

Dublin City Centre Transport Study

Consultation Document June 2015



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Dublin City Council



Údarás
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1 Introduction

1.1 Overview

As Ireland's economic recovery continues, it is essential that Dublin, as the main economic driver of the state, is primed to cater for the consequential growth in activity. Before the economic downturn Dublin's transport network and urban environment were under severe pressure as a result of the volume of people working, studying, visiting and living within the inner city. It is critical that Dublin City does not return to the congestion levels experienced between 2004 and 2007. At its peak, in 2006, 207,000 people crossed the Canals during the morning peak commuting period (7-10am), compared with 192,000 in 2014. As Dublin begins to grow again it is vital that plans are in place to allow the city to avoid the problems which were experienced before, and to enable it to develop as a major European Capital City.

Over the coming years Dublin City will have to meet the needs of a bigger resident population and a larger workforce, as well as ensuring that Dublin is a desirable place for residents, students, visitors and tourists. A key element of this is how people will travel to, move within, and interact with the built and natural environment of Dublin's city centre.



"In terms of economic development cities and city regions are kings. Dublin is Ireland's only city region of international scale. The Dublin economic region extends beyond the boundary of Dublin and well into the adjoining counties of Meath Kildare and Wicklow. Its importance in the national economy cannot be over emphasised, the latest data shows that Greater Dublin area accounts for 49.6% of Irelands GDP."
(Owen Keegan, Chief Executive Dublin City Council)

By 2023, it is anticipated that Dublin City Centre will have to cater for an additional 42,000 journeys in the morning peak, an increase of over 20%. The city centre is intensifying as an employment, retail and tourist destination. The expansion of employment in areas like the Docklands, particularly the technology sector (Google et al.), coupled with increased retail investment in the city centre and growth in Dublin tourism (Dublin had 4 million visitors in 2013) demonstrates that this growth is already taking place.

Since 2006, when peak demand for travel into the city centre was observed, the city has continued to evolve the transport offer serving Dublin City. Some of the key enhancements include:

- Dublin Port Tunnel – opened in 2006;
- HGV City Centre Cordon Ban – introduced in 2007;
- Continuous Bus Lanes North Quays – constructed in 2007;
- M50 Barrier Free Tolling - introduced in 2008;
- College Green Bus corridor (Bus Gate) – introduced in 2009;
- Luas C1 extension to Point Depot – opened in 2009;
- Samuel Beckett Bridge – completed in 2009;
- Dublin Bikes scheme – commenced operation in 2009;
- Extension of Luas to Cherrywood – opened in 2010;
- Clanbrasil Street Bus Corridor – completed in 2010;
- M50 Upgrade scheme – completed in 2010;
- Real Time Passenger Information - introduced in 2011;
- Leap Card - introduced 2011;
- Dublin Bus Network Direct – completed in 2012;
- Phase 1 Canal segregated Cycleway – opened in 2012;
- Rosie Hackett Bridge – completed in 2014;
- Custom's House Quay Contra-flow Bus Lane – opened in 2014;
- Luas Cross City – works commenced in 2014; and,
- Traffic management changes at Stephen's Green – opened in 2014.

Despite these improvements, during the economic downturn, public transport lost substantial passenger numbers, with passenger crossing the canals falling by more than 20,000 between the peak of 2006 and 2011. While this trend has been somewhat reversed, the loss of capacity in the public transport network as a result of declining passenger numbers, means that the current public transport arrangements will not be able to cope with a return to the 2006 levels, let alone the anticipated future growth in demand, without further investment and expansion.

For Dublin city to continue to grow and prosper, it is essential that a strategy is put in place now to ensure that the increased demand for travel is met. At present, recurrent congestion is once again becoming a feature of the City transport network, impinging on public transport reliability and the ability of the City to withstand unforeseen traffic incidents.

The Dublin City Centre Transport Study (the 'Study') aims to set down a framework for how Dublin City's transport network can be redefined to cater for this increased usage, by better utilising the existing infrastructure available, and by moving towards a more sustainable and efficient use of the public realm within the city centre. The Study will facilitate Dublin with an opportunity to grow as a city both physically and economically, whilst also creating a better public realm which can be enjoyed by residents and visitors alike.

"In view of Dublin's pivotal role in driving national growth and prosperity a strong focus on maintaining and enhancing Dublin's attractiveness as a location to do business in and to live and work in is essential" (National Competitive Council)

1.2 Purpose of this Study

The Dublin City Centre Transport Study has been prepared to integrate the transport policies and proposals of Dublin City Council and the National Transport Authority (NTA) and inform an agreed framework for strategic investment.

Between 2010 and 2015, funding of approximately €97 million was provided by the NTA to Dublin City Council for transport infrastructure in the city. A myriad of projects were delivered under this funding programme, spanning bus infrastructure, road resurfacing, cycling and walking schemes, along with Real Time Passenger Information (RTPI) and traffic management systems.

It is envisaged that over the lifetime of this Study, around €150 million will be made available to Dublin City Council to enable the delivery of the proposals set out in this study. This is in addition to the €368 million already committed to the Luas Cross City project and other projects such as rail improvement and bus fleet investment.

This Study relates directly to the policies and objectives already set out in the Dublin City Development Plan 2011-2017, and is influenced by the NTA's Integrated Implementation Plan 2013-2018. Working within the statutory planning framework of the City Council's Development Plan (outlined in section 2.5.1), this document examines the issues relating to the management and movement of people and goods to, from and within Dublin City Centre, and proposes various changes.

This Study, and the timely implementation of the proposals outlined in it, is critical to ensure that the transport provision in Dublin can continue to function, and has the capacity to cater for Dublin's future growth. In essence, the current transport arrangements for each mode are reaching the limits of their capacity as currently configured within the city centre. The introduction of Luas Cross City will provide a critical north-south Luas alignment to complement and integrate with the current east-west Luas red line. Luas Cross City will also complement the development of the core pedestrian network within the city centre, particularly across the Liffey at O'Connell Bridge, one of the most heavily used pedestrian routes in the city. This alignment is illustrated in figure 1.1.

Figure 1.1: The Luas Network in Dublin City Centre



As a result of the construction and future operation of Luas Cross City, the current transport arrangements in the core city centre will no longer have the road space or junction capacity to function in an efficient manner, and will require significant reconfiguration. There is also a pressing need to reconfigure the public transport network to integrate the revised Luas network, and to maximise the use, and capacity, of the public transport system as a whole. It is critical to ensure that the improved public transport offer in the city will meet the demand for travel into the centre of Dublin for work and shopping, as well as facilitating the City to grow into the future.

1.3 Devising the Study

The Study represents the accumulation of work undertaken by Dublin City Council and the NTA. It proposes new traffic management arrangements, public transport infrastructure improvements, and

measures to encourage walking and cycling. The Study was motivated by a number of key issues and concerns regarding the city centre, including the need to:

- Build on the existing and future investment in public transport within the city, and ensure that these assets are utilised appropriately into the future;
- Guarantee the future development potential of the city centre, and improve confidence in the ability of the city centre to be the key focus of future investment;
- Ensure that the city develops in a way which will provide a better living and working environment for residents and visitors alike;
- Ensure that in operation, Luas Cross City can operate in an effective and efficient manner;
- Formulate an agreed set of transport networks, which are integrated and complementary;
- Develop a framework for infrastructural investment in the City Centre;
- Improve the capacity for movement within the City Centre;
- Improve accessibility to the City Centre;
- Ensure that changes in the City Centre are matched by improvements in public transport across the Dublin region. This will be covered by the forthcoming NTA Transport Strategy for the Greater Dublin Area;
- Improve the capacity, reliability and utilisation of public transport – in particular, addressing poor journey times, bus congestion (especially around bus stops) and the negative impact of bus activities on the public realm;
- Improve the quality of service for cycling and walking, with a particular emphasis on the 'core' city centre; and,
- Improve the management of private vehicle, delivery and service vehicle access to the primary retail and business districts.

1.4 Structure of this Study

This Study begins by setting out the context for the study in Chapter 2. It spatially defines the area designated as the City Centre for the purposes of this analysis, gives an overview of the existing transport network and current commuting patterns into the city. This chapter also sets out the principle policy objectives of Dublin City Council and the NTA which frame the direction of this plan.

Chapter 3 examines the current transport offer in the City Centre and highlights some of the key challenges, both in providing for each mode of transport, as well as tackling site specific impediments. Chapter 4 outlines the guiding principles of the study, and summarises the key parameters and assumptions which need to be considered in the development of the transport measures.

Chapters 5 to 9 outline the transport network measures as they relate to each mode, and Chapter 10 sets out a number of specific measures which are proposed as part of the overall transport framework.

Chapter 11 summaries some of the key outcomes of the Study in relation to the future development of Dublin City.

2 Study Area and Context

2.1 Overview

On average 500,000 people travel within Dublin City Centre every day. This is made up of circa. 235,000 work related trips, 45,000 education trips, and 120,000 visitors/tourists/shoppers. In addition, the latest Census reports that around 122,000 people live within the canals. The City has started to grow again now the economy is in recovery. If growth continues as predicted, by 2023 it is likely that the City's transport network will have to cater for an additional 42,000 commuter trips coming into the City Centre each day, as well as 15,000 new residents living within the Canals, in addition to an expanded retail and tourism market.

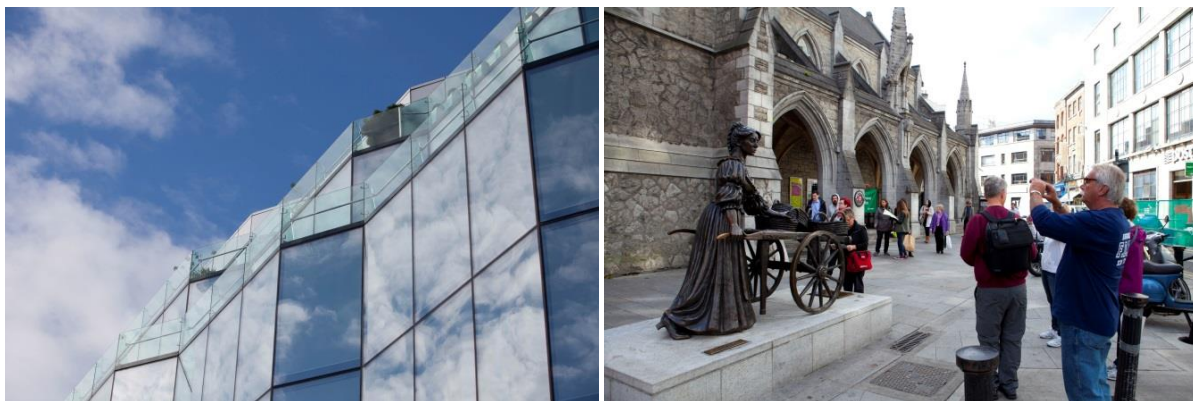
It is important to understand the current make-up of the city in terms of land uses and principal attractions. These existing land uses and attractions are unlikely to change significantly, and will continue to be the main reasons as to why people travel into and within the City Centre. The city is also growing however, and identifying and catering for new growth areas both inside the canals and within the city suburbs is key to ensuring that these areas are integrated into the existing land use context of the city.

2.2 Existing Land Use Context

It was determined that in the context of this Study, the City Centre is defined spatially as the area within the canals and North Circular / South Circular Roads.

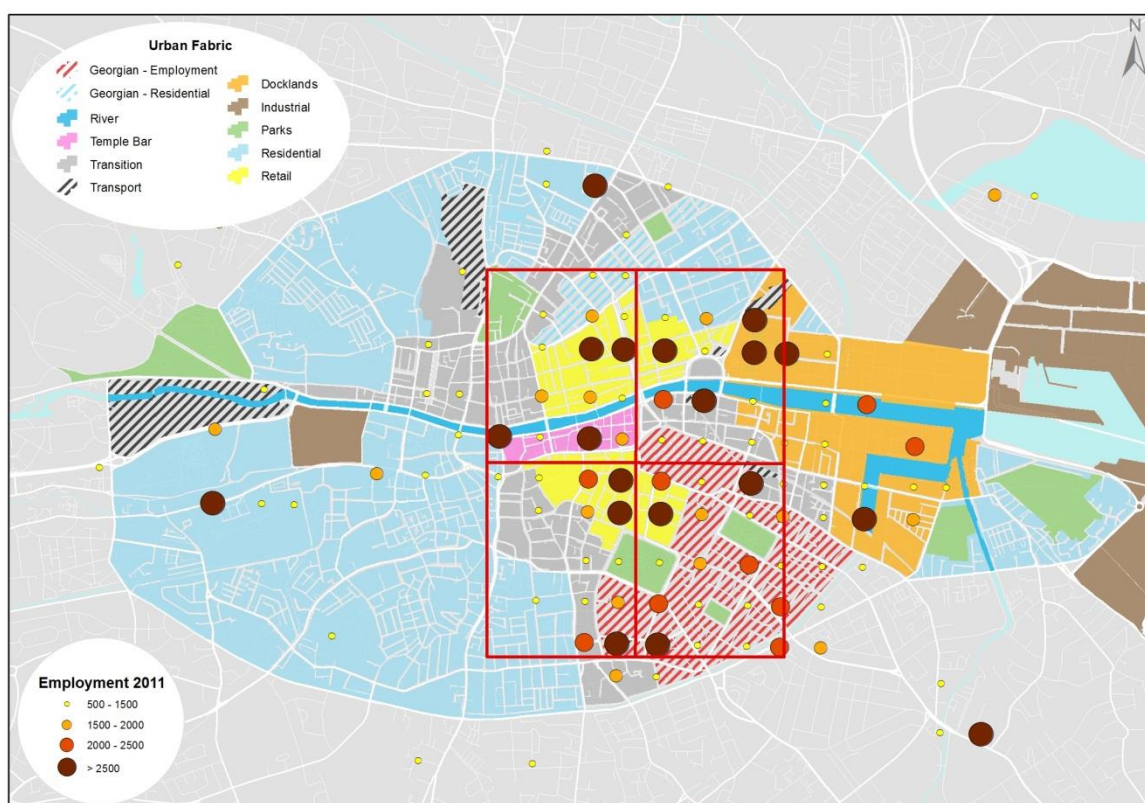
It is important to understand and assess what land use types exist, and are planned for, within the city centre. Dublin City Council, through their Development Plan and subsequent Public Realm Strategy, has identified the land use characteristics of the city, including the key destinations for retail/offices/residential/industrial/tourism. Other important considerations include the conservation areas, listed buildings, and 'Key Spaces and Connections' which must be taken into consideration in the design of any transport proposals.





Based on the Dublin City Council Development Plan zoning the city centre has been broken down into its principal land uses; this is illustrated in Figure 2.1. For analysis purposes, the focus of this Study concentrated on the eastern side of the City Centre, which has the highest concentration of employment and other destinations. This area is defined as the “Core City Centre” area and was further broken into four quadrants, centred on College Green, as set out in Figure 2.1. These quadrants form the spatial framework for the development of transport measures and proposals to the Core City Centre area.

