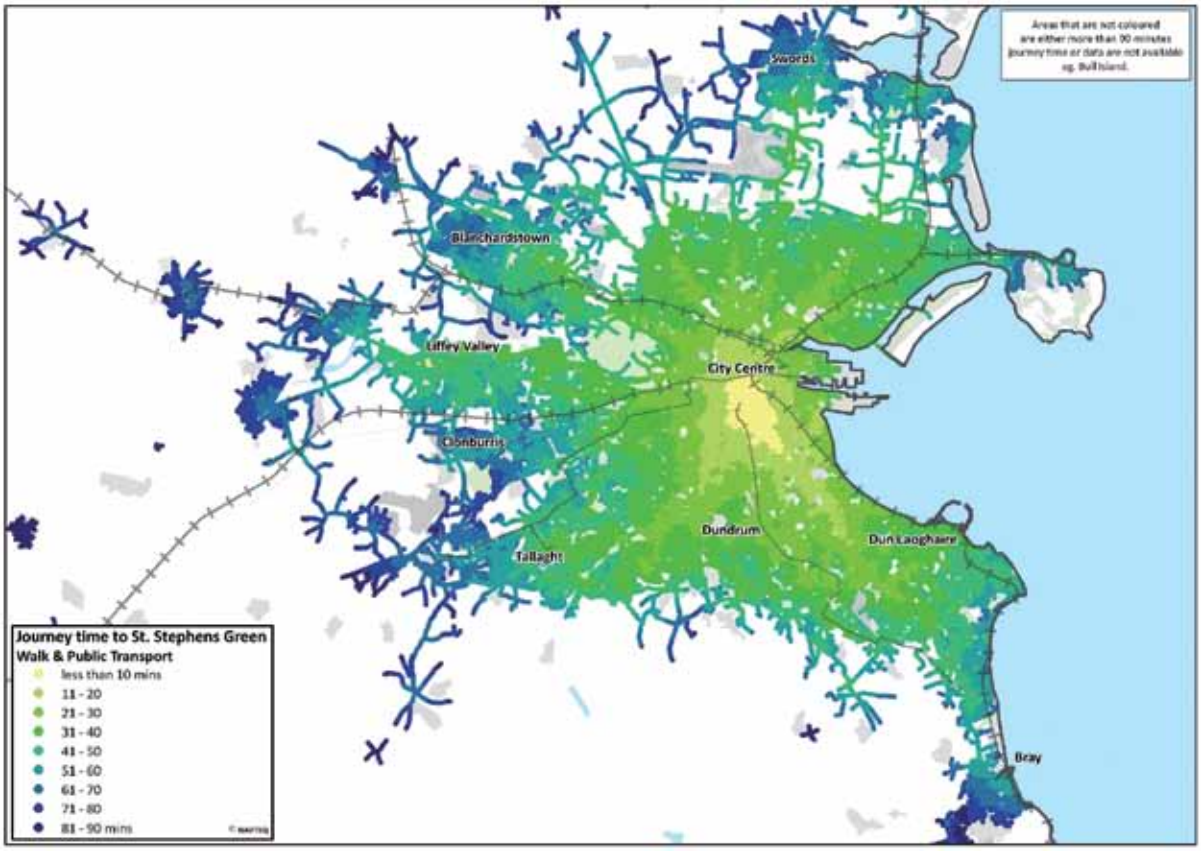
Do minimum network is the transport network in place, assuming completion of currently finded schemes (as of 2010)



Many areas remain poorly served by public transport, with long journey or unreliable journey times to work destinations. This reduces the labour pool that can access employment, and makes the region a less attractive place to do business.

The Strategy needs to consider how best to target areas of population where public transport access to the city centre and other major centres of employment remains poor.

**Figure 5.3: Public transport journey times to City Centre 2030 - ' Do Minimum' scenario (morning peak travel period)**




While recent improvements to the transport network and the road network in particular, have shortened journey times and made it easier to move goods in the region, they have also made it easier for people to commute long distances to work. This in turn has influenced where people choose to live. In the last ten years, there has been a significant movement of population and expansion of the Dublin commuter belt into outer parts of the region and into neighbouring regions. As identified earlier (Section 4.6) the large majority of commuting trips from these areas are by car.

Apart from the environmental and social consequences, there are significant economic issues – the benefits of investment in new transport infrastructure to businesses, goods movement, and the wider economy are in danger of being undermined by congestion caused by commuters availing of the faster journey times to move further away from their workplaces.

The Strategy needs to examine how to lock in the economic benefits of new transport infrastructure by maintaining journey times and reliability.

Given the reliance of Ireland and the GDA on international trade and export markets, and in order to support NSS objectives, particular attention needs to be given to ensuring efficient and reliable business travel and movement of goods to key markets, ports and Dublin Airport.

## 5.2 Serving communities

Transport connects communities and enables people to access essential social infrastructure. Land use planning plays a key role in reducing the need to travel, by locating mixed use residential developments inclusive of community and leisure, retail, health, employment and education services in close proximity to each other. Planning can also ensure that new residential developments are built where a range of transport options are available.

The RPGs include policies that local authorities work with the relevant state agencies in ensuring that an integrated approach is taken to planning for the communities who live within the GDA. They state that low density car based housing development forms should be avoided and instead housing should be focussed on medium densities which will support and integrate with a range of community facilities such as education, health, leisure and employment - all within accessible walking distances.

The RPGs also recommend that where significant new housing is proposed in an area or community, planning authorities should designate new school sites at accessible, pedestrian friendly locations. Planning authorities should also work with the health services with regard to provision for community based primary care centres and hospital care in key population centres, supporting their integration into new and existing communities. Similar policy recommendations are made in relation to childcare facilities and recreational and leisure facilities.

The co-location of retail, education, health services, community and leisure, employment and other social infrastructure in a central place allows easier access by the surrounding community by cycling, walking or public transport. Traditionally, larger town centres and Dublin city centre have performed these roles.

### *Challenges*

Even if the RPG policy recommendations are implemented in full, there remains a significant planning legacy of people living in houses that were built away from the services they require, and with few alternatives to get about, other than by car.

Recent national transport investment has tended to focus on major infrastructural schemes that facilitate access to national and regional centres. Improvements facilitating local movement, such as walking and cycling initiatives and improvements to local public transport have been less extensive.

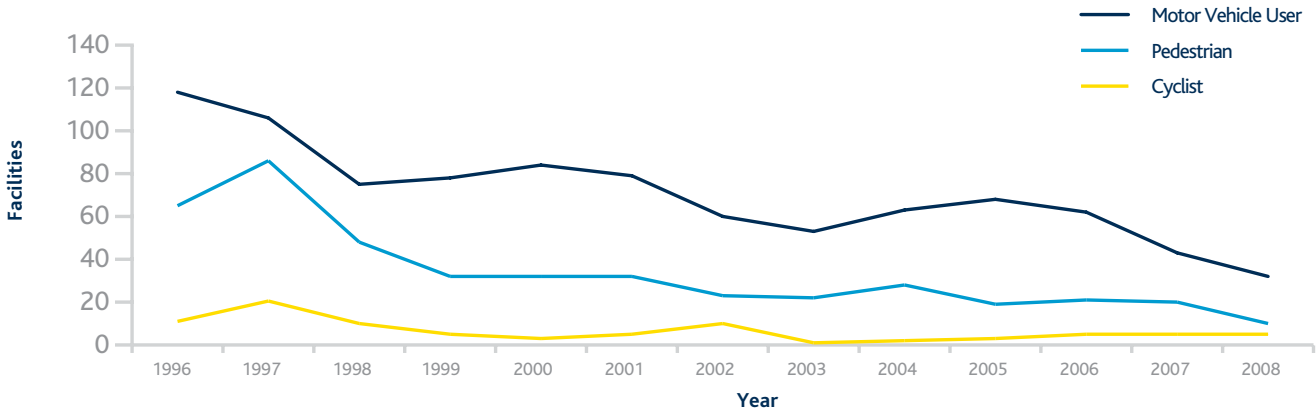
The Strategy faces the challenge of how best to connect people to the jobs, shops, and other essential community services (health, childcare, education, recreation and cultural activities) they need to access, by a range of modes of travel, but particularly by improving local public transport, cycling and walking.

In connecting communities, priority needs to be given to those communities that do not currently have good transport links to the services they need. Disadvantaged areas, where car ownership is lower, need special attention. The particular transport needs of the young, the elderly and people with a disability also need to be taken into account.

The Strategy needs to pay particular attention to improving access for those living in disadvantaged areas. It also needs to ensure transport facilities are designed with the needs of people with disabilities in mind.

Very good progress has been made in reducing traffic accidents throughout the GDA in recent years.

**Figure 5.4: Road fatalities in the Greater Dublin Area**




The Strategy needs to build on this, by improving travel safety further, placing particular emphasis on improving safety, and perceptions of safety, for those who walk and cycle.

Walking and cycling can support community interaction and perceptions of a safe neighbourhood in a way other travel modes cannot. Conversely, low numbers of pedestrians and cyclists can act as a barrier to uptake of those modes in some areas, particularly if coupled with a fear of crime and anti-social behaviour. This also applies to the use of public transport, particularly in the evenings.

The Strategy needs to examine ways in which travel safety and perceptions of personal security can be improved particularly for those walking, cycling or using public transport.

Increases in car ownership, time pressures and the design of developments where homes have been located away from shops and activities have all led to an increase in car use and contributed to a more sedentary lifestyle. This has affected both adults and children of school going age. Although 75% of secondary school students do not consider it too far to walk or cycle to school, less than half do so[25].

Walking and cycling (including walking and cycling to and from public transport) can contribute to improvements in health and wellbeing in a way other modes cannot.

Leisure walking and cycling facilities can also contribute to the quality of life of GDA residents and visitors, as well as supporting local tourism.

The Strategy needs to examine how walking and cycling can be encouraged, including for leisure and recreational purposes.

## 5.3 Improving the environment

By 2009, Ireland's Greenhouse Gas (GHG) emissions were 12% above 1990 levels. Transport GHGs had grown by 149%. Road transport accounted for 97% of all emissions nationally. In recent years, growth in transport GHG emissions has exceeded economic growth. Transport is by far the largest $CO_2$ emitting sector, and since 1990, by far the most significant growth in GHG emissions has taken place in this sector[26] .

25 DTO Education Survey 2006

26 http://www.seai.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy_in_Ireland_1990-2009.pdf

### *Challenges*

There is an increasing need to address transport's role in GHG emissions and the rapid growth that has taken place in recent years. Given recent trends, it will not be an easy task to stabilise or reverse the growth in transport related GHG emissions in the medium to long term. Improvements in engine technology, take up of electric vehicles and appropriate public transport service improvements all have a part to play. So too does better planning that reduces the need to travel long distances to work and other activities.

The major increase in transport related GHGs in recent years indicates the almost total reliance of transport on fossil fuels. Apart from the impacts on the global environment, oil is a finite resource, which may become increasingly scarce over the lifetime of the Strategy, posing a significant economic and social risk.

The Strategy needs to identify means to stabilise or reduce transport related GHG emissions and the use of fossil fuels to power transport in the Greater Dublin Area by 2030.

The impact of transport on local air quality is of particular significance in the more built up part of the GDA. Traffic noise is also a concern for many residents. The most significant impacts are on those living close to main roads and motorways. Both air quality and noise levels need to be managed to ensure compliance with EU legislative standards[27].

Dublin City and other towns in the GDA enjoy a rich architectural heritage. The built environment and streetscape can offer a pleasant and attractive place for city dwellers and visitors alike. However in many places excessive traffic, cluttered or narrow footpaths and poor quality pedestrian facilities make the urban environment less pleasant to move about in.

The hugely varied natural landscape of the GDA is a precious and unique asset which should be valued and maintained. Whereas statutory protection is afforded to several sites, the Strategy also needs to minimise damage or disturbance to the natural environment elsewhere.

The Strategy should minimise its impact on precious natural amenities.

## 5.4 Constraints

In tackling the transport challenges and proposing solutions, the Strategy will need to take account of some 'real world' constraints.

These include:

- The planning legacy of residential development located away from larger town centres, where jobs and other services are available;
- Funding constraints affecting capital expenditure on new infrastructure and ongoing expenditure on bus or rail services and maintenance of infrastructure;
- Public acceptability of proposals;
- Planning or skills constraints which may slow the implementation of proposals; and
- Legal constraints which may prevent implementation of certain proposals.

27 Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise. Air Quality Framework Directive (1996/62/EC): EU (1996)

# Chapter 6

# Strategy options and assembling the Strategy

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## 6.1 Introduction

This chapter looks at the types of measures that could be included in the Strategy, examining how they might meet Strategy objectives and address the transport challenges we face now, and over the next twenty years.

The measures examined include better integration of land use planning policies with transport, new transport infrastructure and changes to public transport operations and services to better meet travel needs, enhanced traffic management arrangements, and travel demand management measures. The measures include those that have been shown to work well in the past in the Greater Dublin Area, those that have been shown to work well elsewhere, but have not yet been widely implemented in the Greater Dublin Area, and the more innovative types of measure that may well have a place in the Strategy, but have had limited application to date in the Greater Dublin Area or elsewhere.

## 6.2 Identifying potential measures

The types of measures identified can be categorised as follows:

- Rail (including new or enhanced suburban rail, Luas and Metro lines and services);
- Bus (including new or enhanced bus priority, bus routes and networks, service frequencies and vehicle types);
- Integration of public transport (better travel information, simplified fares and ticketing, improved interchange including park and ride, better access for cyclists, easier access to public transport for mobility impaired and disabled people);
- Cycling (improved cycling environment and facilities, additional cycle parking, more public cycle rental points);
- Walking (more direct pedestrian links, wider footpaths and improved footpath quality, reduced waiting times at pedestrian crossing points);
- Traffic management (traffic signal coordination to improve priority for pedestrians, cyclists and public transport, improve and maintain streetscapes, improve direction signing);
- Freight (protect or improve access to ports and Dublin Airport, provide priority to freight on congested strategic roads, encourage transfer of freight from road to rail);
- Integration of land use planning and transport (co-location of key activities in defined centres (employment, retail etc), increased development densities in centres and near public transport, location of local facilities within walking and cycling distance, design of developments with pedestrians and cyclists in mind, control of development away from public transport and

control of parking supply in new developments to discourage car use);

- Charging measures to reduce demand for car travel;
- Promotion of non-car travel (including employer and school plans to encourage non-car travel or car sharing, marketing and awareness raising campaigns); and
- Social inclusion measures (improve access to key facilities by non car modes, especially from socially deprived areas, improve street layouts and access to public transport vehicles for people with limited mobility).

### 6.3 Appraising measures for contribution to Strategy objectives

The identified measures were assessed for:

- Their technological, political and legal feasibility;
- The contribution they are likely to make in meeting the Objectives of the Strategy; and
- How they perform against transport criteria, guided by the Department of Transport's 'Common Appraisal Framework' approach.

The Measures were also subjected to a Strategic Environmental Assessment. Measures that failed to meet key Strategy objectives were not taken forward beyond this point. An example of such a measure would be substantial new road building in urban centres. In this case, the adverse impact on the built environment (high-level objective 3) and the economy of the urban centre (high-level objective 2) would be highly likely to outweigh journey time benefits to road users travelling through the centre.

Key stakeholders and the public were consulted on their views on the identified measures, and whether other measures should also be considered. This helped inform the next step in the Strategy development – the packaging of measures into Strategy options.

### 6.4 Generating Strategy options

In formulating Strategy options, particular attention was paid to developing the high performing types of measures, and seeking a way of applying them within the GDA to meet Strategy objectives. Public and stakeholder views on the relative importance of particular measures were also taken into account.

Transport measures particularly favoured by the public and stakeholders included:

- Better integration of public transport, including a single ticket for travel, a simplified network-wide fares system, better travel information and improved park and ride;
- Additional public transport services and better on-street priority for buses;
- Better traffic light co-ordination and removal of local traffic bottlenecks;
- Better quality facilities for walking and cycling and easier crossings for pedestrians; and
- Reduction of travel to school and work by car, and less traffic in town centres.

Planning measures that contribute to Strategy objectives favoured by the public included:

- New homes near public transport;
- Offices and shops in town centres with good public transport; and
- Better walking and cycle access in housing areas.

Three Strategy options were developed and considered, each with a distinct emphasis or theme that related back to Strategy objectives:

- Economy theme;
- Society/community theme; and
- Environment theme.

While each option attempts to meet all the Strategy objectives and address the transport challenges, each also places a particular emphasis on measures that best meet the objectives related to the option theme. So, for example, the economy themed option focuses in particular on policies and proposals that would support the economic growth and competitiveness of the GDA, whilst at the same time ensuring that there is not an unduly adverse impact on the other key Strategy objectives of improving the built environment, supporting the natural environment and of building and strengthening communities.

### 6.5 Measures included in all options

Some measures meet all objectives, and are therefore included in all three options.

This Strategy builds on previous strategies and investment programmes (see chapter 2), and for this reason several major infrastructure schemes from these strategies and programmes are included in all of the Strategy options. These schemes have been assessed as performing well against all key Strategy objectives. They include:

- DART Underground, linking Heuston rail services to services north of Connolly via the south city centre (Docklands, Pearse station, St. Stephen's Green and Christchurch), and associated electrification of services on the Maynooth and Heuston-Hazelhatch lines and extending the electrification of the northern DART line beyond Malahide;
- Metro North, linking Swords, the Airport, and the north city to the city centre (O'Connell Street and Stephen's Green);
- Metro West, from Tallaght via Clondalkin, Porterstown and Blanchardstown to meet the Metro North route south of the Airport; and
- New Luas Line BXD (St. Stephen's Green to Broombridge via O'Connell Street).

They also include the following major public transport schemes:

- Extension of the Clonsilla-Pace railway line to Navan;
- Upgrade of Luas Green line to Metro (St. Stephen's Green to Cherrywood/Bride's Glen);
- Luas Green Line extension to Fassaroe and Bray;
- New Luas Lines E (Rathfarnham to City Centre), F (City Centre to Lucan/Newcastle Road) and D1 (Line D extension from Broombridge to Meakstown (Finglas));
- Provision of rail-based Park and Ride at various sites outside the M50; and
- Additions and enhancements to the Quality Bus Corridor network.

### 6.6 The economy themed option

The particular emphasis in this option is on ways to support economic growth and competitiveness by making access to work and other economic activities easier, and improving connections between businesses that rely on each other.

The focus is on reducing congestion, and improving journey times and journey time reliability, particularly for business travel and the movement of goods. Major improvements to transport infrastructure and public transport services figure prominently in this package, as do traffic management and road pricing measures, aimed at freeing up the transport network for economically essential traffic.

Measures under consideration in this theme include new strategic roads, new rail lines, widening of existing roads, upgrades to key bus and rail corridors, better traffic management to improve traffic flow and congestion charging measures for traffic crossing the M50 or entering the city centre, to free up road space for economically essential business and freight traffic.

Specific measures include major road proposals such as:

- Eastern Bypass (linking the Dublin Port Tunnel with the M50 in the Sandyford area); and
- Leinster Orbital Route (LOR: a new road linking Drogheda (M1), Navan (M3) and Naas (M7/M9)

Other specific major public transport measures in this option include:

- A new Metro line between Tallaght and the city centre via Kimmage and Harold's Cross;
- Extension of Metro North from Swords to Donabate DART station;
- Extension of Metro West from Tallaght East to Dundrum/Balally and from south of the Airport to the DART line north of Howth Junction;
- Extending Luas Line F from Lucan to Adamstown, and from Trinity College to Poolbeg;
- Extending Luas Red Line beyond Line A1 to City West/Belgard on to Greenogue; and beyond Point Depot across the Liffey to Poolbeg;
- A Luas feeder shuttle between Sallins Rail station and Naas Town Centre; and
- Upgrading the single line rail track section south of Bray.

## 6.7 The society/community themed option

The particular emphasis in this option is on measures that link communities to each other and to the social and community activities they need to access. Measures that improve access for disadvantaged groups are particularly important, with a focus on improving public transport services for those travelling to access health and community services, leisure and recreation facilities, or visit family and friends - particularly outside the peak travel to work times.

Specific measures under consideration in this theme include improved public transport and local road connections between communities within the Greater Dublin Area, and improvements to the public transport network, including more off-peak services between residential areas, town centres and other key destinations, to provide improved access for all sectors of society to jobs, shops and other facilities. This option also includes a proposal to reduce public transport fares by 20% at all times of day – whereas in the other two options, this reduction would apply to the off-peak only and peak fares would rise 10%.

Some strategic infrastructure proposals included in the Economy option are also included here, due to the increase in connectivity they provide – most notably the Leinster Orbital Route and Eastern Bypass road schemes, as well as a large number of local road schemes to access communities. Some public transport schemes are included to a lower standard – with a Luas rather than Metro line from Tallaght to the City Centre via Kimmage for example – and bus improvements in place of the extensions to Luas and Metro lines that were included in the Economy option.

### 6.8 The environment themed option

This option puts a particular emphasis on proposals that improve the built environment or minimise impacts on the natural environment. Proposals that are likely to support the strategy objective of reducing transport related greenhouse gas emissions are included, as are proposals that reduce emissions or reduce local air pollution and noise, minimise impacts on natural amenities and the countryside and improve town and streetscapes.

Specific measures included improvements to public transport, broadly in line with those in the Social option, with additional geographical coverage and high quality bus and rail links, but excluding off peak fare reductions. However, in order to discourage growth in car use, no new strategic road building proposals are included. In order to meet the government's '*Smarter Travel*' targets for car mode share, a substantial distance based road user charge is included in this option throughout the Greater Dublin Area, to discourage travel by car, and encourage a transfer to public transport.

The road pricing measures that were modelled were set at a level necessary to meet *Smarter Travel* targets (in particular the target of reducing the mode share for car to 45%) This means that this option is materially different in its effects from the other two options. Whereas road building and upgrades are not included in this option, additional public transport services would be required to serve the public transport users who transfer from car to avoid paying the road user charge.

Other measures considered in this option included priority for pedestrians and cyclists in town centres, restrictions on larger lorries in town centres, restrictions in parking provision at workplaces and other destinations to discourage car use, and support for the introduction of electric vehicles.

## 6.9 Modelling and appraising Strategy options

In order to inform the contents of the Strategy, the three packages of Strategy options were appraised to determine the relative benefits of each package and the contribution each makes to meeting Strategy objectives and addressing the transport challenges. The appraisal took place in two stages:

- Contribution of package to Strategy objectives; and
- How they perform against transport criteria, guided by the Department of Transport's 'Common Appraisal Framework' appraisal approach.

### *Transport Model for the Greater Dublin Area*

The appraisal of options was supported and informed by extensive modelling analysis undertaken using the Authority's multi-modal, strategic transport model for the Greater Dublin Area. This model is ideally suited as a tool to support Strategy appraisal as it:

- Covers the entire Greater Dublin Area and all travel into, out of and within this area,
- Includes all surface modes of travel (including travel by private car, public transport, walking and cycling and trips by heavy goods vehicles),
- Uses the most up to date and state of the art modelling techniques and methods,
- Was recently fully updated and calibrated using comprehensive travel data from the 2006 Census and from GDA wide education and household surveys that were also undertaken in the Census year.

The transport model is a strategic multi-modal, network based transport model covering the counties of Dublin, Meath, Kildare and Wicklow. The model includes all the main surface modes of travel (including travel by car, bus, rail, heavy goods vehicles, walking and cycling). It currently comprises a morning peak model covering the three hour period between 7am and 10am and an afternoon inter-peak model (also referred to as an off-peak model) covering the single hour between 2pm and 3pm. Annualisation factors are applied where appropriate to estimate annual demand from these modelled hours.

The model was first developed in 1991 as part of the Dublin Transportation Initiative (DTI) study. The Dublin Transportation Office (DTO), on establishment in 1996 took ownership of the model. Since 1996, the model has been updated on many occasions. In 2008, following a review of the model a full update was undertaken to prepare it for use in developing the GDA Transport Strategy.

The main elements of the most recent major model update were

- Incorporation of the 2006 CSO Census travel to work data and data from the GDA travel to education and household travel surveys (both surveys undertaken by the DTO in 2006) into the model and re-calibrate the model to observed 2006 travel behaviour and conditions,
- Re-development of the Trip Attraction & Generation and Trip Distribution Models to incorporate the 2006 land use and travel datasets,
- Development of a new afternoon off-peak model to have a similar structure and functionality to the morning peak model and calibrate the model to observed 2006 off-peak travel conditions.

The main characteristics of the transport model for the GDA in terms of the area covered, zoning system used, time periods modelled, model base and forecast years, transport networks modelled and the classification of travel demand are set out below:.

### *Model zones*

The transport model covers the full Greater Dublin Area (GDA) and County Louth. The current model has 657 internal geographic zones covering the modelled area and 9 external zones representing travel between the modelled area and the rest of Ireland. In the Metropolitan area, the zones are subsets of the District Electoral Divisions (DEDs) used to compile CSO Census data. In the Hinterland area, zones are much larger and are an amalgamation of DEDs. In order to represent travel patterns at a more aggregate level, the model has the facility to amalgamate the 657 fine zones to 75 strategic zones, or to 21 coarse zones.

### *Base and forecast years*

The base year for the current peak and off-peak models is 2006, while the main forecast year is 2030 – the planning horizon for the Strategy.

### *Modelled transport networks*

The model contains coded networks for all mechanised modes of travel – including car, HGV, bus, heavy rail, Luas and Metro. The road network has two distinct regions. In the Dublin County area, full junctions details are included for all major junctions (the simulation network), while outside Dublin County, junctions details are not included (the buffer network).

The bus network contains details of all Dublin Bus, Bus Éireann and private operator bus services operating within, into and out of the GDA. Quality Bus Corridors and bus priority measures are included as part of the road network, and in the simulation area their impact on junction capacity is coded.

The rail network contains all Iarnród Éireann services operating within the GDA. Existing and future Luas and Metro lines and services are coded in the model as part of the rail network.

### *Travel demand*

Travel demand is broken down by six journey purposes – i.e. work (commuting), education, employer's business, shopping, other home-based and non home based. Travel demand is further segmented by two person types – i.e. those with and those without a car available for their trip.

A large array of model outputs was extracted to inform the assessment of the three themed options. In addition to summary outputs for the options as a whole, the model also produced outputs on a corridor by corridor basis. This facilitated an outline assessment of the benefits and costs of major infrastructural schemes in each option and helped determine which infrastructural elements of each option were contributing most to meeting strategy objectives, and assisted in assembly of the Strategy itself.

Factors taken into consideration in this assessment included:

- Modelled peak travel demand on schemes in the corridor, the capacity to meet this demand, and outline cost (relating to economic objectives);
- Impact on journey times in a corridor by public transport, freight and car (relating to economic and social objectives);
- Impact on ease of access to city centre and other town centres (relating to economic and social objectives); and
- Impact on share of travel by sustainable modes (relating to environmental objectives).

In addition, the proposals contained in the three Strategy options were subjected to Strategic Environmental Assessment and a Habitats Directive Assessment.

## 6.10 Outcome of appraisal

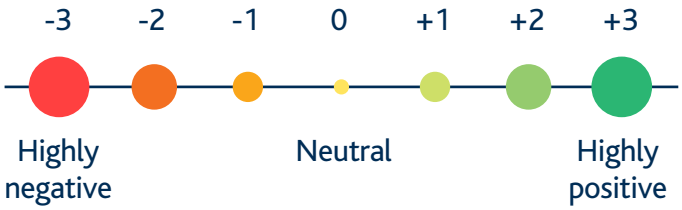
Strategy options containing policies and proposals to improve and promote cycling and walking facilities and public transport performed well.

In general road building or road widening proposals scored well against the objective of improving economic competitiveness, and improving links between communities. However they performed less well against the objectives of improving the built environment or minimising the impact on the natural environment.

Options that included charges to road users in congested areas scored well, by freeing up roadspace and reducing delays to economically productive business and goods traffic.

Options that included a per kilometre charge for all private road vehicles in the GDA scored well against natural environment objectives, by reducing demand for car travel and encouraging a switch to less environmentally damaging modes.

A summary of how the different Strategy options scored against the high-level Strategy objectives is given below. A seven point scoring system (-3 (highly negative) to +3 (highly positive)) was used.




| | Economy themed option | Social themed option | Environment themed option |
|---|---|---|---|
| Objective 1: Build and Strengthen communities | | | |
| Objective 2: Improve Economic Competitiveness | | | |
| Objective 3: Improve the Built Environment | | | |
| Objective 4: Respect and Sustain the Natural Environment | | | |
| Objective 5: Reduce Personal Stress | | | |

The Environment themed option performs as well as, or better than, the other two Strategy options examined.

The Strategy options were also examined against the criteria set out in the Department of Transport's Common Appraisal Framework.

A summary of how the Strategy options performed against these is presented below.

Overall, the results of the appraisal process strongly indicate that the Strategy should be based upon the environmentally themed option.

| Criterion | Economy themed option | Social themed option | Environment themed option |
|---|---|---|---|
| Safety | | | |
| Economic | | | |
| Accessibility | | | |
| Social inclusion | | | |
| Integration | | | |
| Environmental | | | |

## 6.11 Assembling the Strategy

The assembly of the Strategy took the results of the options appraisal into account, and as such the measures contained in the Strategy are broadly similar to the Environment themed option. The key aspects of the Environment themed option that informed the assembly of the Strategy are:

- Substantially enhanced public transport network coverage, and improvements in public transport journey times, reliability and frequency;
- Only limited strategic road building or upgrades; and
- Demand management over a wide geographical area within the Greater Dublin Area to achieve the mode share targets set out in *Smarter Travel*.

The measures that scored well against all Strategy objectives and that were included in all Strategy options were also incorporated in the assembly of the Strategy. These measures included planning policies to support sustainable travel, improvements to walking and cycling environment, improved public transport information and integrated fares and ticketing.

On certain corridors, competing major public transport infrastructural proposals were identified. Whereas the method used to appraise Strategy options indicated the overall direction the Strategy should take, it could not always on its own determine the relative merits of individual competing schemes. For this reason, an outline assessment of the benefits and costs of major infrastructural schemes in each Option was undertaken on a corridor by corridor basis as set out in Section 6.9 above. This assessment produced a variety of conclusions:

- In certain corridors, modelled travel demand indicated that bus based public transport proposals would not have sufficient capacity to cater for forecast travel demand and a higher capacity rail based proposal was needed to serve demand;
- In other corridors, modelled travel demand indicated that higher capacity rail based public transport proposals would not be necessary and a lower capacity proposal would suffice; and
- In other corridors, modelled travel demand indicated that either a high capacity quality bus scheme or a light rail scheme were valid potential solutions, as either scheme could cater for the level of demand whilst meeting Strategy objectives. Following publication of this Strategy, further work will be required to identify the appropriate solution for these corridors.

As a result of this corridor analysis, a number of major public transport schemes were not taken forward due to low levels of demand; these include several from the Economy option, and others that were modelled in all options. They include:

- Luas Line E (Rathfarnham to City Centre);
- Extension of Metro North from Swords to Donabate DART station;
- Extension of Metro West from Tallaght East to Dundrum/Balally;
- Extending Luas Line F from Lucan to Adamstown;
- Extending Luas Red Line spur to Saggart (Line A1) onwards to Greenogue; and beyond the Point across the Liffey to Poolbeg; and
- A Luas feeder shuttle between Sallins Rail station and Naas Town Centre.

However, it is possible that these schemes may become viable at some point during the life of this Strategy as development and demand patterns will change over time from those assumed in appraisal.

The following Part of the report sets out the details of the identified elements of the Strategy.

# PART B:
# THE STRATEGY

# Chapter 7

# Overview of the Strategy

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| 7.5 | Better, easier to use public transport | 3 |
| 7.6 | Strategic road traffic, freight and travel demand management | 3 |

## 7.1 Introduction

This section of the report sets out the Authority's Strategy for the period up to 2030.

The Strategy seeks to meet:

- Economic objectives by reducing delays and improving journey time reliability, particularly for business travel and the movement of goods, and by improving access to and within town centres;
- Social objectives by improving safety, reducing travel related stress and reducing the adverse impacts of traffic on neighbourhoods and centres whilst enabling all sectors of society to travel to the destinations they need to reach; and
- Environmental objectives, by giving priority to those means of travel that are less damaging to our natural and built environment.

In developing the Strategy, Government and regional planning policies and Strategy targets also have been taken into account, as well as environmental, financial and physical constraints. These include

- The Government's 'Smarter Travel' policies and targets;
- The planning policies set out in the Greater Dublin Area Regional Planning Guidelines;
- The target in the Strategy objectives of reducing transport related Greenhouse Gas emissions in the Greater Dublin Area;
- The need to minimise impacts on environmentally sensitive sites and historic areas;
- The cost of providing transport infrastructure and services and the need to ensure value for money; and
- The need to minimise undue disruption to businesses and people either during implementation or operation of a Strategy measure.

A wide range of policies and measures is required to provide the transport solutions for the Greater Dublin Area over the next twenty years.

A particular emphasis has been placed on measures that meet the full range of Strategy objectives - supporting the region's economy, whilst promoting social equity, and reducing adverse impacts on the built and natural environment.

## 7.2 A hierarchy of transport users

Policies and measures that favour those on foot, cycling or using public transport are fundamental to this Strategy and underpin all of the Strategy objectives.

If Government targets[28] for travel by means other than the car are to be met, the share of trips made by walking, cycling or public transport within the Greater Dublin Area will need to dramatically increase.

28 As set out in *Smarter Travel* – A sustainable travel future (DoT 2009)

To make this happen, the needs of pedestrians, cyclists and public transport users need to be considered in advance of the requirements of car users.

This Strategy adopts a clear hierarchy of transport users, with pedestrians, cyclists and public transport users at the top of the hierarchy. As a general principle, these users should have their safety and convenience needs considered first. It is most important that the hierarchy is applied where a large share of travel is (or could be) made by walking, cycling and public transport. This includes areas in and around Dublin city centre, other town and village centres and destinations attracting significant numbers of people, as well as residential areas.

To support economic objectives, the needs of commercial traffic and the movement of goods should be considered ahead of private motor vehicle users.

The requirements of people with disabilities as pedestrians, public transport users and motorists should also be fully taken into account. In all cases, provision must be made for emergency vehicle access, as required.

As well as guiding the development of Strategy measures, this transport user hierarchy should guide engineers, planners and urban designers on the order in which the needs of transport users should be considered in designing new developments or traffic schemes in the Greater Dublin Area.

### 7.3 Joined-up transport and land use planning

At the heart of the Strategy is the requirement that land use planning and transport planning need to be considered together in the overall development of the region. They are inextricably interlinked. Inappropriate land use planning results in failure to be able to provide effective and efficient transport solutions. In turn, a failure to provide appropriate transport solutions results in the growth of development reliant on unsustainable car based travel with ensuing congestion and environmental degradation.

**Measure OVR 1:**

*The Authority supports a transport user hierarchy that considers transport user needs in the following order:*

1. *Pedestrians (including those accessing public transport)*
2. *Cyclists*
3. *Public transport users*
4. *Freight, delivery and waste vehicles*
5. *Private vehicles users*

*In all cases, provision must be made for emergency vehicle access as required, and the needs of people with disabilities should be fully taken into account.*

*This hierarchy of transport users should be applied in all areas where a significant share of the travel is (or could be) made by walking, cycling and/or public transport and should not be applied in inappropriate locations such as motorways.*

Fundamental to future land use planning in the Greater Dublin Area will be the consolidation of development into the appropriate areas that can enable such development to be well served by non-car modes of travel. Dispersed development patterns are inherently unsustainable from a transport perspective and cannot be effectively serviced by public transport. The need to consolidate and concentrate development in a manner that allows the effective provision of public transport is inescapable and is a central theme throughout the Strategy.

Chapter 8 sets out the Strategy measures relating to planning and land use that seek to promote a sustainable development pattern for the future development of the Greater Dublin Area.

## 7.4 Improving the walking and cycling environment

To meet Strategy objectives and Government targets for sustainable travel, the share of journeys made in the Greater Dublin Area on foot or cycle will need to increase considerably. In addition, increased public transport use will mean more people walking and cycling to access public transport. To encourage this shift in travel choice, a dramatic improvement in the environment for walking and cycling is required.

There will be a particular focus on the built up parts of the Greater Dublin Area, and especially Dublin city centre and other town centres, where more journeys are within walking and cycling range. Reducing the impact of motorised traffic will be central to improving the walking and cycling environment in these centres.

This Strategy envisages the Greater Dublin Area, and particularly Dublin city centre and other larger town centres, becoming a **recognised walking and cycling city-region**, with a street environment that is attractive, safe and designed with the pedestrian and cyclist in mind at all times. Approaching Dublin city centre, a dedicated cycle network will provide high-quality attractive access from the inner suburbs and the other centres.

It is recognised that in constrained urban environments such as in parts of Dublin city, available road space is a scarce resource, with many historic streets and bridges requiring particular consideration in any proposed intervention. In such areas there is a need for a careful and measured approach to be taken, that balances competing demands in a manner that seeks to deliver the optimal outcome, and takes cognisance of future needs.

Chapter 9 sets out the Strategy actions to improve the walking and cycling environment.