Figure 2.1: Land Uses in the City Centre



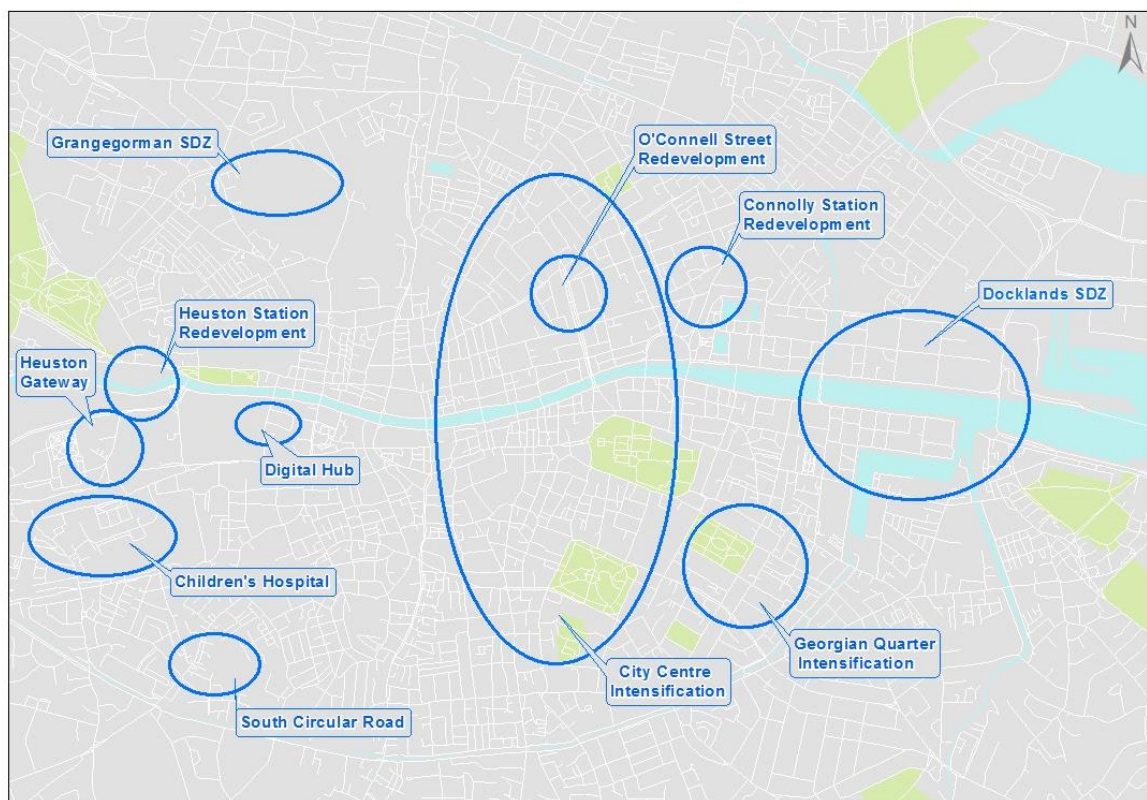
2.3 Growth in Dublin

A critical aspect of this Study is to ensure that Dublin City is 'future proofed' for anticipated growth. The Dublin City Council Development plan provides for the expansion of Dublin City Centre as an employment hub and principal destination, as well as a location for new residential development. There are also significant residential developments planned outside Dublin City, and linkages to the city centre employment areas from these new residential locations will be vital for Dublin to continue to expand as Ireland's primary economic centre.

2.3.1 Growth within the Canals

It is projected that population and employment will grow by significantly over the period of the Study. Some of the major new development areas within Dublin City Centre are set out in Figure 2.2. This highlights the locations of future growth in terms of employment, education and residential development based on the objectives of the Dublin City Development Plan.

Figure 2.2: Locations of Development Areas in Dublin City Centre, based on NTA Analysis

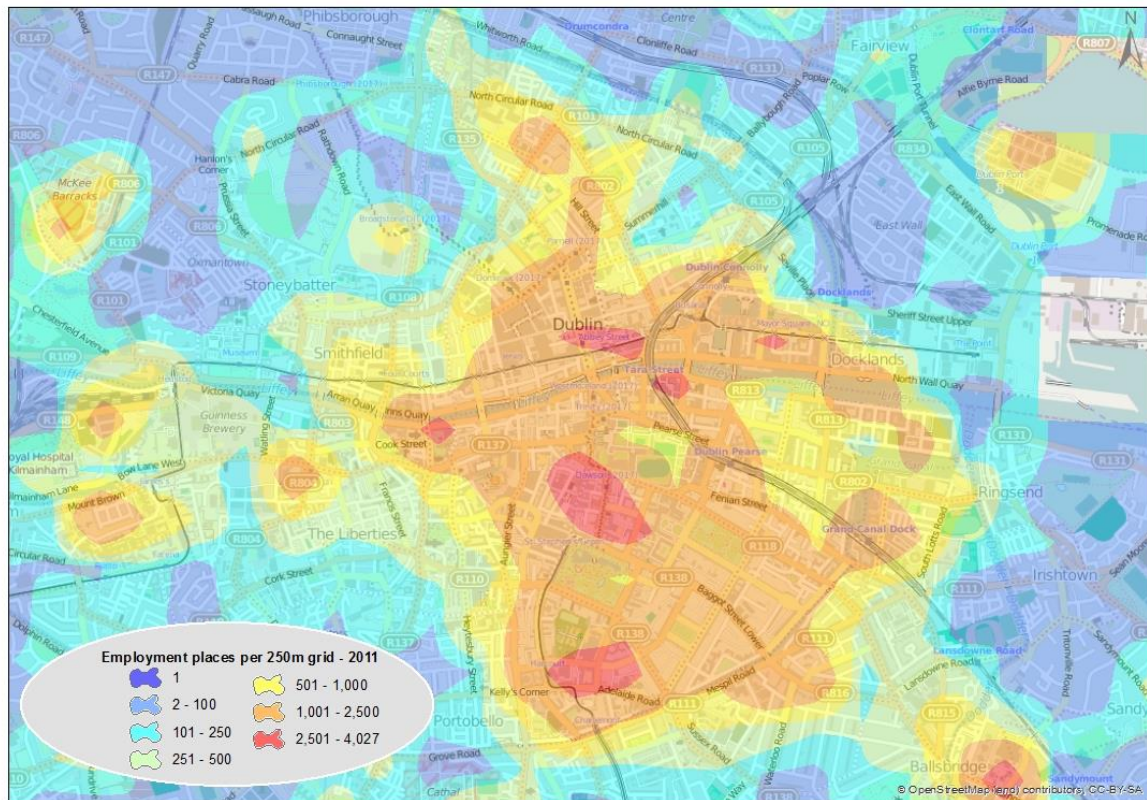


2.3.2 Concentration of Employment in the City Centre

Looking at the distribution of travel to work demand (taken from the 2011 Census); it is noticeable that the vast majority of trips entering the City Centre are going to the eastern side of the study area. This is illustrated in Figure 2.3, which shows the intensity of employment on a colour coded

basis. It is anticipated that future growth in employment will lead to an intensification of this pattern.

Figure 2.3: Employment Distribution within the City Centre, based on Census 2011 Data



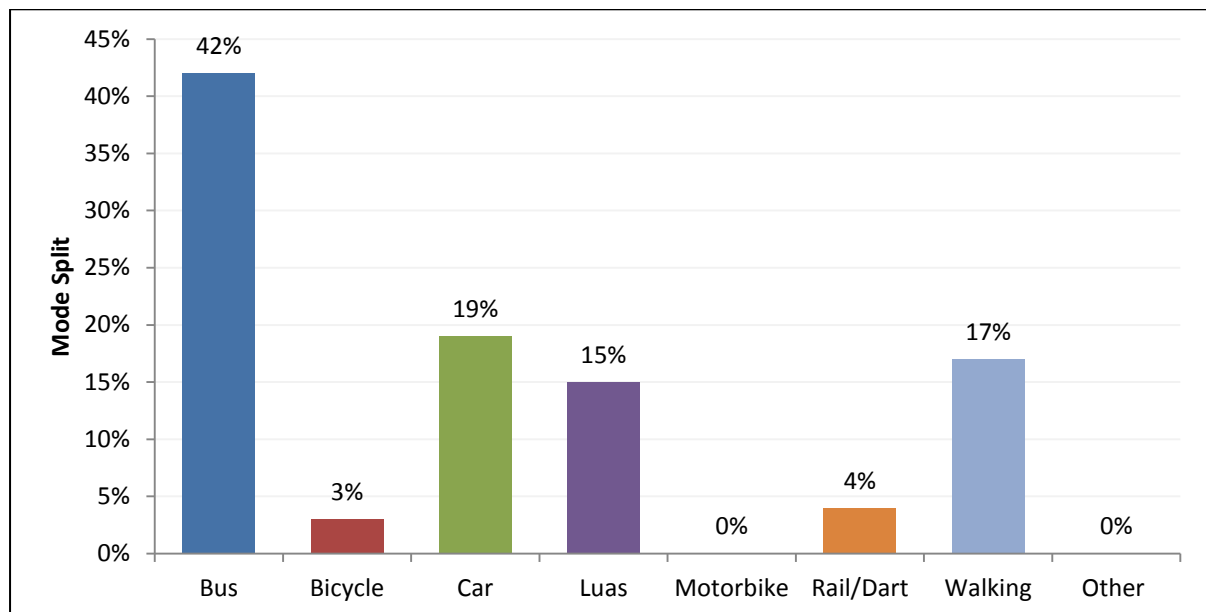
2.3.3 Retail Activity in the City Centre

A survey carried out for the NTA by Millward Brown in October 2014 highlighted the importance of public transport to the retail sector of the city. A total of 1,671 respondents answered questions on why they came into the City Centre, how they travelled, how many times they had visited in the previous four weeks and how much money they were spending in town that day, among other things.

The mode of transport used by the shoppers surveyed is shown in Figure 2.4. Overall, 60% of shoppers surveyed had travelled to the city by public transport, with walking accounting for 17% and 19% of shoppers travelling by car.

When the spending patterns over the prior four weeks of all of the shoppers surveyed were calculated, the contribution of car based shopping accounted for €1 in every €5 of retail spend, while public transport users accounted for almost three times this amount.

Figure 2.4: Mode of Transport Used by Shoppers in the City Centre



2.4 Movement Context

While it is useful to consider where future growth in population and employment will occur, and to prepare for the increased demands on the transport network this growth will necessitate, it is important to note the vast majority of transport demand already exists, with respect to the residents, work force and visitors travelling around Dublin today. In this regard, it is beneficial to look at the existing movement patterns within the city centre.

2.4.1 Changing Travel Habits

Dublin City Council, in conjunction with the NTA, carries out annual monitoring of traffic crossing the canals. This survey takes place in November every year for the peak travel period of 7am to 10am, and is referred to as the Canal Cordon Count. The information gathered from this survey work gives a good insight into the changing travel habits of the public travelling into Dublin City for work, education and other purposes on an average weekday morning. Table 2.1 provides details of the number of vehicles crossing the Canal Cordon for the years 2006 to 2014. The information in Table 2.2 sets out the recorded person trips by mode crossing the Canal Cordon for the same years.

Table 2.1: Vehicles Crossing Canal Cordon - 2006 to 2014

Mode	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bus	1,680	1,740	1,814	1,704	1,688	1,539	1,503	1,539	1,504
All Public Transport	1,680	1,740	1,814	1,704	1,688	1,539	1,503	1,539	1,504
Car	58,664	58,686	58,897	58,232	58,047	55,745	55,343	54,458	53,033
Taxi	3,825	4,583	5,079	4,980	4,809	4,862	5,277	5,458	4,955
Walk	17,114	18,594	18,360	14,618	15,092	14,551	17,070	17,495	19,711
Cycle	4,839	5,676	6,143	6,326	5,952	6,870	7,943	9,061	10,349
Goods	2,291	1,445	1,223	1,087	993	1,176	1,099	1,045	1,087
Motor Cycle	2,395	2,429	2,375	2,060	1,656	1,485	1,425	1,423	1,372
Totals	90,808	93,153	93,891	89,007	88,237	86,228	89,660	90,479	92,011

Table 2.2: Person Trips by Mode Crossing Canal Cordon - 2006 to 2014

Means of Travel	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bus	59,874	57,201	60,438	56,168	50,420	54,251	52,007	56,177	56,671
Rail	33,534	35,692	32,324	25,723	23,580	22,932	23,999	24,969	24,866
LUAS	9,029	9,171	9,242	8,776	9,111	9,949	10,014	10,835	11,670
All Public Transport	102,437	102,064	102,004	90,667	83,111	87,132	86,047	91,981	93,207
Car	76,850	71,597	67,732	71,043	71,978	69,681	68,626	68,072	64,169
Taxi	1,453	2,154	1,930	2,739	2,260	2,674	3,271	3,111	2,775
Walk	17,114	18,594	18,360	14,618	15,092	14,551	17,070	17,495	19,711
Cycle	4,839	5,676	6,143	6,326	5,952	6,870	7,943	9,061	10,349
Goods	2,291	1,445	1,223	1,087	993	1,176	1,099	1,045	1,087
Motorcycles	2,395	2,429	2,375	2,060	1,656	1,485	1,425	1,423	1,372
Total Person Trips	207,379	203,959	199,767	188,540	181,042	183,569	185,481	192,188	192,670

A review of the data presented in Tables 2.1 and Table 2.2 highlights some very important facts about how people are travelling into the City Centre today compared to 2006.

In relation to public transport, the headline item from the analysis is the relative importance of bus as a means of transport into the city centre. Bus is currently transporting five times more people than travel by Luas, and over twice as many as rail system. It is also clear that the use of rail to access the city centre has fallen significantly, from 33,500 to 25,000 trips or by 26% over the past decade. This is partially explained by the general reduction in the overall number of people employed in the city centre, but may also be related to reduced service frequency and capacity on the DART network in particular.

In 2006 less than 5,000 people travelled into the city centre by bike, only 2.3% of total trips that year; however in 2014 this figure has more than doubled to almost 10,500 journeys or 5.4% of total trips – an increase of 114%.

Another notable trend is the steady decline in the use of the private car. The overall number of people travelling into the city centre by car has fallen from 77,000 to 64,000 or a 17% decrease since 2006. However, it is useful to note that the actual number of cars travelling into the City Centre has only declined by 5,000 during this period. The main reason for the reduction in overall recorded car travel is due to a reduction in the numbers of people travelling in each car, down from an average occupancy of 1.3 to 1.2.

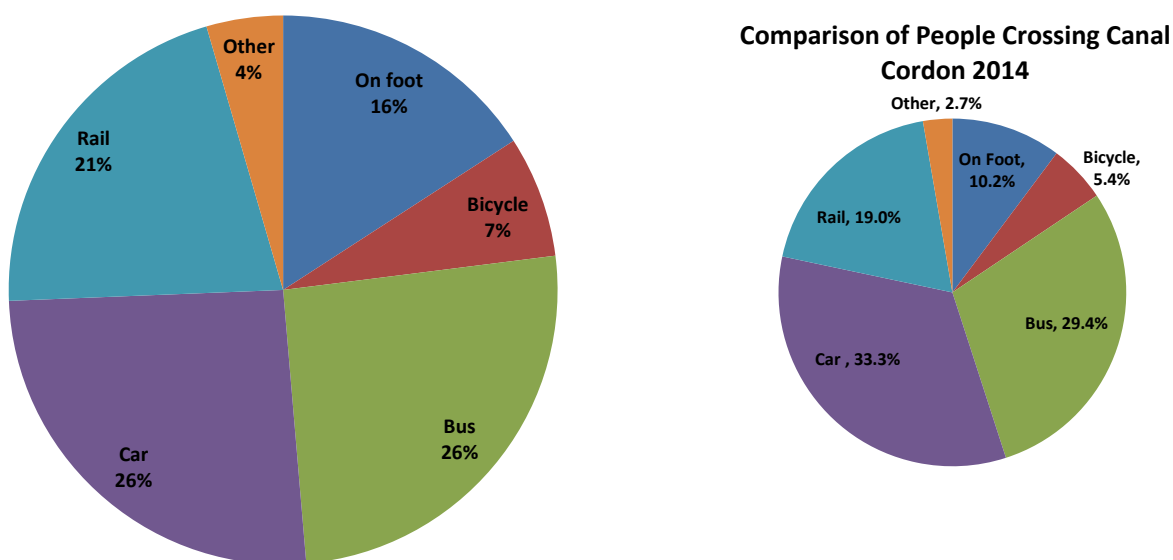
The overall mode share for car is now 33%, while 48% of people now travel into the city centre by public transport and 16% walking or cycling. This trend is explored in more detail in the next section.

2.4.2 Travelling to Work in the City Centre

The following analysis is taken from CSO Census 2011 'Place of Work and Education Census of Anonymised Records' (POWSCAR) and Small Area Population Statistics (SAPs) data, and illustrates some of the key facts about movement within Dublin City Centre. The census results are cross referenced to the data extracted from the Canal Cordon Count to give a more complete overview of the existing travel patterns observed in the City Centre.

In 2011 there were approximately 109,000 people with a stated place of work in the core City Centre. Figure 2.5 sets out the mode split for these work trips. It is interesting that the breakdown by mode is a relatively even split, with roughly a quarter of trips made by Private Car, by Bus, and just less than a quarter travelling by Rail (21%) and on foot/bicycle (23%).

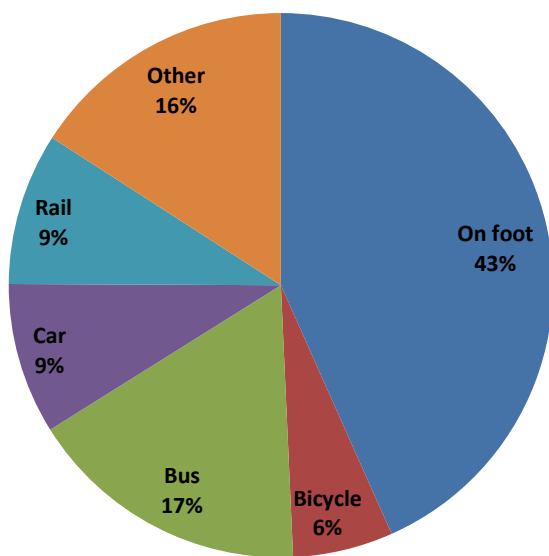
Figure 2.5: Mode Split for People Working in Dublin City Centre



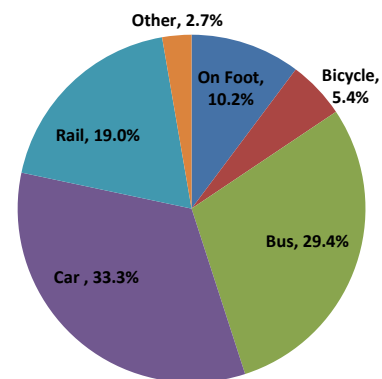
2.4.3 Living in the City Centre

In 2011 there were approximately 30,000 people living within the 'core' city centre quadrants (as illustrated in Figure 2.1). The mode split to work and education has been extracted for these residents. (It is worth noting that they do not necessarily have to work in the city centre (i.e. they may be travelling out of the centre to employment/education elsewhere). Figure 2.6 sets out the mode split for work trips originating within the core City Centre. It is clear, and perhaps unsurprising, that the dominant mode is walking at 43%. (Nb. 'Other' includes 'not stated' responses).

Figure 2.6: Mode Split for People Travelling to Work from Dublin City Centre



Comparison of People Crossing Canal Cordon 2014



The relatively low mode share for car, both for travelling to work (and education) is again not surprising for residents living in the core City Centre. The likely proximity to employment and education destinations, combined with the constraints of congestion and car parking restriction, probably make it more amenable to walk. This is also reflected in the levels of car ownership observed in the city centre, where on average there are only 0.31 cars per household, as opposed to 1.35 cars per household nationally.

2.5 Planning and Policy Perspective

The City Centre Transport Study has not been developed in isolation, it builds upon the on-going work of Dublin City Council and the NTA, and intentionally links directly with the principles, concepts and objectives outlined in the Dublin City Development Plan 2011-2017 and the City Council's Public Realm Strategy (2011). In addition, the study expanded on transport initiatives first outlined in the 'City Centre Transport Plan' published by Dublin City Council Roads and Traffic Department in 2008, as well as taking into account the infrastructure investment programme set out in the NTA's 'Integrated Implementation Plan'.

An outline of the relevant planning and policy issues relating to the study are set out below.

2.5.1 Dublin City Development Plan 2011-2017

Dublin City Council's Development Plan explicitly supports the principles of sustainability, and at the core of this policy position is the Council's approach to the future provision of transport in the city. The Development Plan states in Chapter 5:

"Transport has an important contribution to make in shaping and achieving a sustainable city. Less dependency on the private car for routine trips and replacement by public transport, walking and cycling will result in a reduction in consumption of non-renewable resources and CO2 emissions.

Dublin City Council will seek to achieve modal share targets crossing the canals of 55% for public transport, 15% for cycling, 10% for walking and 20% for private car use in the annual cordon count by 2017."

Dublin City Development Plan also states a number of specific objectives which the Council will strive to meet during the plan period (2011-2017).

The Study takes these objectives into account, and the proposals outlined in the subsequent chapters can facilitate their delivery. There is a clear and unambiguous policy platform expressed in the Dublin City Development Plan which seeks to promote public transport, walking and cycling in the city.

2.5.2 Your City, Your Space – Dublin City Public Realm Strategy

Dublin City Council's Public Realm Strategy seeks to highlight how important the public realm is to success of Dublin City as a place to live in, work in, or visit. The public realm is vital to city life and the Public Realm Strategy identifies the most pressing issues and pinpoints key areas for improvement. This plan has fully incorporated the philosophy and suggestions as set out in the Public Realm Strategy, and has developed proposals which seek to facilitate the design policies outlined in the Strategy.

2.5.3 Dublin City Council Roads and Traffic Department: City Centre Transport Plan

In 2008 Dublin City Council produced a City Centre Transport Plan to provide a framework and context for movement in the city. The study identified the transport needs of the city, and looked at options for public transport, walking and cycling, while maintaining vehicular access for commercial and retail needs such as parking, deliveries etc. The initiatives and proposals presented in this document have been incorporated into the City Centre Transport Study.

2.5.4 National Transport Authority: Integrated Implementation Plan 2013-2018

The Integrated Implementation Plan sets out the NTA's programme of investment and development in the Greater Dublin Area (Dublin, Meath, Kildare, and Wicklow) for the next five years. It has been the subject of public consultation and has been statutorily approved by the Minister for Transport, Tourism and Sport and now provides the framework for a capital and operational investment amounting to almost €900 million. Funding up to 2016 is included as part of the Government's overall capital plan and funding for the remaining years of 2017 and 2018 will be addressed in the

next national capital investment plan. Again, the investment priorities outlined in this plan have been integral in developing the City Centre Transport Study.

2.6 Summary

The projected growth in Dublin City, combined with the expected changes in the commuting patterns into the city centre, will result in major challenges for the City, based on the current utilisation of road space and transport infrastructure. To sustain economic growth within the city centre, it is critical that the transport system has the capacity to bring people to and from work in a timely and reliable manner. For Dublin to continue to grow as a dynamic European capital city, an understanding of how more commuters, visitors and residents can be accommodated within the limited street space, and how the road capacity can be managed to maximise the utility of this finite space, needs to be agreed.

In the context of the Dublin City Development Plan it is critical that a re-evaluation of the current transport environment to better reflect the future land use characteristics of Dublin City and its catchment area takes place. This can have significant and lasting benefits. Not only will it facilitate the further development of lands within the city centre, but it will also improve the accessibility of the City Centre for current residents, shoppers, visitors and workers, improving transport options, and more generally the streetscape and public realm of the city.

3 Challenges and Requirements for Transport within the City Centre

3.1 Overview

The overarching objective of this Study is to develop a platform for the implementation of the policies and objectives of Dublin City Council and the NTA, and achieve, as stipulated in Chapter 5 of the City Council's Development Plan, a modal share of 55% for public transport, 10% walking, 15% cycling and 20% for private car. The key challenge of this Study is to ensure that the changes in the transport environment required to achieve this modal shift will result in an increase in the overall transport capacity within the city centre. These changes must guarantee that future growth within the city can be facilitated by the revised transport system.

To address the needs of the overall transport network, it is firstly important to contextualise and understand the challenges and requirements of each individual mode within Dublin City Centre.

3.2 The Pedestrian Environment

The pedestrian network is arguably the most important transport network in the City Centre as it has to serve all users including residents, commuters, students, shoppers and tourists. Dublin City Council, acting in conjunction with the NTA, has continued to improve pedestrian facilities across the city, by implementing city wide improvements such as 'Way Finder' signage, which aid tourists and locals alike. The City Council have also looked to improve the public realm, instigating schemes such as Fade Street, and reinvesting in the pedestrianised shopping areas of Grafton Street and Henry Street to improve the quality of the streetscapes.





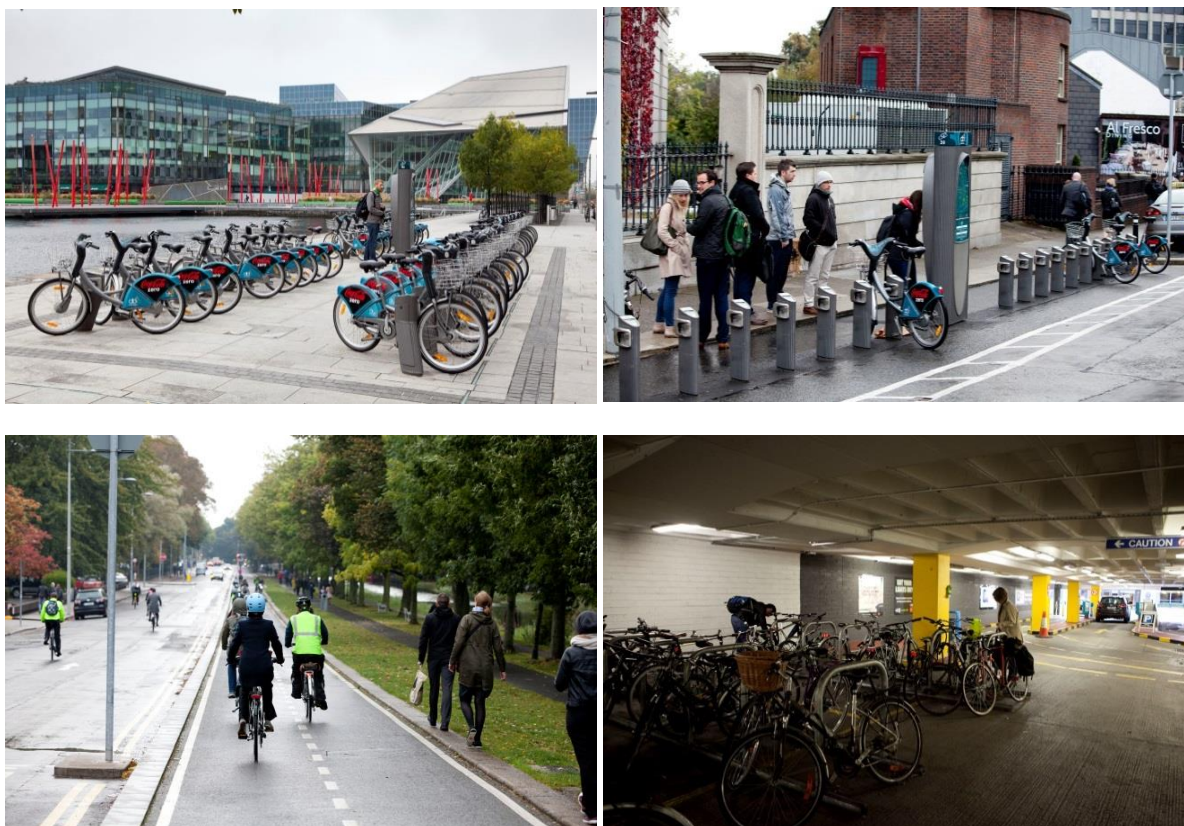
Building on the investment already made in Dublin City Centre to improve the pedestrian environment, it is important to note that challenges remain, and the recommendations of this Study must address amongst other things:

- The need for a defined ‘strategic’ pedestrian network that provides a consistently high quality of service for pedestrian movement within the city;
- The accumulation of unnecessary street clutter (such as redundant signposts) in parts of the city centre impeding pedestrian movement; and
- The relative lack of pedestrian friendly areas of public open space (as highlighted in the Council’s Public Realm Strategy).

3.3 The Cycling Environment

The amount of cyclists on the streets of Dublin City Centre has increased dramatically over the last number of years. To ensure that the number of cyclists travelling within, to and from the city centre continues to rise, it is essential that this study addresses the need to expand and improve the infrastructural requirements of an increased cycling community within Dublin City Centre.

Dublin City Council and the NTA have put significant effort and resources into improving the cycling environment in Dublin City Centre, and initiatives such as the *dublinbikes* scheme have made cycling a very visual mode of transport. The Grand Canal cycleway has created an important cycle route with a high quality of service, which is an important step in attracting novice cyclists. The introduction of new cycle parking facilities, particularly the 300 space facility at Drury Street car park, has also encouraged cycling as a means of accessing the city centre. However, despite this investment, and the significant increase in the number of cyclists, the current quality of service for cyclists both within and travelling to and from the City Centre is poor. The current network lacks continuity and coherence and the degree of priority provision varies greatly across the city.



Building on the investment already made in Dublin City Centre to improve cycling, it is clear that challenges remain. Accordingly, this Study must take into consideration:

- The key requirement to provide a quantum improvement in the provision and quality of facilities for cyclists in Dublin City;
- The NTA Cycle Network Plan for the GDA which includes specific network proposals for Dublin City Centre;
- The ability of the cycle network to attract more cyclists, especially those more risk adverse and leisure cyclists;
- The potential to facilitate the ongoing expansion of the *dublinbikes* scheme;
- Potential for improvement of the permeability for cycle movement within and through the city centre, with a number of one-way streets and long gyratory traffic movements not suitable for the efficient and safe movement of cyclists; and
- Despite the increase in cycle parking, the ad hoc nature of the cycle parking in some parts of the City Centre is having a negative impact on pedestrian movement (e.g. South William Street).

3.4 The Public Transport Environment

There have been a number of operational changes over the last number of years to improve the efficiency of the public transport network for both operators and passengers. The most noticeable

work was carried out under the “Network Direct” bus reconfiguration programme. In addition, a number of infrastructural measures by Dublin City Council have also been put in place to improve journey time reliability, namely the introduction of the College Green bus gate and bus route priority along sections of major radial routes into the city centre.



In considering the challenges facing public transport within the city centre, this Study must examine all the different public transport modes currently used by people to access and travel within the city centre – including bus, rail, Luas, and taxi.

By coordinating and rationalising how these modes interact, a better and more efficient transport network can be created. The outcome of this Study must address:

- The need to protect the investments made, and being made, in public transport and ensure their benefits continue to be delivered;
- The need to improve the journey time and reliability of bus services in the City Centre area;
- The requirement for the introduction of additional bus transport services to increase public transport capacity;
- The need to continue to invest in the Real Time Passenger Information and ITS Bus priority system;
- The use of the City Centre for bus layover and bus parking;
- Bus stop congestion at some key areas of the city centre – both for pedestrians and buses;
- Bus and bicycle conflicts at various locations; and
- The large number of taxis serving the City Centre, and how they interact / impact on other public transport services and road users.

3.5 Introducing new Public Transport Options

Other specific challenges in relation to the public transport environment which must be addressed as part of this study include the construction and future operation of Luas Cross City and the introduction of Bus Rapid Transit (BRT) to serve Dublin City Centre.

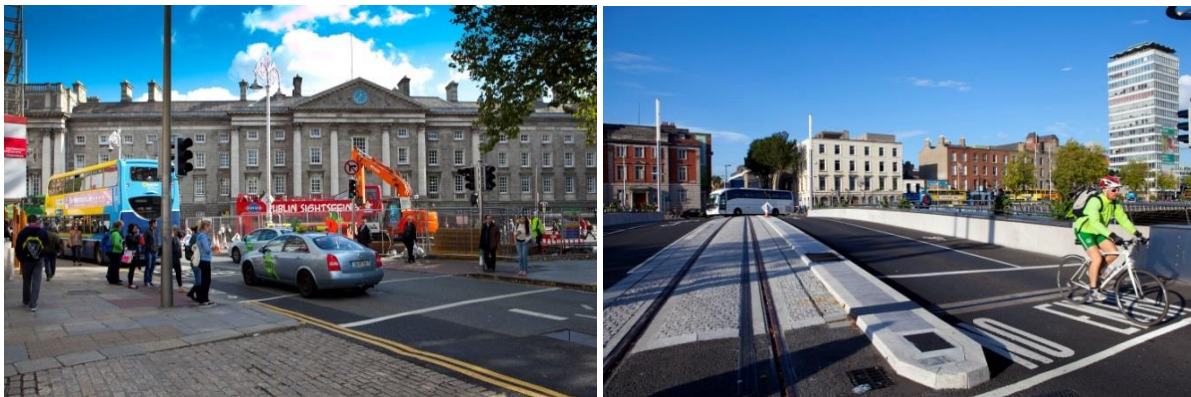
3.5.1 Luas Cross City

Dublin City Centre is getting a new Luas line which is due to come into operation in 2017. The railway construction work along the alignment of this route will have a significant impact on the current operations of the bus network servicing the City Centre in the short term. However, once complete, the new Luas Cross City route will also have a significant impact on the current bus and vehicular traffic movements in and around large areas of central Dublin (most notably O'Connell Street, College Green and Dawson Street/Nassau Street). The new Luas Cross City will require the alteration of junction signal timings, considerably decreasing the amount of green time available for other modes, which in turn will seriously reduce road capacity in the core city centre.

3.5.2 Bus Rapid Transit (BRT)

The introduction of BRT routes to service high demand bus corridors is currently being considered by the NTA. Specific changes to the transport arrangements currently operating in the city centre will be needed to facilitate the introduction of these BRT routes in the short to medium term.

The introduction of new transport options into the city centre will significantly alter the current configuration and capacity of the modes currently using the streets of the city centre. Accordingly, it is important that the bus and private car networks within the core city centre are reconfigured to ensure that the impacts of Luas Cross City /BRT are addressed.