## 7.5 Better, easier to use public transport

Central to this Strategy is the development and delivery of a public transport system that provides an attractive alternative to the car – in particular for journeys beyond walking and cycling range.

The process of developing the Strategy requires choices to be made on the appropriate types of public transport to serve the differing parts of the Greater Dublin Area. This means that in some places heavy rail, Metro or tram (Luas) is proposed, in others bus. Service levels also vary by area. There are many factors influencing these choices, including the existing public transport network, population and employment densities, travel patterns, physical constraints such as the built environment or available street space, and value for money.

In order to make public transport a more attractive travel choice, it is also essential that it operates as an integrated network that is attractive, comfortable, accessible and easy to use. In particular, it is critical to ensure that people can move easily between different services with a high quality travel experience at all times. Amongst other considerations, this requires good public transport information, integrated ticketing and fares, easy passenger interchange between services and park and ride facilities where needed.

Chapter 10 sets out the Strategy actions to improve public transport.

## 7.6 Strategic road traffic, freight and travel demand management

Roads are essential for the functioning of the Greater Dublin Area.

To support the regional and national economy, the Strategy requires that strategic roads in the Greater Dublin Area will be managed or developed to ensure timely, reliable journeys for freight, delivery and other business traffic.

Much of the region's public transport services run on road, and these services need to be protected from delays and unreliability.

Traffic management measures and travel demand management measures both have an important role to play in protecting the function of strategic roads and ensuring priority is given to economically essential traffic and more environmentally friendly means of travel.

Chapter 11 sets out Strategy actions in these areas in more detail.

# Chapter 8

# Planning for Sustainable Living

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## 8.1 Introduction

Transport is a derived need – that is, people do not in general make trips just for the sake of travel, but rather to access work places, schools, shops and other services. It follows that the location of services relative to where people live is a critical determinant of the need to travel, travel distances and the means of travel chosen.

*Smarter Travel* acknowledges the pivotal role of land use planning in achieving sustainable transport targets. Achieving these targets will require building upon the major shifts in land use policies, which have occurred in recent years, over the life time of this Strategy. The past trends that have created low density settlements remote from town centres and services (schools, shops, employment and leisure facilities), coupled with the dispersed nature of the locations of these services, have resulted in unsustainable travel patterns. These trends need to be redressed.

The implementation of the Strategy supported by the Regional Planning Guidelines for the GDA, integrated with the local authority Development Plans and Local Area Plans, will provide the framework for the achievement of *Smarter Travel* objectives and other economic, social and environmental objectives of this Strategy.

## 8.2 Integration of Land use and Transport

Walking and cycling are the most efficient modes of transport as they require no external energy source and produce zero direct environmental emissions. Hence, from a transport perspective, the most efficient settlement and land use patterns are those that locate the largest proportion of the population within walking and cycling distance of their work, schools, shops and other services.

The role of transport and how it interacts with the urban environment is an essential element in improving the quality of life of the communities of our towns and cities. There is an important balance that must be struck between providing for people's travel needs, and maintaining a liveable environment with people friendly streets and spaces with a high quality design.

Based on best international practice, there are a number of key principles which will critically influence the quality of life in our towns and cities in the future. These key principles, applied in the development of this Strategy, included:

- A strong focus on pedestrian and cycling movement for local trips;
- Exploiting the ability of public transport to cater for the mass movement of people while using a fraction of the fuel and street space required by private cars;

- Balancing the demand for car travel with other modes to ensure that walking and cycling are the dominant modes for shorter trips, and that public transport becomes the dominant mode for longer trips;
- Favouring and incentivising the use of cleaner, smaller, quieter, and safer vehicles to deliver goods within urban areas;
- Provision of lively central areas which focus retail on the ground floor with residences and offices above, so streets are vibrant both day and night;
- Intensification and consolidation of towns and cities by building on brownfield sites and vacant areas or reusing underutilised sites, thus addressing urban sprawl and making neighbourhood centres more vibrant;
- Identifying and enhancing the unique culture and heritage of communities in the GDA. A community's history, natural environment and local traditions, all contribute meaningfully to what makes a place unique;
- Increasing connectivity and permeability by providing for shorter distances between destinations, thus making walking and cycling more appealing;
- Making sure that streets and public spaces are built with quality materials and are well-designed, well maintained and well-managed, thus ensuring that they can last for decades.

Applying these principles to future land use patterns will require the consolidation of development into our existing urban areas, increasing the density of development and promoting a mix of land uses within areas which bring people closer to their needs. If the Strategy is to achieve a significant mode shift to walking and cycling (a specific target of *Smarter Travel*) then travel distances need to be radically reduced, to bring more destinations within walking and cycling range, typically less than 2km for walking or less than 6km in the case of cycling.

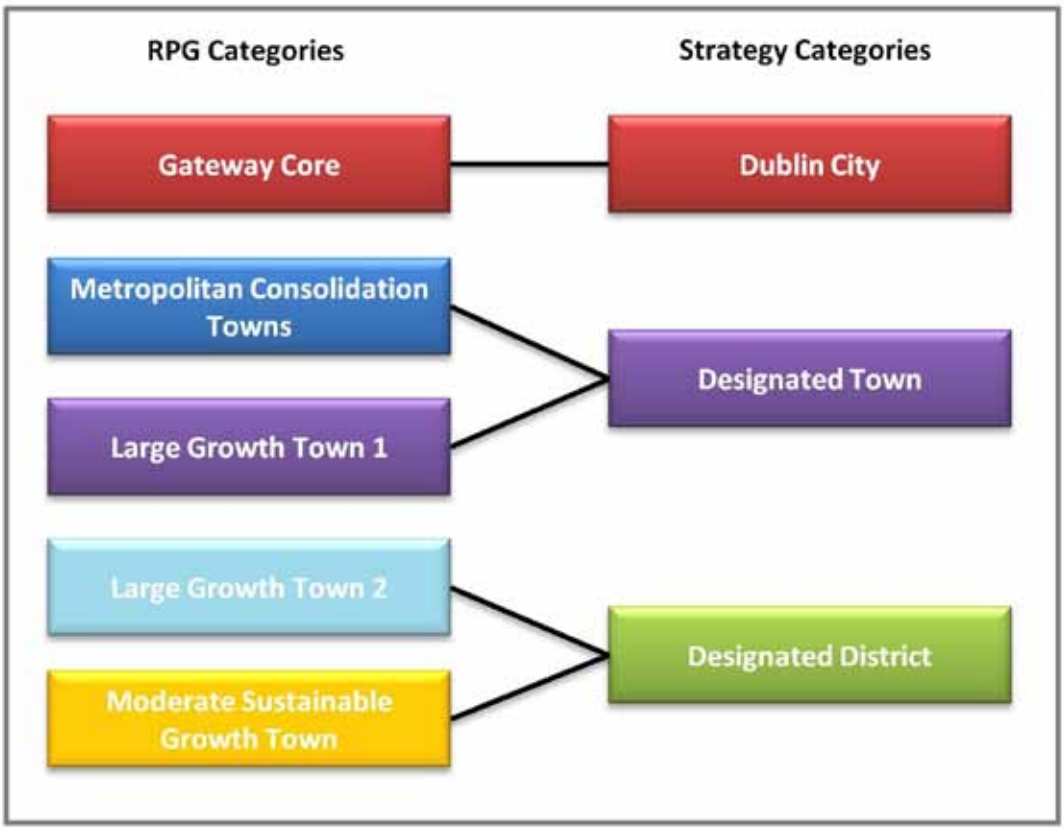
While the correct land use policies can ensure that a wide range of services are available locally within walking or cycling distance of home, it will always be necessary to provide transport solutions for those who need to make longer trips. For such trips, public transport is significantly more efficient than the car in terms of energy use and emissions. Hence, in the case of longer trips, it is important that public transport provides a real alternative to the private car. The Strategy also seeks to locate high density development adjacent to high quality and high capacity public transport nodes – in particular close to rail stations and metro stops. In order to ensure the highest level of accessibility, the Strategy seeks to provide for good quality, and direct walking access to the public transport network, through good design and layout of residential developments and popular destinations.

### 8.3 RPG Settlement Hierarchy

The objectives of the Strategy and the principles set out above have been applied to the RPG settlement hierarchy. In developing this Strategy, the RPG settlement hierarchy was further developed in order to more closely reflect the varying transport needs of different sized settlements in the Greater Dublin Area (GDA). Three levels of settlement centre (based on the RPG categories) were identified, namely Dublin City, Designated Towns and Designated Districts. These are explained in more detail and presented below. The only NSS Gateway in the GDA is referred to in the RPGs as the Gateway Core of "Dublin City Centre & Immediate Suburbs" which is designated as "Dublin City" in the Strategy. The term "Dublin City" in the Strategy refers to the part of the city that is bounded by the Royal Canal / North Circular Road on the north, by the Grand Canal / South Circular Road on the south and extending westwards to include the Heuston area and eastwards to encompass the Docklands Area.

The RPG Settlement Hierarchy for the GDA, and the equivalent settlement categories used in the GDA Transport Strategy are set out in Figure 8.1:

**Figure 8.1: RPG Settlement Hierarchy and corresponding Strategy categories**

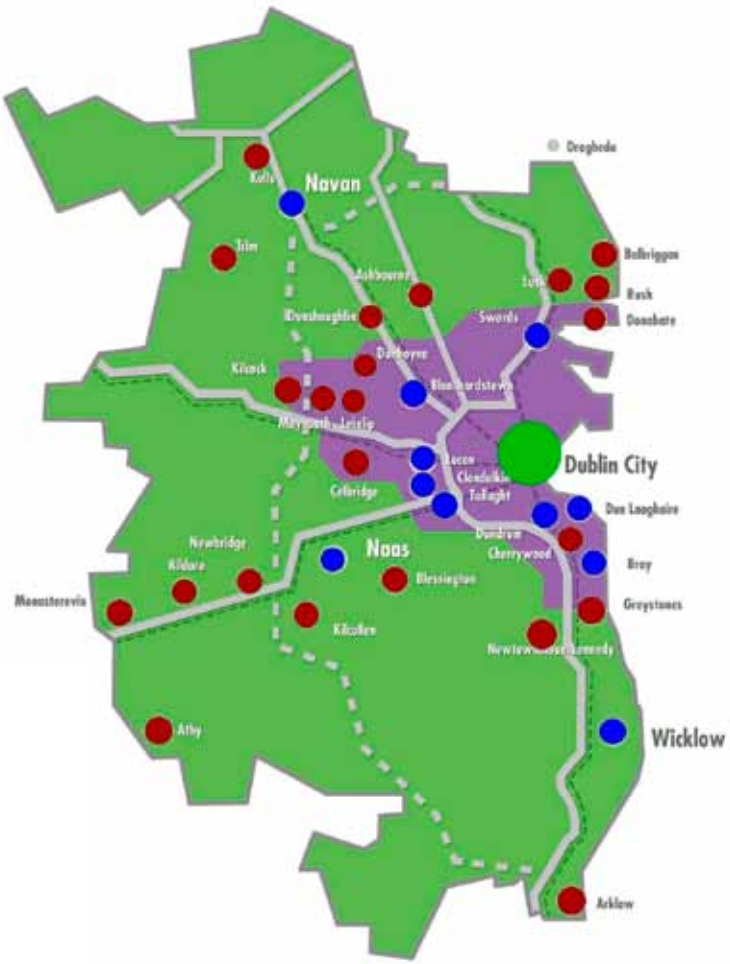



Dublin City is at the apex of the hierarchy with a service function for all of the Greater Dublin Area. The future scale and intensity of development in Dublin City must match the level of transport infrastructure investment and services planned to serve it. The scale and function of Dublin City is not only regional but also has a national and international role. The Strategy recognises the need to protect the key role of Dublin City.

Designated Towns in this Strategy correspond with the Metropolitan Consolidation Towns and larger Hinterland towns (Large Growth Towns 1) defined in the RPGs. The category of Designated Districts includes the Large Growth Towns 2 and Moderate Sustainable Growth Towns designated in the RPGs. These towns primarily provide a more localised level of service for their surrounding catchments; however, some larger Designated Districts constitute major population and employment centres and provide a wider range of services to those living within their catchment. Dublin City and the Designated Towns, while providing higher order services, also act as District Centres for the provision of localised services for their surrounding catchments.

The locations of the Strategy's Designated Towns are shown in Figure 8.2.

**Figure 8.2: Strategy classifications of Designated Centres**


Consolidation of development into higher order urban centres is a key objective of both the RPGs and the DoEHLG's RPG Review[29] as a means of reducing the need to travel and of making walking, cycling and public transport attractive and realistic options for travel by more people over time. This consolidation is also designed to facilitate the containment of urban sprawl and to effect a reduction in car dependency.

In deriving the Strategy, the RPG hierarchy has been used to distribute the population, schools, work places and services, which are the main drivers of travel demand in the GDA. Given the nature of the Designated Districts in the Hinterland area, which are to serve existing developed areas, they are not expected to expand significantly.

In terms of employment distribution, the Strategy takes into account the RPG and Local Authority policies of developing in certain areas along "Economic Corridors" served by public transport. These primarily comprise the City Centre and the Designated Towns but in some instances other areas are also included, such as Cherrywood, Sandyford, City West, and other areas along the Naas Road (Luas) and Metro North Corridors.

**Measure LU1:**

*The Authority, in relation to the settlement hierarchy in the GDA, will seek to:*

- *Focus person-trip intensive development, particularly key destinations such as retail and offices, into Dublin City and Designated Towns within the GDA; and*
- *Focus person-trip intensive development outside Dublin City and Designated Towns to locations served by stations on the existing and proposed rail network (particularly Metro and DART).*

29 DoEHLG's RPG Review – Gateway and Hub Population Targets – August 2009

## 8.4 Serving local and strategic travel

In the past, access to the road network by car was seen as the primary means of serving all urban centres. The implementation of the Strategy will mean that options for walking and cycling locally, and the availability of public transport, will be regarded as essential considerations in the design, scale and location of future development in the GDA.

In the Strategy, the provision of transport options is guided by the objective of maximising availability of choice, to ensure social inclusion and to recognise the changing demographic characteristics that pertain across the GDA, as well as to reduce the environmental impact of travel. While there is an emphasis in the Strategy on providing for mixed use development to ensure proximity to services and facilitate travel by sustainable modes, the range of services and the supply of housing types will also be critical in meeting the needs of people in each Designated Town and Designated District.

In order to discuss land use measures that promote sustainable travel patterns, it is therefore useful to examine two categories of travel:

- Travel within centres, focussing on Designated Towns and Designated Districts; and
- Travel between centres.

### *Travel within Designated Towns and Designated Districts*

A Designated Town typically has a core business area or commercial centre which consists of employment, retail, and other services. A Designated District will primarily be defined by a traditional urban core, although some may be focussed on a medium sized shopping centre. Within their catchments, there may also be smaller centres such as neighbourhood shops, local employment, schools or health facilities.

Designated Districts do not provide for all services needed by the population within their catchment areas, who will need to be well connected to their local services (neighbourhood shops, primary schools, doctors, crèche etc) as well as to the core of the Designated District. Demand for travel to other centres for employment and services, particularly higher order services (for example third level education, specialist shops, cinemas and restaurants), also needs to be provided for, and is examined in the next section.

A key aim of the Strategy is to ensure that walking and cycling become the mode of choice for local trips within the Designated Towns and Designated Districts. To enable this, design principles for the future development of local areas and retrofitting of existing areas must provide for walking and cycling accessibility and connectivity and also ensure that the travel experience for these modes confers an advantage over other modes for shorter trips. This will be achieved by providing:

- Direct routes which are safe, barrier free, pleasant, overlooked and well lit;
- Pedestrian and cycle routes which are appropriately designed and maintained;
- Junctions which are designed to meet the needs of pedestrians and cyclists;
- Continuous routes for these modes from the core area;
- Core areas that are prioritised for pedestrian and cyclist movements and where through traffic is limited or diverted;
- For appropriately sized goods and service vehicles;
- Car parking and access to parking that will be managed to avoid conflict;
- Urban form with small block sizes to ensure permeability; and
- Opportunities for the linking of trips from housing areas to central areas, by locating neighbourhood facilities such as schools and local shops along primary walking and cycling routes.

A real advantage of consolidating development and providing for a mix of uses is that people can carry out a number of functions for any given trip (termed "linked trips"). Clustering of uses to allow for multi-purpose trips to education, retailing, local services (estate agents, solicitors, doctors) is a challenge for the future design of local areas.

The core area of Designated Towns and Designated Districts will also form part of the public transport network, providing access to the other areas within the region and, in the case of Designated Districts, to associated Designated Towns. Investment in walking and cycling, linking the catchment areas to the core centres, will also provide access to the public transport network.

Increasing development density within walking and cycling catchments will shorten average journey times to the core centres, which in turn makes the centres more attractive, and improves their economic viability. Increased densities also enhance the benefits of investment in the transport network and reduce the footprint area of urban developments. It is critical that development at higher density not only provides better access to services and leisure activities but also a high quality of development design to make them attractive to a broad range of societal groups, and to provide a good quality of life. Opportunities to provide more sustainable travel options may occur along the public transport network, outside the direct walking and cycling catchments. This will be particularly important in serving existing dispersed development patterns.

While there will continue to be a need to provide for deliveries by goods vehicles in urban centres, the negative impacts of such trips will be mitigated by choosing the appropriate vehicle type, times of delivery and routes used. In addition, while the car will continue to be an important mode of transport within centres, catering for the car will not be at the expense of the objectives of sustainable transport. In particular:

- Speeds will be limited in key areas to encourage and support other modes;
- Cars will not dominate in central areas;
- Car parking will be provided at the edge of central areas in order to limit movement into and through the business and retail cores;
- Parking will be restricted and where need is demonstrated will be provided underground to the extent practicable;
- On street parking will be designed to support walking, cycling and public transport; and
- Access to new housing areas will in general be off distributor roads that skirt urban areas rather than running through the centre, thus freeing up the necessary space in the centre to provide for walking and cycling and achieve the other objectives already set out above.

The local authority Development Plan and Local Area Plan measures that are required to meet the Strategy objectives for trips within Designated Towns and Designated Districts are set out in measure LU2 below.

**Measure LU2:**

*Development plans and local area plans should ensure that:*

- *Local services such as convenience stores, doctors' surgeries and schools are located and provided in a manner which ensures that access for the local community by walking and cycling is direct, safe and convenient.*
- *All development areas provide for internal permeability for walking and cycling;*
- *The design of new developments incorporate new walking and cycling routes, or exploit existing direct routes, to social and commercial facilities in the central areas of Designated Towns and Designated Districts. This will broaden permeability within the wider area;*
- *Parking, where required, is located and designed in such a manner that it does not dominate the streetscape and does not compromise walking, cycling and public transport;*
- *The provision for the delivery of goods and services is taken into account in the design of new and existing development, to improve efficiency and minimise impact on the local community, and the built and natural environment;*
- *Severance within local catchments, particularly on key access routes, is avoided to the extent practicable;*
- *All transport links take account of the impacts on the wider environment in terms of visual impact;*
- *A mix of dwelling types will be provided to facilitate and encourage mixed residential communities to establish; and*
- *The re-development of brownfield (previously developed) sites close to existing or proposed public transport corridors are supported.*
- *Guidance contained in the DoEHLG "Sustainable Residential Development in Urban Areas, "Best Practice Urban Design Manual" and the DoEHLG/DoT "Manual for Streets" is adhered to. This will be best achieved through the formal incorporation of these guidelines into development plans and local area plans. The elements of local level planning which are of particular importance for the Strategy include:*

  *– Densities;*

  *– Layout of developments;*

  *– The use of Home Zones and Shared Space;*

  *– Widths of roads;*

  *– Level and quality of open spaces and their use as walking and cycling routes; and*

  *– The needs of disabled and mobility impaired people*

### *Travel between Designated Towns and Districts*

The principles set out above for local movement within centres applies at all levels of the settlement hierarchy from neighbourhoods to Dublin City. However, the Strategy has an essential role in planning for and facilitating movement *between* the centres in the GDA.

The importance of Dublin City and the Designated Towns as the engines of economic growth, social infrastructure provision and development within the GDA is well documented in the RPG and Retail Strategy for the GDA. The services sector (particularly the knowledge based economic sector) is expected to become a key driver of future employment growth in the GDA, and access to labour markets, customers, ports and airports will be key prerequisites of future investment. Hence, a central objective of the Strategy is to provide a high level of public transport accessibility to Designated Towns and Dublin City, as this will be critical to retaining and attracting future employment generating investment in the GDA.

The Strategy proposes a public transport network that is focused on Dublin City, with Designated Towns linked to it, primarily by rail. Increased transport connections and ease of connectivity will improve the accessibility between Designated Districts and the Designated Towns, ultimately increasing their attractivness for economic investment.

Public transport accessibility will be a key factor influencing the scale, density and location of future development in the GDA. The consolidation of development within the existing built up area will be particularly focussed along the rail corridors. These *rail based developments* are envisaged to take a number of forms namely:

- Outer Suburban Nodes,
- Town Centres,
- Inner Suburban Nodes, and
- Dublin City Centre.

**Rail based development areas:**

*Outer Suburban Nodes*

*These are rail based development areas located outside the M50, adjacent to rail lines, primarily on 'greenfield' land such as Adamstown, Cherrywood and Hansfield. These areas are planned to provide for a significant proportion of future population growth in the Metropolitan Area. They will be predominantly residential, served by a centrally located Designated District providing for retailing, services and employment. The design of these developments needs to provide for access to the rail station from the catchment area by a range of travel modes, including pedestrian, cycle, bus, car and motorbike – and in some cases by Luas. The rail stations will normally be designed as an integral part of the new development. As roads approach the station area, their design/functions will be transformed to be more pedestrian friendly.*

*Town Centres*

*These are planned Designated Towns and a number of key rail interchange locations (including Clonburris) that have the potential for primarily employment uses, as well as providing interchange facilities. A key aim of the design of these developments will be to optimise public transport accessibility and to manage the interchange between rail corridors and the local access requirements for all other modes. Phasing of development at these locations will be critical to ensure that the long term potential is fully utilised. Existing low density uses will normally be replaced with more intensive uses as the development potential brought about by public transport is realised.*

*Inner Suburban Nodes*

*These nodes are generally located outside of the canal ring, but inside the M50 on the existing heavy rail lines (e.g. Cherry Orchard). Such nodes have existing social, community and commercial infrastructure and are ideally suited for regeneration and significant intensification of a mixed use nature with an emphasis on residential. The fragmentary ownership patterns in these areas, coupled with the existing low density development, is likely to constitute a significant barrier to site assembly and comprehensive redevelopment – especially in residential areas.*

*These suburbs are typically characterised by low density (15-20 houses per hectare) terraced or semi-detached houses which were developed between the 1930s and the 1970s, and/or industrial sites. The design/layout of these residential areas is predominantly car orientated, with little regard to the potential of public transport. Developments in these areas will have to overcome the existing constraints in order to maximise their potential.*

*Dublin City Centre*

*The planned heavy rail and Metro routes through the city will provide for key public transport nodes (including Heuston quarter and Spencer Dock) which should act as catalysts for development. Station focussed development in proximity to new stations and to upgraded existing stations will change the development profile of Dublin City.*

*Many of the existing Dublin City hubs have been, or are in the process of being, redeveloped at significantly higher densities than had been the case previously. The future design / layout of the city must reflect its importance within the hierachy of centres both regionally and nationally and must also exploit fully the potential offered by public transport investment and subsequent accessiblity created by the planned Strategy.*

The RPG settlement hierarchy, coupled with a comprehensive public transport network providing for the travel demand between urban centres is essential to meet the targets set down in Smarter Travel. This will provide for competitive journey times by public transport between centres, necessary to compete with the private car and meet economic, social and environmental objectives.

The centres at the top of the hierarchy will be the focal point of the public transport network with the most accessible areas being within Dublin City. Development in the vicinity of public transport nodes will have a mix of uses consistent with their position in the hierarchy and location within the region. It is envisaged that increasingly a 'Hub and Spoke' system will bring passengers from their local centres to their Designated Towns and from there to the wider area. It is essential that local authorities are clear about the scale and function of each centre to ensure that the public transport services can be targeted to meet the planned travel demand.

Designated Districts will also be served by a network of public transport providing access to the wider network through their associated Designated Towns. Bus will play a critical role in serving these areas and future development in these areas as set out above will also be fundamental to the success of the Strategy.

While both Designated Towns and Designated Districts will incorporate the design principles set out in Measure LU2, in the case of Designated Towns, due to their wider economic and social importance, there will be additional design criteria required to maximise the benefits afforded by the wider accessiblity provided by the public transport network. These include:

- Higher density commercial cores in proximity to the public transport nodes;
- Higher density residential development both centrally and in the immediate catchment;
- Higher quality design which makes places attractive and maximises potential investment over time;
- Phased development consistent with the delivery of public transport accessiblity and ensuring that the long term potential is not compromised in the short term;
- Balancing the needs of residential and commercial development especially where they meet, and
- Public transport interchange facilities, both local and strategic, need to be integrated into the overall development of central areas.

Transport planning, for each of the Designated Towns and Designated Districts, is an integral part of the preparation of local authority Development Plans and Local Area Plans. As part of this process, it is recommended that these plans are prepared in consultation with the Authority and address the implementation of the relevant measures contained in the Strategy.

The Development Plan and Local Area Plan measures that are required to meet these goals are set out in Measure LU3 below.

**Measure LU3:**

*Development plans and Local Area Plans should ensure that:*

- *There is a sequential approach to development whereby lands which are most accessible by public transport are prioritised for growth;*
- *Growth in other areas will be limited to that which cannot be accommodated elsewhere in terms of spatial or social characteristics;*
- *Densities will be increased in order to support public transport, walking and cycling with the following considerations:*
  - *Substantially higher densities in Dublin City and at Designated Town rail stations;*
  - *Rail stations in Designated Districts will be the focus of higher densities;*
  - *General increase in densities in all areas where existing or planned public transport accessibility is good;*
  - *Infill areas in existing centres as a priority for increased densities;*
  - *Well-designed neighbourhoods of high architectural quality with dwelling sizes and layouts which provide good quality liveable homes in attractive residential environments; where open space, health and recreation needs are met.*
- *Mixed use development will be the primary pattern of growth in all areas:*
  - *In Dublin City, Designated Towns and in areas around rail interchange points there will be a greater emphasis on commercial development; and*
  - *Development around other rail stations will be predominantly residential with local level commercial activities provided;*
- *The national Smarter Travel objective of achieving the 55% target share of all trips by a combination of public transport, walking and cycling is achieved;*
- *They coordinate with the DoEHLG and DoT policies to ensure there is a homogeneity between the urban centres designated in future plans and strategies (covering population settlements, employment, retail, and other services), relating this directly to their local and strategic accessibility, and particularly in relation to the provision of public transport;*
- *They define the Designated Districts within their areas and the geographical extent of the core centres and of the catchments of Designated Towns and Designated Districts;*
- *Local transport plans, as an integral component element of Local Area Plans or Development Plans, are prepared for each of the Designated Towns and Designated Districts in consultation with the Authority. These plans will address the implementation of the relevant measures contained in the Strategy and will be integrated into the relevant Development Plan or Local Area Plan;*
- *There is cooperation between Local Authorities along boundary areas including the preparation of joint plans where appropriate; and*
- *The strategic transport function of national roads, including motorways, will be maintained by limiting the extent of development that would give rise of the generation of local car traffic on the national road network.*

### *International gateways and speciality land uses*

In the GDA there are two international gateways, namely Dublin Airport and Dublin Port. The role and function of these facilities is of critical national importance, and the management of transport to and from these locations needs to be considered at a regional level to ensure their efficient operation.

Both the Port and Airport have a key role in freight movement, and the role of HGV movement to and from these sites must be reflected in the planning of the local and strategic road network.

Dublin Airport is a major trip attractor, both in terms of incoming and outgoing passengers, but also as a significant employment centre. Public transport must be the primary focus for the movement of visitors and employees to and from Dublin airport.

The GDA has a number of nationally important hospitals (including, for example, the National Children's Hospital, the National Maternity Hospital, Mater and Beaumont) and educational institutions (including for example Trinity College, UCD, Maynooth, DCU and DIT) These are locations that attract a large number of visitors, students and employees. It is important that movement within their local catchments is catered for by prioritising walking and cycling, while also considering their national role which will require access by public transport and by private car. The management of these sites should be covered by comprehensive Travel Plans.

There are a number of specific locations in the GDA which play host to major sporting, musical and cultural events (such as Croke Park and Lansdowne Road stadia, RDS, National Convention Centre) These venues require special consideration in terms of transport planning, as the travel patterns of visitors tend to be concentrated into a very confined time period and can vary widely in origin.

Although the transport system is not designed to permanently cater for such events, it is important that the Strategy makes provision for the safe and efficient management of the transport requirements of these venues. A transport management plan should be agreed between the local authority, Gardaí and event organisers to ensure that visitors and local residents/ businesses are optimally catered for. The transport management plan should prioritise the movement of pedestrians and public transport, whilst also considering private car transport in terms of parking and traffic management.

## 8.5 Parking supply

The supply and management of parking at a destination is a key mechanism by which development can be encouraged to locate in the most appropriate areas from a sustainable transport point of view. The application of maximum parking standards (i.e. the maximum number of parking spaces that a developer can provide) is central to the management of transport 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 developments, and the allocation and design of space in urban areas. The Authority considers the application of maximum parking standards at a region-wide level to be a key measure in addressing these issues in an equitable and structured fashion.

The use of floorspace thresholds above which the standards only apply, enables flexibility for small-medium scale developments – particularly those that generate local employment – to occur in areas which are not as well served by public transport and not as accessible by walking and cycling. These standards are a positive measure to promote proper and sustainable development in the right locations.

The level at which maximum standards are set is of great importance. Where they exist, maximum standards are usually applied with varying degrees of constraint, on the basis of defined locational factors such as centrality and public transport accessibility. Related to these attributes, the application of parking standards would normally vary inversely with density. The introduction of maximum standards at a region-wide level would represent a key transport demand management measure for the GDA, of particular importance in influencing mode choice to office, retail, education and some leisure uses.

**Measure LU4:**

- *The Authority will seek that all non-residential development proposals in the GDA should be subject to maximum parking standards. Table 1 shows a number of these land uses and sets out regional maximum standards which should apply to them.*

**Table 8.1: Proposed Regional Maximum Parking Standards (for certain land uses)**

| | Maximum Parking Standards (per floor area unless otherwise specified) | Threshold from and above which standard applies (gross floor space) |
|---|---|---|
| Employment, including Offices | 1 space per 50m$^2$ | 1,500m$^2$ |
| Food Retail | 1 space per 14m$^2$ | 1,000m$^2$ |
| Non Food Retail | 1 space per 20m$^2$ | 1,000m$^2$ |
| Cinemas and Conference Facilities | 1 space per 5 seats | 1,000m$^2$ |
| Higher and Further Education | 1 space per 2 staff +1 space per 15 students | 2,500m$^2$ |
| Stadia | 1 space per 15 seats | 1,500 seats |

- *While the above table provides a regional maximum standard, significantly more restrictive provision should apply in Dublin City, Metropolitan Designated Towns and in areas of good 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.*
- *While the above table represents regional maximum parking standards, the Authority will publish guidance on more restrictive car parking standards appropriate for specific locations, or types of locations, in the GDA, where good quality public transport alternatives are available.*

While the standard set out in Table 8.1 is intended to reflect a regional standard, more restrictive maximum parking standards would be expected to apply in many areas, in particular where higher levels of public transport accessibility are achievable. Such higher standards should tend towards those achieved in Zone 1 of the Dublin City Development Plan, which the Authority fully supports as an example of the effective use of car parking policy for necessary demand management. Step changes at local authority boundaries should be avoided.

In locations where the highest intensity of development occurs and is promoted (e.g. Dublin City, Designated Town centres and around rail stations), an approach that caps the numbers of car parking spaces on an area-wide basis should also be considered. This measure is aimed at controlling congestion, enabling higher development densities, improving the public realm and encouraging/ facilitating access by non-car modes, whilst continuing to maximise development potential. The use of such a measure should also be considered at major trip attractors such as large third level institutions, Dublin Airport, and other such developments.

Other parking considerations related to planning policy include, where appropriate, the provision of park and ride facilities at specific public transport nodes, where they can achieve the following:

- Support other public transport objectives, and
- Facilitate a reduction in car-based travel.

## 8.6 Environmental Considerations

The planning measures necessary to achieve the Transport Strategy objectives will be implemented through the Regional Planning Guidelines and County/City Development Plans and subsequent reviews up to 2030. These plans are subject to Strategic Environmental Assessment (SEA) which requires the assessment of alternative approaches to the accommodation of growth, and a quantification of the effects on the environment of the patterns of development and policies as proposed in the plans. The plans are also subject to a Habitats Directive Assessment (HDA) which requires that Appropriate Assessment of development plans and projects will take place at the relevant stage and level in the hierarchy. The Authority will monitor progress in this regard and update and review the Strategy should these plans differ significantly from the land use assumptions used in this strategy, with the following overarching guiding principles in mind:

- The accommodation of population and employment growth, and associated supporting services, should occur in a manner that will not have any significant adverse impacts on the environment in the GDA; and
- The integrity of Natura 2000 sites should be protected at all levels in the land use planning hierarchy.

The findings of the Appropriate Assessment of the planning and land use policies and objectives proposed in this Strategy are presented in the Natura Impact Statement. It is not anticipated that significant impacts on the conservation objectives of any Natura 2000 site will result from the implementation of these policies and objectives.

# Chapter 9
# Walking and Cycling

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## 9.1 Introduction

The Strategy envisages the Greater Dublin Area becoming a recognised city-region for walking and cycling, with a walking and cycling environment that is attractive, safe and designed with the pedestrian and cyclist in mind at all times.

Increasing the share of people travelling on foot and cycle supports all the objectives of the Strategy, and the success of the Strategy is fundamentally dependent on achieving such an increase. Increasing the share of walking and cycling journeys will:

- Reduce traffic congestion;
- Improve air quality and reduce transport's impact on climate change;
- Contribute to social interaction and the vitality of the public realm;
- Support the local retail economy and tourism;
- Provide health benefits in a convenient way to those participating; and
- Complement more compact and mixed use development styles in urban areas which can contribute to the quality of the built environment and reduce the need to travel.

The large majority of walking trips are less than two kilometres in length. More people walk regularly than regularly use any other means of travel and many motorised journeys, including nearly all journeys by public transport, begin or end with a walk.

Cycling journey distances tend to be longer than walking, with most trips between two and six kilometres in length. This is still relatively short when compared to average journey lengths by motorised modes of travel.

Attributes that contribute to a high level of walking and cycling include:

- A safe and convenient walking and cycling environment that meets user needs;
- Avoiding undue delays to pedestrians and cyclists, particularly at junctions;
- Good quality facilities, including good quality surfaces on footpaths and cycle tracks;
- A secure travel environment; and
- Careful planning of developments to make walking and cycling attractive and convenient travel choices.

These are addressed in more detail below.

Because of the scale of walking and cycling and the potential for further growth, particular attention needs to be given to improving the walking and cycling experience in Dublin city centre, in other town centres and in residential areas.

### 9.2 Walking and cycling in town centres

The investment in rail and bus infrastructure and services proposed in the Strategy will dramatically improve the accessibility of Dublin city centre and other town centres in the Greater Dublin Area (see Chapter 12 – Expected Outcomes).

Once in the city centre or a town centre, people movement needs to take priority over vehicle movement. Giving greater priority to pedestrians and cyclists over motorised vehicle traffic in town centres will make these centres more attractive places to visit and stay thus providing benefits to town centre economies.

Examples of ways to facilitate pedestrian and cyclist movements in town centres include:

- Streets or zones where vehicles are permitted for access purposes only (i.e. no through motorised traffic);
- Restriction of a street to certain classes of vehicles (e.g. cycles, buses and taxis);
- The relocation of traffic queues away from centres to where congestion is likely to impact less on public transport users, cycles and pedestrians; and
- Full pedestrianisation of a street or group of streets (more appropriate on streets where there is likely to be significant all day pedestrian activity)

**Measure WCY 1:**

*The Authority will seek:*

- *Restrictions on general motorised traffic travelling through the heart of Dublin city centre and other town centres, by diverting through traffic onto suitable alternative routes, whilst permitting through movement for buses, trams or taxis where necessary; and*
- *The retention of access for town centre deliveries and visitor car parking in appropriate locations and at appropriate times.*

Appropriate access to visitor car parking is required for those visiting Dublin city centre. Car borne shopping plays an important role in supporting the city centre economy.

Lower speed limits in town centres will be introduced to improve safety for cyclists and pedestrians, reduce noise and create a more pleasant environment.

**Measure WCY 2:**

*The Authority will seek reductions in traffic speeds in town centres, and the application of a 30km/h speed limit in appropriate areas in the commercial and retail core of Dublin city centre and other town and village centres.*

Schemes to reconfigure town centre streets will be required to allow for easier people movement and to create or enhance outdoor spaces where people can comfortably browse, stop or chat. As part of such schemes, opportunities should be taken to provide high quality footpath surfaces, seating, planting and cycle parking spaces. Town centre footpaths should be widened where beneficial, and clutter such as redundant signs and poles should be removed, and other street furniture rationalised where possible.