3.6 The Private Vehicle Environment

The private car will continue to be an important choice of mode for people travelling to the City Centre, particularly for shopping and other commercial activities. However, it is essential that the current pattern of vehicular movement both through and within the City Centre is examined to ensure that road space is utilised efficiently. Currently, both traffic travelling through the City Centre and traffic with a destination in the city, rely heavily on major radial routes to access and leave the centre. This results in traffic congestion, and also impacts on the efficiency and ease of movement for other modes, particularly buses.

Dublin City Council has invested heavily in maintaining and improving the movement of vehicular traffic within Dublin City Centre. The opening of the Port Tunnel and the Samuel Beckett Bridge have

improved vehicular accessibility to the east of the city centre as well as providing a direct link from the city centre to the M50. The City Council have also invested in a Traffic Control Centre, and computerised traffic management system to help control traffic movement. Variable Message Signage (VMS) provides traffic updates and up to date car park availability information to motorists.



Building on the investment already made in Dublin City Centre to improve vehicular movement, it is important to note that some challenges remain, and the outcome of this Study must address:

- That there are many vehicles using the city centre as a through route, and which do not have a destination in the City Centre. Such vehicles could be accommodated on alternative routes, circumnavigating the central area;
- To provide journey time information and route guidance via web and mobile devices, and to make this data freely available for all navigation systems.
- The current movement of traffic within the City Centre is dependent on a number of gyratory systems – e.g. St Stephen’s Green, Westmoreland Street / D’Olier Street and Beresford Place. The gyratories are prone to congestion and blocking back of traffic at peak hours, with heavy flows of relatively fast-moving and weaving traffic in the off-peak periods. Such arrangements do not give priority to pedestrians, cyclists or buses, and often force them to deviate significantly from the most direct route; and,
- That an appropriate level of private car vehicular access to the City Centre will be retained for retail and commercial purposes.

3.7 Goods Distribution and HGV Environment

Maintaining an efficient supply chain for goods and services into Dublin City Centre is essential to the commercial life of the city. Dublin Port is also directly adjacent to the core city centre, and many of the goods vehicles travelling within Dublin City Centre are moving between the city centre and the Port. Dublin Port is Ireland’s largest port and is a primary trade hub for the country as a whole.

The construction of the Port Tunnel was a significant benefit to the goods distribution sector, and in particular heavy goods vehicle operators, who can use the tunnel free of charge. The tunnel opened in conjunction with the restriction on 5-axle vehicle access to the city centre. Access for these vehicles now operates under a permit system, reducing congestion and improving the movement of freight vehicles through the city centre.



Building on the investment already made to improve movement of goods to, from and within Dublin City Centre, it is important to note that challenges remain, and, subsequent to the completion of this Study, the City Council and the NTA will give consideration to:

- The potential to develop a managed delivery system in the city centre to reduce the size of goods vehicles operating the core central areas during daytime hours; and,
- The potential for changed freight delivery practices, including:
 - An operational strategy for a range of freight trip generating sectors within the city;
 - The development of delivery and servicing plans in areas subject to HGV management;
 - The use of different vehicle types for a range of distribution purposes;
 - The greater use of Intelligent Transport Systems in the management of freight movement;
 - The potential for the use of rail and tram for the distribution of freight; and
 - The location of a Freight Consolidation Centre for distribution within the City Centre and beyond.

3.8 Safety and Environmental Improvements

3.8.1 Road Safety

Road safety in Dublin City has improved considerably over recent years, with noticeable improvements following major traffic management changes such as the 5-axle HGV ban in the city centre. Despite this there are still a significant amount of traffic related accidents in the city centre, with a number of identifiable accident 'Black Spots'. Information from the Road Safety Authority (RSA) sets out the location of accidents within the city centre. The general pattern is similar for pedestrian, cyclists and private vehicles. It is clear that the central area of the City, particularly around the City Quays, O'Connell Street and Dame Street are areas where road safety for all users could to be improved.

Building on the investment already made in Dublin City Centre to improve road safety and reduce environmental impact, this Study should continue to ensure that:

- Any new transport proposals will reduce conflict between modes, making the streets safer for all users; and,
- The overall transport network will make Dublin City Centre a more environmentally friendly place.

3.9 Summary

The key challenge of this Study is to ensure that the changes in the transport environment required to achieve the desired modal shift will result in an increase in the overall transport capacity within the city centre. These changes must guarantee that future growth within the city can be facilitated by the revised transport system.

It is evident that, in general, the individual transport networks within Dublin City have benefited significantly from the ongoing work and investment of Dublin City Council and the NTA. Despite this, it is clear that the current provision for each mode is inadequate in some way, and does not fully match the functional requirements of the mode either individually, or as part of the collective transport network of Dublin City Centre.

4 Development of the Transport Proposals

4.1 Overview

Drawing on the facts set out in the previous sections of this Study, it is clear that there is a pressing need to reassess how Dublin City's transport options will operate into the future. Central to this assessment is the critical need to ensure that Dublin City can cater for an anticipated growth of approximately 20% in the number of trips coming into the City Centre each morning by 2023, compared to the number observed in Census 2011. As illustrated in Chapter 3, that there are a number of challenges to how the existing transport networks operate within the city centre, a situation which will be made substantially more challenging when Luas Cross City further reduces the capacity of the road network. In fact, given the road network changes over recent years, even accommodating previous vehicle levels is not a feasible option.

Taking these details into account, and drawing on the land use and transport policies of Dublin City Council and the NTA, in particular the target set out in the Development Plan to achieve a modal share of 55% for public transport by 2017, a number of guiding principles were compiled. These principles will be used to ensure that new transport proposals are consistent with the overriding aim of the Study: to produce a transport system capable of catering for the existing and future travel needs of Dublin City Centre. These principles are set out in Section 4.2.

It was also important to clarify some of the parameters within which the development of new transport proposals will have to operate. These assumptions set out specific measures which are already in existence, or at an advanced stage in their project development, and as such have been considered as operational in relation to the formulation of this Study. These main assumptions are set out in the Section 4.3.

4.2 Guiding Principles

The following principles will be used to ensure that new transport proposals are consistent with the overriding aim of the Study. They are set out in the box below:

Principle 1: To protect the investment that already has been, and continues to be, made in public transport in the city.

Principle 2: To increase the capacity for the movement of people and goods into and within the City Centre, and facilitate efficient and effective goods delivery.

Principle 3: To develop a safer City Centre for all transport modes and users.

Principle 4: To improve accessibility and permeability to, and within, the City Centre for pedestrians, cyclists and public transport users, while also maintaining an appropriate level of access for vehicular traffic for commercial and retail purposes.

Principle 5: To make it easier for people to use the transport networks.

Principle 6: To provide opportunities to enhance the Public Realm through transport interventions in the City Centre.

4.3 Transport Network Assumptions

Following on from the establishment of the study principles, it was important to clarify some of the parameters within which the development of new transport proposals will have to operate. The following assumptions set out specific measures identified by the project team which are already in existence, or at an advanced stage in their project development, and as such have been considered as operational in relation to the formulation of this Study. They are set out in the box below:

Main Network Assumptions Underpinning City Centre Transport Proposals

- The study will be aligned to the forthcoming NTA Transport Strategy for the Greater Dublin Area.
- Greater priority will be given to pedestrians in the City Centre, particularly at conflict points, and areas where safety has been a problem.
- The movement of pedestrians and cyclists in the city (in particular north - south across the River Liffey) and around public transport nodes will be improved.
- Existing bus routes and frequencies will continue to be reviewed and modified as necessary.
- Bus Rapid Transit services will operate through the City Centre in line with the proposals set out in the NTA Integrated Implementation Plan.
- Bus routes should no longer terminate in the City Centre and there will be no parking/layover of buses in the City Centre.
- Real Time Passenger Information displays will continue to be rolled out at key transport stops and Interchange points.
- Interchange between public transport services will be significantly improved, and will support more people accessing more destinations via a single interchange within or close to the city centre.
- Luas Cross City will be operational by the end of 2017, and the permanent traffic changes associated with its construction will commence during 2016.
- To ensure the efficient operation of Luas Cross City through the City Centre, the movement of general vehicular traffic will be reduced or eliminated along sections of the route.
- The Phoenix Park Tunnel will be opened by the end of 2016, bringing rail passengers from the Kildare line to the east of the city by serving Drumcondra, Connolly, Tara, Pearse and Grand Canal Dock stations.
- The DART service will be increased to a 10 minute frequency in peak hours.
- Integrated public transport ticketing (supporting faster boarding and alighting and facilitating easier passenger transfer between public transport services) will be further developed, including the introduction of simpler fare structures.
- The success of the College Green bus gate in reducing the level of through car traffic in the core of the City Centre will be used as a template for further similar interventions.
- Vehicular through traffic will be actively encouraged onto routes away from the City Centre, with appropriate signage arrangements provided, in order to protect public transport investment, remove through traffic, and free up the City Centre for other modes.

4.4 Developing a Network Approach

In order for specific transport proposals to be developed, it was necessary to establish an overarching approach of how best to reconfigure Dublin's transport network into an efficient and effective system, capable of catering for the future transport needs of the city. In this regard the project team developed a 'Network Framework'. This Network Framework sets the scene within which specific transport proposals will be developed. The Network Framework anticipates the strategic requirements of each mode, and considers how modes will interact or conflict; this is to ensure that the finalised transport proposals are not developed in isolation but rather as elements of an integrated transport system for Dublin City Centre.

It should be noted that all schemes identified in this study will be subject to their own statutory consent procedures prior to any implementation.

4.4.1 The Strategic Networks

The individual networks forming the overall 'Network Framework' are:

- Vehicular Traffic;
- Bus/BRT;
- Rail;
- Cycling; and,
- Pedestrian;

Each of these networks is addressed in Chapters 5 to 9.

4.4.2 Site Specific Interventions

It was important to first establish and agree the overarching Network Framework for the development of a new integrated and coordinated transport network for Dublin City. As the ideas of how each mode will function within this Framework evolved, it became clear that to facilitate the required revisions to the networks, as well as address some major constraints of the existing network, a number of site specific interventions will also be required. These interventions are critical to the Study, and while primarily aimed at improving how the transport network of Dublin City will operate, the proposed alterations have the potential to transform the public image and attractiveness of the city centre as a whole. These interventions are set out in Chapter 10.

5 Traffic Network Proposals

5.1 Overview

Traffic patterns in Dublin have changed over the last 10 years with new bridge and road infrastructure in place, and with an increasing number of people now choosing public transport, walking and cycling as their mode of transport. More people now reside within the City Centre, and there is a strong desire to ensure that Dublin develops into a more liveable city, where the impact of traffic is minimised.



With the economic upturn there is now evidence of increased volumes of traffic on the radial approaches to Dublin and on the M50. As the economy continues its recovery and employment rises, without positive intervention, increased congestion and longer journey times on the key routes to Dublin City, and within the City Centre itself, will become an increasing feature of the City. In addition, the delivery of the Luas Cross City project will impact on street and junction capacity in the city core, which will require significant changes to the traffic network following its introduction.

It is estimated that by 2023, the transport network of Dublin City will be required to cater for a further 42,000 journeys each morning, an increase of almost 20%. It is not possible to cater for this increase by the private vehicles alone, as if even 20% of these additional trips were made by car it would represent an increase of 8,500 cars on the road during the morning peak, effectively returning the traffic volumes and congestion in the city to levels last seen in the early 2000s. This would also have serious consequences for the operation and management of the public transport, cycling and walking networks.

It is neither sustainable nor practical to attempt to cater for this volume of additional trips to the city centre by car. As such, this Study considers how the road network can continue to function as a key element of the transport network, whilst facilitating the needs and requirements of the other modes, which will have to shoulder the responsibility of serving the increased demand coming into the city centre.

Luas Cross City will also have a major impact on street and junction capacity of Dublin City and will require significant changes to the traffic network during its construction and following the commencement of passenger services in 2017. It will include extensive sections of shared running from Dawson Street to O'Connell Street, and without careful design there is a danger that Luas

trams will be caught up in traffic congestion, and that the reliability of the service will be prone to disruption due to general traffic. Similarly, only sections of the bus network in the City Centre are segregated from general traffic. As such, there are frequently delays, with the reliability of the bus network affected by any incidents, events or accidents which cause general traffic to be delayed.

A number of significant traffic management changes have occurred over the last number of years to restrict north-south traffic movement in the city centre, such as the turn bans at Dawson Street and Georges Street, and the introduction of the bus gate at College Green. East-west movement along the Quays however, have remained relatively unchanged, and continue to act as a major thoroughfare for traffic moving through the heart of the City Centre. Traffic volumes at the junctions on both sides of O'Connell Bridge are in the order of 70,000 vehicles per day (this is 60% of the volumes using the M50 per day and the same as the daily volume on the N3 at Blanchardstown). This directly conflicts with pedestrian movements across the city at the Halfpenny Bridge and at O'Connell Bridge, and is also contrary to the Development Plan objective of reducing through traffic in the city centre.

To continue to cater for this level of through traffic while also providing a new Luas Line and improved bus provision, wider footpaths and segregated cycling facilities will not be possible. Indeed, if the current configuration of roads and traffic management is not altered within the city centre, then the increased investment of Government resources in public transport will not be able to achieve the gains in capacity, speed and reliability required to cater for future travel demand. Providing Government funding for transport provision without ensuring the right environment in the City Centre to allow it to function to its capacity is an inefficient use of limited resources.

A rebalancing of the available road space will be required on various streets to facilitate the introduction of additional capacity for public transport, cycling and walking. Significant changes will be required to the traffic network in the city centre, with the objective of ensuring that the overall transport system is capable of operating efficiently and reliably, with consistent journey times. This will ensure that:-

- The existing and planned investment in public transport is protected, ensuring that public transport can operate to its maximum capacity ;
- Additional public transport capacity can be put in place which will be necessary to cater for increased future demand;
- The public transport network will operate efficiently and reliably even during the Luas Cross City works; and,
- Walking and cycling provision will be enhanced and that significant public realm improvements can be advanced.

These objectives are reflected in the provisions of the Dublin City Development Plan, which requires public transport trips across the canal cordon each day to increase to 55% (from 48% in 2014), and the level of cycling to increase to 15% (from 5% in 2014), while car trips are required to decrease to 20% (down from 33% in 2014).

5.2 Proposals

Since the publication of the Dublin Transport Initiative (DTI) Strategy Report in the mid-1990s, the overriding principle of transport strategies in the Dublin region has been to not increase road capacity into or within Dublin City Centre for private vehicular traffic, but instead to prioritise public transport, walking and cycling. The basis for this policy is a recognition that it is unrealistic and unsustainable to accommodate growth in travel demand across the region through car based movement. Instead, growth must be accommodated by other modes, and the limited road space has to be used optimally to cater for both car and non-car uses. The changes that will be needed by the traffic network to ensure that the city can achieve the requirements of the City Development Plan and cater for the anticipated future transport growth include:

- Removal of through-traffic which currently traverses the central area, thereby releasing certain road space to non-car modes of transport;
- Reinforcement and enhancement of orbital traffic movement, starting as far out as the M50, utilising orbital route options outside the canals, with the objective of reducing the amount of traffic using the city centre to get to their destination;
- An overall objective of ensuring that public transport can operate as efficiently as possible;
- Conversion of certain streets to public transport/cycling/pedestrian access only to enable improved bus, cycle and pedestrian movement around the central area;
- Rationalisation of car parking access/egress and car park location, while retaining appropriate and adequate car parking where possible for retail and commercial functions;
- Expansion and associated rationalisation of City Centre taxi ranks. and,
- Introduction of a City Centre Zone for managing deliveries within the city centre;

The following sections outline the details of the proposals set out above.

5.3 Key Changes

5.3.1 Orbital Movement

In order to release city centre road space for the delivery of the required additional public transport capacity, new cycling corridors and pedestrian/public realm improvements, it is essential that traffic which doesn't need to pass through the city centre area or around the city centre area is facilitated with appropriate arrangements for orbital movement beginning outside the M50. In general the new arrangements will be facilitated by increased signage, particularly on the M50 (i.e. City South, City North) and on strategic corridors with clear directional information, and information on car parking. A key objective of this Study is to actively facilitate the movement of cross city traffic away from the core of the city, and as such it is critical that appropriate orbital routing alternatives are provided to cater for this traffic flow.



The reconfiguration of road space, improved signposting, increased use of mobile technology and ITS, as well as improvements in the Variable Message Sign (VMS) Network on routes around the city centre, will help to guide traffic to access the city centre at the most appropriate entry points relative to its ultimate destination. In addition, on the east side of the city many of the available routes are height constrained by railway bridges, such as Macken Street and Sandwich Street. It is proposed that a study of the bridges and possible options for increasing the clearance under certain of these bridges will be undertaken.