Footpaths on the approaches to town centres, including routes from public transport, should also be widened where necessary for pedestrian safety and convenience. Pedestrian delays in crossing streets in town centres should also be reduced (see Section 9.4.2 'Improving pedestrian crossing facilities').

**Measure WCY 3:**

*The Authority will seek:*

- *Reconfigurations to street space including widening of footpaths and rationalisation of street furniture, poles and signs, and removal of redundant poles, signs or other clutter in Dublin city centre and other town centres and their approaches, to allow for easier people movement, to enhance the quality of the urban realm and to provide more space for people on foot, seating, planting and cycle parking as appropriate;*
- *To ensure that local authorities develop streetscape design and maintenance guidelines for town centres, historic areas, areas of civic importance and elsewhere, as required, and that streetscape interventions are audited for compliance with the relevant guidelines; and*
- *Improvements to walking and cycling routes approaching town centres, public spaces and areas of civic importance.*

## 9.3 Walking and cycling in residential areas

Residential environments should support social interaction, and encourage a sense of community. Careful design of residential areas to support ease of movement for pedestrians and cyclists and to prioritise them over motorised traffic is essential to achieve this goal.

Residential streets will need to be increasingly seen as places for people to use and enjoy rather than simply roads for vehicle movement. Substantial reconfiguration of many existing residential roads and streets will be required.

Particular attention will need to be given to:

- Reducing traffic speeds in residential areas through traffic calming or other means;
- Tightening up of junctions to make them easier to cross on foot, and safer for cycles to negotiate;
- Providing more direct walking and cycling links from residential areas to local centres and to public transport services on main roads;
- The use of better quality footpath materials and improved landscaping and streetscaping along footpaths;
- Suitable lighting, with residential frontages overlooking pedestrian routes; and
- The provision of additional pedestrian crossing points away from junctions.

Consideration will also be given to the redesign of certain residential streets and neighbourhoods to provide a "shared space" environment where the whole street (footpath and carriageway) becomes a multi-use space, with unambiguous priority for people over vehicles[30].

30 The legislative basis for such designs will be addressed in the forthcoming DoEHLG/DoT *Manual for Streets*

**Measure WCY 4:**

*The Authority will seek:*

- *The application of a speed limit of 30kph on appropriate residential roads and streets and in the vicinity of schools;*
- *The design of new residential areas to provide a safe and pleasant movement environment for pe-destrians and cyclists, including suitable lighting, with residential frontages overlooking, and provision of appropriate landscaping and streetscaping features along routes;*
- *The reconfiguration of residential street space to create a safer and more attractive environment for pedestrians and cyclists; and*
- *The use by designers of the design guideline principles and approaches for residential areas set out in the Authority's National Cycle Manual and forthcoming Walking Facilities' Manual, and DoT/DoEHLG 'Manual for Streets'.*

## 9.4 Walking

Previous Sections 9.2 and 9.3 addressed approaches and measures common to both cycling and walking modes. This Section focuses on measures specific to walking only.

The Strategy proposes a multi-pronged approach to walking, including:

- Improvements to footpaths;
- Reductions in pedestrian delays when crossing streets;
- New and enhanced leisure walking routes;
- Appropriate planning to provide walking opportunities and pedestrian friendly developments, and provision of walking design advice for a local authority engineer, planner and private developer audience;
- Better information on walking and communicating the benefits of walking; and
- Enforcement of traffic laws against offences that impede pedestrian movement.

The means of achieving these improvements are set out below.

### 9.4.1 Improving footpaths

An effective way of identifying how walking routes and facilities could be improved is through a 'walkability' audit, that considers the current network and identifies where there are missing links, mobility issues for certain people or where the level of service could be improved.

The use of good quality footpath materials makes the walking experience more pleasant, and improves the public realm. Particular attention needs to be paid to the improvement of pedestrian environments in town centres as set out in Section 9.2 and on approaches to public transport stops or stations.

**Measure WCY 5:**

*The Authority will seek:*

- *The provision of adequately lit footpaths on both sides of roads and streets in built up areas, except in exceptional circumstances;*
- *The provision of footpaths alongside roads in rural areas where pedestrian safety is a concern, subject to appropriate pedestrian demand;*
- *The widening of existing footpaths, where these are too narrow to comfortably and safely cater for pedestrians wishing to use them, including wheelchair users and those with buggies or prams;*
- *The maintenance of footpaths to a good standard, and where appropriate the upgrade of footpath surfaces with higher quality materials; and*
- *Audits of existing footpaths, identifying existing constraints and barriers to pedestrian movement such as redundant poles, signage, guardrails or telephone kiosks followed by removal or relocation of barriers or clutter where appropriate, whilst taking account of signage requirements.*

### 9.4.2 Improving pedestrian crossing facilities

Crossing points need to be safe and easy to use, especially for mobility impaired and disabled people. Pedestrian islands, where provided, need to be large enough to cater for adults with children, and those in wheelchairs.

Formal crossing points either in the form of pedestrian signals or zebra crossing facilities need to be provided wherever required for pedestrian safety and convenience, and where they are provided, they should be on all arms of the junction to the extent practicable.

For safety and convenience reasons, crossing points at junctions should be as direct as possible. Existing junctions should be reviewed to identify opportunities for redesign and simplifications to improve pedestrian safety and ease of use, aiming to reduce crossing distances, provide more direct walking routes and reduce the speed of turning traffic. This will be achieved in a variety of ways, including:

- Reducing turning radii by redesign of kerbs at junctions;
- Moving crossing points closer to the line of movement of pedestrians;
- Eliminating slip lanes for turning traffic; and
- Replacing staggered crossing arrangements with direct crossings of junction arms, where appropriate.

Pedestrian delays in crossing at signalised junctions need to be addressed and reduced.

Pedestrian delays can be reduced at junctions by reducing overall signal cycle times, providing additional periods of green time for pedestrians and providing for diagonal crossing at certain junctions.

Pedestrian crossing delays away from junctions can also be reduced, by the provision of zebra crossings or rapid response pedestrian signals. Existing isolated signal crossings need to be adjusted to rapid response unless there are exceptional reasons for not doing so.

In certain circumstances, zebra crossings have additional benefits over pedestrian signals because they:

- Minimise the waiting required by motorists for a pedestrian to cross away from a junction;
- Are easier to introduce in many areas where it might be more difficult to justify a traffic signalled pedestrian crossing due to lower pedestrian crossing volumes; and
- Can be cheaper to provide.

**Measure WCY 6:**

*The Authority will seek:*

- *The provision of tactile paving and the raising of carriageways or lowering of kerbs at pedestrian crossing points and the provision of audible signals at controlled crossing points, where appropriate, to assist mobility and hearing impaired people and those with buggies or prams;*
- *Revisions in junction layouts where appropriate, to reduce pedestrian crossing distances, provide more direct pedestrian routes and reduce the speed of turning traffic;*
- *The provision of zebra crossing points or pedestrian signals on all junction arms, at junctions where it is likely to be beneficial to pedestrian safety or convenience, starting with junctions on major roads and with higher pedestrian numbers;*
- *The adjusting of traffic signal controls where appropriate to reduce the wait time for pedestrians in town centres and other built up areas or to increase the crossing time allocated to pedestrians;*
- *Additional pedestrian crossing points away from junctions, with greater use of zebra crossing facilities or rapid response pedestrian signal facilities; and*
- *Provision of wheelchair and buggy friendly pedestrian islands where islands are provided at crossing points.*

### 9.4.3 Walking for leisure

Walking for leisure provides benefits to health and wellbeing, and supports tourism.

The Strategy will support improvements to leisure walking routes, and seek good walking links to leisure routes from surrounding areas. This is also in keeping with the Greater Dublin Area Regional Planning Guidelines Actions on Green Infrastructure Development.

**Measure WCY 7:**

*The Authority will*

- *Support existing leisure walking routes and the provision of additional leisure walking routes along river and canal corridors and in the countryside together with provision of facilities for leisure walkers, including seating and picnic areas; and*
- *Seek improvements to walking links:*
  - *From surrounding areas to leisure walking routes; and*
  - *Between leisure routes that are in proximity to each other.*

### 9.4.4 Development planning to support walking

It is important that pedestrian needs are considered at all stages of the statutory planning process. Local authorities play an essential role in this regard.

**Measure WCY 8:**

*The Authority will:*

- *Seek the inclusion in Local Authority Development Plans of policies and specific measures to support walking and improvements to walking facilities;*
- *Seek the provision in Strategic Development Zones, Local Area Plans and planning permissions of direct, convenient and high quality pedestrian routes within new development areas and linking to the surrounding area and public transport access points, including new pedestrian bridges where appropriate; and*
- *Publish guidelines on designing for walking and pedestrian access, in the form of a Walking Facilities Manual.*

To assist local authorities and developers in addressing the needs of pedestrians in existing areas and new developments, the Authority will publish guidelines on designing for walking in the form of a Walking Facilities Manual. The forthcoming 'Manual for Streets' under preparation by the Department of Transport and Department of the Environment, Heritage and Local Government, will also provide relevant guidance.

### 9.4.5 Walking information and marketing

Walking routes to any destination will be available through the Authority's national multi–modal journey planner (see section 10.5.2). In addition, paper maps and increasingly over time, mobile devices, will help tourists and other visitors find their way about an unfamiliar area on foot. Good on-street wayfinding information will further assist in this regard.

The benefits of walking will be promoted, especially in built up areas, as part of sustainable travel awareness and public health campaigns, and workplace and school travel plans (see Chapter11).

**Measure WCY 9:**

*The Authority will:*

- *Provide online information on walking routes to destinations via its national multi-modal journey planner;*
- *Seek the provision of direction signage, including walk times, for those travelling on foot to key destinations, such as important buildings, public spaces and public transport facilities;*
- *Seek the provision of on-street walking maps in Dublin city centre and other town centres; and*
- *Promote the benefits of walking, working with government departments, local authorities and others to target areas where the potential for additional walking is highest (also see Chapter 11).*

### 9.4.6 Enforcement

Obstructions in pedestrian spaces inconvenience pedestrians and can create an unsafe environment, particularly for those in wheelchairs and buggies.

**Measure WCY 10:**

*The Authority will seek the enforcement of the law relating to encroachment on footpaths and pedestrian crossings by motor vehicles, cyclists, skips and other obstructions.*

## 9.5 Cycling

Previous Sections 9.2 and 9.3 addressed approaches and measures common to both cycling and walking modes. This Section focuses on measures specific to cycling.

The Strategy aims to increase the share of cycling journeys, especially in built up areas.

There has been a large increase in cycling in Dublin city in recent years. The Strategy aims to build on this and encourage a greater share for cycling, especially in built up areas, with:

- Improvements in the cycling environment in Dublin city centre, other town centres and their approaches, where shorter trips tend to take place and the potential for increased cycling is highest;
- New or enhanced leisure routes for cycling;
- The expansion of the Dublin city centre on-street cycle hire scheme;
- Adequate cycle parking provision;
- Use of the planning system to promote cycling opportunities;
- Training for new or returning cyclists;
- The marketing of cycling as a travel option, particularly for those of school going age and for those living in more central areas where most shorter trips are made; and
- Better enforcement to encourage safer driver and cyclist behaviour.

These are elaborated upon below.

Means of improving the integration of cycling and public transport are set out in Section 10.5 'Making public transport easier to use'.

### 9.5.1 Improving the cycling environment in built up areas

If cycling numbers in built up areas are to grow, the cycling environment needs to become more pleasant, and to be perceived as safe for cyclists.

Dublin city centre has by far the largest number of short journeys to work in the Greater Dublin Area. Other Metropolitan Designated Towns where a large number of short journeys to work take place include Dundrum/Sandyford, Clondalkin, Blanchardstown, Bray, Dun Laoghaire and Swords. Larger Hinterland Designated Towns (for example Naas and Navan) also have a significant number of short journeys to work. By virtue of the number of short journeys, all these areas have potential for a growth in cycling numbers.

In providing a quality cycling environment for these towns, an emphasis will be placed on measures for central areas and inner approaches first, where cycling potential is highest, followed by addressing areas further from the centre.

High quality cycling arteries, targeted particularly at commuters, will be introduced, or enhanced as necessary, in and on key radial approaches to Dublin city centre and Metropolitan Designated Towns. These corridors will provide safe, coherent and direct routes to central areas from surrounding residential areas. Again, the emphasis will be on improving the cycling environment on inner approaches to the centres first and the quality of service provided to cyclists will be at its highest in these inner areas.

The cycle network will consist of:

- Primary network – main cycle arteries in and on the approach to larger centres and Dublin city centre, which carry the most cycle traffic;
- Secondary routes – connections from the primary network to local areas; and
- Cycling routes targeted at leisure cyclists or with a dual leisure/commuter function, including links that are part of the National Cycle Network, or that connect to it.

Local streets should be cycle friendly without the need for dedicated cycling infrastructure, and should be connected to the overall cycle network.

**Measure WCY 11:**

*The Authority will:*

- *Target measures to improve the cycling environment in areas where there is the greatest potential for trips in cycling distance range. These areas will include Dublin city centre, the Metropolitan Designated Towns, Hinterland Designated Towns, and their approaches;*
- *Seek the provision of high quality cycling corridors, in and on the key radial approaches to Dublin city centre and Metropolitan Designated Towns;*
- *Place an emphasis on improving the cycling environment in town centres and their inner approaches before other areas of the network; and*
- *Seek the cooperation of Local Authorities and other relevant agencies in taking an integrated approach to cycle network implementation.*

Means of improving the cycling environment will vary by location and traffic conditions, and include:

- Reducing the volume of motorised traffic;
- Reducing traffic speeds;
- Improving cyclist priority and safety at junctions;
- Providing segregated on-street cycle lanes, or off-road cycle tracks, where speeds or volumes of traffic remain high;
- Providing more direct routes for cyclists; and
- Reducing wait time for cyclists at junctions through traffic signal control adjustments.

The overriding principle for good cycle facilities is that they should be easy to use – safe, coherent, direct, attractive and comfortable.

**Measure WCY 12:**

*The Authority will seek the introduction of measures to improve the cycling environment in targeted areas; such measures will include:*

- *Lower speed limits in centres, residential areas and in built up areas (see Sections 9.2 and 9.3);*
- *Reductions in motorised traffic in central areas (see Section 9.2);*
- *Improving cyclist priority and safety at junctions;*
- *Providing high quality segregated cycle lanes, or off road cycle tracks, where speeds or volumes of traffic remain high;*
- *Providing more direct routes for cyclists, including the introduction of cycle contra-flow lanes on one-way streets, and the creation of new pedestrian and cycle only links where appropriate;*
- *Subject to feasibility and space constraints, the provision of cycle lanes alongside bus lanes and certain light rail corridors where this would form a useful addition to the cycle network; and*
- *Traffic signal control adjustments at junctions to reduce average wait time (this also benefits pedestrians - see section 9.4.2).*

### 9.5.2 Recreational cycling

Recreational cycling facilities are a major benefit to people's health and wellbeing and are a good way of introducing people, especially children, to cycling. They also support the growing cycling tourism market in the region.

The Strategy proposes that coastal, canal and riverside cycle tracks will be developed and that larger parks throughout the Greater Dublin Area will be opened to cyclists. In many cases, leisure routes may double as routes for commuters (for example, routes alongside the Grand and Royal Canals)

The provision of these routes is consistent with the Green Infrastructure Actions identified in the Greater Dublin Area Regional Planning Guidelines.

In line with the Department of Transport National Cycle Policy framework, designated rural cycle networks will also be provided, especially in more scenic areas, or other areas where tourist and leisure users are likely to visit.

Safe cycle access to these facilities from surrounding built-up areas is essential if they are to be used. Cycle networks in and around urban areas will link into facilities targeted at leisure users and tourists, and where appropriate, the wider National Cycle network.

**Measure WCY 13:**

*The Authority will seek:*

- *The provision of coastal, canal and riverside cycle tracks, including:*
  - *Royal Canal and Grand Canal Routes;*
  - *Sutton to Sandycove coastal route;*
  - *Tolka and Dodder Routes;*
- *The opening to cyclists of the larger public parks throughout the Greater Dublin Area;*
- *The provision of a designated National Cycle Network in line with the Department of Transport National Cycle Policy framework, and provision of safe and attractive cycle links between the GDA Cycle network and the National Cycle Network; and*
- *The provision of a safe and attractive cycling environment in other rural and scenic areas where tourist and leisure cyclists are likely to visit.*

Appropriate Assessment of this Strategy has identified the possibility that development of some sections of the proposed Sutton to Sandycove cycle track may have impacts in relation to 'Natura 2000' sites. This is dealt with in the Natura Impact Statement, which has identified that that this should be further addressed through project-level Appropriate Assessment. (See also Section 13.5 "Environmental considerations").

### 9.5.3 Public cycle hire schemes

The Dublin city centre cycle hire scheme introduced by Dublin City Council in 2009 has proved very successful. The benefits include:

- Those new to, or returning to, cycling have discovered an easy and cheap means of trying it out;
- New cyclists have endorsed cycling, encouraging others to give it a try;
- Additional cyclists raise driver awareness of cyclists and change their driving behaviour; and
- Promotion of tourism by facilitating leisure cycling.

**Measure WCY 14:**

*The Authority will support the expansion of the city centre cycle hire area and will consider supporting similar schemes in other town centres, where shorter trips are common.*

### 9.5.4 Cycle Parking

The provision of secure cycle parking at cycling destinations is essential for cycling to be an attractive travel option. For this reason, additional cycle parking at popular cycling destinations is required. Secure cycle parking provision at schools and workplaces is also needed to enable an increase in cycling to school and work.

Cycle parking will also be needed at key bus and rail stations in town centres and at Metro and suburban rail stations, Luas stops and busier bus stops. Public transport related cycle parking should be secure, sheltered (to the extent practicable) and located as conveniently as possible in relation to platforms or waiting areas. The amount of cycle parking required will need to be assessed on a case by case basis. Surveys of informal cycle parking in the area around the stop or station should be undertaken and consideration of potential sources of growth in cycle demand should inform decisions in this regard.

Where cycle parking is provided, sufficient space for expansion of that parking will need to be left available, should uptake exceed initial expectations.

#### *Public cycle parking*

**Measure WCY 15:**

*The Authority will seek the provision of:*

- *Secure on-street cycle parking in Dublin city centre and other town and village centres, in particular close to major retail, leisure or cultural destinations;*
- *Secure sheltered on-street or public off-street cycle parking at major destinations, for longer stay pur-poses; and*
- *Secure sheltered cycle parking to meet demand at heavy rail and Metro stations, Luas stops, bus stations and busier bus stops, particularly on higher quality QBC routes.*

#### *Cycle parking at schools and other educational facilities*

Providing cycle parking at schools can have an immediate impact in increasing the numbers of students cycling to school, and for this reason the Authority will support school cycle parking provision or expansion of existing cycle parking at schools and third level institutions. Spaces will need to be secure, sheltered and convenient for students to use.

*Cycle parking at workplaces*

The Department of Transport's National Cycle Policy Framework sets a target of 10% of employees cycling to work by 2020. To support this target, cycle parking provision at workplaces will need to be increased. Standards should differ by area, with higher provision in more centrally located areas and for more employment intensive uses such as offices. Development plans should specify that spaces are securely located and sheltered.

**Measure WCY 16:**

*The Authority will seek the provision of secure, sheltered on-site cycle parking and supporting facilities for cycle commuters at:*

- *Schools and other education facilities;*
- *Workplaces; and*
- *Other destinations likely to attract cyclists.*

*It will seek the incorporation into local authority Development Plans of minimum cycle parking standards set out in the Authority's National Cycle Manual.*

Opportunities for providing similar parking provision at existing workplaces should be examined. Parking at workplaces should preferably be accompanied by clothes changing facilities/ lockers for cyclists, and ideally shower facilities, particularly in the case of larger employers.

### 9.5.5 Development planning to support cycling

It is important that cyclist needs are considered at all stages of the statutory planning process. Local authorities will play an essential role in this regard.

Guidelines to assist local authorities and developers in addressing the needs of cyclists in existing areas and new developments are set out in the Authority's National Cycle Manual. The forthcoming 'Manual for Streets' under preparation by the Department of Transport and Department of the Environment, Heritage and Local Government will also provide relevant guidance.

**Measure WCY 17:**

*The Authority will:*

- *Seek the inclusion in Local Authority Development Plans of policies and specific measures to support cycling and improve the environment for cycling particularly in areas identified in this Strategy;*
- *Seek the provision in Strategic Development Zones, Local Area Plans and planning applications of direct, convenient and high quality cycling environment within new development areas and linking to facilities in the surrounding area; and*
- *Support training of designers in local authorities and consultancies in the application of the Authority's National Cycle Manual.*

### 9.5.6 Cycle training

Cycle training for students is currently being implemented by a number of local authorities. In line with the National Cycle Policy Framework objectives, cycling education and training should be part of the school curriculum for all primary and secondary levels in the Greater Dublin Area.

The curriculum should include desk-based (theory), school-yard and graded road-based cycling training (this would include cycling along quieter residential streets and busier roads in mixed traffic). The training should emphasise issues such as practical on-road skills and basic bicycle maintenance.

The Authority will also seek the provision of cycling training for adults – both for those returning to cycling and those who have never cycled before. This could be based for example on the UK 'Bikeability' programme[31], where trainees are taught how to deal with the different types of cycling environment that they are likely to experience.

31 http://www.dft.gov.uk/bikeability/

**Measure WCY 18:**

*The Authority will:*

- *Seek that cycling education and training becomes part of the school curriculum for all primary and secondary levels in the Greater Dublin Area;*
- *Facilitate cycle training for schoolchildren through the Authority's Smarter Travel Schools programme;*
- *Seek provision of cycling training for adults – both for those returning to cycling and those who have never cycled before; and*
- *Support driver training to encourage consideration of cyclists.*

### 9.5.7 Cycling information and promotion

Cycling route signage is beneficial on the approach to urban centres and other key cycling destinations. Cycle network maps will be available on the Authority's website, and an on-line journey planner incorporating cycling options will be developed.

The Authority will support the marketing of cycling to counter any negative perceptions and emphasise the health benefits and convenience of cycling. The focus will be on those people who currently make shorter trips by car, particularly trips that might be beyond walking range.

Marketing of cycling will also emphasise the strong growth in cycling that has taken place in Dublin in recent years.

**Measure WCY 19:**

*The Authority will:*

- *Pursue the provision of cycling route signage on the approach to urban centres and to other key cycling destinations;*
- *Provide up to date cycle network maps on the Authority's website;*
- *Incorporate cycle route options into its on-line multi-modal journey planner; and*
- *Promote the benefits of cycling, targeting geographical areas and groups (including workplaces and schools) where potential for growth in cycling is highest.*

### 9.5.8 Enforcement

All road users have responsibilities to behave in a safe manner towards others. Appropriate enforcement of traffic regulations should create a safer and more pleasant environment for pedestrians, cyclists and drivers alike.

**Measure WCY 20:**

*The Authority will support enforcement of traffic regulations in relation to traffic lights, speeding, overtaking behaviour, parking or driving in cycle lanes, and cycling in an unsafe manner.*


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# Chapter 10
# Public Transport


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## 10.1 Introduction

Public transport is essential for the economy of the Greater Dublin Area. It is the only means of transport that can provide the capacity needed to move the large volumes of people who travel to work, education, shops and leisure facilities in the Greater Dublin Area each day. It also enables much of the business and tourist travel in the region.

It reduces transport's impact on the environment by providing an alternative to the car and supports a more consolidated, compact form of development in the Metropolitan Area in particular, which also reduces the need to travel.

Half of Dublin's residents of driving age do not own a car. Public transport meets an essential social need for those without access to a car.

Attributes that contribute to a high level of public transport use include:

- A well designed public transport network that optimises routes to meet user needs;
- Frequent, on-time services with reliable journey times and sufficient capacity;
- A high level of priority for street-running public transport, to reduce delays and improve journey time reliability;
- Appropriate facilities at stops and stations, including real time arrival information, shelters, seating and easier boarding/alighting arrangements; and
- Attractive, comfortable, clean and modern vehicles.

These are addressed in more detail in the Bus and Rail sections 10.2 and 10.3 below.

Making public transport easier to use also makes it more likely that it will be used. Means of improving ease of use include:

- Better integration of public transport information across all modes and operators;
- Easier arrangements for passengers transferring between public transport services or from car;
- Simplified fares and ticketing arrangements;
- A more secure travel environment;
- Planning of retail, commercial and residential developments to make them more accessible by public transport; and
- Improved access arrangements by walking and cycling from surrounding areas.

The measures proposed by the Authority under these headings are set out in detail in Section 10.5 'Making public transport easier to use'.

## 10.2 Bus and coach

### 10.2.1 Overview

Over the lifetime of the Strategy, bus will continue to be the predominant public transport mode in terms of network coverage throughout the Greater Dublin Area. Outside of the corridors served by rail, buses will be the nucleus of the public transport offering, providing services over a large geographic area to a widely dispersed population.

Within the Metropolitan Area, the role of the bus network will be particularly pronounced in the period in advance of delivery of the proposed new suburban rail, Metro and Luas services (see Section 10.2.2 below). While the implementation of those projects will provide new alternatives in the particular transport corridors, the bus network will still continue to serve local transport needs, providing links to rail services and delivering services in corridors not served by rail. Bus will, therefore, continue to play a pivotal role in the region's transport provision in the longer term.

### 10.2.2 Bus services

A major bus network reform programme is currently ongoing in the Dublin area – the Network Direct project. As part of this project, the bus network in the Dublin area is being significantly simplified, with more direct services being introduced and a greater matching of service capacity to passenger demand. More cross-city routes are being introduced and the number of routes terminating in the city centre area is being reduced.

Following full implementation of the Network Direct project, the bus network will continue to be further reviewed and developed over the lifetime of the Strategy.

Changes to bus services will be focussed on passenger needs. Population and employment growth and changes to where people live and work, shop or spend their leisure time will need to be taken into account. The location of major destinations such as hospitals and education facilities may also change over time and the bus network will be revised to respond to these changes.

Bus services will need to complement and support the investment in rail that will occur over the lifetime of the Strategy. Integrating with the expanded rail network will lead to bus route changes and new routes.

**Measure BUS1:**

*The Authority will regularly review the network of bus services and implement modifications as appropriate.*

*In such reviews, the Authority will seek to provide:*

- *Bus frequencies and operating times that appropriately match demand;*
- *Better bus service coverage in built-up areas that are not well served by rail;*
- *Improved bus services to disadvantaged areas, where appropriate;*
- *More direct and reliable access to local town centres, employment areas, hospitals, third level institutions and other major activity centres;*
- *Services that cater for growth in population and employment; and*
- *Better public transport integration, by providing good interchange opportunities with other services, as the public transport network evolves.*

Bus service characteristics will vary by area. A guide as to how services will operate is presented in the following sections.

*Metropolitan services*

The focus of the Metropolitan bus network will remain Dublin city centre, as the largest centre of retail and employment activity. Future development consolidation will require enhancements to the network of bus services for Designated Towns and Designated Districts in the outer Metropolitan Area. Local bus services will operate as required throughout the Metropolitan Area, linking to Designated Towns and Designated Districts and connecting to key public transport interchange points as well as meeting essential social needs.

**Measure BUS 2:**

*The Authority will seek the operation of:*

- *Frequent and direct bus services from the Metropolitan Designated Towns to Dublin city centre operating with, at a minimum, a 10 minute frequency at peak times and a 20 minute off-peak frequency, supplemented by frequent inner suburban bus services increasingly operating across the city centre;*
- *Orbital bus services providing linkages between the Metropolitan Designated Towns and operating with, at a minimum, a 15 minute frequency at peak times and a 30 minute frequency at off-peak times; and*
- *Frequent local bus services linking residential areas to Designated Districts and to nearby Designated Towns and serving shopping areas, employment areas and other activity centres, and connecting to key public transport interchange points.*

*Local Hinterland services*

While the planning measures aimed at consolidating development (see chapter 8) should ensure that many smaller towns and villages in the Hinterland area will remain at a walkable scale, the Hinterland Designated Towns and certain of the Designated Districts are likely to require local bus services, subject to anticipated population increases. The level of service to be provided will be dependent on the developed scale of the Designated Town and /or Designated District.

To maximise usage of such services, careful matching of timetables to intersecting rail and longer distance bus services will be required.

**Measure BUS 3:**

*The Authority will seek the provision or retention of local bus services in the Hinterland Designated Towns (Navan, Naas-Newbridge, and Wicklow), subject to anticipated population increases. Such services will be focussed on providing intra-town movement as well as linking to key centres and onward transport connections. As a guide, a minimum daytime service frequency of 20 minutes will be sought.*

In the case of the Hinterland Designated Towns, and subject to sufficient passenger demand, part of the local bus service role will be to provide connectivity from the adjacent Designated Districts to the relevant Designated Town.

**Measure BUS 4:**

*The Authority will seek the provision of local bus services to link adjacent Designated Districts to each other and to nearby Designated Towns, subject to sufficient passenger demand.*

Local bus services (including those serving Hinterland villages) should integrate with longer distance (generally Dublin focussed) bus and rail services, by linking to intercity/commuter bus stops and rail stations. Local bus timetables should match longer distance bus and rail arrivals and departure times as closely as possible.

Non-conventional or demand responsive services may be appropriate for many rural Hinterland areas, or smaller towns and villages, to link local catchments to their nearest large town centre. These may include smaller minibus or "bus-taxi" type services, which may vary route or operating times depending on demand (see Section 10.4 "Taxi and community transport").

*Longer distance bus services*

Longer distance commuter or express type bus services will continue to link the Hinterland Designated Towns, as well as the larger Designated Districts and towns outside the Greater Dublin Area, to Dublin city centre. These services need to operate at attractive frequencies, especially where a frequent rail service is absent. There will be an increasing need for these services to integrate with rail services in the Metropolitan area as the rail network evolves, and to serve outer Metropolitan Designated Towns and major employment areas along their route.

**Measure BUS 5:**

*The Authority will seek the provision or maintenance of an express or limited stop type bus service from the Hinterland Designated Towns and larger Designated Districts to Dublin city centre at regular intervals, operating with, at a minimum:*

*(i) a 20 minute frequency at peak times and a 30 minute inter-peak daytime frequency in the case of the Hinterland Designated Towns; and*

*(ii) a 1 hour frequency at peak times and a 2 hour inter-peak daytime frequency in the case of the larger Designated Districts.*

*Services will include stops and interchange points where appropriate at outer Metropolitan town centres and employment centres and key suburban rail/Luas or Metro stations along a route.*

### 10.2.3 Bus priority infrastructure

Bus priority in the Dublin Metropolitan Area has improved considerably in recent years, and as a result significant improvements to bus journey times and reliability have been achieved. However serious delays to buses still occur on many parts of the bus network, and where road traffic grows, these delays are likely to worsen. A renewed emphasis will be placed on upgrading and enhancing bus priority to overcome these delays with a particular focus on addressing known 'pinch points'.

Bus priority needs to be a fundamental feature of bus corridors carrying, or targeted to carry, a high number of passengers. In addition, bus priority is also required at locations where significant delays to bus services exist.

Bus priority measures can take various forms including:

- Dedicated provision of road space (bus lanes);
- Priority for buses at traffic signals, via selective vehicle detection; and
- Restrictions to some or all other road vehicles on a section of road.

**Measure BUS 6:**

*Infrastructural measures that substantially reduce journey delays and improve service reliability and passenger comfort will be implemented on Priority 1 Quality Bus Corridors (as shown on Fig. 10.1). These represent the bus corridors that are forecast to have the highest level of bus passenger usage. Measures will include:*

- *Increasing levels of segregation from other vehicular traffic;*
- *Higher signal priority at junctions;*
- *Good quality running surfaces;*
- *Enhanced bus stop facilities; and*
- *High capacity vehicles, which allow for fast passenger boarding and alighting.*

*The Priority 1 Quality Bus Corridors (see also BUS 7) are:*

*(i) Stillorgan Road QBC;*

*(ii) Malahide Road QBC;*

*(iii) Lucan Road QBC; and*

*(iv) Blanchardstown/Navan Road QBC.*

*Measures will also be implemented to improve bus segregation and junction priority on the Priority 2 Quality Bus Corridors, shown in Figure 10.1. These bus corridors, also forecast to carry high passenger numbers, are:*

*(i) Swords QBC;*

*(ii) Finglas QBC;*

*(iii) South Clondalkin QBC;*

*(iv) Tallaght QBC; and*

*(v) Rathfarnham QBC.*

*Measures to improve orbital bus priority outside of the central city area will also be implemented on two key Orbital Bus Corridors:*

*(i) North Orbital QBC linking Blanchardstown, Finglas, Ballymun and Coolock areas; and*

*(ii) South Orbital QBC, linking Dun Laoghaire/Blackrock area to Sandyford/Dundrum and the Tallaght area.*

*In advance of the provision of Metro West (see Measure RAIL 8) an orbital bus corridor connecting the towns of Tallaght, Clondalkin and Blanchardstown will also be provided. Other orbital routes requiring bus priority measures may emerge from changing patterns of demand for bus transport in the future.*

*The Authority will seek the provision of necessary bus priority measures at locations and corridors where large numbers of buses are likely to be delayed or where substantial delays are likely to occur to smaller numbers of buses. These locations include Dublin city centre, other larger town centres and their approaches.*

*Bus Rapid Transit*

Bus Rapid Transit (BRT) is a high quality bus service, with high levels of priority over other traffic.

BRT characteristics typically include:

- Very high levels of physical segregation (or full segregation) from other traffic;
- High priority at traffic signals;
- Measures to reduce dwell times at stops (such as multiple bus door opening and off-vehicle ticket purchase – similar to tram or train);
- Bus stop areas adjacent to the running bus lane (at busier stops or where dwell time would affect service reliability);
- High quality, high capacity bus vehicles;
- More limited stopping than conventional bus;
- High quality running surfaces; and
- Guided vehicle technologies (in some instances)

During the period of the Strategy, it is expected that a number of the Priority 1 Quality Bus Corridors shown on Figure 10.1 will migrate to facilitate Bus Rapid Transit (BRT) type services. These corridors have high levels of passenger demand, and as they have dedicated bus lanes over much of their length, BRT type services could provide fast and reliable journey times to the city centre.

A number of studies have been carried out in relation to provision of BRT type services on certain corridors, including the 'Blue Line' proposal between Sandyford and St. Vincent's Hospital. The potential for these proposals, and their integration into the wider bus priority network including BRT proposals in this Strategy, will be assessed by the Authority. Other corridors suitable for development of, or migration to, BRT type services may be identified during the period of the Strategy and such proposals will be appropriately assessed and evaluated at the relevant time.

The characteristics of BRT mean buses can operate in a more tram-like manner. In establishing the operation of any BRT type services, the opportunities and benefits of facilitating joint running of bus and tram vehicles on certain streets in the city centre will be assessed.

**Measure BUS 7:**

*The Authority will explore the potential for the upgrade of some or all of the Priority 1 Quality Bus Corridors shown in Figure 10.1 to Bus Rapid Transit (BRT) type operations, taking into account passenger demand, proximity of rail alternatives, the level of bus priority that is feasible along the corridor and the suitability of the corridor for BRT type vehicle operation. It will seek the implementation of such upgrades, subject to the above considerations, and to demonstration of value for money.*

*A number of studies have been carried out in relation to provision of BRT type services on certain corridors, including the 'Blue Line' proposal between Sandyford and Vincent's Hospital. The potential of these proposals, and their possible integration into the wider bus priority network, including BRT proposals in this Strategy, will be assessed by the Authority. The Authority may also identify and assess the potential for development or upgrade of other corridors to facilitate BRT type provision.*

*Bus priority enforcement*

It is important that the operating environment of the bus is supported by appropriate enforcement of traffic regulations to minimise infringements on bus priority space by general traffic.

The hours of operation of bus lanes and other bus priority measures vary across the region. Wherever appropriate, these hours will be reviewed with a view to standardising them. This will facilitate easier recognition of, and compliance with, the operational hours and will ensure bus priority is provided whenever required by bus. Means of enhancing compliance in a cost effective manner, subject to regulatory change, could include the increased use of monitoring and recording technology to detect bus lane infringements.

**Measure BUS 8:**

*The Authority will seek to maintain and enhance the enforcement of parking and traffic regulations that assist bus movement, particularly at bus stops and where bus priority is provided. It will seek to standardise the hours of operation of bus priority measures to facilitate easier recognition of, and compliance with, the relevant restrictions and to ensure bus priority is provided when buses need it.*

*The Authority will explore the potential benefits of regulatory change to enable the increased use of monitoring and recording technology to identify bus lane infringements.*

### 10.2.4 Bus stops

An appropriate environment for passengers waiting for buses forms an important part of public transport provision.

There have been significant improvements to passenger information at bus stops on many routes and these will be further developed during the period of the Strategy. Real time bus arrival information displays have been introduced at certain stops, and will be provided at other stops across the Greater Dublin Area bus network. This will be supplemented by on-line and mobile communications information available for all bus stops.

Bus timetables and route maps will be provided at all stops. Where space permits, local area maps showing locations of nearby bus and rail stops will also be provided. Over time, these improvements will be rolled out over the entire bus network.

Multiple bus stops in close proximity to each other create footpath clutter and represent obstacles to pedestrian movement. A rationalisation of such bus stops will be undertaken, taking into account bus operating needs, and the practice of segregating bus stops by operator will be discontinued.

Boarding and alighting from buses will be made easier by raising kerbs to bus floor level, and stopping areas will be redesigned where necessary to allow buses to pull up flush to the kerb (for example by raising kerbs, building out the footpath at bus stops where cars park adjacent to the stop, or lengthening bus stopping areas to ensure buses can pull up in line with the kerb).

Bus shelters will be provided at all heavily used bus stops where space permits. They will be clean, well maintained, well lit, with seating provided. Passenger security at bus stops will be enhanced, with CCTV monitoring provided where deemed necessary.

Ticket machines will be installed at busier bus stops to reduce bus delays associated with on-board ticket purchase.

To enable easy access to bus services from surrounding areas, bus stops will be located to optimise pedestrian accessibility, with secure cycle parking provided at busier bus stops, particularly in suburban areas.

**Measure BUS 9:**

*The Authority will seek the improvement of bus stopping areas, including:*

- *Provision of clear, well lit shelters, incorporating seating, where space permits;*
- *Improved security features for waiting passengers, where deemed necessary;*
- *Travel information including stop specific timetables, route maps and real time bus arrival information;*
- *Rationalisation of stop poles and sharing of nearby bus stops between operators;*
- *Improved alignment of kerbside boarding points with bus stopping points;*
- *Secure cycle parking where appropriate;*
- *Provision of bus fare information; and*
- *Provision of bus ticket machines at busier stops, subject to detailed feasibility analysis.*

*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.*

### 10.2.5 Bus fleet

All scheduled buses on services procured by the Authority will be fully wheelchair accessible, with boarding arrangements, seating and internal layout addressing the needs of all passengers. Wheelchair space and storage space for prams, buggies, shopping and luggage will be provided. Bus vehicles will be clean, and well maintained. On board travel information, including next stop display and announcements will also be provided.

High capacity buses that allow passengers to board and alight from buses in a speedy manner will be required on busier bus routes. Lower capacity midi or mini buses will operate on local services in suburban areas, smaller towns and their catchments.

A low carbon bus fleet will contribute to Strategy objectives and national $CO_2$ reduction targets. Fuel efficiency and $CO_2$ and local air pollutant emissions standards for buses will be set, with a view to progressive improvement in fleet environmental performance over the Strategy lifetime.

**Measure BUS 10:**

*The Authority will seek through its legislative powers and contracts the procurement and operation of bus vehicles tailored to meet passenger demand and requirements, which will vary by service and area of operation. All vehicles on services procured by the Authority will be fully wheelchair accessible and will meet or exceed Euro emissions standards. Over time, and in keeping with the Department of Transport, Tourism and Sport sectoral plan under the Disability Act 2005, the Authority will seek that large public transport vehicles will be predominantly wheelchair accessible and incorporate facilities to assist people with mobility, sensory and cognitive impairments.*

*The Authority will seek a progressive reduction in $CO_2$, local air pollutant emissions and noise from bus vehicles over the Strategy period, and inclusion of 'eco-driving' techniques in bus driver training.*

In the past, there has been an overuse of Dublin city centre and other town centres as a terminal point for bus routes. As well as requiring bus changes for cross-city movements, this arrangement has also resulted in significant levels of use of city centre kerbsides for stopovers by terminating buses, absorbing a scarce resource – valuable street space – and detracting from the street environment. Revised routings have now been introduced on many services which have significantly reduced on-street stopovers by buses and further improvements will continue to be identified and implemented.

**Measure BUS 11:**

*The Authority will seek:*

- *The progressive reduction in the use of scarce street space for out-of-service bus fleet in Dublin city centre and other town centres; and*
- *Alternative terminus facilities elsewhere, as required, to facilitate efficient bus management.*

**Measure BUS 12:**

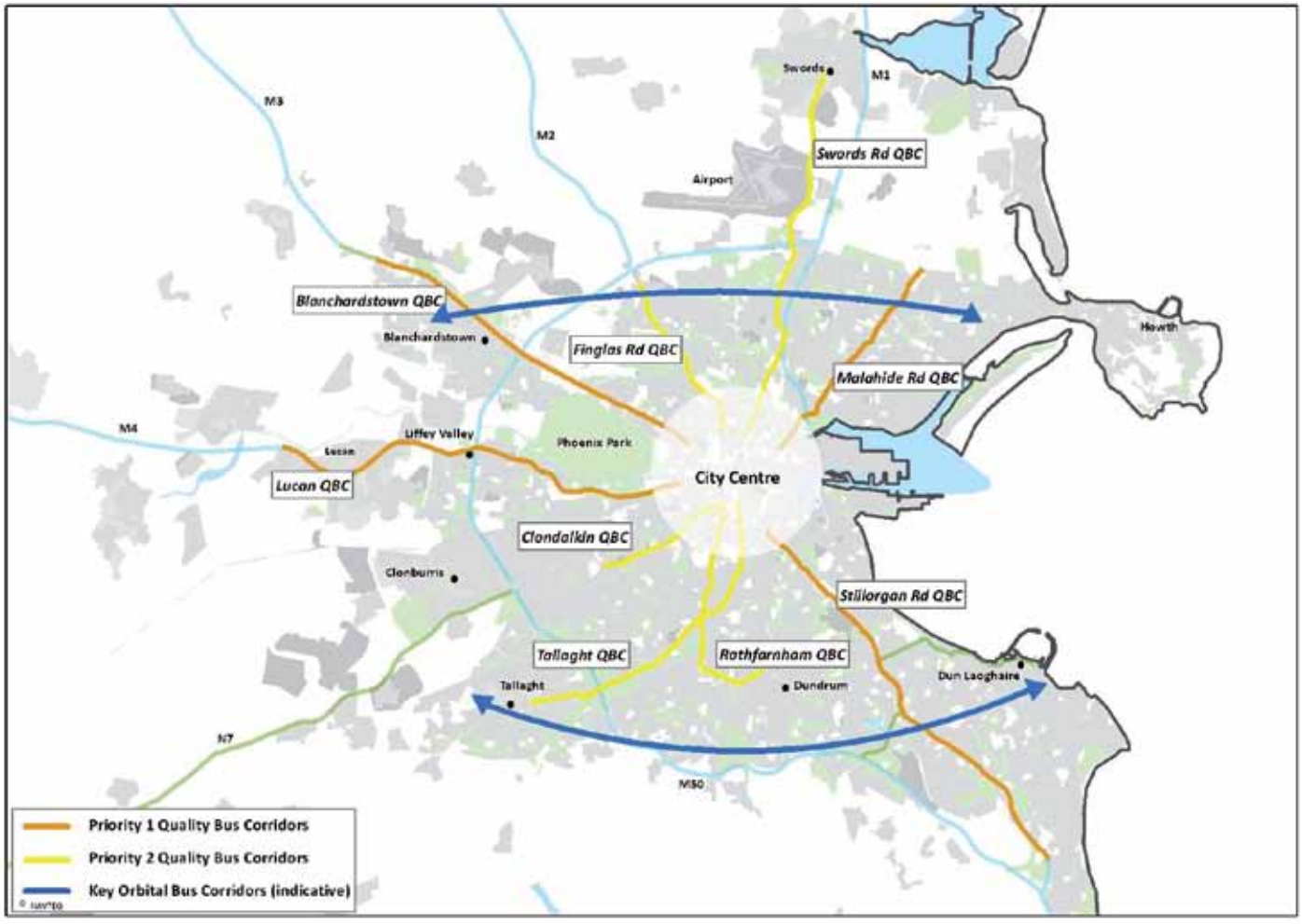
*The Authority will seek the provision of:*

- *Coach stopping and parking space In the city centre and other areas of attraction such as major sports stadia, event venues or tourist destinations, in a manner that ensures coaches do not obstruct bus or tram operations or other traffic on key corridors; and*
- *An appropriate level of off-street coach parking at or close to new sports stadia, conference centres, larger event venues and major tourist destinations.*

### 10.2.6 Coaches

Coaches play an important role in transporting peoples to sports, concerts or other events as well as serving the travel needs of tourists and day-trippers.

**Figure 10.1: Key Quality Bus Corridors**



## 10.3 Passenger rail

### 10.3.1 Overview

One of the key attributes of rail is its ability to carry large numbers of people in a reliable and fast manner to their destinations. As such it has a critical role to play in providing quality public transport to existing areas, and in supporting the consolidation and intensification of development around rail in the city centre, the wider Metropolitan Area and larger Hinterland towns.

Three classes of rail service will operate in the Greater Dublin Area over the Strategy period. These will be:

- Intercity heavy rail services to Dublin city centre, with limited or no intermediate stops in the Greater Dublin Area;
- Regional heavy rail commuter services to Dublin city centre, typically starting outside the Greater Dublin Area, with limited intermediate stops in the Greater Dublin Area; and
- Metropolitan services (DART heavy rail, Luas and planned Metro light rail), starting and ending in, or close to, the Dublin Metropolitan Area, and stopping at all intermediate stations and stops.

Over the Strategy period existing rail services will be upgraded to provide additional passenger capacity and service quality either by lengthening trains or increasing rail service frequencies. New corridors will be required to improve rail coverage and rail track, vehicles and stations will be upgraded.

### 10.3.2 Heavy rail

The heavy rail network is a critical part of the overall transport network for the Greater Dublin Area. As well as providing for intercity services connecting to the rest of the island, it also provides for the movement of over 30 million passengers each year in the Greater Dublin Area.

The network can be divided into four elements:

- Northern corridor (Belfast, Drogheda, Balbriggan and Malahide/Howth DART) services;
- Southwestern corridor (Galway, Kerry, Limerick, Cork, Waterford, Portlaoise and Kildare commuter services);
- Western corridor (Sligo, Navan and Maynooth commuter services); and
- Southeast corridor (serving Rosslare, Arklow, Wicklow and Bray/Greystones DART services).

In addition to continuing to serve existing areas along rail corridors, heavy rail will also have a crucial role in serving projected large scale trip-intensive development in Designated Towns and Designated Districts including:

- Dublin city centre, Docklands and Heuston areas;
- Along the Northern rail corridor in the Metropolitan Area (Clongriffin, Portmarnock and Donabate) and Hinterland Area (Balbriggan and Drogheda);
- Along the Southwestern rail corridor in the Metropolitan Area (Clonburris and Adamstown) and Hinterland Area (Naas and Newbridge);
- Along the Western corridor in the Metropolitan Area (Ashtown, Blanchardstown south, Leixlip/ Maynooth) and Hinterland Area (via a spur to Navan); and
- Along the Southeastern corridor in the Metropolitan Area (Dun Laoghaire and Bray) and Hinterland Area (Wicklow and Arklow).

A major investment programme in the heavy rail network is required to improve heavy rail access to the city centre, facilitate the provision of rail services to new development areas and to satisfy growing passenger demand on all of the rail corridors.

### 10.3.3 Heavy rail infrastructure

*DART and DART Underground*

Since its introduction in the 1980s, the DART system has performed a vital role in the Metropolitan Area's transport system. More recent enhancements such as extensions northwards to Malahide and southwards to Greystones, together with station platform lengthening, additional train sets and new stations have all increased the attractiveness and carrying capacity of the DART system.

An upgrade and renewal of the signalling system between Malahide and Grand Canal Dock is currently underway, which will enable a more frequent train service across the Liffey between Connolly and Pearse stations.

However, significant limitations with the current network layout still remain. There are line capacity limitations through the city centre at, and adjacent to, Connolly Station. DART services still have to share rail tracks with regional and intercity services further reducing capacity. Passenger connections between DART and Maynooth services and southwestern corridor services terminating at Heuston station remain inconvenient. Onward connections from Heuston to the commercial and retail core of the south city centre are also poor.

The DART Underground project is designed to address these deficiencies and will provide a step change in the delivery of rail services in the Dublin area. It is a key project of this Strategy. It will provide a major new rail tunnel through the south city centre for DART trains, connecting the northern and Kildare rail corridors, and linking Balbriggan and Malahide to Heuston and Hazelhatch. A series of city centre stations at Docklands, Pearse Street area, St. Stephen's Green, Christchurch and Heuston will dramatically improve heavy rail accessibility to the commercial and employment heart of the city centre. Opportunities to interchange with other heavy rail, metro and Luas services at these stations will greatly increase the opportunity to travel by rail to a wide variety of destinations, allowing rail to act for the first time in the Greater Dublin Area as the backbone of a coherent and integrated transport network. Therefore, DART Underground represents a cornerstone of the future transport system.

DART Underground will also free up space to provide a much improved service on the Maynooth Line through to the Southeastern Line, linking Maynooth to Bray and Greystones via Connolly and Pearse stations, thereby facilitating the creation of a new DART line.

**Measure RAIL 1:**

- *The Authority will procure the construction of a new heavy rail link – DART Underground - for electrified train services between the Northern Line, north of Connolly station and the Kildare Line, west of Heuston station. The project will incorporate the construction of new underground rail stations at Docklands, Pearse area, St. Stephen's Green, Christchurch and Heuston, and provide interchange with other heavy rail, Luas and Metro services as appropriate at these stations.*
- *In advance of this project, the Authority will procure the upgrade and renewal of the city centre rail signalling system to enable additional DART and Maynooth train services to operate between Connolly and Pearse stations.*

To realise the full benefits of the DART Underground project, additional tracks to separate intercity, regional and DART heavy rail services will be required on the Northern and Southwestern (Kildare) corridor approaches to DART Underground. This will facilitate faster and more frequent and reliable intercity, regional and DART services on these corridors. In addition, these corridors will be electrified as far as the boundary of operation of DART services (Balbriggan to the Northern corridor and Hazelhatch on the Southwestern (Kildare) corridor). The Western (Maynooth) rail corridor will be upgraded and electrified to enable through running of DART trains from Maynooth to Bray and Greystones. These actions are set out in more detail below.

### *Northern rail corridor*

One of the key deficiencies with the current DART network is its need to share track space with other longer distance services. This requires comparatively large time intervals between DART services, particularly in the peak hours, to accommodate the running of these longer distance services.

In order to achieve the full benefits of the DART Underground project, additional tracks to separate intercity, regional and DART heavy rail services will be required on the northern and south western

corridor approaches to DART Underground. This will facilitate faster and more frequent intercity, regional and DART services on this corridor.

The provision of additional tracks between Connolly and Balbriggan, or a point south of Balbriggan, would facilitate the required service segregation between DART and other services.

In addition, it is intended that the electrification of the Northern Line will be extended as far as Balbriggan, to enable the future extension of DART operations to Balbriggan. This will also facilitate a potential future extension of electrification north of Balbriggan.

The potential for a twin track rail link extending from the Northern Line to serve Dublin Airport, and capable of being extended further northwards, has been identified. This proposal will be subject to further assessment for its possible implementation, including consideration of the timing of other related projects and an economic assessment.

**Measure RAIL 2:**

*The Authority will seek:*

- *Subject to a feasibility study and economic assessment, the provision of additional tracks on the Northern Line between Connolly and Balbriggan, or a point south of Balbriggan, to separate intercity and fast regional services from stopping DART services in this corridor; and*
- *The electrification of the Northern Line from Malahide to Balbriggan to allow an extension of DART services to Balbriggan, and to facilitate a potential extension of electrification north of Balbriggan.*

*The Authority will assess the potential for a rail link to connect Dublin Airport to the Northern Line, subject to economic assessment and timing of related projects.*

Appropriate Assessment of this Strategy has identified the possibility that the implementation of additional tracks on the Northern Line may have impacts in relation to 'Natura 2000' sites. This is dealt with in the Natura Impact Statement, which has identified that that this should be further addressed through project-level Appropriate Assessment. (See also Section 13.5 Environmental Considerations).

### *Southwestern (Kildare) rail corridor*

Substantial improvements have taken place on this rail corridor over recent years with the opening of new stations and the four-tracking of the line between Cherry Orchard and Hazelhatch. This has provided two dedicated lines for commuter services and two dedicated lines for Intercity and regional services, facilitating improved service frequency and capacity increases.

Linked to the DART Underground programme, it is intended to continue the four-tracking of this line eastwards from the Cherry Orchard area to Inchicore station on the DART Underground project, allowing for full separation of DART from intercity and regional services. In addition, the line will be electrified as far as Hazelhatch, enabling the running of DART services through DART Underground to that station. This will facilitate a potential future extension of electrification southwest of Hazelhatch. Additional stations will be provided on this rail corridor, to facilitate the consolidation of development within the Metropolitan Area along rail lines, and to enable passenger interchange onto other public transport services.

**Measure RAIL 3:**

*The Authority will seek:*

- *The provision of additional tracks on the Southwestern (Kildare) corridor between Cherry Orchard and Inchicore to separate intercity and fast regional services from stopping services west of Heuston;*
- *The electrification of the rail corridor from Hazelhatch to the Heuston area to enable the extension of the DART service to Hazelhatch utilising the DART Underground tunnel and to facilitate a potential extension of electrification southwest of Hazelhatch; and*

**Measure RAIL 3 (continued):**

*The Authority will seek:*

- *Provision of additional stations at appropriate locations in the Metropolitan Area to serve existing areas and facilitate development consolidation along this rail corridor, subject to feasibility, economic evaluation, impact on existing services and scale of existing or planned development in the station catchment.*

### *Western (Maynooth) corridor*

The Western corridor extends westwards from Docklands and Connolly, providing commuter services to stations as far west as Maynooth and regular scheduled services out to Kilcock and Enfield. From Clonsilla Station a separate line has been constructed to M3 Parkway, west of Dunboyne.

Significant enhancements are proposed for the line between Maynooth and Connolly. In conjunction with the DART Underground project, the line will be electrified and re-signalled, and level crossings will be removed to the extent practicable, enabling frequent DART services to run between Maynooth and Bray/Greystones.

Beyond the period of the Strategy, there is potential for further rail electrification west of Maynooth.

Navan is the only Designated Town in the Hinterland that does not currently have a rail service to Dublin city centre. Its population is forecast to grow substantially over the Strategy period and demand for travel to Dublin is likely to increase in line with this growth. A new rail line linking Navan to Dublin city centre would support regional planning objectives and facilitate Navan's sustainable development.

**Measure RAIL 4:**

*The Authority will seek:*

- *To the extent practicable and economically justifiable, removal of level crossings on the line between Maynooth and Connolly;*
- *The electrification of the line between Maynooth and Connolly which, in conjunction with signal upgrades, will enable DART services to run from Maynooth to Bray and Greystones;*
- *Provision of additional stations at appropriate locations in the Metropolitan Area (including Porterstown) to serve existing areas and facilitate development consolidation along this rail corridor subject to feasibility, economic evaluation, impact on existing services and scale of existing or planned development in the station catchment; and*
- *The provision of a new rail line from Navan to join the recently constructed spur to Dunboyne and Pace, for onward travel to Dublin city centre. The timing of this line construction and the roll out of services will be subject to economic assessment and the timing and scale of development in the Navan area.*

Appropriate Assessment of this Strategy has identified the possibility that implementation of sections of the proposed rail line to Navan may have impacts in relation to 'Natura 2000' sites. This is dealt with in the Natura Impact Statement, which has identified that that this should be further addressed through project-level Appropriate Assessment. (See also Section 13.5 "Environmental considerations").

### *Southeast corridor*

Assessments will be carried out on all of the remaining level crossings on the Southeastern rail corridor, with a view to facilitating closures of individual level crossings where operationally beneficial for rail services, and where a suitable economically beneficial and environmentally acceptable solution can be identified.

**Measure RAIL 5:**

*The Authority will seek the closure of level crossings north of Bray on the Southeastern rail corridor, subject to assessment of benefits to rail operations and identification of an economically beneficial and environmentally acceptable solution in each case.*

*The Authority will seek the provision of additional track and other measures on the single rail track south of Bray to facilitate additional rail services to Greystones, Wicklow and Arklow, subject to feasibility, environmental considerations and economic assessment.*

Rail services south of Greystones currently operate on a single track, seriously impacting on the service level that can be provided. Local sections of additional track south of Bray to enable trains south of Bray to pass each other would facilitate the introduction of additional services.

Appropriate Assessment of this Strategy has identified the possibility that development of these "passing loops" or additional track may have impacts in relation to Natura 2000 sites.

This is dealt with in the Natura Impact Statement, which has identified that that this should be further addressed through project-level Appropriate Assessment. (See also Section 13.5 "Environmental considerations").

Beyond the period of the Strategy, there is potential for further rail electrification south of Greystones.

### 10.3.4 Heavy rail services

The above infrastructural improvements will enable improvements to journey times, service frequencies and reliability on all heavy rail services operating in the Greater Dublin Area. In addition, the services operating on the new infrastructure will dramatically increase the numbers of people within commuting range of the Dublin city centre, and other town centres served by rail. The improved rail infrastructure will also enable improved intercity rail connections to the Greater Dublin Area, particularly at peak times.

Rail services need to be tailored to appropriately meet the evolving needs along the commuter lines.

**Measure RAIL 6:**

*The Authority will seek:*

- *The provision of a heavy rail service between each of the Designated Towns in the Hinterland and Dublin city centre, operating, as a minimum, on an hourly basis in the peak hours and on a two hour basis in off-peak service periods;*
- *The provision of Metropolitan (DART) rail services, along heavy rail corridors, operating as a minimum every 10 minutes peak (every 6 minutes in central areas) and every 15 minute off peak (10 minutes in central areas) during operating hours; and*
- *Additional services to meet demand on heavy rail corridors where appropriate.*

*Services, including limited stop services from outside the Metropolitan Area, will include stops and interchange points where rail corridors meet outer Metropolitan town/ employment centres and key suburban rail/ Luas or Metro stations present along a route.*

### 10.3.5 Light rail (Metro and Luas)

Light rail services (branded as Luas) commenced operating in Dublin in 2004 and since then the Luas system has become a core part of the public transport network of the city. It provides a high frequency reliable service with relatively closely spaced stops providing good levels of access to those living, working or visiting points along the routes.

The Strategy proposes further extensions to the Luas network and the introduction of a higher capacity light rail service (branded as Metro). The essential difference between Metro and Luas is that Metro services have full segregation or full priority over other road traffic over their entire route length, enabling the operation of longer rail vehicles and more frequent services.

### 10.3.6 Metro and Luas infrastructure

*Metro North corridor (Swords – city centre)*

Metro North is a key project of the Strategy, designed to provide a high capacity public transport link serving the northern section of the city area and extending to the Designated Town of Swords. It also connects Dublin Airport, the main entry point into Ireland by air, to the city centre with a modern, high quality rail service.

In operation it will also serve intermediate points such as Ballymun, Dublin City University and the Mater Hospital. While initially this line will terminate at St. Stephen's Green, the Strategy envisages its further extension southwards to allow Metro services to extend onto the Green Line.

Connecting with Metro West and the Luas Green Line, it represents a key linkage in the overall light rail service in Dublin. Interchange with other rail and bus services will be provided at various stations including Drumcondra (DART), O'Connell Street (Luas and bus) and St. Stephens Green (DART Underground, Luas, bus).

**Measure RAIL 7:**

- *The Authority will seek the construction of a new light rail link for Metro services between the Swords area and St. Stephens Green. The project will incorporate the construction of Metro stations including Dublin Airport, Dardistown, Drumcondra, O'Connell Street and St. Stephen's Green, and provide for passenger interchange with other heavy rail, Luas, Metro and bus services as appropriate at these stations.*

*Metro West (Tallaght-Clonburris-Liffey Valley -Blanchardstown-city centre –Airport)*

The purpose of Metro West is to provide a frequent and reliable public transport link of sufficient capacity between the Designated Towns and Designated Districts of Tallaght, Clonburris, Liffey Valley area and Blanchardstown, and onwards to the city centre and the Airport/Swords area. Metro West will share the Metro North tunnel with Metro North vehicles from Dardistown, south of the Airport to the city centre, and it will also share the Metro North alignment from Dardistown to the Airport/Swords area. Interchange with other rail services will be possible at Tallaght (Luas Red Line and Kimmage Luas line), Clonburris (DART), Liffey Valley area (Lucan Luas), Porterstown (Maynooth DART), and south of the Airport (Metro North)

**Measure RAIL 8:**

*The Authority will seek the construction of a new light rail link for Metro services between the Tallaght area and the Metro North corridor, south of Dublin Airport. The project will incorporate the construction of stops at Tallaght, Clonburris, Liffey Valley, Porterstown and Blanchardstown centre and will provide for passenger interchange with other heavy rail, Luas, Metro and bus services as appropriate at these stations.*

*Luas BXD (Stephens Green - Broombridge)*

To improve city centre accessibility, and provide access to the major new campus for the Dublin Institute of Technology and health related services in the Grangegorman area, a northward extension of the Luas Green Line will be built from St. Stephen's Green to Broombridge, via O'Connell Street and Grangegorman (Luas Line BXD). A passenger interchange with Maynooth DART services will be provided at Broombridge. Dependent on the timing and scale of development in this area, and subject to economic assessment, this line may be further extended to Meakstown (Finglas), potentially linking with Metro West.

*Luas Green Line (city centre-Bray area)*

To provide for forecast travel demand, the existing Green Luas line between St. Stephen's Green and Brides Glen will need to be upgraded by the introduction of longer, more frequent Luas vehicles between St. Stephen's Green and Sandyford/Brides Glen area.

A southward extension of the Green Line from Brides Glen to the Bray area is proposed to improve public transport accessibility for this Designated Town. This will be subject to timing and scale of new development in this area, and appraisal, including economic assessment. A comparative analysis with a BRT alternative will be undertaken prior to final progression to Railway Order.

Forecast travel demand suggests that the Green Luas line south of St. Stephen's Green will need to be upgraded to cater for longer Metro type vehicles. Subject to evaluation and economic assessment, Metro North will be extended southwards in a tunnel to join the Green line in the Ranelagh/Beechwood area. This will enable Metro North services to run from Swords and the Airport via St. Stephen's Green direct to Dundrum, Sandyford and Bray without the need for passengers to interchange between services.

**Measure RAIL 9:**

*The Authority will seek:*

- *the upgrade of passenger capacity on the existing Luas Green Line, as required to meet demand;*
- *Extension of the Luas Green Line from St. Stephen's Green to Broombridge via Grangegorman and assess the potential for a further extension beyond Broombridge to the Finglas area, subject to scale and timing of development in this area and economic assessment;*
- *Extension of Luas Green Line from Brides Glen to the Bray area, subject to the timing and scale of new development in this area and appraisal and economic assessment; and*
- *Upgrade of Luas Green Line to cater for Metro services and extension of the proposed Metro North tunnel to meet the Green Line, to enable through running of Metro trains from Swords and the Airport via St. Stephen's Green to the Green Line, subject to appraisal and economic assessment.*

*Luas Lucan line (Lucan to south city centre)*

The purpose of the Lucan Luas line is to provide a good quality public transport link between Liffey Valley and adjacent residential areas (Lucan, north Clondalkin and Ballyfermot). It also improves links between these areas and Dublin city centre. The timing and routing of this scheme will need to take into account the availability of public transport alternatives in much of the catchment, including the Hazelhatch to Heuston and south city centre DART service (following completion of DART Underground).

Depending on demand, and timing and scale of new development in the south Docklands/Rinsgend and Poolbeg areas, the Lucan Luas line may be extended from the city centre into the Poolbeg area during the lifetime of the Strategy.

While this project is currently proposed as a Luas line, it will be subject to further comparative analysis against a possible BRT solution before final progression to Railway Order stage.

**Measure RAIL 10:**

*The Authority will seek the provision of a light rail line from Lucan to Dublin south city centre, subject to economic assessment, and the consideration of a BRT option.*

*Depending on travel demand and the phasing and scale of new development in the south Docklands/Poolbeg area, and subject to assessment of feasibility and value for money, the Authority will seek a Luas (or BRT) line linking from Luas (or BRT) in the south city centre to the south Docklands or Poolbeg area.*

### *Southwest Luas*

A large sector of Dublin (between the Red Cow roundabout and Dundrum) is currently without a rail service to the city centre. Furthermore, bus services in this area are frequently subject to delays and unreliability due to the absence of comprehensive bus priority. To improve access and journey times by public transport from this sector to the south city centre and to provide better links for intermediate points (for example the Kimmage area), a new Luas line will be supported, subject to further feasibility work and assessment of value for money.

While this project is currently proposed as a Luas line, it will be subject to further comparative analysis against a possible BRT solution before final progression to Railway Order stage.

**Measure RAIL 11:**

*The Authority will seek the provision of a light rail line serving the southwest sector and connecting to Dublin south city centre, via the Kimmage area, subject to assessment of feasibility and value for money and the consideration of a BRT option.*

### *Metro and Luas services*

Metro and Luas services coverage will be expanded to serve projected large scale development in the following areas:

- Swords, Ballymun/DCU and Dublin city centre/ Grangegorman/Docklands;
- Dundrum, Sandyford, Cherrywood and Bray; and
- Tallaght, Clonburris, Liffey Valley and Blanchardstown.

An attractive service frequency will be provided on all services.

**Measure RAIL 12:**

*The Authority will seek:*

*(i) As a minimum, between each of the Designated Towns and Designated Districts that will be served by Metro/ Luas and Dublin city centre, the provision of an 8 minute peak service and 10 minute off-peak service during operating hours;*

*(ii) As a minimum on other Metro/Luas services, the provision of a 10 minute peak service and a 15 minute off-peak service; and*

*(iii) Additional Metro/Luas services to meet travel demand where appropriate.*

*To enable passenger transfer between services, Metro/Luas services will stop where they meet other Luas/Metro or heavy rail stations present along a route.*

As new Luas and Metro infrastructure is completed, opportunities are likely to arise for service network revisions to better meet passenger needs. For example, if Metro North is extended southwards from St. Stephen's Green, Luas Green Line services could continue to operate to St. Stephen's Green and onwards to O'Connell Street and Broombridge.

Alternatively, and dependent on their timing and alignment, it may be more beneficial to link the Lucan Luas line or the Tallaght via the Kimmage Luas line to the Green Luas line in the St. Stephen's Green area. This would enable these services to link on-street to O'Connell Street and Broombridge, and would free up the corridor between Swords and Bray, for exclusive Metro West and Metro North vehicle operations.

**Measure RAIL 13:**

*The Authority will review the merits of Luas and Metro service network reconfigurations, as new Metro and Luas infrastructure is brought into service, and implement these service reconfigurations where appropriate.*

Figure 10.2 shows a possible Luas/Metro/DART service configuration, following completion of the above infrastructure and based on the above assumptions.

### 10.3.7 Rail Priority

Metro and heavy rail trains should be fully segregated from road traffic. Any delays to in-service tram and Metro vehicles must be minimised, with full priority given at road junctions. In-service heavy rail trains need to be given full priority at all level crossings they encounter.

**Measure RAIL 14:**

*The Authority will seek full priority for Metro and (to the extent practicable) tram vehicles in passenger service at all road junctions, and full priority for heavy rail trains at level crossings.*

### 10.3.8 Rail vehicles

In recent years, there has been major investment in additional heavy rail fleet capacity and replacement of existing life-expired fleet for services operating in the Greater Dublin Area. The average age of the heavy rail fleet is now low by international standards.

Additional rolling stock will be introduced as required on a phased basis in line with travel demand to operate the rail services on existing and new heavy rail, tram and Metro corridors and as lines are electrified.

It is important that rail vehicles are clean, comfortable, and tailored to meet passenger demand and requirements, which will vary by service. Up to date passenger information will be available through on-board announcements and displays.

$CO_2$ and local air pollutant emissions from the heavy rail fleet will be progressively reduced over the Strategy lifetime. The proposed electrification of commuter rail services will contribute to this.

**Measure RAIL 15:**

*Over the Strategy period, the Authority will seek the provision of additional rail vehicles to meet demand, and the refurbishment and replacement of existing vehicles where appropriate, tailored and maintained to meet passenger demand and requirements, which will vary by service. A progressive reduction in heavy rail fleet emissions will be sought.*

### 10.3.9 Rail stations and tram stops

The environment for passengers accessing or waiting for rail services must be of a high standard to ensure its attractiveness as a mode of travel.

**Measure RAIL 16:**

*The Authority will seek the provision of high quality rail stations and tram stops, including:*

- *Stops, stations and trains that are fully accessible by mobility impaired and disabled people;*
- *Improved access by foot or on cycle from the surrounding area (see Chapter 9 "Walking and Cycling");*
- *Provision, where appropriate, for associated bus stopping areas, taxi ranks and passenger drop off facilities;*
- *Provision of shelters, well maintained, well lit and with seating, where space permits;*
- *Improved security features for waiting passengers, where deemed necessary;*
- *Display of stop/station specific timetables (or tram/train headways where services are very frequent) and real time train or tram arrival information;*
- *Display of other travel information including local area maps and maps of connecting bus and rail services;*
- *Sufficient and secure cycle parking;*
- *Station car parking in outer areas, where appropriate and not already present (see section 10.5.5 Park and Ride below); and*
- *Ancillary facilities (toilets, refreshments etc) at larger stations/stops.*

**Figure 10.2: Proposed Greater Dublin Area Rail Network**

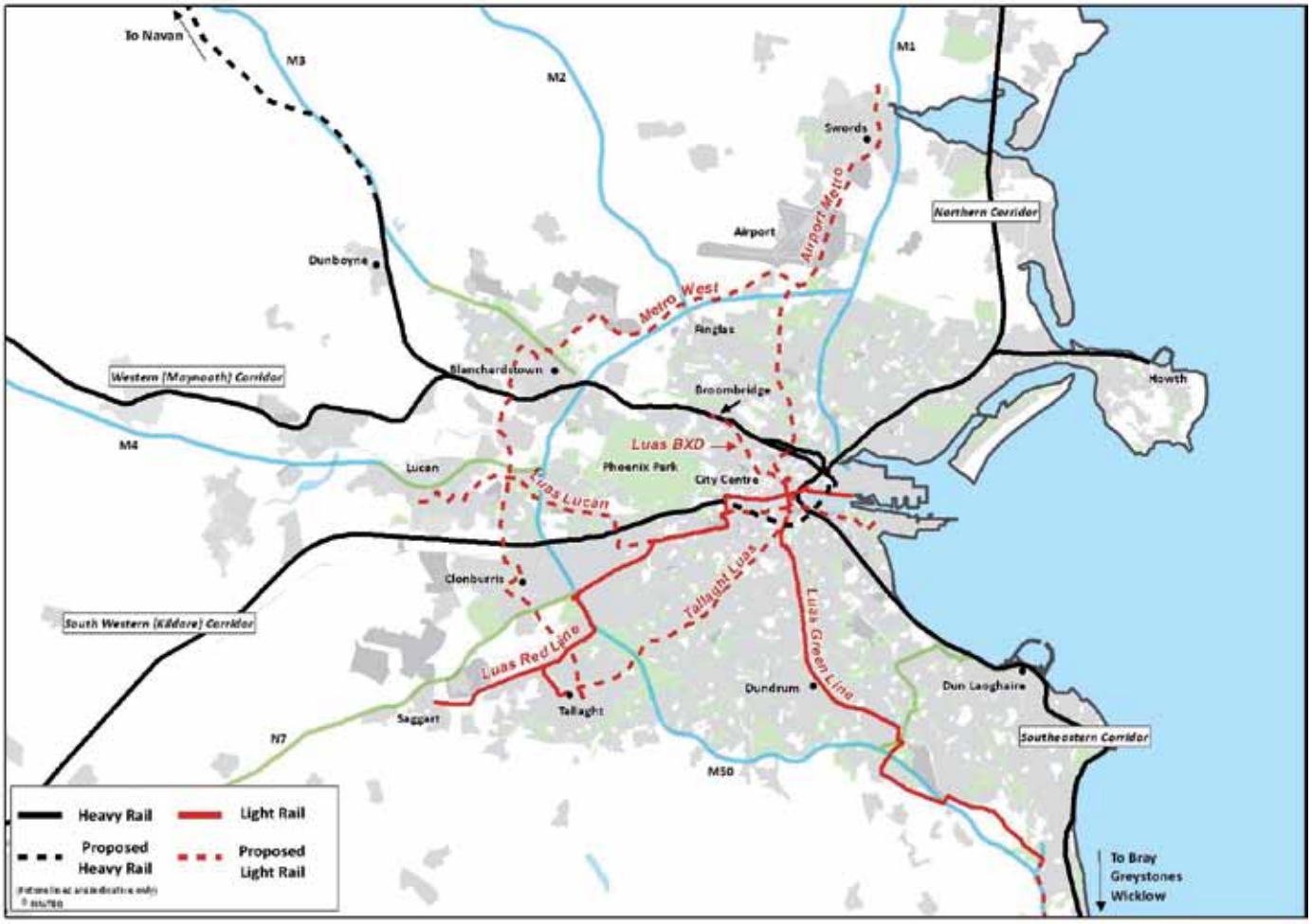
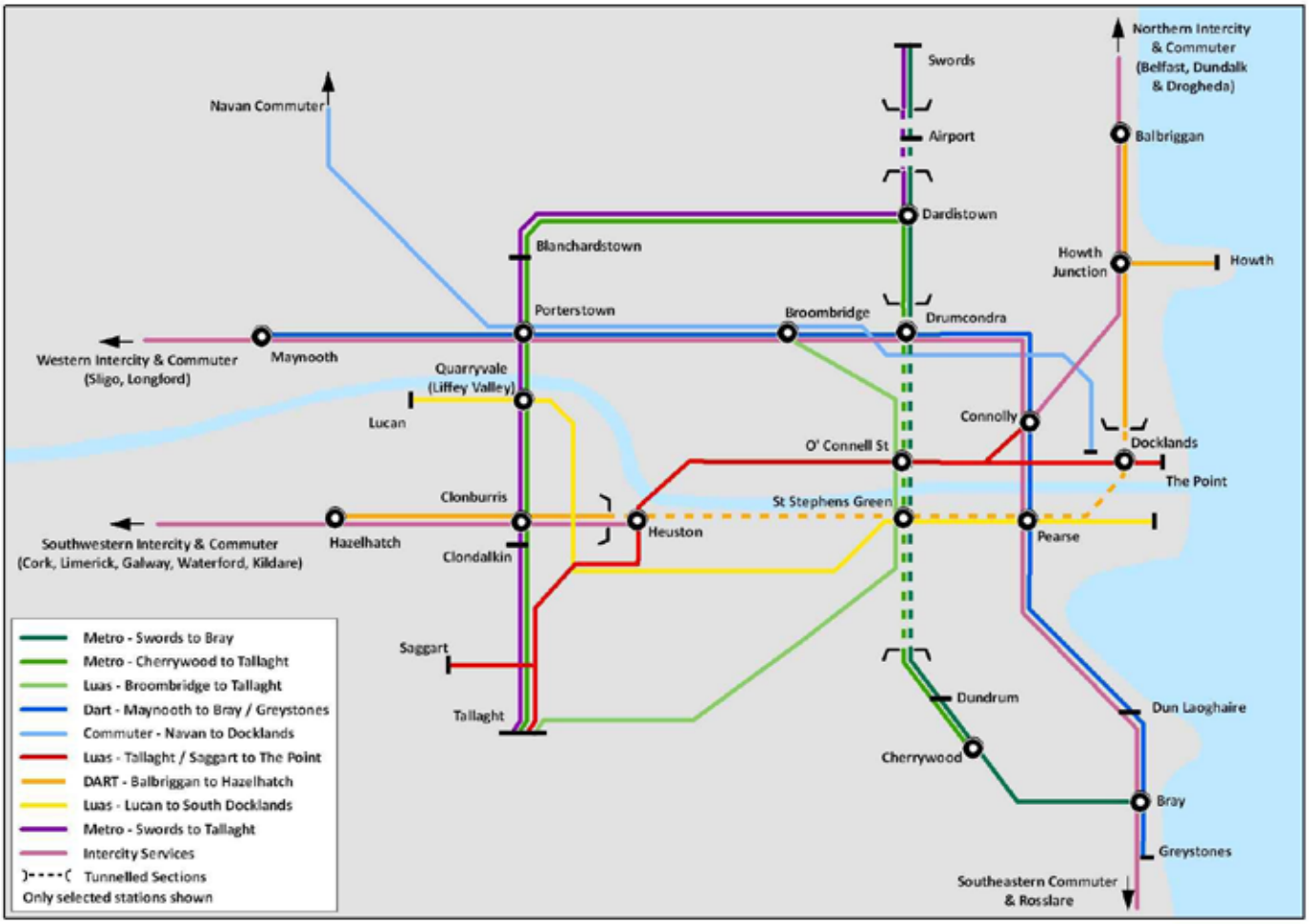


**Figure 10.3: Indicative rail service network in 2030**




## 10.4 Taxi and community transport

### 10.4.1 Taxi

Taxis provide a door-to door transport for those without access to a car or a scheduled public transport service. They also provide a means of travel for mobility impaired people or those carrying heavy or bulky luggage that precludes them from using scheduled public transport.