The improvements outlined above will facilitate and prioritise the orbital movement of traffic around the central city area, while enabling traffic to access the city centre at the most appropriate entry points relative to its ultimate destination. In turn, this enables the core of the city centre to be re-designed to provide more physical space, junction priority and journey time reliability for public transport, as well as making the city centre a safer and more pleasant environment for cyclists and pedestrians.

As well as addressing the need for increased transport capacity by non-car modes, this reallocation of road space will create the potential for a transformation of the urban fabric within the City Centre, as set out in the City Council's Public Realm Strategy, enabling the creation of an improved city centre, and increasing the vibrancy and vitality of Dublin as a commercial and retail centre.

5.3.2 Public Transport/Cycling/Pedestrian Only Streets

The current issue with rising levels of congestion for all modes in the City Centre (North and South Quays as an example), together with the traffic network changes brought about by Luas Cross City, and the need to cater for a growth in travel demand, will require the reallocation of road space on certain streets from general traffic to sustainable transport modes. This will safeguard the critical role of public transport, and will ensure that it is possible to transport more people in and out of the City Centre.

One of the most successful traffic management changes introduced in recent years in Dublin City was the College Green Bus Corridor. The introduction of the College Green Bus Corridor provided significant benefits to public transport in particular. During its hours of operation, it reduces journey

times for buses by up to 20 minutes in the peak hour. It provided vastly improved journey time reliability for buses using that route, and by removing large volumes of traffic from College Green, Westmoreland Street and D'Olier Street, provided some improvements in the utility of the street from the perspective of pedestrians and cyclists.



Building on the success of the College Green Bus Corridor, this Study proposes the introduction of a number of other similar public transport focused links. These will include, in particular new bus gates at:

- Bachelors Walk Bus Gate – the diversion of general car traffic from Bachelors Walk between its junction with Jervis Street and its junction with O'Connell Street; and
- A Bus Gate on the south Quays at Aston Quay, Burgh Quay or Georges Quay – facilitating the reduction of vehicular traffic in the vicinity of O'Connell Bridge.
- Westmoreland Street/D'Olier Street

Each of these Bus Gate proposals and benefits are addressed separately in Chapter 10.

5.3.3 Reduced Private Vehicle Access Arrangements

As identified, one of the most successful traffic management changes introduced in recent years in Dublin City was the College Green Bus Gate. Currently College Green/Dame Street operates with two traffic lanes in each direction. However, the footpaths in College Green are narrow and overcrowded and north-south pedestrian movement from the key O'Connell Street/Henry Street area to the Grafton Street shopping area can be slow, difficult and frequently impeded. The current street constraints at College Green have resulted in inadequate pedestrian provision at this key location.

Additionally, the arrangements for cycling through this area are unsatisfactory and inadequate. As cycling numbers continue to grow, this inadequacy will become more acute, particularly following the placement of the new tracks for Luas Cross City.

To address these issues, it is intended to construct dedicated cycling routes through College Green connecting Westmoreland Street and D'Olier Street to Dame Street. This will provide safer cycling through this critical artery for the thousands of cyclists that are using this route each day. In tandem with this cycling provision, wider footpaths will be incorporated, to the extent feasible, to improve pedestrian movement through this area. Both of these changes will require additional road space to be assigned for cycling and pedestrian use.

Separately, the introduction of Luas Cross City will impact on the vehicular capacity of College Green. The impact of the Luas operations, together with the need to improve cycling and pedestrian facilities, mean that it will be necessary to reduce the number of traffic lanes through College Green to one lane in each direction. This is a significant change but one that is necessary if the streetscape of College Green is to be radically improved, and if appropriate provision is to be made for both Luas and non-vehicular modes of transport through this area.

The reduction to one lane in each direction will mean that the current prohibition of cars from College Green during the bus gate hours of 7am to 10am and 4pm to 7pm will need to be extended to operate on a 24 hour basis, with some allowance to be developed to facilitate deliveries. Additionally, because of the volume of both buses and taxis using this link, a single lane in each direction will not have the capacity to accommodate both vehicle types into the future. Given the importance of this link in the bus network serving the city, it is proposed that buses only be permitted to use the College Green Bus Gate and that taxis, due to the inability to cater for their volume, will not be permitted to travel through this bus gate. A similar arrangement will also apply to the bus gate on Pearse Street, leading into College Street. While buses only will be permitted to use the above bus gates, cars and taxis will still be able to access, and service, D'Olier Street, College Street and Westmoreland Street with access continuing to be available from the north end of D'Olier Street.

Further details on the proposals for College Green, Westmoreland Street and D'Olier Street are provided in Chapter 10.

5.3.4 Traffic Management Revisions

The reduction and redirection of traffic travelling through the city centre, will enable further traffic management modifications to be carried out to benefit the general transport movement within the city centre. In particular, this will facilitate a review of the current phasing of traffic lights at signalised junctions, as well the use of gyratory traffic systems at certain locations within Dublin City Centre.

Traffic gyratory systems are usually provided to enable more traffic capacity than might be available through conventional two-way streets. However, while catering for vehicular traffic, they generally disadvantage other road users. Buses can be particularly affected, with journey lengths and journey times increased, often requiring the subsequent introduction of contra-flow bus lanes. Gyratory systems are also difficult for cyclists, who are forced to mix with weaving vehicular traffic, as well as being required to deviate away from the most direct route. The presence of network gyratories also acts as a constraint on traffic signalling. Junction signals at such locations must be designed to avoid the risk of traffic blocking-back to ensure gyratories do not lock up.

This Study proposes to review and revise as necessary the current traffic signal phasing, and traffic arrangements of certain gyratory systems, within the city centre. This will rebalance the needs of pedestrians, cyclists, buses and trams with other vehicular traffic, reducing overall junction delays and improving safety for all road users.

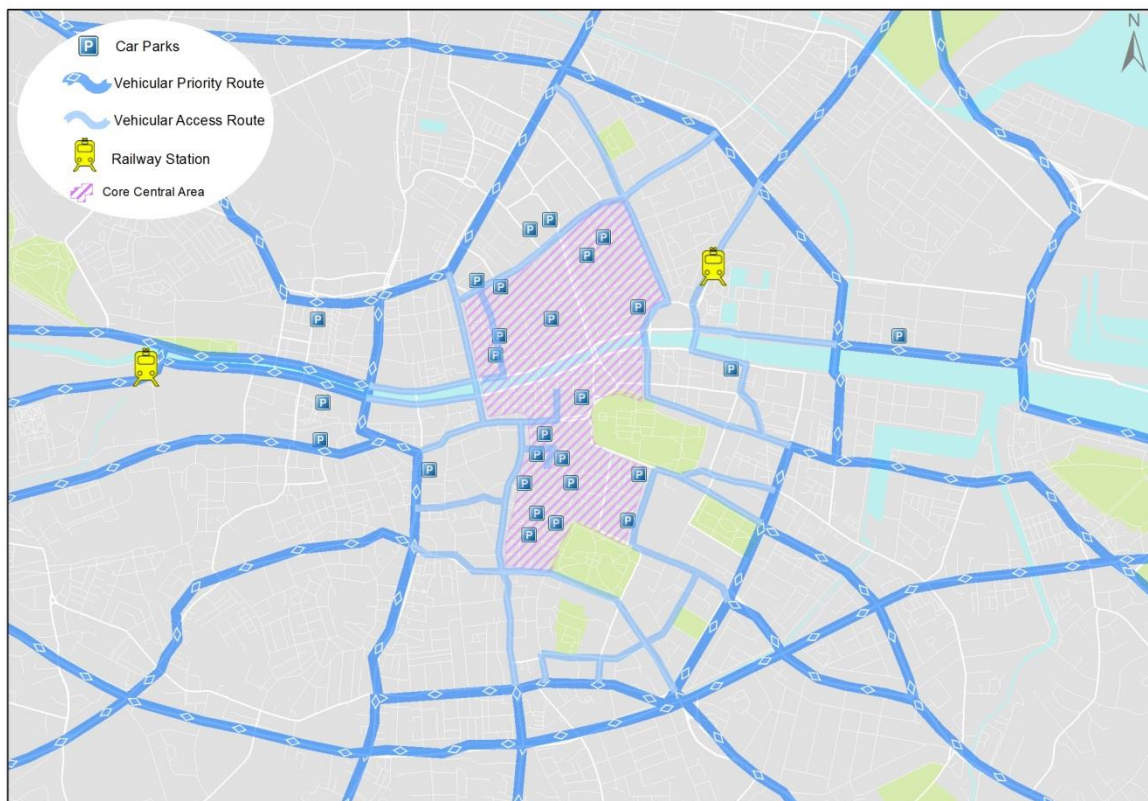
5.3.5 Access to and from City Centre Car Parking

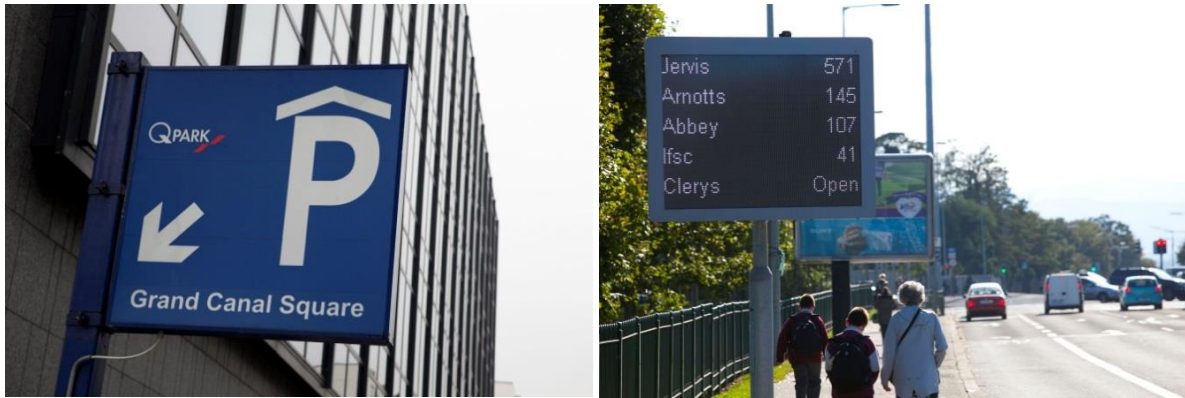
It is recognised that continued access by car is essential for sustaining retail and commercial activity within the City. While it is important that growth in commuting is accommodated through increased investment in, and use of public transport, walking and cycling, an appropriate level of car access needs to be facilitated, together with related parking provision. This should primarily cater for non-commuting activity, particularly for shopping related trips outside of peak commuting hours.

There are a large number of commercial and publicly owned multi-storey car parks in the city centre (Figure 7.1), as well as a significant level of on-street parking. Access to and from these car parks, and other private car parking facilities in the city centre has been a major influence in the routing and configuration of road space in the City Centre.

Currently there are approximately 10,500 spaces in off-street commercial car parks. This is in addition to circa 20,000 on-street car parking spaces. To improve management of access to the commercial off-street car parking spaces, Dublin City Council have introduced real time Variable Message Signs (VMS) on the main arterial routes into the city advising motorists on the availability of car parking in multi-storey car parks across the city. This has enabled better utilisation of these car parks and the minimisation of on-street queuing for spaces. Similarly, the introduction of pay and display together with an active clamping enforcement policy has also helped manage the availability of on-street car parking within the city.

Figure 7.1: Location of City Centre Car Parking





To a certain extent, the arrangement of the traffic network in Dublin City has been constrained by the presence of certain multi-story car parks. In the past, proposals which may have benefited the city by improving the efficiency of the transport network, or the attractiveness of the public realm and streetscape, have been difficult to progress due to conflicts with current access arrangements to large car-parks.

While the necessity of such car parks for supporting the retail and commercial activity of the city is clearly understood, the issue arises as to whether the city should continue to be designed around such car-parks and their existing access arrangements. This Study considers whether these car-parks should be adapted to fit into the vision of the city, or indeed whether their relocation to alternative sites is necessary.

The proposed changes to the transport network within the City Centre will require some changes to existing car-park provision within the core area. Most of the existing car parks can continue to be served in their current locations but with modifications to their access arrangements. It is proposed that where revised car park access arrangements cannot be reconciled with the overriding objectives of the plan, a relocation of the car park will be sought. In such a case, the new location will still serve the retail and commercial activity within the central area, but be more amenable to access from outside the core central area. Where car parks are no longer appropriate, the reuse of these spaces will add to the functionality of the city centre. Proposals such as using car parks in central areas for multi storey taxi holding areas could be implemented. This would allow for storage, rest and comfort facilities for taxi drivers, whilst also removing the number of empty taxis from crowded areas of the city. Equally, using these facilities for cycle parking will ensure that cyclists have central, safe and weather protected locations to store their bikes while in the city centre.

Whilst it is desirable, from an operator's perspective, to allow access to a car park from all directions, such an approach is not compatible with the overall objective of achieving an optimised transport network and pedestrian friendly public realm. Instead, it is proposed to create a car-park access plan which will see access to each car park focussed on a routing from outside the core central area (shown on Figure 7.1). This will allow motorists to predetermine the access arrangements to specific car parks and remove the need to facilitate access routes through the core central area. This approach would benefit from an arrangement where car parks are located along or close to the edge of the central area rather than within the core centre area. In relation to on-street car parking, it is likely that a number of spaces will have to be removed across the city to ensure traffic and public transport flows are not interrupted by parking cars.

To complement these changes a comprehensive plan to inform motorists as to the access routing to car parks will be put in place. This will utilise increased signage / VMS to channel vehicular traffic accessing car parks along designated routes. By informing motorists in advance of the core central area, decisions on car parking can be made in a predetermined manner, thus minimising the number of entry routings necessary for vehicular access through the central area. The revised access arrangements to car parks will be cognisant of the public transport, cycle and pedestrian networks across the city, and will be designed to reduce conflict between the modes, reducing potential for delays.

The improved management of car parking within the city centre will have a number of advantages. Clearly defined routings to car parks will aid drivers' decision making and reduce circulating traffic looking for parking. This will reduce journey times and congestion in the core city centre for private vehicles.

5.3.6 Improved Management and Control of City Centre Freight / Goods Movement

The supply chain for goods and services into Dublin must be carefully considered as an essential element of a working City Centre.

Dublin City Council introduced a 5-axle Heavy Goods Vehicle (HGV) ban which covered most of the area within the canals in 2007. This ban has reduced the number of HGVs within the city centre to, on average, 30-40 per day. The main demand for HGV movements within or through the city centre is to serve such areas as the City Fruit Markets, and certain large City Centre retailers and exporters.

The vast majority of goods vehicles serving the city centre however are light goods vehicles (LGVs) and vans. The destination of these vehicles is dispersed, and although there is a predominance of deliveries in the morning, the movement of goods has an all day trip pattern. Access to the shopping areas and reliability of delivery are essential considerations of this Study.



The purpose of the Goods Management interventions is to ensure that the city has the capacity to receive and distribute goods and services in accordance with the growing needs of the population and economic centres, in an efficient and least disruptive manner. It is recommended that:

- Consideration of and discussion with stakeholders should commence on the provision of a managed delivery system in the City Centre utilising potentially a second HGV zone in the city centre which includes all Commercial vehicles and where the emphasis will be on provided timed deliveries within the city centre.

- Ancillary management measures will also be considered, including;
 - The potential for changed freight delivery practices, including a different approach to vehicle types / use of Intelligent Transport Systems / prioritised freight routes;
 - The potential use and location of a Freight Consolidation Centre (possibly in the vicinity of Dublin Port or another city centre location);
 - A determination of whether any legislative changes are required to allow deliveries only into Public Transport Streets at set times only;
 - Noise management for city centre loading activity; and
 - Move towards a vision of a CO² free delivery system in the City Centre by 2023 utilising alternative vehicles and fuel types.

The enhanced management and regulation of freight movement and control of loading/unloading will:

- Reduce the number of goods vehicles on the city streets, reducing congestion and improving the urban environment with less emissions, noise, and less weight damage to the roadways;
- Greatly benefit cyclists, pedestrians and bus movements; and
- Improve efficiency bringing benefits to freight operators and retailers with journey and delivery time reliability and potentially reduced costs by consolidation of deliveries.

5.4 Intended Outcomes

The proposed modifications to the existing road network are vital to the success of the Study. The changes will allow the road network to be utilised more efficiently for all modes traversing and accessing the city centre, and will facilitate the transformation of central places, such as College Green and the Quays. The proposed revisions to the road network will ensure that the city remains accessible by private vehicles, particularly in relation to access to car parking in the vicinity of the north side and south side retail centres.