The following measures are intended to improve taxi movement and access in Dublin city centre, other town centres and their approaches.

**Measure TC 1:**

*The Authority will continue to support:*

- *The use of most bus lanes by taxis. However, there may be circumstances where the negative impact of taxis on bus services will require the exclusion of taxis from certain bus lanes; and*
- *The provision of taxi ranks at appropriate locations in Dublin city centre, and other town centres, designed in accordance with the Authority's Taxi Rank Design Guidelines.*

Taxis can enable people at some remove from the scheduled public transport network to access those services, effectively extending the reach of public transport.

Taxis can also act as a substitute for scheduled public transport services, particularly in areas of dispersed population or at night.

To support these roles, measures to improve the integration of taxi into the public transport network will be pursued.

**Measure TC 2:**

*The Authority will:*

- *Support the provision or retention of taxi ranks outside key rail stations, tram and bus stops in outer areas, and at key intercity rail and bus stations in Dublin city centre;*
- *Examine the potential for incorporation of taxi fare payment into the forthcoming integrated Smartcard ticket; and*
- *Examine the potential for the introduction of a combined scheduled public transport fare and taxi fare in certain Hinterland areas or at certain times.*

The Taxi Regulation Review was a wide ranging review carried out in line with a Government decision of June 2011. The outcome of that review process was published in January 2012. The report of the review process set out forty six actions to establish a revised framework governing the taxi industry. That revised framework is expected to improve and streamline the regulatory regime for driver and vehicle licensing, enhance the overall professionalism of the industry and implement a variety of measures that address quality standards, including improving access to wheelchair accessible taxis.

**Measure TC 3:**

*The Authority will:*

- *implement the recommendations of the Taxi Regulation Review that are within the ambit of the Authority and will support the relevant agencies in the implementation of the remaining recommendations.*

### 10.4.2 Community Transport

Community transport is provided by not-for-profit organisations. Typically, service operations are funded by the education and health services or the voluntary sector.

There will be a continuing role for community transport over the Strategy period, to provide transport services to schoolchildren, the elderly, mobility impaired and others, especially in rural areas. Opportunities for efficiency savings in service provision, by creating partnerships across the health, education and community sector, should be availed of to ensure these services are retained or expanded.

**Measure TC 4:**

*The Authority will work in partnership with agencies responsible for the provision of school and community and rural transport (including local authorities, Pobal (Rural Transport Programme), Department of Health, Health Service Executive and Department of Education) to explore the potential within the Greater Dublin Area to:*

- *Amalgamate disparate existing services, and share vehicles where appropriate, to achieve efficiency savings;*
- *Improve the level of service where current levels of service are inadequate;*
- *Improve integration of community transport with scheduled or demand responsive public transport services;*
- *Gain efficiency savings by establishing a centralised booking system for community transport; and*
- *Provide 'hail and ride' services in certain areas.*

## 10.5 Making public transport easier to use

### 10.5.1 Overview

The bus and rail services in the Greater Dublin Area need to operate as a unified network if they are to become more attractive to users. Various methods of improving the overall public transport travel experience and making it easier to use are proposed to achieve this network integration, including:

- Better public transport information and more integrated marketing as a network;
- Integrated ticketing and fares;
- Improved passenger interchange between services;
- Better park and ride facilities; and
- Development planning to improve access to public transport.

### 10.5.2 Public transport information and marketing

Consistent, reliable and readily available public transport information is a particularly effective means of removing barriers to public transport use. It improves people's perceptions of the public transport offer and reduces personal stress due to travel uncertainties.

People need information on their travel options before a journey is made, and information to assist them during the journey, including advice on alternative options should travel disruption occur.

Two key means of achieving this are through the provision of an internet based multi-modal journey planner and real time service arrival information.

Multi-modal journey planners advise trip-makers unfamiliar with available public transport options, or service schedules, on the best public transport option for their journey, and provide door-to-door information on how to get to a stop or station, where to board a service, when the service is due to arrive, how long each stage of the journey is expected to take, where to transfer services (if required), the walk route and how to get from the end stop or station to the final destination.

Barriers to movement for mobility impaired (e.g. steps, stairs) can be identified, and alternatives for these passengers suggested, where available.

Real time service arrival information benefits people who are unfamiliar with service schedules, as well as those who are familiar with service schedules, but who would welcome 'live' confirmation.

The following measures will be developed to enhance the provision of travel information:

**Measure INT 1:**

*The Authority will seek or directly procure:*

- *timetables displaying service arrival times (or service intervals, where a service is very frequent) at every bus and tram stop and rail station, with copies available to the public via websites and in hard copy where such is considered necessary;*
- *real-time service arrival information at all tram stops and rail stations in the Greater Dublin Area, and at certain bus stops, supplemented by on-line or text message information on service arrival times for all bus stops.*
- *travel alerts in the event of public transport service disruption, with estimated disruption duration and rerouting suggestions;*
- *direction signs to public transport stops and stations in all town centres, supplemented where appro-priate with local maps indicating bus stops and rail stations, located prominently in town centres;*
- *service specific maps, supplemented with public transport network maps where appropriate, at bus stops, rail stations and in public transport vehicles;*
- *on-board displays and announcements of next stops and relevant connecting public transport services at that stop on scheduled buses and trains;*
- *An internet based public transport journey planning service to enable advance planning of any public transport journey on the island of Ireland, including the Greater Dublin Area, from door to door (incor-porating walking and cycling options);*
- *Appropriate availability of transport information to people with hearing, visual or mobility impairments and, where required, training for frontline staff in assisting hearing impaired, mobility impaired and visually impaired customers; and*
- *A single national public transport brand for all scheduled public transport vehicles serving the Greater Dublin Area, to assist people in understanding the public transport network as a single entity. The Authority will require that the brand will be clearly visible on travel information media described above, on all tickets and at all stops and stations and, in time, on all scheduled public transport vehicles.*

### 10.5.3 Integrated ticketing and fares

Simplifying ticketing and fare structures across the entire public transport network is essential to make public transport more attractive to users.

Currently, ticketing types, purchase points and payment methods vary widely by public transport operator, creating difficulties for those unfamiliar with a particular operator's approach. In addition, through tickets are often unavailable, making transfers between services inconvenient and off-putting.

**Measure INT 2:**

*The Authority will introduce a single Smartcard system for payment of fares on scheduled public transport in the Greater Dublin Area, and it will require all publicly funded public transport operators to accept Smartcard tickets for travel on scheduled services. Where appropriate, this will also be a condition associated with commercial bus licences issued for the Greater Dublin Area.*

*The Authority will seek the use of the Smartcard ticket over time to pay for other transport services, including park and ride, taxi fares and public cycle hire.*

*In order to encourage its use and minimise cash transactions, the Authority will apply a fare differential between Smartcard fares and cash fares, with the Smartcard fares representing the lower cost option.*

*The Authority will procure a network of Smartcard purchase or top-up points, including at stops and stations, retail outlets and on-line.*

Current fare structures in the Greater Dublin Area are very complex, making it difficult for people to understand and detracting from convenient and easy use of public transport. In particular, multi-leg journeys by public transport are not encouraged as those transferring between services are usually charged a full fare for each service used.

Public transport users should not be obliged to pay substantially more, simply because they need to change from one service to another to complete their journey.

**Measure INT 3:**

*The Authority will implement a simplified fares system for the Greater Dublin Area, covering bus, rail, Luas and Metro services, and will develop a fare arrangement within the Metropolitan Area that facilitates multi-leg and multi-modal journeys.*

### 10.5.4 Interchange between public transport services

As the public transport network improves, and with better integration of fares, tickets and travel information, multi-leg journeys across the public transport network should become far more common. For this reason it will become increasingly important to provide a high quality environment for those changing from one service to another.

In the interests of the efficient and cost effective operation of the overall public transport network, bus and rail services should, in general, complement each other rather than compete. Passenger interchange options to other bus and rail services will be promoted where the benefits of faster and more reliable journey times exceed the inconvenience of interchange. Opportunities for improving the interchange experience will be examined wherever public transport services meet, especially in Dublin city centre and larger town centres. The principal existing or proposed interchange points within the built up area are shown on Figure 10.4. There will also be other interchange points available (e.g. smaller suburban centres, and several locations in the city centre), not shown on the figure.

**Measure INT 4:**

*The Authority will seek:*

- *The provision of high quality passenger interchange points between public transport services in Metropolitan and Hinterland town centres and elsewhere, including the locations shown in Figure 10.4;*
- *Alteration of bus or rail service schedules or stop locations, where appropriate and feasible, so that ease of interchange is improved and passengers are not obliged to wait unnecessarily long periods for connecting services;*
- *Reductions in walk times between connecting services, by providing safe and direct routes which do not require long waiting times to cross streets; and*
- *Provision of a high standard of direction signs to connecting services at interchange points.*

### 10.5.5 Park and Ride

Car Park and Ride facilities help those in outer areas who are not well served by public transport to access public transport connections.

It is important that Park and Ride 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 outer areas where the road network has capacity to absorb the impact of car park traffic. It also means that park and ride sites should not be located where they might encourage people who would otherwise access public transport locally to drive further to access a site, adding to congestion.

Any necessary improvements to 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 on roads in the vicinity of Park and Ride car parks may be required, particularly in the case where the car park is charged for, or it is oversubscribed.

Cycle parking should also be provided at rail stations and tram stops, and provision for carriage of cycles on train services should be made where space is available. More details are included in Chapter 9 Cycling and Walking.

**Measure INT 5:**

*The Authority will:*

- *Seek the provision of larger Strategic rail-based Park and Ride facilities at appropriate points where rail services intersect with National Primary roads outside the M50, with a phased approach to parking provi-sion at each site and monitoring to ensure unintended consequences such as significant additional conges-tion or car travel do not arise, before further expansion is considered;*
- *Seek the provision of local Park and Ride schemes in outer parts of the Metropolitan area and in the Hinter-land area, where they improve public transport accessibility without worsening road congestion, or increas-ing car travel distance;*
- *Consider the potential for bus-based park and ride, particularly close to high quality road corridors leading from Hinterland towns, with good bus priority to commuter destinations in the Metropolitan Area, and will seek the provision of such facilities where appropriate and feasible;*
- *Seek that a minimum percentage of parking spaces should be allocated to disabled users; and*
- *Seek suitable charging structures for Park and Ride facilities to make it more likely that those who most need the service (those outside walking distance) will obtain parking.*

### 10.5.6 Passenger security

Fear of crime and anti-social behaviour can act as a real disincentive to public transport use. It can be a particular issue for women and late night travellers.

**Measure INT 6:**

*The Authority will seek to provide a secure travel environment for all public transport passengers, at stops and stations and on board vehicles, through appropriate design and lighting of stops and stations and surveillance of stops, stations and vehicles (for example through CCTV), provision of passenger help points or assistance phone lines, and Garda Patrols, supported by security officers.*

### 10.5.7 Integrating development planning with public transport

Public transport users need to be considered at all stages of the planning process.

The Strategy policy of consolidation of development with the appropriate mix of uses, scale and density will require development design which maximises the accessibility to public transport access points.

Design of new residential areas should ensure that no home in an urban area is further than an 800 metre walk from a bus or tram stop or rail station. This figure should be considered as a maximum distance and a shorter distance of 500 metres should be targeted wherever feasible. A similar maximum distance should be sought for existing residential areas, wherever feasible, accepting the fact that many existing residential areas contain long cul de sac roads that are inaccessible by bus.

Opportunities should be identified for improving pedestrian permeability from existing residential areas to roads with bus routes. Walk links should be enhanced where appropriate, for example through better lighting, to improve attractiveness and pedestrians' perceptions of security.

**Measure INT 7:**

*The Authority will work with local authorities to ensure that the needs of public transport users are considered at all stages of the planning process, and addressed through Local Authority Development Plans and Local Area Plan policies and measures and individual planning applications as appropriate. In particular, the Authority will seek:*

- *Provision of safe, convenient, direct and secure routes for pedestrians and cyclists to local bus stops, tram stops and rail stations;*
- *In larger developments, opportunities for the incorporation of bus or rail services into the active heart of the development;*
- *That no new home in an urban area is further than 800 metres walking distance from a bus or tram stop or rail station, with a shorter distance of 500 metres to be targeted wherever feasible; and*
- *The removal of existing barriers to pedestrian movement that impose long walk distances to public transport, wherever practicable, and the retention of existing walking links.*

Planning policies and principles that promote and encourage public transport use are set out in more detail in Chapter 8.

## 10.6 Prioritisation of Public Transport Projects

A number of the rail proposals, both heavy rail and light rail, listed in this chapter represent capital intensive projects requiring significant funding for their implementation. Clearly the unprecedented economic circumstances prevailing in Ireland at the time of adoption of this Strategy means funding availability for investment in public transport infrastructure will be limited in the early period of this Strategy. As a result, it will not be possible to progress the delivery of a number of these capital intensive schemes until the final period of the Strategy. Indeed, the implementation of a number of these projects will be dependent upon the timing of local development and would, therefore, not be required in any event to be delivered until the last part of the Strategy period. Accordingly, it is appropriate to identify a prioritisation listing for the major public transport rail infrastructure schemes listed in this chapter.

The major rail infrastructure schemes proposed in Section 10.3 (which are subject to satisfactory detailed business cases and a range of various dependencies other than funding such as land development and capacity deficiencies) are:

- DART Underground (inclusive of improvements to Kildare/Northern/Maynooth lines);
- Metro North;
- Luas BXD;
- Luas to Bray;
- Upgrade of Luas Green line to metro standard;
- Luas to Lucan (and possible extension to Poolbeg);
- Luas through south west city (Kimmage);
- Additional tracks on the Northern Line;
- Metro West; and
- Extension of Dunboyne rail line to Navan.

Each of these schemes will be subject to future assessment of their individual business cases and, prior to construction, a confirmation that they represent the appropriate solution in each particular case.

As set out in Table 10.1, there are a number of key considerations (other than funding) that pertain to individual projects. In particular, for a number of light rail projects, their implementation would be subject to the scale and timing of development on their particular corridors. In addition, Bus Rapid Transit would be required to be considered and assessed as an alternative during the project development process.

While the overall Strategy period is twenty years, the detailed capital plans to deliver the required infrastructure are generally of a much shorter period, typically about five or six years. This is reflected in the statutory requirement, set out in the Dublin Transport Authority Act 2008, to produce integrated implementation plans covering six year time periods, setting out the detailed infrastructure investment plan for that period. Accordingly, it is anticipated that there will be about four such plans covering the full period of the Strategy.

The Government's *Infrastructure and Capital Investment 2012 - 2016*, published in November 2011, sets out the funding priorities for the five year period covered by this plan. *Infrastructure and Capital Investment 2012 – 2016* focuses on prioritising spending *"to ensure maintenance of existing investment and to advance a small number of important projects which can add value to the existing network"*.

In relation to major rail projects, the Government's capital investment plan up to 2016 envisages the advancement of work on the LUAS Broombridge (Line BXD) project during the plan period, with the other major rail projects being postponed due to the current funding constraints.

In terms of prioritisation, the major rail projects can be grouped into three tiers – Short-term, Medium-term and Long-term. Short-term reflects what will be progressed during the first six years of the Strategy under the Infrastructure and Capital Investment 2012 – 2016 plan. Medium-term reflects what will be progressed over the subsequent ten year period (the middle period of the Strategy). Long-term covers what will be developed over the final four or five years of the Strategy, subject to funding availability.

**Table 10.1 – Prioritisation schedule for capital intensive rail infrastructure schemes**

| Tier | Possible Time Period | Projects | Additional Considerations other than Funding |
|---|---|---|---|
| Short-term | 2012 - 2016 | Luas BXD | |
| Medium-term | 2017 – 2026 | DART Underground<br>Metro North | |
| Long-term | 2027 – 2030 | Additional tracks on the Northern Line | Subject to feasibility study |
| | | Upgrade of Luas Green line to Metro | Subject to emergence of severe capacity shortfall |
| | | Metro West | Northern section subject to development in North Blanchardstown |
| | | Extension of Luas Green Line to Bray | Subject to development in the Bray/Fassaroe area |
| | | Luas to Lucan and extended to Poolbeg | Subject to examination of BRT alternative; Poolbeg section subject to development in Poolbeg peninsula |
| | | Luas through south west city (Kimmage) | Subject to examination of BRT alternative |
| | | Navan Rail Line | Subject to development in the Navan area |

Applying that prioritisation grouping to the capital intensive rail infrastructure schemes, provides the schedule of rail project groupings set out in table 10.1 above.

Since the delivery of major capital projects is fundamentally dependent on the availability of funding, the significant time periods encompassed in the above table mean that the stated timescales should be treated as indicative only. It is difficult to predict at any point the likely availability of funding beyond a short time horizon, and particularly so at the present time in the light of Ireland's current economic difficulties.

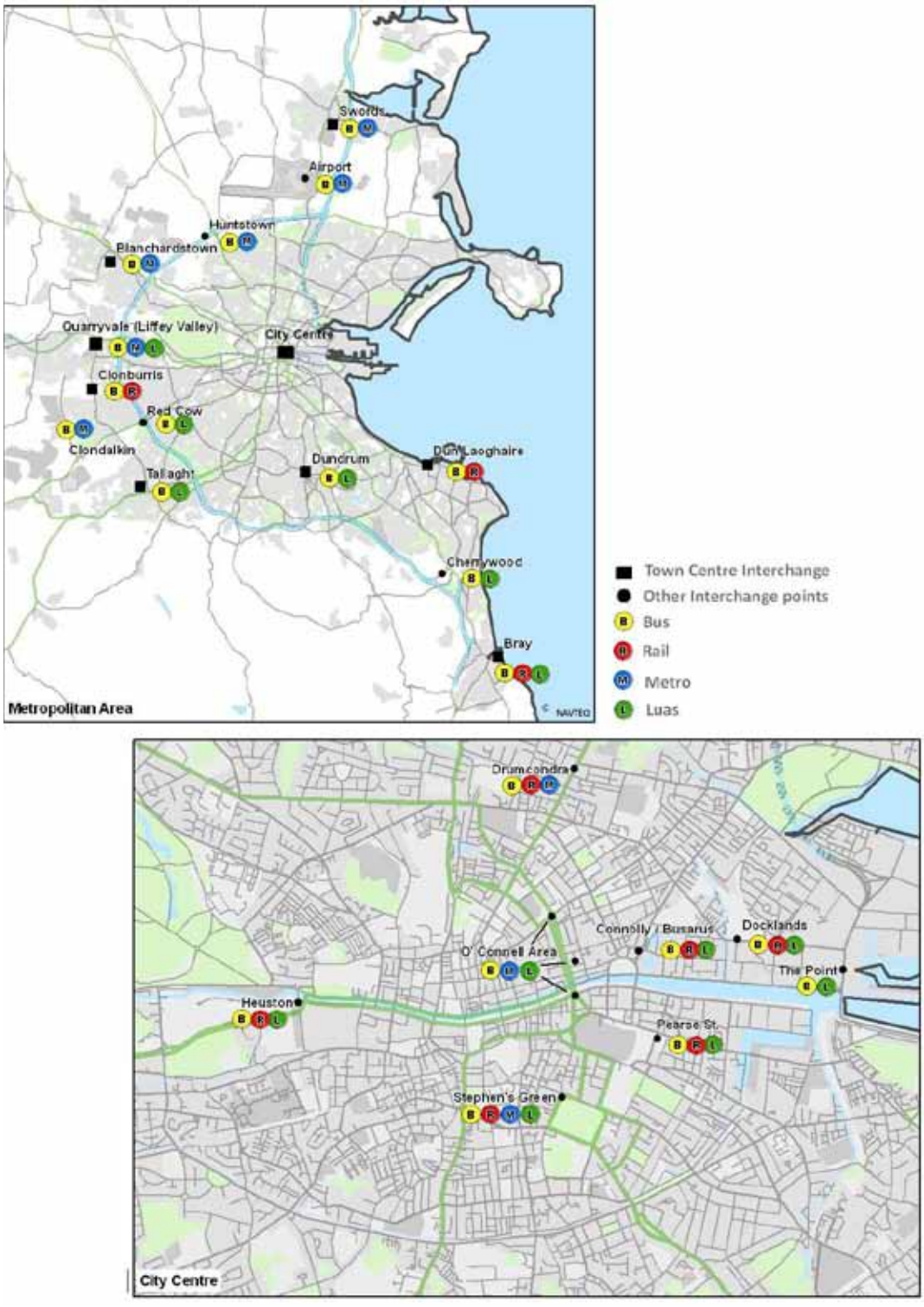
However, the grouping of the projects reflects the order of development envisioned under this Strategy. Luas BXD has been included in the Government's *Infrastructure and Capital Investment 2012 - 2016* plan for advancement during the period of that plan. The two most significant public transport projects proposed in the Strategy are DART Underground and Metro North.

These two projects are, therefore, included in the Medium-term category, for development over the period of the two capital plans subsequent to the current *Infrastructure and Capital Investment 2012 - 2016* plan. The remaining major rail capital schemes are classified in the Long-term category, for delivery following DART Underground and Metro North, subject to the confirmation of their need and appropriateness.

The above timescales are not intended to preclude the earlier development of major rail infrastructure schemes should circumstances, in particular the availability of funding, permit. Equally, if lower cost scheme solutions emerge, such as BRT alternatives, or if private finance can be secured on a value for money basis, consideration can be given to the earlier progression of such schemes, should funding permit. In addition, other smaller rail projects - such as new stations, closure of level crossings, information and control systems - will be advanced in accordance with funding availability.

As set out in the Dublin Transport Authority Act 2008, the Strategy is subject to reviews at intervals not exceeding six years, as are the Regional Planning Guidelines. This review cycle allows for a consideration of population and land development changes in the intervening period and also would take account of new or revised Government priorities in matters such as national spatial strategy, employment creation, sustainability and climate change.

**Figure 10.4: Key public transport passenger interchange locations in 2030**



# Chapter 11

# Roads, freight and travel demand management

**In this Chapter:**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| 11.2 | Freight | 9 |
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## 11.1 Roads

### 11.1.1 Introduction

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. They provide vital arteries for the movement of freight and the operation of the commercial life of the Metropolitan and Hinterland areas. They also meet important social objectives, by providing access to activities and links between communities. However, in providing a sustainable transport system capable of meeting the needs of the region, it is essential that an appropriate balance is achieved between the allocation of road space to the motor car and the prioritisation of road space for pedestrians, cyclists, public transport, and freight movement.

*Smarter Travel* published by the Government in 2009, sets ambitious targets in relation to limiting growth in car traffic. It requires that *"the total kilometres travelled by the car fleet in 2020 will not increase significantly from current levels"* and that the share of total journeys made by car will fall to 45%. Achieving these objectives will effectively require that future travel growth over the next decade will have to be accommodated through non-car modes. Accordingly, further road development in the GDA in the period of the Strategy will be predominately limited to cases that are justified on a basis other than simply providing road capacity.

The Strategy seeks to improve road safety for all users. Considerable progress has been made in improving road safety in the Greater Dublin Area over the last ten years, and the Strategy will seek to build on this, with a particular emphasis on improving safety, and perceptions of safety, for pedestrians and cyclists.

### 11.1.2 Development of the road network

*Overview*

In general there will be a clear presumption against development of new road proposals unless required to address issues such as safety concerns, provision of space for public transport priority or local servicing of development lands that meet Strategy planning objectives or is otherwise needed to meet national objectives consistent with the Strategy's principles. Alternative solutions such as traffic management or demand management measures should always be examined to identify if they could effectively address the particular circumstances prompting the road proposal. Any road proposals need to be consistent with Strategy objectives and the Department of Transport's Smarter Travel policies and targets in addition to other relevant national policies.

The specific principles that will underpin decisions in relation to the development of roads schemes in the Greater Dublin Area are set down in Measure ROAD 1.

The implications of these principles in respect of strategic roads are that the Authority will seek the examination and introduction, where appropriate, of traffic, mobility and demand management measures and exploitation of public transport options in the corridor before considering strategic road capacity upgrades, or new strategic roads that would facilitate unsustainable increases in car-based commuting traffic.

The Authority will support road improvements schemes whose primary purpose is to address accident or safety issues, providing such schemes are designed to an appropriate standard and avoid inappropriately increasing capacity that may encourage longer distance car-based commuting.

It is also recognised that certain roads will be essential to provide or improve access to development areas. However, these need to be in appropriately zoned areas and be consistent with the stated principles in respect of permissible road development. In addition, and to the extent practicable, where the need for such a road proposal is governed by future development provision, a phased approach to the delivery of the road proposal, in line with development progression, should be adopted.

The Authority will also support the provision of local bypass schemes for towns and villages where the key objectives of such schemes are to address safety issues or to facilitate more sustainable transport provision within the town or village, providing such schemes are designed to an appropriate standard and avoid inappropriately increasing capacity that may encourage longer distance car based commuting.

Any new road schemes will need to meet strategic environmental objectives and be required to avoid adversely affecting the integrity of any Natura 2000 sites. The environmental impact of new roads, beyond those specifically being progressed as part of the Strategy, will be assessed as each subsequent Strategy implementation plan is developed.

Consultations with the Authority should take place at an early stage on any road proposals envisaged in the Greater Dublin Area.

### *Major road proposals*

The two major road proposals of greatest significance for the Greater Dublin Area are the Eastern Bypass and the Leinster Orbital Route.

**Measure ROAD 1:**

*The Authority will seek that road development in the Greater Dublin Area will satisfy the following principles:*

*(a) That the proposed scheme is consistent with the overall Strategy objectives and Government policies related to transport and that the need which is proposed to be addressed by the road scheme cannot be effectively and satisfactorily addressed by other mode choices;*

*(b) That alternative solutions such as traffic management or demand management measures cannot effectively and satisfactorily address the particular circumstances prompting the road proposal or are not applicable or appropriate;*

*(c) That the demand needs or the development needs giving rise to the road proposal are in accordance with the Strategy planning objectives for the region or area impacted by the road proposal;*

*(d) That the development of the road scheme does not diminish in any significant way the expected beneficial outcomes of the Strategy;*

*(e) That the proposed road scheme will not give rise to a significant or unsustainable increase in the overall level of car trips;*

*(f) That the proposed scheme is consistent with Smarter Travel objectives and targets;*

*(g) That the road scheme, other than a motorway proposal, will be designed to provide safe and appropriate arrangements to facilitate walking, cycling and public transport provision;*

*(h) That any proposed road developments in proximity to residential areas or bypassed town centres should incorporate traffic management measures to reduce traffic speeds to appropriate levels;*

*(i) That any major new national road schemes would consider and incorporate, where appropriate, demand management proposals as an integral part of their delivery; and*

*(j) That there will be no significant increase in road capacity for private vehicles on radial roads inside the M50 motorway.*

In the case of the Eastern Bypass, the proposal is not recommended for development during the Strategy period. However the retention of a route corridor is recommended, to facilitate the possible future use of the corridor for transport provision. However, a residual need to service the South Port and the south docks area over the period of the Strategy remains. To address this need, a road link on the line of the proposed Eastern Bypass and extending from the Dublin Port Tunnel to the Poolbeg area is recommended.

Appropriate Assessment of this Strategy has identified the possibility that development of this road proposal may have impacts in relation to 'Natura 2000' sites.

This is dealt with in the Natura Impact Statement, which has identified that that this should be further addressed through project-level Appropriate Assessment. (See also Section 13.5 "Environmental considerations").

**Measure ROAD 2:**

*The Authority will seek:*

*(a) The protection of an Eastern Bypass route corridor for a possible future transport scheme that may be implemented after 2030; and*

*(b) The provision of a new road link from Dublin Port Tunnel to the Poolbeg area, subject to feasibility, economic assessment and the extent of development in the Poolbeg area.*

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. The Strategy recommends the finalisation of the determination of the route corridor and its protection from development intrusion. However, the full development of the proposal is unlikely to be required during the Strategy period and, accordingly, it is recommended that an incremental approach to its delivery is adopted. This should target the most deficient sections on the existing road network in terms of road accident records, or congestion.

Appropriate Assessment of this Strategy has identified the possibility that development of the Leinster Orbital Route may have impacts in relation to 'Natura 2000' sites. This is dealt with in the Natura Impact Statement, which has identified that that this should be further addressed through project-level Appropriate Assessment. (See also Section 13.5 Environmental Considerations).

**Measure ROAD 3:**

*The Authority will seek:*

*(a) The finalisation of the route corridor for an appropriately scaled Leinster Outer Orbital Route and its protection from development intrusion; and*

*(b) An incremental approach to the delivery of the project, with partial development only during the Strategy period targeted at addressing deficiencies in the existing road network in terms of road safety or congestion.*

### 11.1.3 Managing the road network

In order to achieve a more sustainable balance between the use of the private car and other transport modes it will be necessary to increase the allocation of road space and traffic signal priority in favour of public transport and walking and cycling modes.

Without such a rebalance, non-car modes of transport will not be able to offer the level of service that is essential to attract motorists out of their cars to use more sustainable public transport or cycling or walking alternatives.

This assignment of road space to public transport has been a feature of road traffic management in the Dublin area over the last decade with tens of kilometres of bus and tram lanes having been installed and buses and trams given priority at certain traffic signals. This approach will be required to continue under the Strategy and will need to focus on more central areas which are more challenging because of space and capacity constraints. Without additional measures to further improve the priority for non-car modes in central urban areas, the full benefits of the public transport offering will fail to be delivered and the objectives set in *Smarter Travel* will not be achieved.

**Measure ROAD 4:**

*The Authority will;*

*(a) Prepare a programme for prioritisation of road space and traffic signal priority in favour of walking, cycling and public transport in the Greater Dublin Area, based on the road user hierarchy and need, in a planned manner that recognises the competing demands for scarce road capacity (See chapter 9 "Walking and Cycling" and Chapter 10 "Public Transport"); and*

*(b) Seek the identification and implementation by local authorities of appropriate measures in locations or areas identified by the above programme.*

#### *Management of Strategic Roads*

A network of strategic roads for the Greater Dublin Area will provide reliable journey times for longer distance travel by road, particularly for goods and freight movements. The key elements of this network will be the motorways and national primary roads outside the M50.

**Measure ROAD 5:**

*The Authority will:*

*(a) Identify a network of roads essential for strategic traffic movement in its forthcoming Strategic Traffic Management Plan. Motorways and National Primary Roads outside the M50 will form the core of this network (see Figure 11.1);*

*(b) Seek the management of this strategic road network to:*

- *(i) Protect and enhance the person-trip capacity of the network;*
- *(ii) Prevent inappropriate development or access arrangements from eroding capacity, safety or smooth traffic flow on the network;*
- *(iii) Operate the network to its maximum efficiency having regard to the balance to be achieved across the various transport modes;*
- *(iv) Provide reliable journey times and network resilience when incidents arise (e.g. accidents or other disruption);*
- *(v) provide priority where needed to modes higher in the road user hierarchy; and*
- *(vi) Expand the use of ITS (intelligent Transport Systems) technology to enhance operational efficiency and driver information.*

*(c) Support the declassification of national roads inside the M50 C-ring to regional road status except for the Dublin Port Tunnel and a route serving Dun Laoghaire Port.*

*Driver information*

Clear and consistent information for road users is essential. This includes direction signage as well as live journey information, including notification of disruptions.

The provision of live travel information can assist in maintaining the resilience and reliability of the road network, by enabling drivers to plan alternative routes or means of travel. Information will be displayed at appropriate points on the strategic road network and should also be provided for dissemination to third party providers of travel information, such as radio stations, Sat Nav companies and travel information websites.

Live travel information will include:

- Expected journey times to key destinations on the strategic road network, based on current and historical traffic conditions;
- Event access information;
- Traffic disruption locations, expected duration and alternative routes where appropriate;
- Parking availability at appropriate points on the approach to larger town centres; and
- Parking availability and public transport journey times on the approach to Strategic Park and Ride sites (see Section 10.5.5)

**Measure ROAD 6:**

*The Authority will support the National Roads Authority and local authorities in providing:*

*(a) Clear, consistent direction signage for road users, particularly on the strategic road network and approaches; and*

*(b) Timely information on road travel conditions and parking availability at appropriate points on the road network, and the open dissemination of this information to the public and third party information providers.*

Road authorities need to have policies and cross-boundary partnership working processes in place to ensure that planned maintenance and construction work and planned events do not give rise to an unacceptable level of journey time unreliability and to ensure that the road network can remain at a level of working efficiency which will not impose excessive or unnecessary delays. This is particularly important for roads that serve a strategic function.

**Measure ROAD 7:**

*The Authority will seek the development and implementation of arrangements to reduce traffic disruption due to maintenance or utilities works in the Greater Dublin Area, including:*

*(a) The operation of a comprehensive road works permit system throughout the Greater Dublin Area;*

*(b) Increased co-ordination and monitoring of roadworks activities;*

*(c) The application of suitable charges (e.g. 'lane rentals') to encourage minimal occupation of road space during construction or maintenance activities on key roads;*

*(d) The levying of appropriate penalty provisions on contractors for non-performance, such as over-running roadworks or unsatisfactory road reinstatement; and*

*(e) The preparation of incident and event management plans (including provision for emergency services) for unplanned (emergency) roadworks, incidents and events to minimise the amount and extent of disruption.*

### *Strategies for on-street waiting, loading & parking*

As part of local traffic management plans, local authorities should undertake a comprehensive review of uses of kerbside space, aimed at maximising the efficiency of allocations of space and time to different users, in line with strategy objectives and hierarchy of provision at specific locations. This would apply primarily in commercial areas (particularly in Designated Towns and Designated Districts) but also along arterial routes and bus corridors, where provision for essential parking and deliveries for retail may have to be made in side streets, balanced with the needs of local residents of these areas for parking, access etc. There is also a need to determine adequate overall kerb-space allocations for special uses in Designated Towns and Designated Districts, addressing additional bus stops and bus lay-over spaces; coach parking and drop-off/pick up; taxi ranks and feeders; permanent delivery bays; disabled parking; Car Club spaces; Pay and Display; and other on-street requirements.

**Measure ROAD 8:**

*The Authority will seek the inclusion of detailed arrangements for on-street parking, loading and unloading in local Traffic Management Plans.*

### *Increased enforcement of parking and moving traffic offences*

To protect the function of roads and streets, co-ordinated and expanded enforcement over on-street offences is required, including illegal kerbside parking and overstaying, waiting and loading offences (including at bus stops), taxi over-ranking and unauthorised waiting, bus lane and tramway encroachment, ignoring traffic bans, vehicles failing to stop at traffic lights or pedestrian crossings and overtaking and speeding on local roads.

In order to free up Garda resources, and ensure more effective enforcement on roads and streets in urban areas, consideration should be given to the introduction of legislation to enable civil enforcement through local Councils. Existing Garda powers on strategic roads would be retained but others could be handed over.

**Measure ROAD 9:**

*The Authority will seek more effective enforcement of traffic regulations and laws, and support examination of the use of technology and measures and legislative changes as required, to assist in achieving improved compliance with regulations.*

### 11.1.4 Making roads safer

Road safety and accident reduction measures are typically inexpensive to implement - however, they provide significant social and economic benefits. There are a variety of ways to improve road safety, including resolving road layout problems, road user education, enforcement of traffic regulations and road and vehicle engineering measures.

**Measure ROAD 10:**

*The Authority, working with Gardaí, the Road Safety Authority, the National Roads Authority and local authorities will:*

*(a) Identify road accident locations in the Greater Dublin Area where cost-effective engineering measures can beneficially contribute to improved safety and seek the implementation by local authorities of appropriate accident remedial measures at these locations, and monitor their impact, with a view to improving the effectiveness of accident remedial interventions over time;*

*(b) Support road safety campaigns and public information programmes, targeting all road users including schoolchildren, and training for drivers of larger vehicles in built up areas;*

*(c) Seek enhanced enforcement, particularly of speed limit or traffic light regulations, at identified accident locations; and*

*(d) Support changes in HGV design to improve cyclist safety, including provision for vehicle sideguards and side mirror lenses that reduce cyclist blind spots for HGV drivers.*

### 11.1.5 Reducing the environmental impact of road traffic

Measures to reduce the environmental impact of road traffic in the Greater Dublin Area in terms of air pollution, noise and $CO_2$ emissions need to form part of the Strategy. Many of the measures set out elsewhere in the Strategy provide fundamental contributions to this objective. The Authority will continue to monitor these parameters, in conjunction with the relevant agencies, and will seek the implementation of appropriate measures, where necessary, to comply with applicable standards.

The *Smarter Travel* document envisages that 10% of the car fleet will be electric by 2020. To support this target, electric charging points will need to be introduced throughout the Greater Dublin Area.

**Measure ROAD 11:**

*The Authority will:*

- *Support the provision of electric vehicle charging points on-street, at park and ride sites and elsewhere as appropriate in the Greater Dublin Area;*
- *Support greater use of electric taxis and goods vehicles, especially in urban areas; and*
- *Support training and provision of information in relation to 'eco-driving' techniques.*

**Figure 11.1: Motorways and National Primary Roads**

## 11.2 Freight

Currently 98% of the internal merchandise trade in Ireland is carried on the road network. Over 25% of Ireland's freight related travel occurs on roads within the Greater Dublin Area. The dispersed nature of population and employment patterns, the limited number of high volume bulk movements, the low density of most production activities and the relatively short haulage distances involved (arising from Ireland's small country size), all militate against the economic viability of alternatives to road freight. Consequentially, the central role served by road freight for inland transport is unlikely to change significantly in the future and appropriate provisions must be put in place to facilitate that position.

Efficient freight transport is essential for current economic activity and anticipated growth. Factories and production units need good transport connections to ensure certainty of supplies and deliveries. Shops and retail outlets need efficient distribution systems. All businesses need efficient freight movement to operate effectively.

Located within the Dublin Region, Dublin Port represents Ireland's largest port, with a throughput of over twenty six million tonnes in 2009. Dublin Airport is also a major transporter of goods, much of it being of a high-value nature. Together with the other ports, they underline the importance of the Greater Dublin Area nationally, as a conduit and focus for the movement of goods.

The opening of the Dublin Port Tunnel in December 2006 facilitated significant improvements in freight movement benefitting the Dublin City area. It enabled the implementation of Dublin's HGV Management Strategy which has, in conjunction with the Tunnel project, removed thousands of truck movements from city streets and re-routed most of them through the Tunnel. Together with the recent improvements in the M50, journey times for trucks going to and from Dublin Port have improved dramatically over recent years.

However, numerous challenges remain in the freight area. The Strategy proposes to build on the successful outcomes achieved to date and to seek to attain a position where freight moves efficiently throughout the region but in balance with the needs of other road users and the needs of the areas and streets that it passes through and serves.

### *Freight and the planning process*

Creating an efficient freight network that operates in harmony with other transport users and the residents of the Greater Dublin Area must start at the planning and development level. Appropriate location of freight intensive activity and incorporating freight considerations into the planning process for developments, will be essential if freight movement is to be optimally provided for in the overall transport system.

To enable better planning for freight movement, ongoing research is required into freight movements, industry requirements and likely future trends.

Accordingly, the following measures will be implemented:

**Measure FRT 1:**

*The Authority will:*

- *Support the clear identification in Development Plans of appropriate locations for freight generating developments and freight intensive activities. To the extent consistent with good planning policy, these will be located close to high capacity roads to avoid the need for freight movement on unsuitable roads and streets; and*
- *Seek, as part of the statutory planning process, the preparation and operation of Construction Logistics Plans for large construction sites which will focus on reducing the congestion impacts of the development's construction.*
- *Work with the freight industry, local authorities, road and rail operators and the Department of Transport in relation to collection of freight data and the identification of changing needs.*

### *Managing movements of heavy vehicles*

Dublin City Council's HGV Management Strategy provides for a general ban on heavy (5+ axle) vehicles between 7am and 7pm seven days a week from a designated exclusion area, with a limited permit scheme for 5+ axle vehicles that need to load/unload within that area.

The introduction of this scheme, in conjunction with the opening of the Dublin Port Tunnel, has dramatically reduced the number of 5+ axle vehicles operating within the exclusion area. Opportunities to extend the categories of excluded vehicles have been examined and while there are challenges associated with such extension, further expansion of the scheme would provide additional environmental benefits for the city.

**Measure FRT 2:**

*The Authority will:*

- *Seek the extension of the current Dublin City HGV Management Strategy to include 4 axle vehicles;*
- *Evaluate the potential for the Dublin City HGV Management Strategy to:*
  - *Be further extended to other vehicles types;*
  - *Have an expanded exclusion area; and to*
  - *Encompass vehicle emission parameters;*
- *Examine the potential of introducing HGV controls in other town centres.*

### *Deliveries*

A major portion of freight movement on roads and streets throughout the Greater Dublin Area is associated with deliveries to retail and commercial premises. Changes in the delivery patterns currently operated could pay significant dividends in terms of reducing congestion on roads and increasing productivity for the transport companies involved.

Options such as night-time deliveries are commonplace in other cities, as are arrangements such as "breaking down" large loads and consolidating small loads in dedicated centres at the outskirts of urban areas, and using smaller fleet, commonly of a van type and sometimes electric, for the final delivery stage.

**Measure FRT 3:**

*The Authority will:*

- *Seek the introduction of arrangements to promote deliveries in Dublin city centre and, if appropriate, in other towns, between the hours of 7p.m. and 7a.m., taking into account the rights and needs of residents living in these areas;*
- *Promote the development and operation of Distribution and Servicing Plans for freight intensive developments, which will focus on creating efficient delivery and servicing processes that reduce the congestion impacts associated with the development;*
- *Seek the development of a pilot urban delivery centre in the Dublin area for the disaggregation of large loads and the consolidation of small loads for final delivery by van type vehicles in Dublin City Centre and surrounding areas; and*
- *Support the use of low impact delivery schemes in Dublin city centre and other town centres, for example by using smaller quieter vehicles, with lower emissions, including the use of cargo-bikes and examining the potential for certain freight deliveries by tram.*

### *Vehicle technology*

Improvements in vehicle technology will provide opportunities for more environmentally friendly approaches to freight logistics. In addition, improvements in communications technologies provide the means to better manage and co-ordinate freight distribution.

**Measure FRT 4:**

*The Authority will promote the use of low emission freight vehicles, including electric vehicles, throughout the Greater Dublin Region and specifically in the urban areas.*

*Truck parking and truck routes*

Inappropriate lorry parking can cause nuisance and annoyance in residential areas and congestion or other problems at other locations. Facilities for truck parking are highly desirable both to prevent such issues arising and also from a road safety perspective, in that such facilities accommodate truck drivers in adhering to required rest and break periods.

**Measure FRT 5:**

*The Authority will support the provision of truck parking facilities at on-line motorway service areas and other appropriate locations within the Greater Dublin Area. In addition, the Authority will seek the provision of truck parking facilities within appropriate areas of Dublin City.*

Of primary importance to freight transport is reliable and timely access to key destinations, including access to ports and airports. It is also important that freight traffic does not unduly impact on people living in urban areas through which they pass.

**Measure FRT 6:**

*The Authority will identify recommended preferred routes for freight transport for key locations such as ports and Dublin Airport, encompassing both strategic national routes and also localised routing as appropriate.*

*Rail based freight*

The Strategy will support the use and safeguarding of the existing rail network and appropriate enhancements to the network to provide for freight movements, where the value for money of such provision, taking into account economic, social and environmental benefits, is positive.

**Measure FRT 7:**

*The Authority will:*

- *Support the use of the existing rail system for the transport of appropriate materials where feasible and economically, socially and environmentally beneficial; and*
- *Seek the safeguarding of existing rail lines for potential use by freight, and will support the upgrading and improvement of the rail freight network, including, where appropriate, reducing conflict with passenger services, improving freight terminal capacity and enhancing links to key ports for onward distribution of containers and other goods, where feasible and economically, socially and environmentally beneficial.*

## 11.3 Travel demand management

### 11.3.1 Purpose of demand management

*Reducing costs of congestion*

Congestion represents both an economic and environmental cost to the region as a whole and an impact on the quality of life at the level of the individual road user. Traffic congestion imposes costs on industry and business in particular, reduces the overall competitiveness of the region and decreases the attractiveness of the region as a place to locate new business. Goods and services cost more to deliver, journey time uncertainty creates additional costs and resources are consumed unproductively.

There will be only limited provision of new road capacity in the Greater Dublin Area over the Strategy period. This is in keeping with the objectives of the Strategy and the policies set out in the Department of Transport's *Smarter Travel* document. Better management of existing road space will allow for more efficient movement of essential traffic. Major investments in the public transport network and expansion of public transport service coverage and capacity will also attract new public transport users, freeing up road space.

Despite these improvements, the forecast growth in population and employment means that traffic congestion is projected to worsen considerably throughout the Greater Dublin Area up to 2030. Although better planning of the location of homes relative to jobs can mitigate this impact (see Chapter 8), more active measures to manage the demand for travel by road will be required, if worsening traffic congestion is to be avoided.

*Meeting Smarter Travel targets*

*Smarter Travel* sets out the Government's objectives in relation to sustainable travel and transport in Ireland. Two specific targets set out in the document are (i) that "the total kilometres travelled by the car fleet in 2020 will not increase significantly from current levels" and (ii) that "work-related commuting by car will be reduced from a current modal share of 65% to 45%".

While these are ambitious and challenging targets, the Strategy is focused on achieving these goals. It provides for major investment in a transformed public transport network to support a shift to public transport use. It includes extensive measures to make it easier and more attractive to cycle and walk. Planning and transport integration is a fundamental part of the Strategy, which should reduce car use need. However, even with all of these elements in place, transport modelling forecasts indicate that the targets in *Smarter Travel* will not be achieved without significant demand management measures of a fiscal nature.

*Providing for public transport*

Widespread car use has led to some public opposition to the allocation of valuable road space to public transport. However, this allocation can make for more efficient use of road space, providing public transport is well used. Management of travel demand that reduces car use would facilitate the provision of additional priority to street based public transport, as well as cyclists and pedestrians.

The following section provides an overview of possible demand management options and sets out the demand management measures included in the Strategy.

### 11.3.2 Demand management measures

*General*

Travel demand management measures in the Greater Dublin Area need to support the environmental and economic objectives of the Strategy, and targets related to distance travelled by car and share of travel by car, set out in the Department of Transport's *Smarter Travel* document. Analysis carried out by the Authority confirms that a region-wide approach to travel demand management is required if Strategy objectives and *Smarter Travel* targets are to be met.

Management of demand for road use can be broadly grouped into three categories:

*(i) Control measures where access to, and use of, the road infrastructure or on and off-street parking spaces is controlled;*

(ii) *Fiscal measures where pricing mechanisms are utilisied to achieve road usage modification; and*

(iii) *Other complementary measures, which have a role on their own but are best introduced in combination with one or more of the control and fiscal measures.*

Control measures include:

- Better development planning to manage travel demand and reduce the need to travel;
- On street parking controls;
- Control of access onto certain strategic roads at congested times (ramp metering); and
- Dedication of road space to certain transport modes, whose users are higher up in the road user hierarchy.

Fiscal measures include:

- Taxation of car ownership;
- Fuel tax; and
- Road tolls or other forms of charging for road use.

Other complementary measures include:

- Mobility management plans (workplace, school and residential travel plans);
- Car clubs (short term car hire, reducing the need to own a car);
- Lift sharing (increasing car occupancy, so reducing car use); and
- Marketing, promotion and other travel behaviour change measures to promote walking, cycling and public transport use.

Some of these measures will be more useful and appropriate than others in meeting the objectives of the Strategy. The recommended measures are set out below.

*Better development planning to manage travel demand*

Recommended planning measures that can reduce the amount of travel by car include:

- The consolidation of housing, employment and retail developments into the Metropolitan Area of Dublin and the larger Hinterland town centres;
- The location of office and retail developments in central areas where access by public transport, cycling and walking is good;
- Restrictions on parking provisions at key destinations to encourage public transport use; and
- The location of residential developments on public transport corridors that provide good access to central areas.

These are addressed in more detail in Chapter 8.

*Traffic and on-street parking control measures.*

Traffic and on-street parking control measures can address issues arising from excess demand for road space on individual road corridors. Examples of control measures include:

- Ramp Metering, which is the control of access onto a dual carriageway or motorway corridor, through the provision of traffic lights on the entry slip road which respond to the traffic conditions on the corridor;
- Variable speed limits that allow speed limits to be dynamically set to suit traffic conditions, so that flow is maintained, avoiding stop-start conditions that arise from driver behaviour when congestion limits speeds below the road's usual limit;
- Hard shoulder running - opening up the hard shoulder to moving traffic on motorways, or dual carriageways with motorway characteristics to maintain journey time reliability and smooth traffic flows, at busy times;
- Dedication of lanes to particular transport modes such as public transport lanes, high-occupancy vehicle lanes or freight lanes; and
- On-street car parking restrictions.

**Measure TDM 1:**

*The Authority will evaluate the feasibility and potential benefits of the following measures to manage travel demand on roads in the Greater Dublin Area, and where appropriate seek their implementation:*

- *Ramp Metering, variable speed limits or hard shoulder running on dual carriageways or motorways, at times and places where congestion on these strategic roads is affecting journey time reliability and disrupting traffic flows;*
- *Dedication of traffic lanes to particular transport modes such as public transport lanes or freight lanes on certain roads, in addition to bus priority provision where appropriate (see section 11.3.2); and*
- *Introduction or expansion of local authority on-street parking controls that seek to reduce commuter parking.*

**Measure TDM 2:**

*The Authority will:*

- *Support the introduction or expansion of charging for on-street car parking in areas where space is scarce and charging contributes to parking turnover;*
- *Support the introduction of a levy on off-street parking spaces at town and employment centres and out-of-down retail developments subject to evaluation of feasibility and benefits and any necessary legislative change; and*
- *Support the setting of parking charges at levels to achieve specific transport objectives.*

### *Parking charges and levies*

Parking charges are already extensively applied in Dublin city centre and other towns in the Greater Dublin Area. It is desirable to charge for parking in these areas, to increase turnover of spaces, making it easier for those who need to drive to find a parking space.

In addition, the Government announced as part of Budget 2009 the introduction of a levy in respect of workplace provided parking facilities in major urban centres, to be specified in regulation by the Minister for Finance.

Demand management through a workplace parking levy could play a significant role in reducing car commuting. There is potential for levies to be extended to other types of destinations such as out-of-town shopping centres. For the measure to be most effective, a mechanism is required that charges the individual user of the space each time the space is used.

Road access control, parking restrictions and parking charges address issues due to excess demand on individual roads or individual corridors. They are less appropriate for managing travel demand on wider geographical or regional basis. In this case, road user charging is the most appropriate and effective mechanism to use. It is designed to influence people's decision to make a journey by car, and encourage them to consider alternative modes to the car when they do travel.

### *Road use charging*

Road use charging spans a range of possibilities from relatively simple single toll point charging to more elaborate area based or route charging schemes using satellite tracking systems or Dedicated Short Range Communication (DSRC) systems.

Road use charging already operates extensively in Ireland with toll plazas on ten routes throughout the country (nine national roads and one non-national road) as well as an electronic barrier-free tolling operation on the M50 motorway. One of those toll routes – the Dublin Port Tunnel – operates a variable rate tolling system which applies a higher toll charge during peak hours than the charge prevailing in the off-peak hours.

Several cities such as London, Stockholm and Singapore have implemented forms of cordon or area based road pricing which have been successfully in operation for several years. Other cities such as Oslo and other Norwegian cities operate similar forms of cordon tolling.

Road use charging provides the most effective mechanism for directly targeting specific users and seeking to alter travel behaviour. It also provides the most direct means of levying a user with the full external cost of the trip being undertaken. As such it allows for the full application of the "user pays" principle.

Different objectives can be targeted under a road use charging scheme. Two of the obvious objectives are congestion management (reducing delays for economically essential traffic) and environmental improvement. For the former, an arrangement with a charging regime focussing on the use of specific routes at busier times would be applicable, whereas for an environmental objective, a scheme based on emission ratings might be appropriate.

In order to achieve the *Smarter Travel* objectives of reducing the mode share of work-related commuting by car to 45% and ensuring that the total kilometres travelled by the car fleet in 2020 will not increase significantly from current total car kilometres, the Authority's analysis shows that demand management will be required over a large geographic area. Road use charging is the most appropriate means of achieving this.

If there are changes in Smarter Travel objectives, including timeframes and mode share targets, the role and extent of road use charging will need to be reviewed to reflect those changes.

Delivery of any road use charging proposal is challenging on many levels. Not least is the achievement of public and political acceptance of the proposals. In many successful applications the imposition of road use charging is linked to delivery of clearly defined improvements that are tangible and visible (such as improved public transport) or to a redistribution of costs (for example a reduction in public transport fares) so as to render the charging effect relatively cost neutral on an overall basis.

In addition, the technical and cost challenges in implementing any large system can also be significant.

**Measure TDM 3:**

*The Authority will:*

- *seek the introduction of a road use charging scheme over a large geographic area of the region prior to 2020 in order to meet current national policy as set out in* Smarter Travel*;*
- *Advise the Minister on the format of a road use charging scheme that would meet national targets, including the structure and level of the charges, the area to which they are to be applied and the hours of operation, under the Implementation Plan arrangements;*
- *Undertake extensive stakeholder and public consultation in the scoping of a scheme;*
- *Advise on the extent to which the net revenues from a road use charging scheme can or should be assigned to, or re-invested in, public transport improvements and operations; and*
- *Advise on the introduction of a pilot charging scheme on an individual road corridor, or corridors, in conjunction with the provision of public transport improvements on that corridor.*

### *Mobility management, car clubs, lift sharing and marketing*

There are other approaches to managing demand, which can be considered to some degree as being complementary to the main categories. These include the implementation of mobility management plans, such as workplace or school travel plans at individual employment or educational centres, or residential travel plans in defined residential areas.

The Department of Smarter Travel Workplaces programme provides advice and support to workplaces in setting up workplace travel plans. As of January 2011, over 60 major organisations in the GDA were participating in the programme. Separately, An Taisce's Green Schools Travel programme, funded by the Department of Transport, has signed up over 150 schools in the GDA to date to participate in school travel plan initiatives.

Other initiatives include the introduction of car clubs (short term public car hire, similar in concept to public cycle hire scheme) to reduce the need to own a car, and lift sharing initiatives to reduce single occupant car use.

Other related measures include awareness and marketing campaigns, which centre on improving knowledge of the impacts of, and alternatives to car use.

These types of measures work best when introduced in tandem with the travel demand management measures set out above. While relatively inexpensive, they can pay significant dividends and form an important element of the overall Strategy for the GDA.

**Measure TDM 4**

*The Authority will support and facilitate the development of:*

- *Workplace travel plans for all large employers in the Greater Dublin Area;*
- *Residential travel plans in a phased programme over the Greater Dublin Area;*
- *School travel plans for all schools in the Greater Dublin Area;*
- *Car club schemes, and their future expansion if successful; and*
- *An all-island car sharing website.*


*Taxation Measures*

Taxation measures aimed at either car ownership or car usage costs can act as a form of demand management measure. Any changes would need to be made at a national level.

Taxation measures focused on car ownership have the disadvantage of being "one off" payments that provide no disincentive to travel.

Fuel taxation is a relatively simple device to implement, and is very effective at targeting reductions in fuel consumption and consequently $CO_2$ emissions. As such it could help to meet this environmental objective. However, disadvantages arise from the fact that it is an untargeted tool that affects all users equally on all routes and at all times. It lacks the ability to be area specific or to target car journeys at congested times or in places prone to congestion or where local traffic related environmental issues exist.

Taxation measures to reduce car travel are not recommended as part of this Strategy because they can only be implemented at a national level and are, therefore, outside the remit of this regional Strategy, while other demand management measures (in particular road user charging) can be applied in a more targeted manner within the Greater Dublin Area.


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# PART C:
# OUTCOMES AND NEXT STEPS

# Chapter 12

# Expected Outcomes

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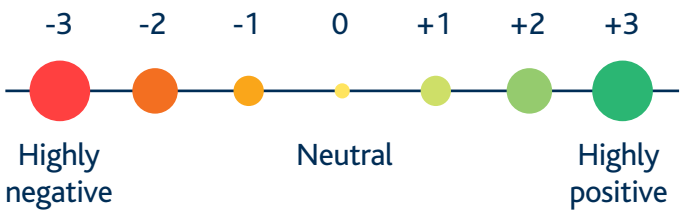
## 12.1 Introduction

This chapter presents the results of the appraisal of the Strategy. It sets out how well the Strategy performs in meeting:

- The Strategy objectives; and
- Transport appraisal criteria, based on the Department of Transport's Common Appraisal Framework (CAF).

In each case, the Strategy outcomes are compared with what would be expected to happen in the absence of the measures being implemented (the Do Minimum scenario), and the extent of the difference determines the score awarded.

Strategy scores for each objective, sub-objective and appraisal criterion were awarded on a seven point scale, -3 (highly negative) to +3 (highly positive)




This chapter also examines how well the Strategy performs in meeting the targets set out in the Department of Transport's Smarter Travel policy document.

## 12.2 Contribution to Strategy objectives

The Strategy appraisal examined the expected performance of the Strategy against the high-level Strategy objectives set out in Chapter 3. This performance is summarised below, alongside the appraisal results for the three Strategy options described in Chapter 6.

| Strategy Objectives | Economy themed option | Social themed option | Environmental themed option | Draft Strategy |
|---|---|---|---|---|
| Objective 1: Build and strengthen communities |  |  |  |  |
| Objective 2: Improve economic competitiveness |  |  |  |  |
| Objective 3: Improve the built environment |  |  |  |  |
| Objective 4: Respect and sustain the natural environment |  |  |  |  |
| Objective 5: Reduce personal stress |  |  |  |  |

The general level of performance of the Strategy in delivering the objectives is in line with the best outcome from the three earlier Strategy options.

### 12.3 Detailed analysis of sub-objectives

As with the assessment of Strategy options (described in Chapter 6), the detailed assessment of the Strategy against the sub-objectives was informed in large part by analysis using the Authority's transport model for the Greater Dublin Area. In addition, modelling analysis was required to inform the assessment of the Strategy against transport appraisal criteria (detailed in section 12.4).

More detail on the performance of the Strategy against each of the specific sub-objectives is given in the tables below, which also list the main Strategy measures that contribute to that performance.

The score given against each sub-objective takes account of:

- the impacts of larger-scale infrastructure measures whose journey time savings and impact on share of travel were explicitly modelled and quantified; and
- the likely impacts of the measures that cannot be easily modelled at a strategic level (for example, more localised improvements to buses, walking and cycling facilities).

The sub-objective scores again use a seven point scale, -3 (highly negative) to +3 (highly positive)

### 12.3.1 Objective 1: Build and strengthen communities

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 1.1 | Improve accessibility to work, education, retail, leisure and other activities |  | LU1 | Priority locations for development | The concentration of employment in designated centres, and of residential development along rail corridors, will enhance the public transport share of commuter trips. Investment in new and upgraded public transport on key corridors will shorten travel time to key employment centres.<br><br>This will reduce congestion and hence car travel times too, but will require road user charging.<br><br>The more compact pattern of development will allow greater access to employment and local facilities by bus and by walking and cycling, also facilitating their enjoyment as leisure activities.<br><br>Access will also be improved by bus network improvements and new services such as hinterland Town networks and Park and Ride on corridors not served by rail. |
| | | | LU3 | Designated Town development plans | |
| | | | WCY7 | Walking for leisure | |
| | | | WCY12 | On-road cycling facilities | |
| | | | WCY13 | Off-road cycle tracks and paths | |
| | | | BUS2 | Metropolitan bus service improvements | |
| | | | BUS3 | Hinterland town bus services | |
| | | | BUS4 | Bus links from Designated Districts | |
| | | | BUS5 | Express bus links to Dublin City Centre | |
| | | | RAIL1 | DART underground | |
| | | | RAIL6 | Heavy rail service levels | |
| | | | RAIL7 | Metro North | |
| | | | RAIL8 | Metro West | |
| | | | RAIL9 | Green line Metro upgrade and extension | |
| | | | RAIL10 | New Luas line Lucan to Poolbeg | |
| | | | RAIL11 | New Luas line to Tallaght via Kimmage | |
| | | | INT5 | Park and Ride | |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 1.2 | Improve access for disadvantaged groups |  | OVR1 | Transport user hierarchy | Links to the nearest centre from disadvantaged areas (including designated Clár and RAPID localities) are mostly short, and are best improved by measures targeting short trips – cycling, local bus and walking. Bus network improvements and frequency enhancements benefit these areas; while some also gain from new Metro or Luas corridors – especially the South Docklands communities – and from integration of taxi with these services.<br><br>Overall, Dublin city centre access times from deprived areas by public transport fall by 43%.<br><br>Reduced off-peak fares will benefit low income public transport users. Those with impaired physical mobility will be able to use taxi or community transport, as well as having more, and more accessible, public transport. |
| | | | WCY4 | Walking/cycling in residential areas | |
| | | | WCY6 | Pedestrian crossing facilities | |
| | | | BUS1 | Bus network review | |
| | | | BUS2 | Metropolitan bus service improvements | |
| | | | BUS3 | Hinterland town bus services | |
| | | | BUS4 | Bus links from Designated Districts | |
| | | | BUS6 | Quality Bus Corridors | |
| | | | BUS7 | Bus Rapid Transit | |
| | | | RAIL10 | New Luas line Lucan to Poolbeg | |
| | | | RAIL12 | Metro and Luas service frequencies | |
| | | | RAIL13 | Review Metro and Luas service patterns | |
| | | | TC2 | Taxi interchange with public transport | |
| | | | TC4 | Community Transport | |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 1.3 | Improve access between communities within the region | ● | LU1 | Priority locations for development | In respect of trips to and from Designated Towns, new Luas and Metro lines benefit those travelling to the city centre and around the M50 – especially for outbound commuting – and rail improves journey times to some of the Hinterland locations, including Navan and Wicklow.<br><br>Such trips also gain from 'Integration' measures, but lose out from the higher (+10%) peak fares modelled.<br><br>However, the Hinterland Towns remain highly car-dependent (over 70% of inbound trips); and these will face a negative impact from road use charging, while gaining much-improved journey times .<br><br>Hence the overall neutral score for this indicator – though in practice, many of the trips which link to this sub-objective will take place outside the peak and will therefore benefit from 20% fare reductions, or less-congested roads, if by car. |
| | | | WCY11 | Cycling environment in towns | |
| | | | WCY12 | On-road cycling facilities | |
| | | | WCY13 | Off-road cycle tracks and paths | |
| | | | BUS2 | Metropolitan bus service improvements | |
| | | | BUS3 | Hinterland town bus services | |
| | | | BUS4 | Bus links from Designated Districts | |
| | | | BUS5 | Express bus links to Dublin city centre | |
| | | | RAIL1 | DART underground | |
| | | | RAIL2 | Northern line capacity and electrification | |
| | | | RAIL3 | Kildare line capacity and electrification | |
| | | | RAIL4 | Maynooth line electrification / extension | |
| | | | RAIL5 | South East line removal of constraints | |
| | | | INT1 | Integrated public transport information | |
| | | | INT2 | Integrated smart ticketing | |
| | | | INT3 | Simplified integrated fares system | |
| | | | INT4 | Public transport interchange | |
| | | | INT5 | Park and Ride | |

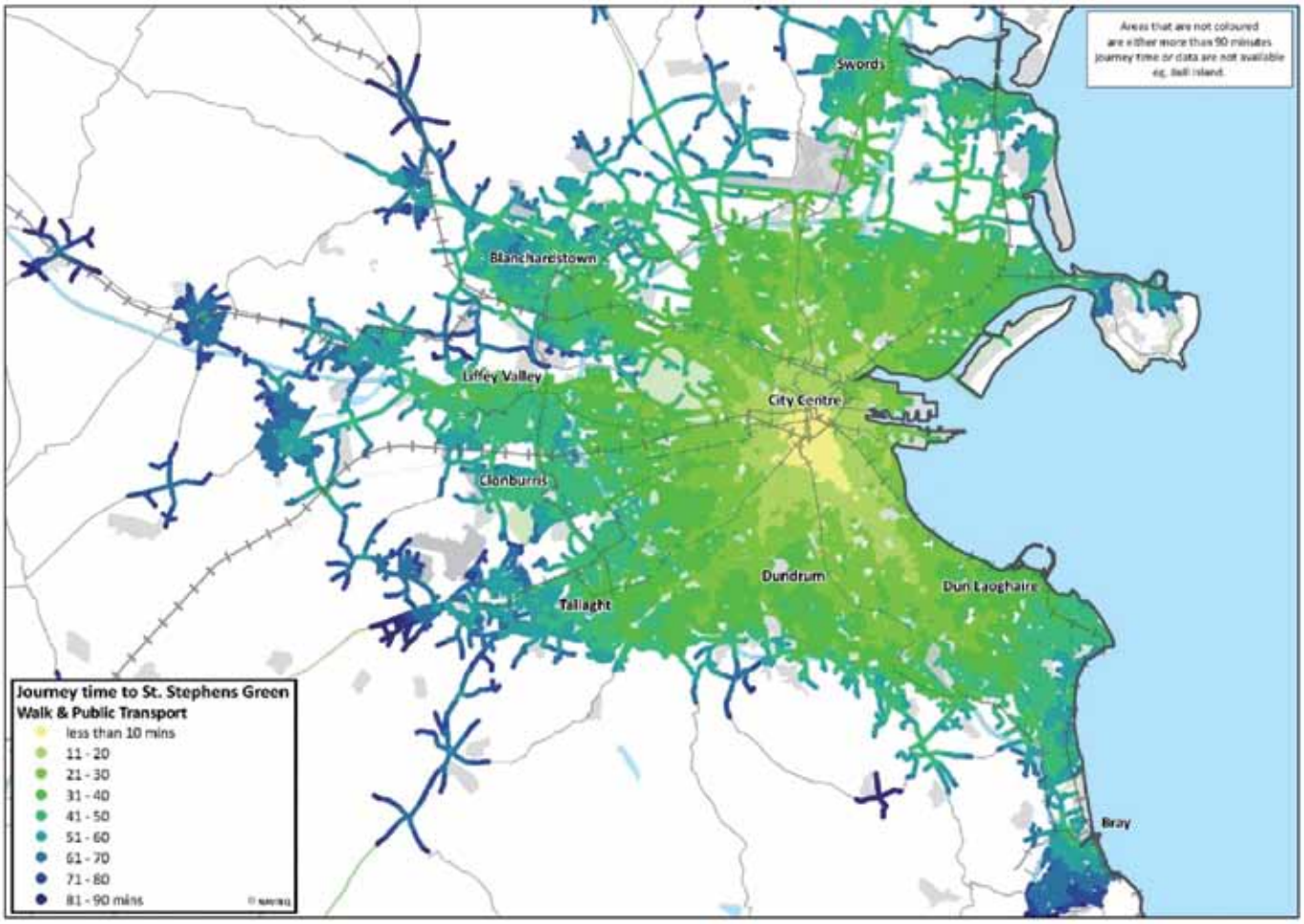
| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 1.4 | Improve access to other regions and the rest of the island of Ireland |  | RAIL2<br>RAIL3<br>RAIL4<br>RAIL5<br>ROAD6<br>ROAD7 | Northern line capacity and electrification<br>Kildare line capacity and electrification<br>Maynooth line electrification / extension<br>South East line removal of constraints<br>Driver information<br>Management of roadworks | The assessment shows limited improvement to rail journey times for trips from Dublin city to the other main cities (larger on the Northern rail line, where faster inter-city trips are now segregated from DART). All inter-urban bus routes become faster; and data suggest a 24% fall in car mode share for such AM peak trips that would be strongly affected by the road use charge. |

Accessibility (also a criterion in the CAF-based transport appraisal) will be greatly improved through the provision of new public transport corridors to Dublin city centre and Designated Towns and Districts, giving greater access to jobs and retail at e.g. Swords, Dundrum and O'Connell Street/Henry Street (from the cross-city Metro and Luas BXD); and to education, through Maynooth line electrification, Grangegorman Luas (DIT) and new routes to DCU (Metro North), Trinity College (Lucan Luas) and buses to UCD. Access to the centres of Hinterland Designated Towns will be improved by providing new local bus networks, while access to Dublin city centre from these towns will be improved by a combination of improved bus and rail services.

Generally the Strategy reduces car access times as well as public transport access times, compared to the Do Minimum and therefore performs well against all the society / community sub-objectives, with the caveat that the road user charge will impact upon general motoring access, and will not benefit disadvantaged areas. If these areas gain sufficiently from local walking and cycling access improvements, and better bus and Luas services (with lower off-peak fares), this will more than offset the charging impact. Such improvements would particularly benefit those who do not have access to a car. Improvements to physical accessibility and more public transport will also benefit people with disabilities.

Access between communities and to wider destinations in Ireland will be easier due to the reductions in traffic on the roads, especially in peak travel periods. By 2030, it can be expected that a large proportion of those who transfer to public transport for their daily commuting will cease to own a car altogether, leading to less car use for all journey purposes (although this is not assumed in the appraisal). Additional rail track, to separate stopping metropolitan electric train (DART) services from faster longer distance train services, will enable improvements to Intercity rail speeds and service frequencies; while access to rail for many communities in the Metropolitan area will be improved by new Luas and Metro links to the city centre.

**Figure 12.1: Public transport journey times to Dublin city centre 2030 with Strategy in place (morning peak travel period)**




In comparison with the Do Minimum situation illustrated in Figure 5.3, the diagram above shows an improvement in journey times to Dublin city centre from areas served by the new rail, Metro and Luas lines – most notably, along the Green line extension to Bray, Metro North to Swords and the Metro West corridor between Tallaght and Blanchardstown (connected to the interchange with city centre via Kildare line/DART Underground).

The Lucan Luas line also improves access along the M4 corridor. Other areas also benefit from improved access to the city centre – for example areas west of Blanchardstown, due to the improved rail services in this area. There are also some small and more local improvements arising from bus measures, such as the outward extensions of the Naas Road and Malahide Road Quality Bus Corridors.

There are also significant benefits of local access improvements to other centres (not shown in Figure 12.1). These include, for example, Liffey Valley and Clonburris.