The reorientation of the roadways within the city centre will allow for the required expansion of public transport services, ensuring that there is sufficient capacity across the transport networks to accommodate the anticipated growth in demand for travel to Dublin City Centre. This will ensure that the city can continue to grow as an economic driver of the State.

6 Bus Network Proposals

6.1 Overview

Key objectives of this Study are to safeguard the efficiency of the bus operating environment in the context of Luas Cross City and increased congestion, as well as enabling the bus network to transport a significantly increased number of commuters, shoppers and visitors into Dublin City each day. These objectives reflect the intention of the City Development Plan 2011-2017, which sets the target of increasing the public transport proportion of trips across the canal corridor each day.

To achieve these changes, it is necessary to increase the carrying capacity of the bus system and to significantly enhance the efficiency of the bus network. Dublin Bus currently operates a network catering for 115 million passenger journeys per annum, while Bus Éireann's network of commuter services within the Greater Dublin Area accounts for a further 10 million passengers per annum. Numerous private operators also operate to and from Dublin City carrying an additional 13 million passengers per annum.

While there has been significant development of bus lanes and bus corridors over the last decade, the discontinuous nature of many of those bus lanes and the lack of priority at junctions has meant that the average bus speed on many routes in the morning and evening peaks are as low as 10km/h. This has a knock on effect on journey time reliability for some routes running through the city centre, with significant variances between different times and days in many cases. This issue is exacerbated in the event of a traffic accident or incident occurring on any of the key routes, which frequently results in major delays across the full bus network. Overall, the lack of reliability and predictably makes many bus journeys much less attractive than they should be for the travelling public.

Appropriate bus infrastructure provision in the City Centre will be vital to increasing the overall effectiveness of the bus network, and will be essential to achieving the increased bus targets set out in the Development Plan. The attractiveness of bus is greatly influenced by the routes taken by services through the City Centre, the location of stops, the opportunities for interchange, and the overall bus journey times and reliability through the City Centre. Faster, more reliable and more predictable journey times will enable bus travel to become the transport mode of choice for more people.



6.2 Proposals

To achieve the objective of improving the operation, management and efficiency of the bus network within Dublin City, it is intended:

- To increase the passenger carrying capacity of the bus network, through the enlargement of the bus fleet, with additional services to be provided on existing busy routes, plus the introduction of new routes;
- To maximise the performance of the bus network by ensuring that sufficient road capacity and junction priority are provided to allow buses to operate efficiently, with reliable and predictable journey times;
- To introduce high capacity Bus Rapid Transit (BRT) style services along specific routes; and,
- To further optimise the routing of the bus corridors through the City Centre area, improving interchange arrangements and optimising the efficiency of the service.

The proposed changes both in the City and the wider Greater Dublin Area will make public transport, and in particular bus, a more viable option for many users, providing choice and facilitating a mode shift away from the private car for all trip purposes, particularly commuting.

6.3 Key Changes

The following sections set out additional detail in relation to the above proposals.

6.3.1 Passenger Carrying Capacity of the Bus Network

In order to transport more passengers by bus, the capacity of the overall bus system needs to be increased. This will require an expansion of the bus fleet. Dublin Bus currently operates just over 800 buses in the peak hours. Additional bus fleet will be required to provide increased capacity on existing routes as well as to enable the introduction of new routes.

Related to the issue of fleet, the provision of enhanced bus priority along key routes will speed up journey times. While the primary beneficiaries of faster journey times will be the passengers, an important ancillary benefit is that faster bus speeds enable the same level of service to be operated with fewer buses and at much reduced cost. If the average speed on a route can be increased, then the same bus service can be provided with a reduced bus fleet. This enables the full bus fleet and drivers to be assigned in a more efficient manner. Accordingly, the implementation programme for bus priority measures will be important in determining fleet requirements.

6.3.2 Introduction of additional bus priority measures in the City Centre

In order to cater for the increased level of bus capacity and usage, and to ensure that bus services can run efficiently and on time through the City Centre, extra provision for buses will be required, primarily in terms of new / improved bus lanes and additional bus priority.

In tandem with this, the construction of Luas Cross City, and its commencement of passenger services at end 2017, will result in significant traffic alterations in the City Centre. Luas Cross City traverses the central spine of the city, passing through College Green, Westmoreland Street and O'Connell Street, crossing the major traffic arteries of the north and south quays. Various traffic movements that currently operate will not be possible after the completion of the Luas project. The vehicular capacity at various junctions along the corridor, particularly on either side of O'Connell Bridge and at College Green, will be significantly reduced in order to cater for the Luas service.

Having regard to the impacts of Luas Cross City, the targets set out in the Development Plan and the need to enhance the efficiency of the bus network through the City Centre, the following proposals are intended to be implemented during the period of this Study:

- College Green bus lane hours to be extended to 24 hours each day – details of this are set out in section 10.2.2;
- New public transport / cycling only sections of streets in appropriate locations to ensure that those modes can operate efficiently and without undue delay. These locations may include short sections of the north and south quays, potentially at Bachelors Walk on the north quays and at a corresponding location on the south quays). Details of this proposal are set out in Section 10.2.7; and,
- Reconfiguration of traffic signals at certain key junctions to provide a greater level of prioritisation for public transport, in addition to rebalancing the needs of pedestrians, cyclists, buses and trams with other vehicular traffic.

This improvement of bus movement through the central area will be complemented by additional bus priority provision on the radial routes approaching the central area.

6.3.1 **Quality Bus Corridors (QBC)**

A number of the existing Quality Bus Corridors (QBCs) are not working to their carrying capacity due to problems caused by congestion, resulting in speeds as low as 10km/h on some routes. Each corridor will be assessed using detailed AVL data available on bus performance to identify pinch points and slow sections. Measures will be brought forward to rectify these. It is intended to provide, to the extent practicable, continuous bus lanes along the entire length of each QBC. Advanced ITS will be used to ensure reliable operation at traffic signals and provide detailed reports of journey times, this facilitate ongoing performance monitoring, and a quicker response to problems. The enhanced operation of the QBCs will increase carrying capacity into the city centre and, as new buses come on stream, will ensure they can be used to their maximum capacity.

Orbital bus route movements will also be reviewed and strengthened to cater for the anticipated increase in demand.

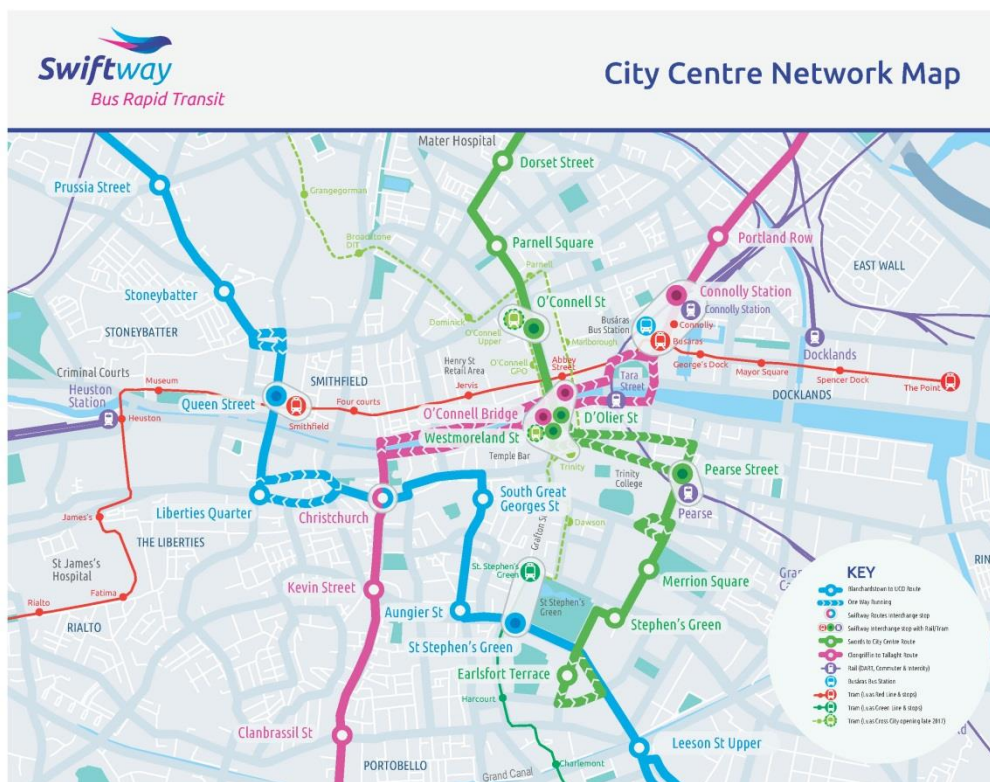
6.3.2 **Development of Bus Rapid Transit (BRT)**

It is proposed to introduce a number of Bus Rapid Transit (BRT) type services on heavily used routes into the City Centre. BRT is a high quality bus service providing faster journey times than conventional buses. It will utilise high specification vehicles and high quality BRT stops which will allow for off-board ticketing. Three initial routes have been identified:

1. Swords/Airport to City Centre;
2. Blanchardstown to UCD; and
3. Clongriffin to Tallaght.

The proposed BRT network will provide a high quality public transport service on appropriate corridors where the likely passenger demand justifies a higher provision than a conventional bus service. In order to facilitate the BRT network, provision needs to be made for its routing through the City Centre area. The emerging preferred options within the City Centre area for the three proposed routes forming the core network are shown below in Figure 5.1.

Figure 5.1: Swiftway BRT – City Centre Network Map



The implementation of the BRT proposals will require significant changes to the current traffic arrangements within the city centre area and will impact on on-street parking provision. In the case of the Swords/Airport to City Centre BRT, Parnell Square East and Cavendish Row will be required to be made two-way for public transport.

The proposed Blanchardstown to UCD BRT will require significant changes to South Great Georges Street, with reductions in general traffic. The Clongriffin to Tallaght BRT is likely to require a contraflow BRT/bus lane to be introduced on Winetavern Street. Careful design and the application of appropriate mitigating and compensatory measures will be an integral part of the development of the overall BRT network.

Within the City Centre, the BRT system has been designed to provide intersecting routes which, in combination with Luas and rail services, will deliver an integrated public transport network providing

high quality, higher capacity cross city linkages, which will be further complemented by the conventional bus services.

6.3.3 Optimisation of Bus Routing and Operational Efficiency

It is intended that existing bus services will migrate from the current network to a future public transport network based on the principles outlined below. These are described as follows:

6.3.3.1 Bus Network Changes

The introduction of the various proposals referred to in this Study will require a review of the overall bus network in the City Centre area, and the routes approaching the City Centre. This review will be undertaken by the NTA, in collaboration with the City Council and the bus operators, and its objective will be to improve the overall efficiency of the bus system.

That review will also seek to increase the frequency of services on certain key routes and to promote the concept of interchange (transfers between services) where it can deliver a more effective system.

6.3.3.2 Removal of City Centre termination

Over the last number of years very significant progress has been achieved in removing bus termination and bus layover from the central area. Only a small number of routes now terminate in the City Centre. It is intended that the remaining core radial bus routes will be operated on a cross city basis, eliminating the need for bus layover in the City Centre. Some of these services will be able to utilise the existing and new City Centre bus gates, thereby improving the reliability and journey times for these bus services.

6.3.3.3 Optimise the efficiency of the public transport network

To minimise delay in the City Centre, to facilitate a reliable public transport offer, and to improve the smoothness of passenger movement, the efficiency of the public transport network will be further optimised. This will include, inter alia, the following:

- Further expansion and development of non-cash payments on buses, to require less interaction with the driver and enabling faster boarding/ alighting of passengers;
- Rationalisation of bus stops within the City Centre while ensuring sufficient bus stop capacity;
- Enhanced waiting arrangements for passengers in the City Centre; and,
- Optimising traffic signals, focussed on priority for public transport, pedestrians and cyclists.

6.3.3.4 On-Street Interchange

High quality, on-street passenger interchange points between public transport services will be provided in a number of key locations in the City Centre. While further interchange facilities may be developed, it is intended that the following locations will act as key public transport hubs:

- Amiens Street /Store Street (*Train/Bus/Luas/Taxi/dublinbikes/Car*);
- Westmoreland Street/D'Olier Street (*Train/Bus/Luas/Taxi/dublinbikes*); and
- Heuston Station (*Train/Bus/Luas/Taxi/dublinbikes/Car*).

D'Olier Street and Westmoreland Street will be reconfigured to provide better interchange and improved facilities for passengers. Enhancements will also be undertaken at Amiens Street / Store Street to provide an improved level of connection between the largest railway station and the main bus station in the city. At Heuston Station, there is significant potential for a greater level of interchange between bus, car and Luas, which will also be developed during the period of this Study. Details of the Amiens Street/Store Street and the Heuston Station proposals are set out in Chapter 10.

In addition, all of Dublin Bus and Bus Eireann stops have now been designated by the NTA as “shared stops” under the relevant legislation. This will permit an amalgamation of bus stops, with more than one operator being allowed to operate from these stops. As well as assisting with interchange facilities, this will also facilitate a reduction in the number of on-street bus poles that have to be accommodated on footpaths.

6.4 Intended Outcomes

The provision of additional bus capacity is essential for Dublin City to continue to function and develop as the commercial and retail centre over the next decade and beyond. Without moving to increase bus capacity and supporting infrastructure now, it will not be possible to accommodate the anticipated increase in the number of commuters, shoppers and visitors coming into the city centre each day.

The BRT system, once implemented, will form an integral part of the public transport network in the City Centre. It will provide a high capacity and high quality service on some of the busiest bus corridors approaching the city. As well as providing enhanced infrastructural and junction priority measures along the routes for the BRT services, those improvements will also be utilised by the conventional buses which will continue using these corridors, improving their performance and reliability.

The revised bus network proposals will result in a more efficient and legible network, which will ultimately ensure that the carrying capacity of bus is sufficient to meet the travel demands of the future. The various measures proposed will also assist in protecting the investment to date in public transport, in addition to future investment, and ensure that the benefits from those investments are fully delivered.

7 Rail Network Proposals

7.1 Overview

Although the primary mode of public transport in the Dublin region is bus, rail based transport still plays a significant role. Based on the 2014 Canal Cordon survey, 12.9% of the trips each morning are by train (DART/Commuter) while 6.1% are by Luas. While proposals have been advanced for underground rail/metro services, it is unlikely that such services will be operational during the period of this Study. Nevertheless, rail transport will continue to play an important role in transporting passengers into and out of the city each day.

7.2 Proposals

To support the implementation of improved rail provision, it is intended:

- To facilitate the introduction of passenger services on Luas Cross City, currently under construction;
- To increase the frequency and carrying capacity of the DART Service;
- To facilitate the introduction of passenger services on the Phoenix Park Tunnel Link, which will become operational in 2016; and,
- To enhance interchange opportunities between rail services and other public transport modes.

7.3 Key Changes

The following sections set out additional detail in relation to the above proposals:

7.3.1 Luas Cross City

Luas Cross City is an extension of the existing Luas Green Line, which currently terminates at St. Stephen's Green. Extending from that stop, the new route travels north-south through the City Centre before running along a disused railway line through Phibsboro and Cabra and terminating at Broombridge Railway Station on the Maynooth Railway Line. The project is currently being constructed and is expected to commence passenger operations in late 2017. It is anticipated that this new route will add several million additional passengers to the Luas network each year, and will offer a new cross city link which will serve, in particular, as a fast, convenient connection between the retail centres on both sides of the River Liffey.

The delivery of the Luas Cross City project will impact on street and junction capacity in the City Centre. Together with the need to improve bus priority, cycling and pedestrian provision, significant changes will be required at various locations in the City Centre to enable the tram system to work effectively in conjunction with delivering the other transport objectives.

Most of the required changes are dealt with in other sections of this Study. They include changes to the layout and bus gate arrangements at College Green, alterations to traffic movements at O'Connell Bridge as well street layout changes on Westmoreland Street and revised traffic signal timings and turn bans at various junctions. This will substantially alter the use of a number of transport routes in the City Centre.

7.3.2 Improved DART Services

The frequency and capacity of the DART network was reduced in line with the fall in demand following the economic downturn in 2008. This cost saving measure will be reversed in 2016, and it is anticipated that a vastly improved DART service will be operated. This will include an increase in the usage of 8 car DARTs during the peak periods, as well as an increase in service frequency, providing a DART every 10 minutes at peak times.

7.3.3 Phoenix Park Tunnel Link

The Phoenix Park Tunnel Link utilises an existing tunnel under the Phoenix Park to allow trains on the Kildare Line to access Drumcondra, Connolly, Tara, Pearse and Grand Canal Dock stations. Services on this link are expected to commence in the second half of 2016.