### 12.3.2 Objective 2 Improve economic competitiveness

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 2.1 | Improve journey time reliability for business travel and the movement of goods |  | LU4 | Maximum parking standards | Measured by the number of trips made on both road links and public transport services which are working close to or above capacity, the Strategy leads to the number of public transport services operating over capacity falling by 11% – even though passenger numbers have risen. On the road, vehicle kilometres affected fall by 7%.<br><br>Management measures will be beneficial at the local level and reduce the impact of incidents and ad-hoc delays such as from roadworks – on average these cause 40% of all delays to traffic.<br><br>New public transport links into and across the City Centre will create significant opportunities for short business trips by public transport – though many in practice may transfer from walking and taxis – as will links between Designated centres around the M50 and rail links to the 'Hinterland' towns. |
| | | | BUS2 | Metropolitan bus service improvements | |
| | | | BUS3 | Hinterland town bus services | |
| | | | BUS5 | Express bus links to Dublin City Centre | |
| | | | BUS11 | Reduce on-street termination and lay-over | |
| | | | RAIL1 | DART Underground | |
| | | | RAIL2 | Northern line capacity and electrification | |
| | | | RAIL3 | Kildare line capacity and electrification | |
| | | | RAIL4 | Maynooth line electrification / extension | |
| | | | RAIL9 | Green line Metro upgrade and extension | |
| | | | RAIL13 | Review Metro and Luas service patterns | |
| | | | TCC2 | Taxi interchange with public transport | |
| | | | INT5 | Park and Ride | |
| | | | ROAD4 | Traffic management on local authority roads | |
| | | | ROAD5 | Traffic management on strategic roads | |
| | | | ROAD6 | Driver information | |
| | | | ROAD7 | Management of roadworks | |
| | | | ROAD8 | Management of parking, waiting and loading | |
| | | | ROAD9 | Enforcement of parking and traffic offences | |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 2.1 | Improve journey time reliability for business travel and the movement of goods |  | FRT3<br>FRT5<br>FRT6<br>FRT7 | Planning for Distribution and Servicing<br>Truck parking facilities<br>Strategic Freight routing<br>Rail freight | Freight trips on the strategic network benefit greatly from reduced congestion, with a 15% fall in vehicle-hours for HGVs in the AM peak. This is likely to be carried through to other periods if charges remain in place at all times. |
| 2.2 | Reduce overall journey times for business travel and the movement of goods |  | WCY1<br>WCY2<br>WCY11<br>BUS2<br>BUS3<br>BUS4<br>BUS6<br>BUS7<br>RAIL1<br>RAIL2<br>RAIL3 | Traffic restrictions in town centres<br>Lower speeds in town centres<br>Cycling environment in towns<br>Metropolitan bus service improvements<br>Hinterland town bus services<br>Bus links from Designated Districts<br>Quality Bus Corridors<br>Bus Rapid Transit<br>DART underground<br>Northern line capacity and electrification<br>Kildare line capacity and electrification | The Strategy shows a 16% peak-hour reduction in trips on Dublin metropolitan buses, largely due to transfer to the new Luas, Metro and rail options – hence, all these users will experience faster journeys.<br><br>However, this is offset by the 33% of car users travelling to business locations, whose journeys may also get slower for trips between these business clusters.<br><br>For trips between the clusters and all other locations, public transport trips take only slightly less time than in the Do-Minimum, while car trip journey times fall sharply (trips to clusters become 22% faster by car but only 1.5% faster by all public transport modes). |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|
| 2.2 | Reduce overall journey times for business travel and the movement of goods |  | RAIL4 Maynooth line electrification / extension<br>RAIL9 Green line Metro upgrade and extension<br>RAIL13 Review Metro and Luas service patterns<br>RAIL7 Metro North<br>RAIL8 Metro West<br>RAIL9 Green line Metro upgrade and extension<br>RAIL10 New Luas line Lucan to Poolbeg 11, 12<br>RAIL11 New Luas line to Tallaght via Kimmage<br>RAIL12 Metro and Luas service frequencies<br>RAIL13 Review Metro and Luas service patterns | |
| 2.3 | Ensure value for money of transport expenditure |  | Especially low cost measures such as:<br>LU1 Priority locations for development<br>LU2 Designated District development plans<br>LU3 Designated Town development plans<br>LU4 Maximum parking standards<br>WCY1 Traffic restrictions in town centres<br>WCY8 Planning policies to support walking | Planning measures can both reduce demand for travel and ensure more of it takes place by sustainable modes. The Strategy shows car demand decreases by 15%; however all vehicle hours (car plus HGV) fall by 35% and kilometres travelled decrease by 31% – indicating that vehicle trips (especially by car) become shorter. This is also associated with the distance based road user charge. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 2.3 | Ensure value for money of transport expenditure |  | WCY16<br>WCY17<br>WCY19<br>INT7<br>ROAD4<br>ROAD5<br>ROAD7<br>ROAD8<br>TDM1<br>TDM2<br>TDM3<br>TDM4 | Cycle facilities at schools and workplaces<br>Planning policies to support cycling<br>Cycle information and promotion<br>Planning policies to support public transport<br>Traffic management on local authority roads<br>Traffic management on strategic roads<br>Management of roadworks<br>Management of parking, waiting and loading<br>Traffic control measures<br>Parking charges and levies<br>Road use charging<br>Travel behaviour change measures | The greater levels of public transport use require provision of additional fleet so that peak overcrowding does not become intolerable – if this fleet cannot be adequately utilised at other times, the costs may result in an additional burden of subvention.<br><br>Road use charging revenues could be used to cover this, as well as potentially to offset cost of better road maintenance and the higher levels of traffic management proposed in the Strategy.<br><br>Parking and planning incomes can also reduce the cost of delivering and maintaining networks. |
| 2.4 | Support business agglomeration and competition |  | LU1<br>LU3<br>BUS2<br>BUS5<br>BUS7 | Priority locations for development<br>Designated Town development plans<br>Metropolitan bus service improvements<br>Express bus links to Dublin City Centre<br>Bus Rapid Transit | The Strategy delivers better access to the areas where high-value jobs are located, through new public transport links across the city centre, to Docklands, and Designated Towns. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|
| 2.4 | Support business agglomeration and competition |  | RAIL1 DART Underground<br>RAIL2 Northern line capacity and electrification<br>RAIL3 Kildare line capacity and electrification<br>RAIL4 Maynooth line electrification / extension<br>RAIL5 South East line removal of constraints<br>RAIL7 Metro North<br>RAIL8 Metro West<br>RAIL9 Green line Metro upgrade and extension<br>RAIL10 New Luas line Lucan to Poolbeg<br>RAIL11 New Luas line to Tallaght via Kimmage<br>RAIL12 Metro and Luas service frequencies | The removal of the need to interchange for trips across the City (north-south or east-west) will allow much better access to and between the different job clusters within the City Centre – e.g. from St Stephen's Green to O'Connell Street – as well as direct links to centres such as Liffey Valley, Lucan, Swords, Sandyford, Dundrum etc. |
| 2.5 | Improve access to GDA ports and Dublin Airport |  | RAIL7 Metro North<br>Public transport connecting to Metro North, including<br>BUS5 Express bus links to Dublin City Centre<br>BUS7 Bus Rapid Transit<br>RAIL1 DART underground | The Strategy delivers easier access, better coverage and faster trips on the new public transport links to the Airport; creating less traffic on routes to Ports and Airport. Journey times by road to the Airport fall by 33%; while public transport times for incoming trips drop by almost 55%, primarily due to the Metro line. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 2.5 | Improve access to GDA ports and Dublin Airport |  | RAIL8<br>RAIL9<br>INT4<br>FRT 6<br>TDM 3 | Metro West<br>Green line Metro upgrade and extension<br>Public transport interchange<br>Preferred freight routes<br>Road user charging | Dublin Port sees car traffic trip times reduce by 31% for arrivals and 13% for departures, though public transport trips become marginally slower.<br><br>Identification of preferred routes for freight and road user charging should improve road conditions for freight access to Ports and the Airport. |
| 2.6 | Provide for efficient goods distribution, servicing and access to materials |  | ROAD4<br>ROAD5<br>ROAD6<br>ROAD7<br>ROAD8<br>ROAD9 | Traffic management on local authority roads<br>Traffic management on strategic roads<br>Driver information<br>Management of roadworks<br>Management of parking, waiting and loading<br>Enforcement of parking and traffic offences | The Strategy allows for fewer large lorries on town streets due to edge-of-town transhipment to smaller vehicles; and less delay to goods vehicles on main roads resulting from lower overall traffic levels. There is potential for the greater use of rail freight for some movements. |

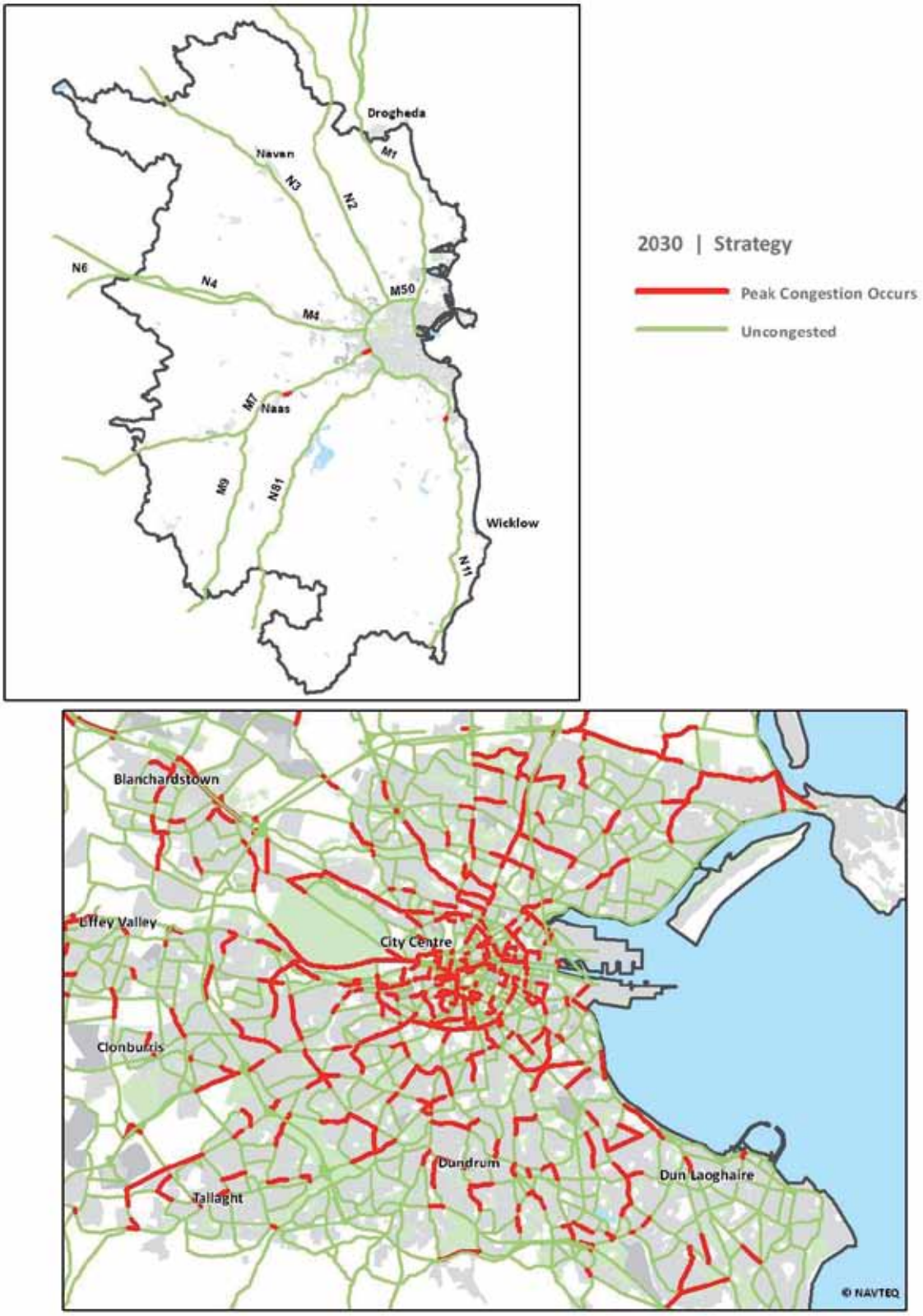
Business trips – by people and goods – are important to grow the economy. The Strategy reduces road congestion at all times, and will therefore provide more reliable journey times by road. It also significantly reduces crowding on Luas and, to a lesser degree, on heavy rail.

Figure 12.2 below shows a marked reduction in peak-time congestion on all radial road corridors compared to the Do-Minimum (illustrated in Figure 5.1).

This is as a result of the improved services and increased capacity on rail routes adjacent to radial road corridors (the Navan, Maynooth and Kildare lines and Metro North) and, in the case of the M50, Metro West – and as a result of road use charging.

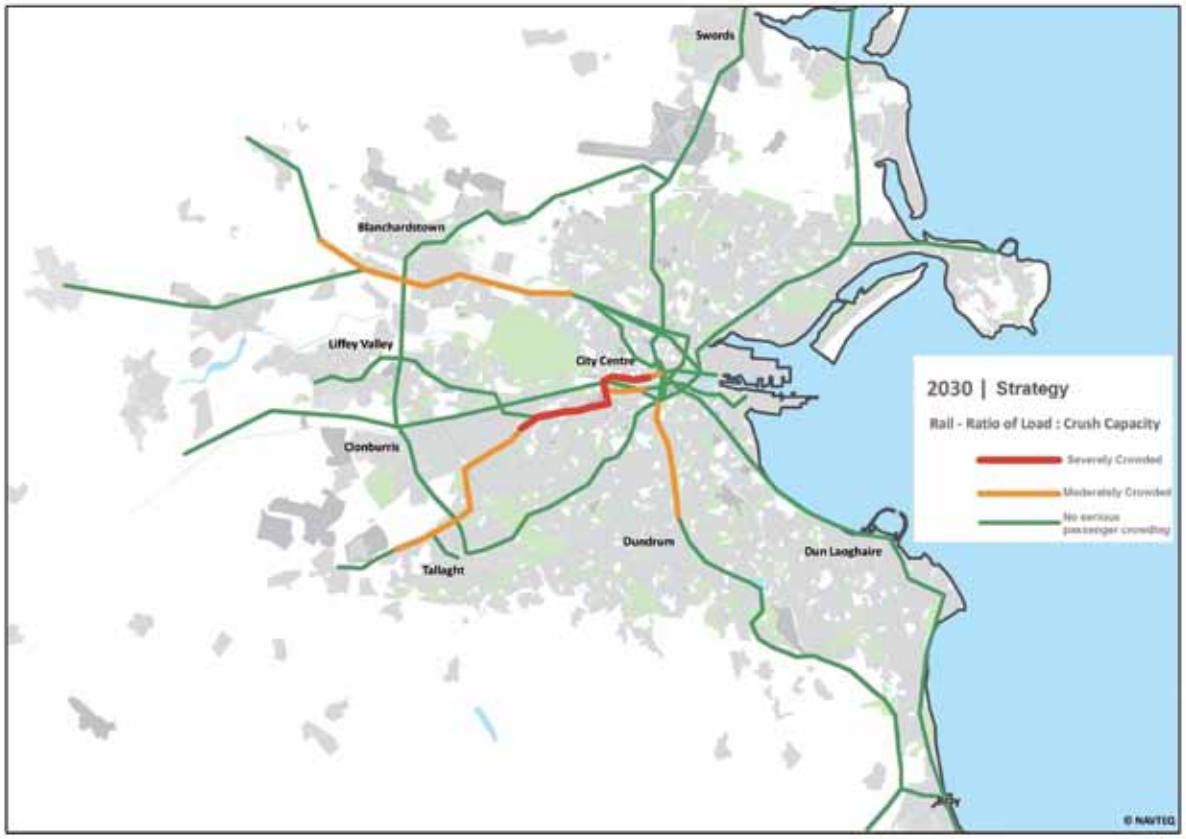
However, as the second diagram shows, there is less reduction in congestion within the M50 – here, the shorter journeys are deterred less by charging, while demand for access to jobs means that most routes will continue to be used at their capacity regardless of the improved availability of alternatives. This will be addressed by traffic management, parking and other policies which aim to get more of these shorter trips to transfer to walking and cycling 'soft modes'.

**Figure 12.2: Forecast road congestion 2030 – with Strategy in place (morning peak travel period)**




Note: The above graphics represent abstractions from the strategic transport model used for the development of the Strategy. Because of the strategic regional nature of the transport model, the exact details for any particular road link are indicative only.

**Figure 12.3: Forecast rail crowding 2030 – with Strategy in place (morning peak travel period)**




Rail crowding also falls markedly from the Do Minimum position shown in Figure 5.2, where the DART, Maynooth and Kildare lines are all above crush capacity. Moreover, the upgraded and expanded network will have reserve capacity to accommodate additional trips – especially on Metro North, Green Line extension and all of the former coastal DART route.

The diagram indicates that there are some potential capacity issues by 2030 on the Luas Red Line, especially where Lucan Luas line shares its track, west of the city centre. This suggests a need to consider development of a separate alignment for the Lucan Luas line over this section.

Some of the spare city centre rail capacity shown on the diagram may in practice be taken up by new commuting within the central area, (for example additional business-to-business trips made by rail which are currently made by taxi or walking), as demand levels for these shorter trips are likely to be underestimated in the model forecasts.

The Strategy provides crowding reduction benefits on inter-urban buses, but only marginal benefits on Dublin Bus routes and services. The impact of the road user charge is discounted for these sub-objectives, since it is considered businesses travellers will be more willing to pay this charge than will those travelling at their own expense. This is because they will benefit most from the faster journey times on much less congested roads, arising from a transfer to other transport modes of car users who do not wish to pay the user charge.

The Strategy delivers a substantial decrease of 7% in average public transport journey times between 'business clusters' (locations with the highest numbers of jobs) – though there is a marginal increase in car journey times for these trips and a 17% rise in HGV journey times.

Overall, however, the Strategy provides the largest benefits for car users travelling from home to access jobs at these business clusters – a 22% drop in journey times.

In comparison the equivalent reduction for travel by public transport to these locations is 1%, though this in part reflects longer average trip lengths by public transport as network coverage improves and public transport claims a larger mode share. There are also 'agglomeration benefits' (better access to more jobs or better jobs) for public transport users, who are benefiting from the new services introduced.

Alongside the substantial capital costs associated with the additional infrastructure proposed in the Strategy, account also needs to be taken of the increased public transport operating costs, resulting from the new demand caused by the road user charge. These costs will be offset to some extent by increased revenues, and the potential use of tolls and charges for road maintenance and to fund asset replacements.

The Strategy provides significant benefits for cars and HGVs to and from the Airport and Dublin Port. There are also benefits for public transport users travelling to the Airport, but not Dublin Port. If the option to include HGVs in road pricing were taken, it would increase the cost of road freight but improve journey times and reliability further, as well as encouraging transfer to alternative freight modes - e.g. rail and water.

The commitment to increase facilities for HGVs include a HGV strategic freight network, with consolidation centres and (potentially) dedicated freight lanes on certain roads.

*Strategy costs*

The costs of major infrastructural elements and operational improvements included in the Strategy were estimated, to enable a cost benefits analysis of the Strategy to be undertaken.

The capital and operating costs, (2002 prices, discounted for the purposes of cost benefit analysis), are set out below.

| Means of travel | Capital Costs Net Present Value (€m) | Operating Costs Net Present Value (€m) |
|---|---|---|
| Public Transport Proposals | 5,999 | 1607 |
| Road Proposals | 465 | 422 |
| Total | 6,464 | 2,029 |

These costs do not take into account any additional revenue (through additional fares or road user charging) that the Strategy may generate). The Strategy is expected to be significantly less expensive to implement than the Economy themed or Social themed options, due to the more limited amount of road building. This will help to ensure that the levels of benefits realised would represent good value for money for this investment. The Environment themed option – with fewer public transport schemes included than the Draft Strategy – would have had lower costs. However it would not in practice have delivered as high a level of benefits in terms of economic competitiveness since less travel would take place, as a result of both road user charging and limited investment in additional public transport capacity, leading to overcrowding. Unless equivalent value jobs could somehow be relocated nearer to where people live (thus requiring less travel) there would be some detriment to economic competitiveness and growth.

*Transport economic efficiency analysis*

The strategy package has been subject to a detailed assessment of economic benefit and costs analysis in order to help assess the overall impact upon the economy. An economic modelling package (TUBA) has been utilised to assess the benefits and costs of the strategy for users, private sector service providers and the public accounts over a 30 year period.

Unlike most appraisal assessments, the TUBA modelling utilises both the morning peak and inter-peak transport model outputs but, as such, only those schemes that are incorporated within the transport model are assessed as part of the TUBA outputs.

The proposed measures within the Strategy package will result in changes in User Benefits for both personal travellers (consumers), as well as business travellers.

Benefits (or disbenefits) are derived from changes in:

- Journey times
- Vehicle operating costs
- User charges (including fares and tolls); and
- Reliability and Quality benefits

*Social cost benefit analysis*

The Strategy package has been subject to a detailed social costs benefit analysis in order to assess the overall costs and benefits to society. This analysis draws upon much of the Transport Economic Efficiency analysis within the economy section of the multi-criteria assessment. This provided an assessment of both the Net Private (User and Service Provider) Benefits from the strategy, as well as Public Sector Investment Costs.

In addition, the social costs benefit analysis also gives consideration to any changes in the cost of externalities, specifically carbon and accidents.

The analysis indicates that the overall benefits delivered by the Strategy are in the order of €36 billion (2002 prices, discounted), providing a ratio of the benefits to costs of the Strategy Package in the order of 5.

Whilst there must be caveats in relation to the precise scale of the benefits and costs, as calculating a ratio for a wide-ranging Strategy incorporating many measures can only be indicative, the result clearly demonstrates that the Strategy package will deliver substantial benefits to society that outweigh the costs of implementation and operation.

### 12.3.3 Objective 3 Improve the built environment

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 3.1 | Improve and maintain the environment for people movement |  | OVR 1 | Transport user hierarchy | Placing pedestrians at the top of a transport user hierarchy and enhancement of facilities, for pedestrians and cyclists, particularly in town centres and residential areas, should create a much more pleasant environment for people movement. |
| | | | WCY3 | Improve streetscape in town centres | |
| | | | WCY4 | Walking/cycling in residential areas | |
| | | | WCY5 | Footpath provision and maintenance | |
| | | | WCY6 | Pedestrian crossing facilities | |
| | | | WCY8 | Planning policies to support walking | |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|
| 3.1 | Improve and maintain the environment for people movement |  | WCY10 Enforcement on obstructions to walking<br>WCY11 Cycling environment in towns<br>WCY17 Planning policies to support cycling<br>ROAD10 Making roads safer | The impact of measures in this category should lead to higher levels of walking and cycling in the GDA than anticipated by the modelling work (which predicts marginal change in overall peak walking and cycling levels). |
| 3.2 | Improve the quality of design and maintenance of transport infrastructure and vehicles |  | All of the above measures for public spaces, plus the following measures to improve public transport:<br>BUS9 Bus stop improvements<br>BUS10 Use of appropriate and accessible vehicles<br>BUS11 Reduce on-street termination and lay-over<br>BUS12 Coach access and parking<br>RAIL15 Additional rail vehicles<br>RAIL16 Stations and tram stops<br>TC1 Taxi priority and access in town centres<br>TC3 Taxi fleet quality and accessibility | The measures in 3.1 above will also lead to new benefits in the quality of public space. Within this, special attention will be paid to transport access points – looking at better design of stops and stations, including on-street taxi facilities.<br>Public transport journeys will benefit from more modern vehicle design over time, and a 14% shift to greater rail and Luas/Metro use relative to bus will generally provide a higher quality of fleet and levels of passenger comfort. This will be mirrored by improvement to interchanges. |
| 3.3 | Minimise physical intrusion of motor traffic |  | LU4 Maximum parking standards<br>WCY1 Traffic restrictions in town centres<br>WCY2 Lower speeds in town centres<br>BUS11 Reduce on-street termination and layover<br>ROAD4 Traffic management on local authority roads | The Strategy includes a range of measures that reduce severance by roads and traffic – both by serving to reduce vehicle kilometres by 31% overall, and through targeted measures in the busiest areas where impact on other road users will be greatest. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 3.3 | Minimise physical intrusion of motor traffic |  | ROAD8<br>FRT3<br>TDM1<br>TDM2 | Management of parking, waiting & loading<br>Planning for Distribution and Servicing<br>Traffic control measures<br>Parking charges and levies | Benefits from restricting access for some cars lower speeds and limiting all HGVs in urban areas will be complemented by better management of the on-street visibility of public transport. |

The Strategy includes measures that generally enhance the urban environment, including improving and maintaining the streetscape, better design of residential streets to assist pedestrian and cyclist movement, and other measures providing priority for pedestrians and vulnerable users in towns and Dublin city centre.

These will need to be closely linked with development planning, to ensure that high-quality streetscapes and permeable access is provided in new developments; as well as other enhancements to the urban public realm.

Planning measures will be needed to promote the positive aspects of transport-related development in urban areas and to recognise and mitigate the potential negative impacts. Measures WCY 8 and WCY 17 are designed to take full advantage of this type of opportunity to promote positive, high-quality and attractive walking and cycling environments in urban centres and these measures will result in positive townscape and streetscape impacts.

The Strategy includes a significant number of enhancements to public transport vehicles, as well as good quality on-street infrastructure for those waiting for buses, coaches and taxis. These measures also have the potential to enhance townscapes – and can result in wider urban regeneration effects, such as those often associated with new light rail lines and high quality transport interchanges and hubs.

Some more detailed assessment of the vehicle flows along corridors has been undertaken for Strategic Environmental reporting of noise levels, and initial analysis shows the Strategy will have a significant positive impact on reducing physical intrusion of traffic in many areas where people circulate, reinforcing the usability of streets and enhancing access by walking and cycling to key facilities (though this is not all directly captured in the modelling).

Alongside this, greater attention to maintenance will be needed to avoid the deterioration of such facilities – and the streetscape itself – over time. It is clearly enshrined in the overall Strategy approach that quality must be not only designed and built in where investment takes place, but also maintained.

Management of the competing uses of streets will be important, alongside design and new investment, in delivering and maintaining more usable and people-friendly streets

Overall, the Strategy is considered to perform well against this objective.

### 12.3.4 Objective 4 – Respect and sustain the natural environment

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|
| 4.1 | Minimise the impact of transport on air quality |  | All of the Walking/Cycling, Bus and Rail measures which provide alternatives to the car and additionally:<br>ROAD4 Traffic management on local authority roads<br>ROAD5 Traffic management on strategic roads<br>ROAD8 Management of parking, waiting & loading<br>ROAD11 Reducing vehicles' environmental impacts<br>FRT2 Management of Heavy Goods Vehicles<br>FRT3 Planning for Distribution and Servicing<br>FRT4 Low emission freight vehicles<br>FRT6 Strategic freight routing<br>TDM1 Traffic control measures<br>TDM3 Road use charging | Transport emissions of PM10 will be reduced by the Strategy, primarily due to less bus use relative to rail and urban HGV controls – benefitting small numbers in the residential areas where standards for this pollutant will not be exceeded.<br>The assessment of $NO_2$ show higher numbers of people will be exposed to higher concentrations than will see a reduction – hence a small disbenefit accrues to this element.<br>Note however that no improvement in the environmental impacts of road vehicles (e.g. due to electric/alternative fuel usages) compared to the 'Do Minimum' scenario is assumed in the assessment work. |
| 4.2 | Minimise the impact of transport on water quality |  | Mitigation around delivery of infrastructure such as:<br>BUS7 Bus Rapid Transit<br>RAIL1 DART Underground<br>RAIL4 Maynooth line electrification and extension<br>RAIL5 South East line removal of constraints<br>RAIL7 Metro North<br>RAIL8 Metro West<br>RAIL9 Green line Metro upgrade and extension | The relatively low number of infrastructure schemes on new alignments in the Strategy means there are only minor negative impacts against surface-water, coastal, and transitional systems. The Strategy is considered to have neutral impacts against River Management Plans, the aims of the Water Framework Directive and groundwater systems, due to the limited need for new river crossings. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|
| 4.2 | Minimise the impact of transport on water quality |  | RAIL10 New Luas line Lucan to Poolbeg<br>ROAD2 Dublin Port Tunnel-Poolbeg link | Actual impact will be determined by the mitigation levels attached to delivery of individual schemes. |
| 4.3 | Reduce greenhouse gases associated with transport |  | All of the measures which provide alternatives to the car and/ or reduce road vehicle use, as per 4.1 above. | The preferred package has a positive impact upon the levels of $CO_2$ emissions, with a 7% reduction in all-day levels showing in environmental modelling, with no improvement in vehicle fuel use assumed. |
| 4.4 | Improve efficiency in the use of natural resources, especially non-renewable ones, (e.g. land, materials, fuels) |  | Includes mitigation around delivery of infrastructure schemes listed under 4.2 and other construction (e.g. new stops and interchanges etc.)as well as vehicles.<br>Also related to fossil fuel consumption so will be met by measures which reduce car vehicle usage as in 4.1. | The Strategy has marginal negative impacts on use of natural construction materials, neutral impacts upon agricultural soil resources – though it scores positively in reducing the consumption of fossil fuels due to the very large reduction in car kms, so overall, the package has marginal positive benefits |
| 4.5 | Minimise the impact of noise and vibration |  | All of the Walking/Cycling, Bus and Rail measures which provide alternatives to the car and additionally:<br>ROAD4 Traffic management on local authority roads<br>ROAD5 Traffic management on strategic roads<br>ROAD11 Reducing vehicles' environmental impacts<br>FRT2 Management of Heavy Goods Vehicles<br>FRT3 Planning for Distribution and Servicing<br>FRT4 Low emission freight vehicles<br>TDM3 Road use charging | Direct noise impacts on populations close to roads have been modelled, and found to fall on 49% of road links, due to the large reduction in peak vehicle kilometres of 31%, hence the positive score. Measures to reduce large freight vehicle access to town centres will also assist locally, as will targeted restrictions and improvements in vehicle design – though actual per vehicle noise levels were not assumed to fall in modelling work (compared to the 'Do Minimum' scenario). |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|
| 4.6 | Minimise adverse impact of transport on biodiversity and natural amenities |  | Mitigation around delivery of infrastructure such as:<br>BUS7 Bus Rapid Transit<br>RAIL1 DART underground<br>RAIL4 Maynooth line electrification and extension<br>RAIL5 South East line removal of constraints<br>RAIL7 Metro North<br>RAIL8 Metro West<br>RAIL9 Green line Metro upgrade and extension<br>RAIL10 New Luas line Lucan to Poolbeg<br>ROAD2 Dublin Port Tunnel-Poolbeg link | The Strategy has a small negative impact upon biodiversity and landscape as a result of the land-take related to new rail infrastructure, in particular river crossings.<br>However, the limited number of infrastructure projects outside urban areas in the Strategy means that overall impacts are low; while in some cases reduced traffic levels as vehicle trips reduce, or transfer to public transport on other corridors, may allow some biodiversity to return. |

The environmental impacts of the Strategy have been independently assessed through the Strategic Environmental Assessment process, and are laid out more fully in a separate Environmental Report accompanying this Strategy document. This incorporates specific assessments that calculate how many people would be exposed to higher or lower levels of noise and air pollutants, but otherwise relies on the same evidence and professional assessments of likely impacts as for other objectives.

The air quality assessment produces a somewhat counter-intuitive result – in that it would usually be expected to fall in a situation where road traffic kilometres fall. However, it is very sensitive to the routes traffic takes, especially if it routes through populated areas which were already close to exceeding the statutory thresholds for pollutants.

This effect seems to be happening with car traffic, hence the growth in the numbers of residential dwellings (and thus the population) exposed to high $NO_2$ levels – outweighing the number of residents experiencing a significant reduction in their exposure levels. The numbers are not large (a net 23,000 people) and in practice, such effects could be managed through local Air Quality Plans or a refinement in road user charging structures to ensure that the areas in question did not suffer such an impact.

Noise assessment by contrast shows a more expected pattern, with the number of streets experiencing a drop in traffic noise levels outstripping those where noise levels increase by 10% (49% vs. 39%).

Reductions in greenhouse gas emissions follow a similar pattern, falling by 7% (day-long) compared to the Do Minimum, due to the road user charge limiting the number and length of peak car journeys and additional capacity on public transport generating a significant shift to more environmentally-efficient modes. This is lower than the overall 31% drop in peak vehicle use, as road traffic reductions in the Strategy are much more pronounced during the peak travel period. In addition the car trips modelled as remaining are disproportionately shorter, and travel on some of the most congested routes, where emissions tend to be higher.

Both of the above effects are clearly strengthened by the assumption of a per-kilometre road user charge in the Strategy model, which – as well as deterring car travel – will encourage drivers to take the shortest route rather than the fastest one. In practice any road user charge would almost certainly seek to address congestion as well as distance travelled, and if properly tailored, this would further improve the environmental performance of the Strategy.

It is also important to note that the 7% drop in $CO_2$ emissions is conservative as the modelling work yielding this result did not take into account potential savings due to increased use of electric vehicles or other alternative fuels.

Reductions in $CO_2$ emissions will also benefit the 'natural resources' sub-objective insofar as it directly corresponds to fuel consumption. The Strategy will also be beneficial in conserving the supply of land, due to the ability to deliver high density development supported by high capacity transport accessibility along the rail/light rail lines, and support for shorter trips into and around key centres which can be made by walking and cycling.

In respect of raw materials, the issues that arise are related to their consumption in the construction of new infrastructure, facilities and vehicles – this can be mitigated with best practice (by using recycled materials etc.) – but will need to be managed at a scheme or programme delivery level. In general, the Strategy supports less travel by car and should hence reduce road construction.

Water quality, biodiversity and natural amenity objectives also need to be addressed at individual scheme level. Detailed route choice and design and suitable mitigation measures will be developed. However, this has not been assumed in the scoring, with an expectation of some negative impacts.

Overall, the effect of the Strategy on these environmental objectives balances out to being neutral.