The operation of train services directly from the Kildare Line into the central city area will enable direct access to the south east business area without the need for interchange to Luas, bus or bicycle at Heuston Station. While no significant changes are required to facilitate the introduction of such services, there may be a need to review the distribution arrangements of the *Dublinbikes* service as some of the demand may move from Heuston Station to other locations.

7.3.4 Interchange Facilities

An important element of ensuring that public transport is viewed as a convenient, quick and efficient method of getting into Dublin City Centre, relates to the ease at which passengers can access transport services. The expanded rail and Luas network, in combination with revisions to the bus network and the introduction of integrated ticketing and simplified fare structure, will facilitate and encourage people to change between transport modes. In this regard, key interchange locations are likely to become increasingly important to the overall operation and efficiency of Dublin's transport system.

It is proposed that redesigned and fit for purpose interchange facilities will be developed at Dublin's main transport hubs, namely at Connolly Station / Busaras and Heuston Station. It is also possible that formal interchange arrangements at key commuter stations such as Tara Street and Pearse Street station could be developed to facilitate easier rail-bus interchange. A more detail examination of the potential to develop specific interchange facilities is set out in Chapter 10.

7.4 Intended Outcomes

It is recognised that within the lifetime of this Study there will be no significant additional rail infrastructure projects completed in Dublin City, other than Luas Cross City going into operation and the opening of the Phoenix Park Tunnel Link. Despite this, it is acknowledged that for Dublin City to maintain long term growth, Heavy Rail (DART/ Commuter) and Luas, with their greater passenger carrying capacities, will play an essential part. In this regard, it is essential that the future development of the transport network in Dublin builds on the existing rail infrastructure, and ensures that the potential for the expansion of the rail system and new interchange locations, are fully considered.

8 Cycle Network Proposals

8.1 Overview

While a significant proportion of the additional future travel demand into the city centre will be accommodated by public transport, it is anticipated that an increasing percentage of trips will be made by bicycle, particularly for medium and short distance journeys.

A number of important cycling schemes have been implemented in Dublin City in recent years, notably the *dublinbikes* rental scheme, and dedicated cycle routes such as the Grand Canal cycle track. Further development of a high quality, safe cycling network is a key objective of Dublin City Council and the NTA, and there are a number of cycle way schemes already either in design or moving to construction including:

- Sutton to Sandycove;
- Clontarf to City Centre;
- Royal Canal Greenway (Sheriff Street Upper to Ashtown);
- Grand Canal Route (Portobello to Blackhorse);
- Dodder Greenway;
- Clonskeagh to City Centre;
- Blackrock to City Centre; and,
- Liffey Cycle Route.

The acceleration of funding for the implementation of the projects listed above is an essential component to fundamentally changing the perception of cycling in Dublin, and ensuring that it is seen as a viable option for the majority of people travelling to and within the city centre. This is a key element of this study, which aims to build on the growing numbers of cyclists in the city, as evidenced by the increased use of cycling reported in the 2014 Canal Cordon Count referred to in Chapter 2.

The core cycle network will provide high quality cycle facilities. It is intended that many of the key cycling routes will be developed as segregated facilities, with cyclists separated from vehicular traffic through the use of kerb separators or by having the cycleway at a higher level than the road carriageway. Complementing these facilities will be a corresponding level of priority given to cycle movements at junctions. This will all be carried out in accordance with the National Cycle Manual and the Greater Dublin Area Cycle Network Plan.

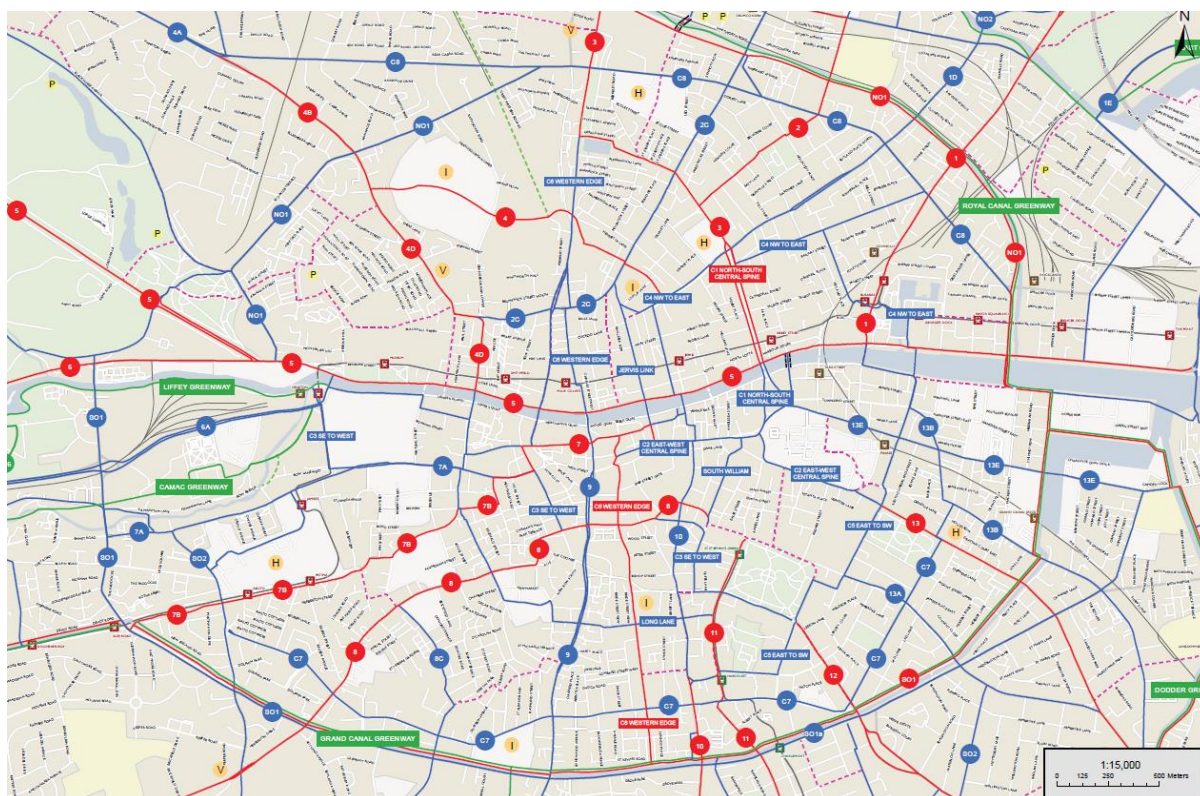


8.2 Proposals

Many of the key cycling proposals are already underway, however it is critical that the following measures are undertaken, including:

- Development of key Primary Cycle Routes from the GDA Cycle Network Plan to form the strategic cycle network for the City Centre area; this will be aligned with the development of the overall GDA Cycle Network as illustrated in Figure 8.1;
- Where appropriate, segregated cycleways (i.e. physically separated from traffic lanes) will be developed, and when this is not possible, alternative measures will be implemented to enhance the safety of cyclists (e.g. lower speed roads, vehicle restrictions etc.);
- Where possible, one-way streets will be made two-way for cyclists, most likely through the introduction of contraflow cycling;
- Land use 'cells' within the city centre will be cycle friendly; and,
- The location and security/design of cycle parking will be considered in the design of the City Centre network.
- The provision of additional cycle parking provision, including on street sites, and the availability of real time cycle parking information.
- Encourage the provision of cycle in multi storey off street parking facilities.
- Development of high density cycle parks.

Figure 8.1: City Centre Section of GDA Cycle Network

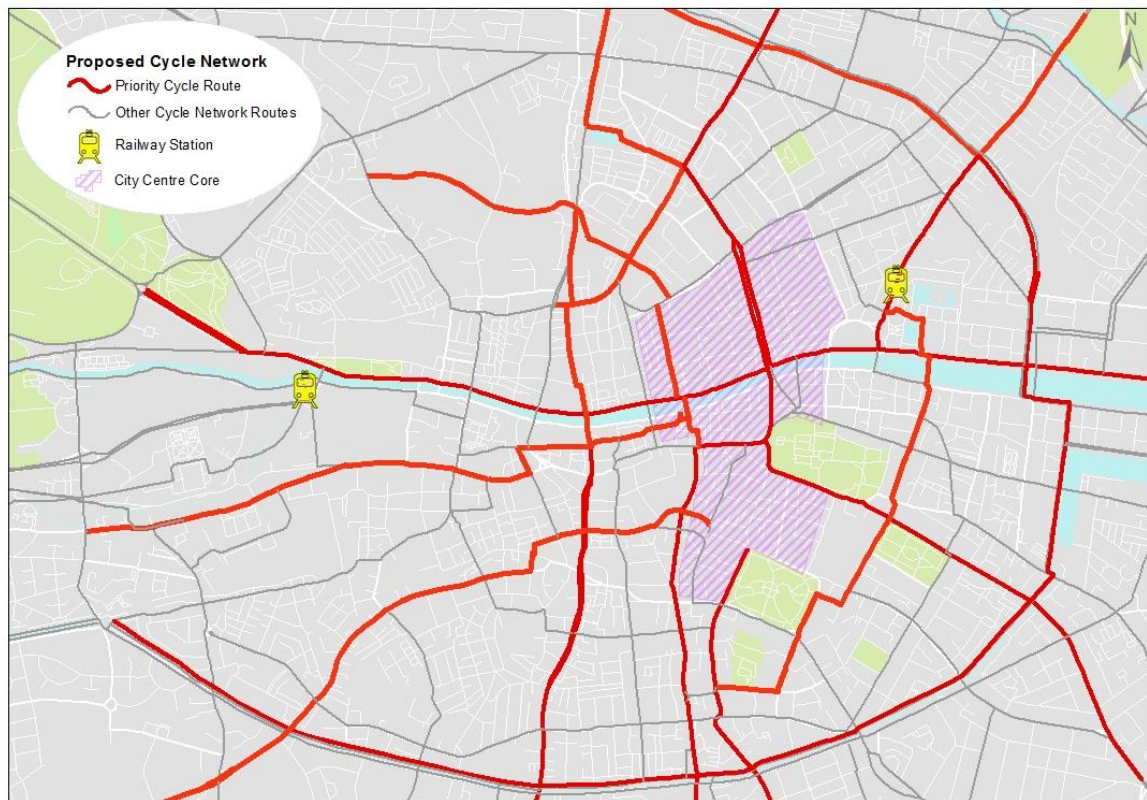


8.3 Key Changes

Based on the network set out in the GDA Cycle Network Plan and the current cycle projects in progress, a set of routes have been prioritised for implementation as part of this Study. The priority routes, indicated in Figure 8.2, will ensure that high quality cycle facilities are available along the busiest cycle corridors, and that access to the core City Centre area by bicycle is a safe and convenient option for all cyclists, regardless of the level of their experience.

It is envisaged that the implementation of these priority routes in the first case will provide a strong skeleton of high quality, segregated cycling facilities to cater for the increased number of cyclists moving within the City Centre area. This will then provide the structure for the remainder of the GDA Cycle Network plan arrangements to be implemented across the city region. The priority routes are set out in Figure 8.2:

Figure 8-2: Priority Cycle Routes for Implementation



In addition to being able to cycle safely into and through the City Centre, it is important that adequate secure and convenient cycle parking is available for cyclists. This will require the provision of both on-street and off-street cycle parking facilities. On-street cycle parking will be reviewed and rationalised to ensure that the volume of cycle parking required at key destinations is met, and that ‘casual’ cycle parking (on road signs/lampposts etc.) does not impede on the movement of other road users, particularly pedestrians. Additional designated off-street cycle parking, such as that currently provided at Drury Street carpark will also be implemented during the period of this Study.

8.4 Intended Outcomes

The accelerated implementation of the high quality cycle network that provides safe and attractive access by bicycle to, and through, the City Centre will attract more cyclists into the City Centre, reducing car dependency and congestion. As well as benefiting commuters, better cycle facilities will increase the number of recreational and shopping trips made by bike, improving the vitality and ambience of the City Centre. The improved facilities will also make cycling safer, and more amenable to those with less cycling experience, providing an alternative mode for residents and visitors to explore and enjoy the city.

9 Pedestrian Network/Public Realm Proposals

9.1 Overview

The pedestrian environment serves all users, including residents, commuters, tourists and shoppers. It must also serve a range of needs, from legibility and design for those with mobility and visual impairments, to serving visitors and residents who require space to enjoy the sights and sounds of the City Centre. The pedestrian environment also caters for the heavy flows of commuters moving to and from work every day. The need to grow the public transport network will increase the pedestrian flows within the city centre, which will be further hampered by the need to facilitate enhanced public transport stops, which will take up additional footpath space. Expanding the capacity of the pedestrian environment is critical to allow the city to grow.

This Study has identified areas of the city which have significant pedestrian footfall. These areas, in addition to a number of key street junctions, and a number of the Liffey bridges were highlighted as points on the pedestrian network that need specific attention due to sheer volumes of pedestrians, and the consequential safety issues.



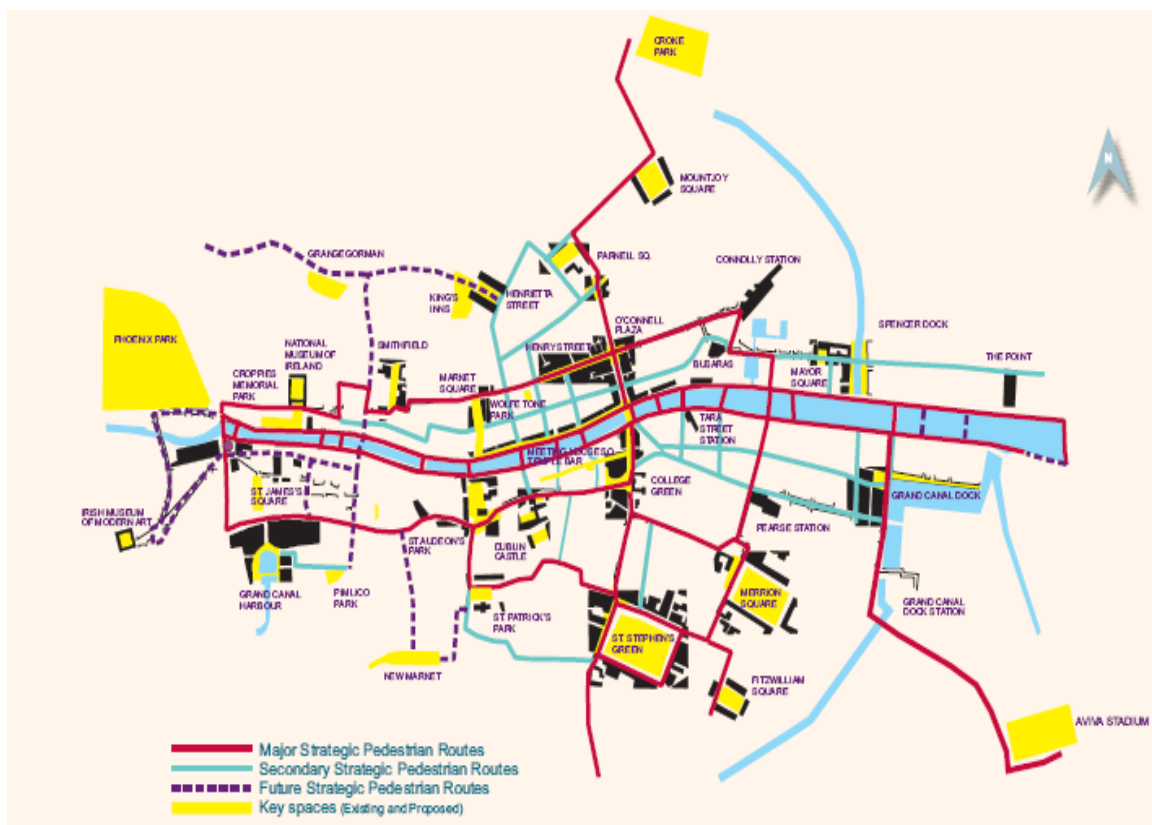
The development of routes and areas that are designed primarily with the pedestrian in mind will reduce delays and increase the comfort for those walking, visiting, socialising and living in the city centre, as well as contributing significantly to the objectives in Dublin City Council's Development Plan and Public Realm Strategy. These measures will also provide the essential last link for all public transport trips within the city, whereby almost all bus and rail users must use the pedestrian network for the final leg of their journey.