### 12.3.5 Objective 5 – Reduce personal stress

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 5.1 | Improve journey time reliability for personal travel |  | LU4 | Maximum parking standards | The Strategy will deliver more reliable journey times, substantial reductions in overcrowding on rail (13.5%) and Luas (20%) routes operated. |
| | | | BUS2 | Metropolitan bus service improvements | |
| | | | BUS3 | Hinterland town bus services | |
| | | | BUS5 | Express bus links to Dublin City Centre | |
| | | | RAIL1 | DART underground | |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 5.1 | Improve journey time reliability for personal travel |  | RAIL2<br>RAIL3<br>RAIL4<br>RAIL9<br>RAIL13<br>TCC2<br>INT5<br>ROAD4<br>ROAD5<br>ROAD6<br>ROAD7<br>ROAD8<br>ROAD9 | Northern line capacity and electrification<br>Kildare line capacity and electrification<br>Maynooth line electrification / extension<br>Green line Metro upgrade and extension<br>Review Metro and Luas service patterns<br>Taxi interchange with public transport<br>Park and Ride<br>Traffic management on local authority roads<br>Traffic management on strategic roads<br>Driver information<br>Management of roadworks<br>Management of parking, waiting and loading<br>Enforcement of parking and traffic offences | As well as the quantified benefits to peak hour users, the new journey opportunities available at other times from new lines and services can be expected to significantly enhance personal travel opportunities, and reduce car ownership.<br>Car drivers benefit from less congested roads – with 6-7%fewer journeys experiencing very long journey times or travelling on congested routes, although this requires the imposition of road user charges at the busiest times.<br>Local demand management measures and parking restrictions will inconvenience drivers but have benefits both for public transport passengers and those walking and cycling (the majority). |
| 5.2 | Reduce overall journey times for personal travel |  | WCY11<br>WCY12<br>WCY13<br>BUS6<br>BUS7<br>RAIL1<br>RAIL2 | Cycling environment in towns<br>On-road cycling facilities<br>Off-road cycle tracks and paths<br>Quality Bus Corridors<br>Bus Rapid Transit<br>DART underground<br>Northern line capacity and electrification | Reductions in journey times will result from the increased provision of rail and light rail services replacing slower buses and car trips, affected by traffic congestion which segregated lines avoid. Wait time also falls as service frequencies rise. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 5.2 | Reduce overall journey times for personal travel |  | RAIL3 | Kildare line capacity and electrification | Overall peak journey times on public transport fall by only 1% – this is a result of longer car trips transferring to rail in particular. This – and the 27% fall in peak car trip times – results from the imposition of distance-based charging.<br><br>Although the Strategy should make it easier to walk and cycle in town centres, model results suggest that some trips will transfer from these modes onto newly-available public transport. |
| | | | RAIL4 | Maynooth line electrification / extension | |
| | | | RAIL7 | Metro North | |
| | | | RAIL8 | Metro West | |
| | | | RAIL9 | Green line Metro upgrade and extension | |
| | | | RAIL10 | New Luas line Lucan to Poolbeg | |
| | | | RAIL11 | New Luas line to Tallaght via Kimmage | |
| | | | RAIL12 | Metro and Luas service frequencies | |
| | | | RAIL13 | Review Metro and Luas service patterns | |
| | | | TCC2 | Taxi interchange with public transport | |
| | | | TDM3 | Road use charging | |
| | | | TDM4 | Travel behaviour change measures | |
| 5.3 | Improve travel information |  | INT1 | Integrated public transport information | The Strategy will deliver real time information on all rail and Luas services, and on bus services throughout the GDA, as well as easier to access data for infrequent users or for complicated trips, better feedback on travel disruptions etc. (The benefits of this have not been quantified). |
| | | | INT2 | Integrated smart ticketing | |
| | | | INT3 | Simplified integrated fares system | |
| | | | INT4 | Public transport interchange | |
| | | | ROAD6 | Driver information | |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 5.4 | Improve ease of use of public transport system |  | INT1<br>INT2<br>INT3<br>INT4<br>INT5<br>TCC2 | Integrated public transport information<br>Integrated smart ticketing<br>Simplified integrated fares system<br>Public transport interchange<br>Park and Ride<br>Taxi interchange with public transport | Simplified fares and ticketing will make it easier to understand and use an integrated network of public transport services, including park & ride.<br>As public transport demand increases so does the amount of interchange between services – and hence more people will benefit from the proposed improvements in these areas. |
| 5.5 | Promote healthier forms of travel and use of public space |  | WCY1<br>WCY2<br>WCY3<br>WCY4<br>WCY5<br>WCY6<br>WCY7<br>WCY8<br>WCY9<br>WCY10<br>WCY11<br>WCY12<br>WCY13 | Traffic restrictions in town centres<br>Lower speeds in town centres<br>Improve streetscape in town centres<br>Walking/cycling in residential areas<br>Footpath provision and maintenance<br>Pedestrian crossing facilities<br>Walking for leisure<br>Planning policies to support walking<br>Walking information and marketing<br>Enforcement on obstructions to walking<br>Cycling environment in towns<br>On-road cycling facilities<br>Off-road cycle tracks and paths | The Strategy sets out a significant package of measures designed to increase the numbers of people cycling and walking. This is supported by more concentrated land use patterns and locally located facilities that people will wish to access.<br>Alongside this, urban design measures (outlined under objective 3 above) will make it easier to walk, sit and wait on streets, and use streets as places. Better information on walking and cycling options, and leisure walking and cycling routes should also facilitate these healthier forms of travel. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 5.5 | Promote healthier forms of travel and use of public space |  | WCY14<br>WCY15<br>WCY16<br>WCY17<br>WCY18<br>WCY19<br>WCY20 | Cycle hire provision<br>Public cycle parking<br>Cycle facilities at schools and workplaces<br>Planning policies to support cycling<br>Cycle training<br>Cycle information and promotion<br>Enforcement on offences against cyclists | Model results show walking and cycling levels remaining static at 24% of all peak trips, but this is likely to be an underestimate, as many such trips will be too short to be captured at the strategic level of model 'zones'; there is also clearly enormous potential for the health benefits of these modes to be realised outside the peaks, especially as fewer people will own a car if they commute by public transport. |
| 5.6 | Improve travel safety |  | WCY1<br>WCY2<br>WCY5<br>WCY6<br>BUS10<br>BUS11<br>ROAD9<br>ROAD10<br>FRT3<br>TDM1 | Traffic restrictions in town centres<br>Lower speeds in town centres<br>Footpath provision and maintenance<br>Pedestrian crossing facilities<br>Use of appropriate and accessible vehicles<br>Reduce on-street termination and lay-over<br>Enforcement of parking and traffic offences<br>Making roads safer<br>Planning for Distribution and Servicing<br>Traffic control measures | Fewer casualties from road traffic accidents are expected to result from the Strategy. Modelling results show this effect will arise primarily from the lower numbers of car kilometres travelled – indicating a 32% fall in fatal and a 27.5% fall in serious casualties during morning peak periods.<br>This takes no account of psychological effects of larger numbers of cyclists and friendlier street layouts and facilities for non-motorised users, nor of restrictions on traffic from busy areas – all of which serve to reduce conflict and improve perceptions of safety. |

| No. | Sub-objective | Strategy score | Measures which support the sub-objective | | Predicted outcomes by 2030 from Strategy (based on 3-hour AM peak model outputs) |
|---|---|---|---|---|---|
| 5.7 | Improve travel comfort and the sense of personal security |  | BUS9 | Bus stop improvements | Along with service capacity and frequency enhancement measures which will reduce overcrowding on public transport (see 5.1 above), other measures will result in a more comfortable network for public transport users.<br><br>Less stressful road travel will result from lower traffic levels and improved driver environments – with better signs and signals, and information on traffic delays and parking availability. |
| | | | BUS10 | Use of appropriate and accessible vehicles | |
| | | | RAIL15 | Additional rail vehicles | |
| | | | RAIL16 | Stations and tram stops | |
| | | | TCC3 | Taxi fleet quality and accessibility | |
| | | | ROAD4 | Traffic management on local authority roads | |
| | | | ROAD5 | Traffic management on strategic roads | |
| | | | ROAD6 | Driver information | |
| | | | ROAD7 | Management of roadworks | |
| | | | ROAD8 | Management of parking, waiting and loading | |

The Strategy reduces road congestion especially in other areas leading to more reliable journey times, with vehicle kilometres travelled on roads which are over-capacity at peak times reduced by more than half. It also significantly reduces crowding on the Luas and on heavy rail. There are some crowding reduction benefits on inter-urban buses, but only a marginal drop in the proportion of passengers on very crowded vehicles on bus routes operating in Dublin at peak times.

Across all destinations, the Strategy delivers significant reductions in car, goods vehicle and public transport journey times, again largely due to the road user charge – with peak average journey times falling 27% for cars, 14% for HGV but only a small change on public transport. This is in part the effect of the extended reach of rail and light rail public transport networks, which (due to the per-kilometre charge) become most attractive for longer journeys.

The extent of the impact on personal travel other than that to work in practice depends on the times of day at which the road user charge operates the level of the charge, and whether it would apply in off-peak periods, where congestion is less of an issue and destinations sought are more diverse.

The Strategy significantly increases total public transport use – a 46% rise in peak passenger kilometres, and a 7% rise in mode share – and hence the benefits from measures such as improved travel information, ease of use of the transport system, safety, security and comfort will be enjoyed by a wider range of travellers. Measures to make travel information for walking and cycling better, as well as driver information, benefit others across all modes.

Total travel time by public transport increases in line with demand, with the average travel time much the same as the Do Minimum, however the average distance travelled on public transport in the peak period is up by approximately 50%, indicating a significant transfer of longer distance car trips to (relatively fast) public transport services.

There is also a transfer from bus to Luas/Metro and DART. The Luas/Metro share of total peak travel doubles from 6.5% to 13%, while bus usage in the Metropolitan area of Dublin more than halves from 20% to 9.5%, when comparing the Strategy against the Do-Minimum.

Average walk and wait times per trip fall in the peak (6% and 10% respectively), suggesting improved access to, and frequency of, public transport services in general.

This objective (reducing personal stress) was rated amongst the most important by the public at the beginning of the Strategy development process. Despite the fact that it has no direct equivalent in the Multi-Criteria Appraisal (MCA) reported below, it is important that the Strategy has been designed to include measures which deliver a highly positive set of results against all the sub-objectives under this objective.

## 12.4 Performance against transport appraisal criteria

Strategy appraisal performance in relation to the six 'MCA' appraisal objectives based on the Department of Transport's Common Appraisal Framework is shown in the table below. This is based on both analysis of quantified data received from the GDA transport models and the SEA process, and the performance of policy type measures which affect travel behaviour, but whose effect could not be modelled directly.

The aggregate MCA scores for the Strategy are shown in Table 12.1 in relation to the option packages where, as seen above with the Strategy objectives appraisal, they match the best of the options – but at lower cost and with some potential shortcomings reduced.

The scoring table (below) uses a broad quantification of benefits (relative to Do-Minimum) to set the scores for each criterion on a scale from – 3 to +3 (colour coded as set out in section 12.1). Within this, the following is seen:

| Criterion | Economy themed option | Social themed option | Environment themed option | Preferred Option |
|---|---|---|---|---|
| Safety | | | | |
| Economic | | | | |
| Accessibility | | | | |
| Social inclusion | | | | |
| Integration | | | | |
| Environmental | | | | |

*Safety* – Public transport enhancements improve safety benefits primarily by removing car traffic from roads, reducing accidents regardless of other measures. However, complementary measures covering pedestrian, cyclist, traffic management and speed control measures (not in the modelled Strategy) should also improve overall safety.

*Economy* – Journey time benefits are high compared to Do Minimum, and significant reliability benefits accrue (with less traffic on the busiest roads at the busiest times). Wider economic benefits from business-to-business links may add value, related to the 'agglomeration' and access to better jobs sub-objectives; as will the more efficient access of goods to markets.

The Strategy comprises a deliverable package of interventions and with a positive Benefit to Cost Ratio (BCR), represents good value for money overall. This is based solely on the modelled outputs and is therefore conservative, taking no account of local walking, cycling and bus services and the impact of behavioural change programmes.

Whether income from the road user charge should be set aside to support public transport subvention, and/or create a fund for road maintenance and renewal, was not accounted for.

*Accessibility* – The Strategy scores well on 'option values' by giving access to new public transport services to those who do not actually use them, but benefit from having the option, and could become targets for travel behaviour change programmes – though in respect of both these aspects, more detailed assessment would be required for individual measures. Some potential severance impacts arise from new infrastructure, but there is relief from less busy roads and the measures related to the "built environment" objective above.

*Social inclusion* – There are positive impacts on journey times for car and public transport; however, road user charging has negative impacts on deprived and vulnerable groups if they are car users and must travel at these times. New public transport routes or trip options to existing disadvantaged areas and 'at-risk' new settlements will reduce this negative impact.

*Integration* – There are positive scores here for transport interchange improvements and 'geographic integration' – driven by improved airport links and capacity on the Dublin-Belfast rail route – while the linkages to land use policy mean the Strategy scores well for that area. The road user charge affects the score against other government policies, especially under the sub-objective of 'improving access to other parts of Ireland', which supports a National Development Plan objective. However, the better public transport options do compensate for this.

*Environment* – this performance is more mixed, due to the range of outcomes considered, with small negative impacts recorded against some areas but with three large positives. As with the objectives appraisal, most of the negatives come from the potential construction impacts, which may in practice be mitigated. The issue of air pollutants falling in some areas but rising where they affect more people, would again be dealt with in implementation of the measures. Overall, however, the core benefits of the Strategy in reducing traffic levels – and hence greenhouse gases and traffic noise – would offset this. Along with a set of large and obvious public health benefits – with fewer accidents and higher levels of walking and cycling as well as lower noise exposures – the environmental performance overall is neutral.

*Conclusion*

The Multi-Criteria Appraisal shows that the strategy is likely to perform well against the key indicators used in the assessment of transport schemes, and to give good value for money.

## 12.5 Meeting *Smarter Travel* targets

A key context for the Strategy is the Government's *Smarter Travel* document that sets specific transport objectives and targets nationally, and hence it is important to check how well the Strategy meets these targets for the GDA. The Strategy outcomes relative to some of the *Smarter Travel* targets has already been discussed in the evaluation against Strategy objectives.

This section examines how well the Strategy performs relative to two specific *Smarter Travel* targets – i.e.

- Work-related commuting by car to be reduced to 45%; and
- Total vehicle kilometres travelled by car should not significantly increase.

The table below presents the expected GDA mode share of trips in the morning peak for the Strategy scenario compared with the Do Minimum and against the known mode share in 2006.

| Means of travel | 2006 | 2030 Do Minimum | 2030 Strategy |
|---|---|---|---|
| Walk or cycle | 24% | 24% | 25% |
| Public transport | 19% | 23% | 30% |
| Car / private transport | 57% | 53% | 45% |

From the table, it can be seen that the Strategy will meet the car mode share for all GDA trips in the peak travel to work period by 2030. The table indicates only a small change in the walking and cycling mode share of trips. However, it should be noted that the model does not capture the benefits of all of the various walking and cycling measures in the Strategy (see Chapter 9). These measures can in reality be expected to deliver a significant increase in the mode share of walking and cycling trips – particularly within the city and major towns in the GDA.

The table below shows the forecast number of vehicle kilometres travelled by car in the GDA in a typical weekday morning peak period (7am to 10am) with the Strategy in place, and compares this to the Do Minimum scenario, and the known 2006 base year.

| Means of travel | 2006 | 2030 Do Minimum | 2030 Strategy |
|---|---|---|---|
| Millions of car-km in AM peak | 7.9 | 13.7 | 8.5 |

The table shows that the Strategy will deliver a small increase in peak vehicle kilometres travelled by car over 2006 and a significant decrease relative to the Do Minimum. Overall the Strategy as modelled in the peak period would come close to delivering the *Smarter Travel* target for the GDA of not significantly increasing vehicle kilometres travelled. In practice charging levels and structures for the proposed road user charging scheme for the Greater Dublin Area could be adjusted at design and implementation stage to meet this *Smarter Travel* target in full.

## 12.6 Impact of Strategy measures on outcomes

In addition to quantifying the overall outcomes of the Strategy against the objectives and MCA criteria through the appraisal process, and testing it against *Smarter Travel* targets, it is also worth looking at how the different categories of Strategy measures (set out in Part 2 of the Report) combine to best meet the objectives, and deliver the desired outcomes.

*Joined up transport and land use planning*

Given the quantum of land use change which could potentially take place by 2030, these measures are likely to be crucial in delivering better accessibility (objective 1), and will deliver many of the local measures in Designated Towns and Designated Districts, including complementary measures for improved streets and public spaces for walking and cycling, more permeable retail and residential development and new local connections between communities.

Overall, better planning of residential development locations, to give better access to jobs, schools, shops and other facilities, improved routes to onward public transport networks, as well as dedicated cycle routes/parking, will play a cumulative role in reducing car demand.

*Improving the walking and cycling environment*

These short trips will play an important role in reducing demand for car use, although they will tend to complement the larger scale interventions, with analysis suggesting the share of trips by these modes is maintained at around 24% of peak travel in both the Strategy and Do-Minimum. However, as noted above, peak-hour modelling is likely to have underestimated this impact, and the actual potential for these modes – especially when well-promoted – remains higher.

Proposals such as pedestrian and cyclist priorities in town centres, restrictions to larger lorries in town centres, restricting long-stay parking to free up streetscape, and support for the introduction of electric vehicles will all help meet Strategy environmental objectives, as well as improving public health and reducing stress.

*Better, easier to use public transport*

The role of major rail infrastructure schemes in the Strategy is essential for supporting the development strategy of residential growth along key rail corridors foreseen in Regional Planning Guidelines.

Key measures include the new rail and Metro lines which increase capacity on radial corridors serving Northern coastal suburbs, Maynooth/Leixlip, the Kildare line suburbs (Adamstown, Clonburris etc.), Navan, Blanchardstown and Swords, Dundrum, Sandyford and Bray and Tallaght. Along with the Luas line to Lucan, these provide capacity on growing mass transit corridors.

In addition, key missing links and connections are created through the DART Underground and linking electrification, Metro West to serve the Clonburris and Liffey Valley area and link to Blanchardstown; and Luas Lines to Lucan, Kimmage and Luas line BXD crossing the city. Enhanced quality bus supports mode shift to public transport within the M50 and on some long-distance routes not served by rail (for example the M2 corridor), and acts as precursor to Luas on growing public transport corridors, such as the new orbital routes through south Dublin to Dundrum and Dun Laoghaire.

Alongside the infrastructure investment, a range of measures will enhance ease of use of this system, such as ticketing, integrated fares, information and marketing, as well as the measures that improve access for physically and socio-economically disadvantaged groups.

Although not always captured in the model outputs, other proposals that link communities to each other and to the social and community activities they need to access are vital. New networks will improve public transport availability in outer suburban areas, and Designated Towns for those travelling to access health and community services, leisure and recreation facilities, or visit family and friends, including coverage outside peak travel to work times.

*Strategic road traffic, freight and travel demand management*

To discourage growth in car use, only limited new strategic road building is proposed. This factor, together with the proposed road user charging measures, discourages longer distance car travel and encourage overall shift to other modes. These measures will be backed up by strategic traffic management measures and widespread travel planning and travel behaviour change measures.

Strategic connectivity between growing Hinterland communities is acknowledged through an incremental upgrade proposal for the Leinster orbital corridor. The road freight network will also benefit from the large reductions in private car traffic on the motorway and national road networks, making HGV trips more reliable.

In urban areas, traffic management and local servicing and distribution policies will improve conditions and make efficient use of the network, enhancing journey time reliability such as through better management of events.

Overall, traffic-related proposals are likely to support the objective of reducing transport related greenhouse gas emissions, reduce emissions, improve local air pollution and noise, minimise the impacts on natural amenities and the countryside, and improve towns and streetscapes for walking and cycling, through keeping traffic impacts to their minimum.

## 12.7 Strategy synergy and delivery

In delivering the strategy, it will be important to consider how policy and infrastructure measures should interact – e.g. how far demand management should be applied on a corridor before infrastructure proposals are brought forward; and what should be done following enhancements to ensure that new car trips ("generated traffic") do not emerge to occupy road space freed up by transfer to other modes as a result of the scheme delivered.

Assessment of benefits of major infrastructural schemes on a corridor by corridor or area-wide basis may form a starting point for further consideration of these issues. However, the Strategy has already considered connectivity issues at 'area band' level – for example, between the Hinterland towns linked by the Leinster Orbital Route – and the need for self-contained local transport plans for Designated Towns, as well as local access plans for each Designated District, highlighting the short trips within its catchment.

These overlapping layers of implementation planning should feed into an overarching prioritisation framework that will help determine the order and timing of delivery using new information on demand and development and ensure best value for public monies, as well as accounting for any gaps in current network performance that are in need of addressing.

## 12.8 Tests of Strategy performance with lower growth forecasts

In predicting the outcomes that the Strategy will deliver, it is important to bear in mind that all long-term forecasts have a high degree of uncertainty – and this is particularly important to consider, given the recent sharp economic downturn, and the associated slowdown in population growth and decline in employment in the Greater Dublin Area. Although this slowdown may be a relatively short term when compared to the lifetime of the Strategy, it is prudent to undertake a sensitivity test on the Strategy to test its robustness under a scenario where much of the predicted growth in travel demand does not materialise over the next 20 years.

For this reason, a scenario was developed where population and employment in 2030 are both 20% lower than the RPG based forecasts used to develop the Strategy. This would result in a net increase of only 11% in population and employment in 2030 compared to 2006 levels. This growth approximately equates to the lowest of a range of forecast scenarios for the Greater Dublin Area prepared by the Central Statistics Office in 2008[32].

The outcome of the assessment of this scenario shows that the Strategy is still likely to perform well in meeting all its key objectives, and the key measures in the Strategy would be retained. However the timing of construction of some of the major infrastructural schemes set out in the Strategy might be postponed to take account of the lower rate of growth in travel demand associated with lower population and employment growth. This would be particularly likely to affect major schemes that depend to a significant extent on future population and employment growth along their corridors for their financial and economic viability.

Schemes identified as subject to retiming or postponement under a lower growth scenario include:

- Metro West;

- Extension of Luas Green Line to Bray/Fassaroe area;
- The proposed heavy rail line to Navan; and
- Investment in rail cars, depots and supporting infrastructure.

Subject to further project specific assessment, linked to emerging development trends, other elements of the Strategy may also be subject to timing adjustments.

### 12.9 Tests of Strategy performance for longer term planning horizons

A test of the performance of the Strategy in the longer term, up to 2050 was also undertaken with a view to understanding whether the major infrastructure proposals in the Strategy would have sufficient capacity to cater for forecast demand, or whether significant additional infrastructure may be needed in the longer term. In this test, population and employment were assumed to grow beyond 2030 forecasts in areas in the GDA that are suitable for future development.

Broadly, the Strategy continues to perform well in this scenario against Strategy objectives, however demand on certain corridors exceeds capacity, suggesting further transport interventions would be required by 2050, should the forecast growth materialise.

### 12.10 Conclusion

The evaluation of the Strategy shows that it will deliver significant benefits against each of the high level objectives. In particular it will:

- Help build and strengthen communities by improving accessibility within communities, to the services they need and to other regions;
- Improve economic competitiveness by reducing journey times and improving journey time reliability for all travel and ensuring good value for money of transport expenditure;
- Improve the built environment by creating a better environment for people movement, improving the quality and design of public spaces and minimising the intrusive impact of all forms of transport;
- Respect and sustain the natural environment by improving transport efficiency and minimising the negative environmental impact of transport; and
- Reduce personal stress by improving people's journey times and journey time reliability and by making the transport system easier to use.

The strategy also delivers significant benefits against the transport appraisal criteria of Safety, Integration and Social inclusion. It also represents excellent value for money by delivering a high benefit to cost ratio and a healthy internal rate of return on investment.

Against the *Smarter Travel* targets, the Strategy meets the specific target of reducing the mode share of car trips to 45%, and – despite the significant growth in overall travel demand anticipated by 2030 – does not significantly increase vehicle kilometres travelled by car in the peak although there would be some growth in off-peak periods. In this regard, the Planning and Demand Management measures included in this Strategy will be critical in ensuring that the challenging Smarter Travel targets are achieved.

It is important to note that the full impact of many of the planning and policy measures – particularly those aimed at transforming the walking and cycling environment in town centres, but also local bus services in hinterland towns – cannot be fully captured by the modelling assessment. In practice such measures have the potential to have a far greater impact on local trips than has been reported by the Strategy assessment or captured within the BCR.

It should also be noted that the Authority under its statutory remit will put in place a system of monitoring the impact of Strategy measures as they are implemented to ensure that the stated targets are met. This will be part of the Next Steps – and more details are included in Chapter 13.

# Chapter 13

# Next steps

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## 13.1 Overview

Chapters 7 to 11 list some 84 different measures (many of those with several sub-measures) that form the basis of the Strategy.

These range from providing major new elements of transport infrastructure to making small scale improvements to existing services. The list covers interventions relating to all the surface modes of transport in the Greater Dublin Area. Measures targeted at improving the coverage and performance of infrastructure as well as policy measures and those aimed at changing personal decision-making and behaviour are included in the Strategy.

The Strategy represents the overall strategic approach to developing transport within the GDA for the period up to 2030, and, by its nature, must take a high level approach in many of its recommendations. Legislation requires the preparation of six- year Implementation Plans addressing the delivery of the elements of the Strategy to the required level of detail for the period covered by each Plan. Legislation also requires a cycle of six yearly reviews of the strategy in a similar fashion to the Regional Planning Guidelines. This cyclical strategy review process, the requirement to be consistent with evolving Regional Planning Guidelines along with the cycle of 6 year implementation plans all emphasise the need for flexibility, as contained in the Strategy.

## 13.2 Integrated Implementation Plan

Section 13 of the Dublin Transport Authority Act (2008) requires the Authority to, within 9 months of Ministerial approval of the Strategy, prepare an Implementation Plan covering the first 6 years of the period planned for by the Strategy. The Implementation Plan will consist of:

a) Programmes for investment in infrastructure and services over the Plan period, and

b) Integration measures – actions to be taken to improve physical integration of infrastructure between and within modes of transport, and to improve the integration of services.

The Authority will proceed with the preparation of the first Implementation Plan following the adoption of the Strategy. Public consultation will be undertaken during the development of the draft Plan and the final draft Plan will be submitted to the Minister for Transport for his or her approval.

In delivering the implementation Plan, the Authority will monitor the need for legislative changes to facilitate the delivery of Strategy measures, and will seek the provision of any necessary legislative changes.

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## 13.3 Funding

The unprecedented economic circumstances prevailing in Ireland at the time of the adoption of this Strategy, will clearly mean that the level of available funding for investment in transport over the early years of the Strategy will be significantly less than anticipated under prior investment plans and programmes. The Strategy has been developed mindful of these circumstances and constraints.

The 84 measures set out in the Strategy comprise a mix of high cost projects and low cost plus zero cost projects and initiatives. Considered overall, the majority of the Strategy measures are either low cost or, indeed, zero cost proposals, with a limited number of high cost capital projects only proposed where, ultimately, the future transport demands require such investment to deliver the necessary long-term capacity in the transport system. The delivery of many of those high cost schemes can, and will, extend over many years – it is not a prerequisite of the Strategy that they are delivered in the early years of the Strategy.

The Strategy is not intended to represent a short-term solution to the transport deficiencies in the Greater Dublin Area. Instead it represents a long-term framework for the development of transport in the Greater Dublin Area up to 2030. Irrespective of the nature of the current economic difficulties, it is important that the long term objectives and goals for transport in the region are appropriately established and that each investment moves incrementally towards delivering the overall outcome.

Accordingly it is envisaged that the component elements of the Strategy will be delivered on a phased basis over the period of the Strategy. The exact pace of delivery will be dictated by the level of available funding and will be established in the various Implementation Plans over the period of the plan.

Section 14(5) of the Dublin Transport Authority Act (2008), provides that the Minister for Transport, in consultation with the Minister for Finance, will provide guidance on multi-annual funding arrangements. The Authority will have full regard to such guidance in preparing the Implementation Plan.

While the availability of capital funding is both necessary and welcome, there is a continued need to support service delivery and to ensure the appropriate maintenance of the infrastructure assets developed under the Strategy. The Authority will seek to achieve effective and efficient maintenance and operational arrangements so that the necessary high-quality levels of service are offered to the public. This will be essential to ensure that public transport (as well as cycling and walking) will make their expected contribution to the achievement of transport policy and objectives.

## 13.4 Integrating Transport and Land Use Planning

Transport planning can only be successful if it is integrated with land use planning. Spatial policies aimed at reducing both the need to travel and distance travelled by locating future regional populations closer to their employment, education and shopping opportunities are required. Conversely, provision of high capacity public transport can only be effective if matched with appropriate development patterns within its catchment. Accordingly, it is vital that land use planning and transport planning are fully aligned, both spatially and over time.

To this end the Strategy sets out, in Chapter 8, various land use planning objectives and recommendations that are aimed at integrating transport and land use planning in a coherent and consistent way.

As required under Sections 81-95 of the Dublin Transport Authority Act (2008), the Authority will fulfil its role in participating in the preparation of the Development Plans of each Planning Authority in the Greater Dublin Area, and will ensure that planning proposals are consistent with, and support

the achievement of, the Strategy and the transport policy objectives. It will also participate in the development of draft regional planning guidance drawn up by Regional Planning Authorities in the GDA, to ensure similar consistency of intent.

The Authority will also work with GDA Planning Authorities to draw up local area plans that will include integrated transport provision, initially targeting the Designated Towns and Designated Districts and progressing to include all areas likely to be subject to development or redevelopment, in order to ensure consistency between the Strategy and the actions to be pursued at local level.

### 13.5 Environmental considerations

The development of the Strategy has been accompanied by consideration of environmental issues through, in particular, the Strategic Environmental Assessment process and the Habitats Directive Assessment process. That process of environmental assessment will continue through the project development stage for individual schemes forming part of the Strategy.

In preparing the Strategy, it has been identified that a number of schemes have the potential to impact on Natura 2000 sites. This is dealt with in the Natura Impact Statement, which has identified that this should be further addressed through project-level Appropriate Assessment.

In addressing such issues at project level development, the preferred approach will be to avoid significant negative impacts through appropriate design and mitigation. However, if this is not possible, then alternatives will need to be examined and in the absence of these, there will be a requirement to demonstrate imperative reasons of overriding public interest for the scheme and to implement compensatory measures to offset any significant negative impacts that are identified.

In delivering the Strategy, the Authority will, in collaboration with the relevant agencies, actively address the protection and enhancement, where practical, of the natural, built and historic environment associated with these schemes.

Projects which are taken forward to development consent stage will be supported by environmental appraisal and Environmental Impact Assessment (EIA) where appropriate. All transport projects will be constructed in accordance with applicable design standards and environmental regulations and that mitigation measures in accordance with good practice will be incorporated into the design and construction of these schemes.

### 13.6 Monitoring Progress

As the Strategy is a 20 year plan, arrangements to monitor the progress of its delivery over that period will be required. This will primarily be the responsibility of the Authority under its statutory remit.

The framework for such monitoring will be largely through the series of shorter-term implementation plans that will be developed and which will establish the delivery schedules for the various elements of the overall Strategy. Details of the monitoring arrangements will be established as part of the process of preparing the first such implementation plan.

# GLOSSARY OF TERMS

**Agglomeration:** Economic activity congregating in or close to one location, rather than being dispersed, allowing improved labour market access to a wider range of jobs, and easier business interaction.

**An Bord Pleanála:** The planning board, which considers planning applications for major transport infrastructure projects under the Critical Infrastructure Act (2006).

**Accessibility:** Ease of access to a destination by a particular means of transport.

**Appropriate Assessment:** See Habitats Directive Assessment.

**Brownfield sites:** Previously developed, now abandoned or underused, lands available within towns for re-development.

**BRT:** Bus Rapid Transit.

**CCTV:** Closed-circuit television (cameras).

**Commute:** A journey to or from work.

**CSO:** Central Statistics Office.

**CIE:** Coras Iompair Éireann (holding company for the state-run bus and heavy rail service providers).

**DART:** Dublin Area Rapid Transit (suburban heavy rail system).

**Development Plans:** Statutory documents produced by a local authority which set out its plans and policies for the development and use of land in its remit.

**DCU:** Dublin City University.

**Distributor roads:** Roads intended for use by traffic travelling between a local point and a point outside the locality.

**DIT:** Dublin Institute of Technology.

**DoEHLG:** Department of the Environment, Heritage and Local Government.

**DoT:** Department of Transport

**Do Minimum:** A transport scenario, where only existing and committed (funded and approved) transport schemes and policies are in place.

**DTA Act:** Dublin Transport Authority Act, 2008.

**DTI:** Dublin Transport Initiative (1995).

**DTO:** Dublin Transportation Office, which was subsumed into the National Transport Authority in December 2009.

**DTO Steering Committee:** Committee of Department of Transport, Department of Environment Heritage and Local Government, GDA local authority and transport agency officials who oversaw the work of the DTO.

**Dublin Region:** Dublin city and county, encompassing Dublin City Council, Fingal County Council, South Dublin County Council and Dun Laoghaire Rathdown County Council administrative areas.

**Eastern Bypass:** A motorway proposal, to link the M50 in the Sandyford area to Dublin Port.

**ECCP:** European Climate Change programme.

**Eco-driving:** Driving techniques that minimise vehicular emissions.

**ESRI:** Economic and Social Research Institute.

**EURO standards:** EU emission standards that ensure that every 4 to 5 years, new vehicles produced in a particular class are cleaner than the previous generation. 'Euro 5' standards apply to buses built after 2008.

**FORFÁS:** National advisory body for enterprise and science.

**Feeder:** A local public transport service that extends the catchment area of a trunk service.

**Footprint:** The area of land taken up by development

**GDA:** Greater Dublin Area – the area encompassing the Dublin and Mid-East Regions, comprising Dublin City and counties Dun Laoghaire-Rathdown, Fingal and South Dublin in the Dublin Region, together with the counties of Kildare, Meath and Wicklow in the Mid-East Region.

**GDP:** Gross Domestic Product.

**GHG:** Greenhouse gases.

**Greenfield sites:** Lands that have not previously been developed, frequently agricultural lands at the edge of settlements.

**GVA:** Gross Value Added is a measure of economic value and is used in the estimation of Gross Domestic Product (GDP). It measures the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used in production.

**Habitats Directive Asssessment (HDA):** An assessment of impact on Natura 2000 areas in accordance with the Habitats Directive 92/43/EEC) - also referred to as Appropriate Assessment, Habitats Impact Assessment or Natura Impact Assessment.

**Hinterland:** The outer part of the GDA (the GDA excluding the Metropolitan area).

**'Hail and Ride':** A style of bus operation where passengers can hail the bus anywhere along a route, without needing to be at formal bus stops.

**Heavy rail:** suburban rail services provided by Irish Rail.

**HGV:** Heavy Goods Vehicle, i.e. trucks and lorries.

**Home Zones:** Residential areas where traffic calming measures have been introduced to greatly reduce vehicle speed, affording pedestrians and cyclists priority.

**ITS:** Intelligent Transportation Systems.

**Interchange:** point where a passenger transfers between public transport services to complete a trip.

**Integration:** the removal of real and perceived barriers to movement within and between modes of transport and the improved interaction between land use planning and transport.

**Journey planner:** a web-based facility that provides an intending traveller with information on how to make a specific trip by public transport, cycling or walking.

**Kildare Route Project:** a project to increase the number of rail tracks from 2 to 4 between Hazelhatch and Inchicore in two phases.

**Local Area Plans:** a set of statutory documents produced by a Local Authority which set out its plans and policies for the development and use of land in a local area in its jurisdiction.

**LOR:** Leinster Orbital Route – a proposed orbital road linking Drogheda, Navan and Naas areas.

**Luas:** The Dublin light rail (tram) system (Luas is the Irish word for 'speed').

**M2F1:** a forecast population scenario assuming certain migration and fertility factors, devised by CSO.

**Metro:** a light rail system that is segregated from other traffic, enabling longer light rail vehicles, operating at higher frequencies and speeds.

**Metropolitan Area:** the area of the GDA defined in the RPGs for the GDA, encompassing the city and suburbs of Dublin, including parts of neighbouring counties.

**Mid-East Region:** Counties Kildare, Meath and Wicklow.

**Mode:** a means of travel, e.g. bus, rail, walk.

**Mode share:** the share of total travel made by a particular mode.

**Modal shift:** change in the share of total travel made by a mode.

**RPA:** Railway Procurement Agency.

**Natura 2000:** European network of Special Areas of Conservation and Special Protection Areas.

**Natura Impact Statement:** see Habitats Directive Assessment.

**NCC:** National Competitiveness Council- a social partnership body, which reports to the Taoiseach on key competitiveness issues facing the Irish economy.

**NDP:** National Development Plan (the current Plan covers the period 2007-2013).

**NESC:** National Economic and Social Council.

**Node:** a point of access to the transport network.

**NRA:** National Roads Authority.

**NSS:** National Spatial Strategy – statutory national planning document prepared by the Department of the Environment, Heritage and Local Government.

**NTA:** National Transport Authority.

**Passing loops:** extra track on sections of a railway line to permit trains to pass each other.

**Permeable:** allowing easy movement (of pedestrians and cyclists) using direct routes.

**Park and Ride:** car parking at points in the public transport network, for transfer to onward travel by rail or bus.

**Parking standards:** Number of car parking spaces required to be provided as part of a new development.

**Priority:** in traffic terms, giving road space or traffic signal time to particular road transport modes (e.g. buses), to assist their movement

**QBC:** Quality Bus Corridor – a corridor where substantial road space has been given over to bus priority.

**QNHS:** Quarterly National Household Survey, undertaken by the Central Statistics Office.

**Railway Application Order:** An application to An Bord Pleanála, seeking permission for the undertaking of railway infrastructure works.

**Railway Order:** Planning approval to carry out railway infrastructural works.

**RAPID:** Revitalising Areas by Planning Investment and Development (programme to assist those living in disadvantaged urban areas).

**Real-time information:** live, up-to-date travel information.

**RPGs:** Regional Planning Guidelines – statutory planning guidelines setting out the planned direction for growth in the Greater Dublin Area (prepared in accordance with section 21 of the Planning and Development Act, 2000).

**RPGPA:** Retail Planning Guidelines for Planning Authorities – statutory national planning document prepared by the Department of the Environment and Local Government.

**RPSGDA:** Retail Planning Strategy for the Greater Dublin Area - non-statutory document prepared by the GDA local authorities.

**Strategic Development Zone:** A site or sites for which a planning scheme has been made and is in force. Special rules concerning planning applications and appeals apply to development in these sites (See sections 165-171 of the 2000 Planning and Development Act).

**SEA:** Strategic Environmental Assessment. An environmental assessment in accordance with the European Union Directive on the 'Assessment of the Effects of Certain Plans and Programmes on the Environment' adopted on 5th June 2001.

**Segregated:** Infrastructure intended for use by a particular means of transport that does not share with others.

**Severance:** where the provision of transport infrastructure (e.g. a new high speed road) bisects a local area, making people movement within the area more difficult.

**Stakeholder:** Body with an interest in the outcome of a planned change.

**Smartcard:** An electronic ticket for public transport.

**Strategy Steering Group:** A group of representatives of transport and planning authorities within the GDA, established to oversee the development of this Strategy.

**Sustainability:** Meeting today's needs without compromising the ability of future generations to meet their needs.

**'Top-Down' approach:** An objectives-led approach to problem-solving.

**Traffic management:** Measures generally intended to improve road safety for all users, reduce congestion or control the use of the car.

**Transport modelling:** Computer programmes that model the level of usage of transport systems, and impacts of that usage.

**VRT:** Vehicle Registration Tax.

**The Authority:** The National Transport Authority.

**UCD:** University College Dublin.

**'User pays' principle:** Paying for all costs of an activity e.g. road user pays for full cost of their journey to society (e.g. environmental and congestion costs).

**Walkability:** Ease of walking.


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