9.2 Proposals

The core pedestrian network (as shown in Figure 9.1) is based on the network outlined in Dublin City Council's Development Plan. This network highlights the key strategic pedestrian corridors which should be designed to prioritise the ease of pedestrian movement and activity. This core network, and in particular the Central Priority Routes in the City Centre, will have to provide a high quality of pedestrian facilities, with a corresponding level of priority given to pedestrian movements at junctions. It is proposed that, as an outcome of this Study, the following measures will be implemented:

- Development of a defined ‘strategic’ pedestrian network, which sets out pedestrian priority routes within the city centre pedestrian environment;
- Wider footpaths at key locations;
- Pedestrian priority at key junctions and locations;
- Provision for tourists by linking key Dublin tourist destinations into the ‘strategic’ network;
- Ensure that the needs of mobility impaired and disabled pedestrians are considered in the design of new facilities;
- Good signage, surfaces and lighting;
- The removal of unnecessary street clutter to facilitate ease of movement for pedestrians and the mobility impaired; and,
- Where possible, pedestrian friendly areas of public open space to be established and enhanced. This will be cognisant of the public open spaces identified in the City Council’s Public Realm Strategy.

Figure 9.1: Proposed Pedestrian Routes – from Dublin City Council’s Development Plan



9.3 Key Changes

In general, the key change in relation to the pedestrian environment will be the reprioritisation of space along streets and at junctions within the city centre to cater for the increased number of

commuters, shoppers, residents and tourists using the city streets. In line with this, the following proposals are highlighted:

9.3.1 Development of strategic pedestrian routes

The core pedestrian network has been outlined in the Dublin City Development Plan (Figure 9.1), and the implementation and development of these routes will allow for an improved pedestrian environment which can function as part of an integrated transport network. The identified routes will provide a high quality of pedestrian facilities, complemented by a corresponding level of priority given to pedestrian movements at junctions.

The strategic network will be designed to attract pedestrians and will ensure good signage, surfaces and lighting, and appropriate footpath width/pedestrianisation/shared space to cater for the anticipated pedestrian movement. The strategic pedestrian network will be fully compliant with the requirements and needs of those with mobility and visual impairments.

9.3.2 Development of complementary public spaces/pedestrian area

The implementation of the transport changes set out in this Study provides an opportunity for further enhancement of the public realm and pedestrian areas across the city centre. The proposed transport changes will open up spaces which have previously been traffic dominated, facilitating the transformation of traffic thoroughfares into new places for shopping, tourism or simply public open space. Examples of such a proposal are the pedestrianisation of Suffolk Street and of St. Stephen's Green North.

The introduction of Luas Cross City will necessitate the relocation of some bus services from Nassau Street. Following the completion of Luas Cross City the residual bus services that were previously routed along Suffolk Street could be accommodated on other streets, enabling Suffolk Street to be pedestrianised. This will form a natural extension to the Grafton Street shopping area, and link the main tourist office on Suffolk Street directly into the south inner city pedestrian zone. This proposal and other site specific pedestrian improvement schemes are set out in more detail in the next chapter.

9.4 Intended Outcomes

The proposed pedestrian network will provide a much more attractive environment for residents, workers, shoppers and tourists to move around the City Centre more easily, safely and with less delay. It will encourage greater numbers of people to walk as their preferred mode of travel within the City Centre. The improved pedestrian network will also complement and enhance access to and from the public transport serving the city.

10 Specific Measures

10.1 Overview

In order to implement the network proposals outlined in this Study, a number of site specific interventions will be required at locations around the city centre. Some of these measures are essential to facilitate the introduction of new transport options, such as Luas Cross City, while other schemes address long standing issues and constraints of the existing network. These specific measures are critical to the Study, and while primarily aimed at improving how the transport network of Dublin City will operate, the proposals can also form the basis for transforming the public realm, ambience and attractiveness of the city centre.

The locations of the site specific measures are illustrated in Figure 10.1. The measures have been grouped into subsections in the text below, for each case, a general description of the proposal (including possible layouts and/or photomontages of potential streetscapes) has been set out.

Figure 10.1 Locations of Site Specific Measures



10.2 Core City Centre Measures

10.2.1 Overview

Lying at the heart of the city, the area from Grafton Street to O’Connell Bridge is central to the future transformation of both transport and the public realm in Dublin City Centre. The undertaking of the Luas Cross City project dictates that the traffic arrangements in the vicinity of College Green and O’Connell Street will have to change to allow the construction and operation of the new Luas link. In addition, the new traffic signal timings required to ensure that Luas trams can cross the Liffey unimpeded, will result in a significant reduction in capacity for traffic moving along the Quays. The following site specific schemes are proposed, offering the opportunity to transform the function and use of certain streets at the heart of Dublin City Centre.

10.2.2 College Green

College Green forms an important part of the city’s north-south public transport corridor. Underpinning this importance, a ‘bus gate’ was introduced on the street in 2009 to provide priority for public transport vehicles. As set out in Section 7.3, the arrangements at College Green will alter with the introduction of Luas Cross City, affording an opportunity to improve the environment for cycling, public transport users and, in particular, for the large volume of pedestrians in and around the College Green / Trinity College area.

The proposals for College Green set out in earlier sections envisage the existing peak-hour bus gate time periods being extended, facilitating Luas Cross City operations as well as enhanced cycling and pedestrian provision. The implementation of these changes provides the opportunity to reconfigure the physical layout of the area, improve the social and commercial opportunities, enhance the public realm, and better facilitate public transport movement.





The rerouting of a significant portion of buses from College Green to facilitate Luas Cross City means that one of the two carriageways on College Green between Grafton Street Lower and Church Lane can be reallocated for other modes. The movement of cyclists will also be fully considered in this new design.

The reconfiguration of College Green from its current format as a traffic through-route to a new public transport and civic space will require a reconsideration of the allocation of road traffic space, and its reduction to one traffic lane in each direction. To ensure that this space is utilised most efficiently it is proposed that only public transport vehicles will have access to College Green. The exclusion of all other vehicles will mean that taxis are precluded from using the road space as a through route or as a taxi rank. The existing taxi rank on College Green will be relocated. A photomontage of what the newly re-designed College Green might look like is shown in Figure 10.2.

Figure 10-2: College Green following re-configuration (westerly aspect)



The new design will provide an attractive pedestrian route for Dubliners and tourists to move from the north of the city from O’Connell Street through the College Green area to St. Stephen’s Green in a pleasant, safe and pedestrian friendly environment. Specifically, the new design will enable pedestrians to move between Grafton Street and the Quays by negotiating only one short pedestrian crossing.

The introduction of the proposed transport changes facilitating an improved public realm, will allow people to enjoy some of the best of Dublin’s architectural heritage in comfort and space, and will significantly raise the profile and attractiveness of the large retail premises facing onto College Green. The new open space will provide opportunities to anchor the ‘Civic Spine’ of the City at the front of Trinity College, creating a natural people gathering location.

10.2.3 Westmoreland Street

At present, the street cross-section provides for up to four lanes of traffic, with pedestrians confined to a relatively narrow area containing trees, phone boxes, side road entrances, front-of-shop promotions etc. There have also been a number of road fatalities on the street, due in part to the high volume and mix of modes, particularly at the pedestrian crossing points.

The introduction of Luas Cross City, together with the changes at College Green, provides an opportunity to reconfigure Westmoreland Street in line with Development Plan objectives and targets. The redesign of Westmoreland Street will provide an improved environment for the significant pedestrian flows moving along the street, as well as providing safer, segregated cycle facilities. It will also facilitate and exploit the operation of Luas Cross City, and provide for a more optimised bus stopping arrangement with a better overall environment for waiting passengers.



The proposed extension of the time period of the College Green Bus Gate means that Westmoreland Street will cease to be a through route for car traffic. While local access traffic will still be able to enter the street, the reduction in vehicular traffic means that more of the current road space can be given over to providing a high quality pedestrian environment, complementing works on College Green, and creating the 'Civic Spine' from O'Connell Street to St. Stephens Green as set out in the Dublin City Development Plan. A photomontage of what the newly re-designed Westmoreland Street could look like is shown in Figure 10.3.

The redevelopment of Westmoreland Street will provide a premium walking environment along one of the most prominent streets in the city, providing an enhanced linkage between the city's two principal commercial centres of Henry Street / O'Connell Street and the Grafton Street Quarter. The inclusion of cycle facilities, bus and Luas Cross City stops, together with a proposed BRT stop, will ensure the street remains one of the city's most accessible locations. Together with D'Olier Street, it will form a key public transport access point, with high frequency services allowing easy access and convenient interchange between services.

Figure 10-3 Re-designed Westmoreland Street



The reconfiguration of Westmoreland Street will also allow significant improvements to be made at the O'Connell Bridge junction. The layout of this junction can be simplified with improved pedestrian space and crossing facilities, and a reduction in conflicts with vehicular traffic. In particular, there will be improved safety for pedestrians crossing Aston Quay near O'Connell Bridge, as buses will be banned from turning left from Westmoreland Street. The street will also be easier to cross, increasing access to the new bus, BRT and Luas Cross City stops on the street itself, and to bus/BRT stops on D'Olier Street.

10.2.4 D'Olier Street

There is a requirement for defined locations where it is convenient to access and interchange between buses, and between bus, BRT, Luas and DART (at Tara Street). D'Olier Street represents a central corridor, located between the Luas Cross City northbound line- running along Westmoreland Street, and the Luas Cross City southbound line- running along Hawkins Street.

Given its layout and central location, D'Olier Street, interacting with Westmoreland Street, is ideally positioned to become a key public transport access point to the city centre. It can become a new

transport hub, where people interchange between bus, BRT, Luas and DART services at the nearby Tara Station.



The redevelopment of D'Olier Street will see the wide tarmac dominated street divided with a central median, enhancing the overall street environment and assisting in pedestrian movement across the street. Bus stops will be located on this median, with a BRT stop located on the eastern side of the street, together with footpath widening, tree planting and other improvements. Coupled with the bus gate changes in College Green, and the reconfiguration of Bachelors Walk to a public transport only link, car through traffic will be removed from D'Olier Street while local access will be retained. A photomontage of what the newly re-designed D'Olier Street might look like is shown in Figure 10.4.

Figure 10-4 D'Olier Street (Southerly Aspect)



In overall terms, D'Olier Street will become a vital hub for the City, with the convergence of various public transport modes and cross city routes, coupled with the corresponding significant increase in pedestrian movements on both sides of the street, making it one of the most active and accessible

streets in the city. Together with the reconfiguration of Westmoreland Street and College Green, there is an opportunity to recreate the heart of the city centre, based on these three interlinked streets. The redesign and changed function of the street will also bring an increased footfall into the area, improving the vitality and vibrancy of the street, and raising the profile and attractiveness of retail units and offices located there.

10.2.5 Suffolk Street

Prior to the commencement of Luas Cross City works, Suffolk Street and Church Lane were part of a heavily used bus corridor linking the Dawson Street / Nassau Street / Kildare Street area to the O'Connell Street / D'Olier Street / Westmoreland Street area. Suffolk Street and Church Lane are narrow streets, with small footpaths on either side. While both streets were marked with two traffic lanes, the turning difficulties from Suffolk Street to Church Lane effectively reduces the capacity to a single lane.

Church Lane is an undesirable route for the large numbers of scheduled bus services and tourist coaches currently using the street. Features such as the sharp turn entry, narrow footpaths, the presence of many pedestrians and cyclists, and visibility issues exiting onto College Green all render the route sub-optimal.

The construction of Luas Cross City requires the re-design and reorientation of street space in College Green, Grafton Street Lower, and Dawson Street and will afford an opportunity to greatly enhance the transport environment and public realm in this important area of the city. The proposed reconfiguration of the movement of public transport opens up the opportunity of pedestrianising Suffolk Street, extending and complementing the Grafton Street commercial area, and significantly improving the pedestrian environment.





This proposal will see the extension of the Grafton Street pedestrianised area to of Suffolk Street and the provision of widened footpath areas on Church Lane. This will extend the Grafton Street shopping area, allowing a continuous pedestrianised space running from St. Stephens Green to College Green.

A photomontage of what the newly re-designed Suffolk Street / Church Lane might look like is shown in Figure 10.5.

Figure 10.5: Suffolk Street / Church Lane following potential re-configuration (westerly aspect)



The changes will provide a much more attractive environment for shoppers, and will bring major benefits to retailers on these streets, as well as stores operating on Grafton Street Lower and Dame Street who will be directly connected to an extended Grafton Street shopping area.

10.2.6 St Stephen's Green North

The construction of Luas Cross City will necessitate a reconfiguration of the road layout at the Grafton Street end of St. Stephen's Green. Traffic management modifications have already been put in place, including revised car park access arrangements to the RCSI and St Stephens Green Car Parks via St Stephens Green South, which has reduced the traffic flow using St. Stephen's Green North to access this area. In addition, the Luas Cross City alignment will also require the relocation of the existing taxi rank at St. Stephen's Green.

Taken together, the above changes mean that that a large amount of the current carriageway on St. Stephen's Green North can be reallocated, allowing a new civic space to be created between the junctions with Grafton Street and Dawson Street. A photomontage of what this may look like is set out in Figure 10.6.

Figure 10.5: St Stephens Green North following potential re-configuration (Easterly aspect)



10.2.7 Bachelors Walk

The Quays currently form a major traffic artery through the central city area for eastbound and westbound traffic movements. Because the primary function of the Quays is to facilitate vehicular traffic movement, it causes a high degree of severance for north-south pedestrian movement. The busiest pedestrian link in the city is the link from O'Connell Street to Westmoreland Street, crossing Bachelors Walk and Aston Quay. The vehicular traffic flow along Bachelors Walk is a significant

barrier to pedestrian flow on this link, with large volumes of pedestrians frequently crowding, often in an unsafe manner, on either footpath, awaiting the pedestrian signal phase.



From a public transport perspective, Bachelors Walk is a frequent source of delay to bus services. Buses turning southwards towards D'Olier Street have to leave the bus lane on the north side of the street and traverse two lanes of general traffic, frequently congested, to go southwards. In addition, the need to cater for general traffic means that footpath widths and bus stopping arrangements along this section are significantly below the optimal provision. Notwithstanding its current traffic focus, Bachelors Walk is a very prominent location in the city centre. Its position, directly adjacent to the O'Connell Street means it forms an integral part of the urban framework of the city centre.

The major construction elements of Luas Cross City, and the commencement of passenger services at end 2017, will require significant changes to junction arrangements in the City Centre including at O'Connell Street. In addition, the vehicular capacity at various junctions along the Luas Cross City corridor, particularly on either side of O'Connell Bridge, will be significantly reduced in order to cater for the Luas service.

Proposals are also now in place to develop the Liffey Cycle Route, connecting from Heuston Station in the west to the Point in the east. This provision will impact upon the current road layout on Bachelors Walk, requiring a reallocation of road space.

Given the need to cater for the new Luas service plus the development of the Liffey Cycle Route, and reflecting the transport targets set out in the Development Plan, it is intended remove general car traffic from Bachelors Walk and to reconfigure it as a public transport, cycling and pedestrian only corridor. This will require the diversion of general car traffic from Bachelors Walk between its junction with Jervis Street and O'Connell Street. The right turn from Bachelors Walk onto O'Connell Bridge will be removed and buses will make this right turn at the new Rosie Hackett Bridge.

The removal of car traffic from this section of the north quays, together with corresponding changes on the south Quays, will allow a more integrated central city area to develop, with a greater level of connection between areas north and south of the river. It will also significantly enhance bus and cycle arrangements along Bachelors Walk and resolve some of the major problems that currently exist for those modes.

10.2.8 Aston Quay/Burgh Quay/Georges Quay

Similar to Bachelors Walk on the north side of the River Liffey, Aston Quay forms part of the major south Quays traffic artery, traversing the central city area and catering for westbound traffic movements. The vehicular traffic flow along Aston Quay is a significant barrier to pedestrian flow on the busy O'Connell Street to Westmoreland Street pedestrian link. Mirroring the position on the north side of the river, large volumes of pedestrians crowd on both footpaths of Aston Quay, awaiting the pedestrian signal phase.

Addressing the severance issue on the north Quays without similarly addressing it on the south Quays would diminish the benefits that will be gained by the Bachelors Walk bus gate – it would concentrate the issue more acutely on the Aston Quay / Westmoreland Street junction. Similar to Bachelors Walk, the need to cater for Luas Cross City, provide increased priority for bus and BRT movement, plus the need to provide better and safer cycling facility in the central city area, all require a reallocation of part of the south Quays to public transport and cycling use.

To achieve this it is proposed to introduce a public transport, cycling and pedestrian only link along the south Quays, at either Aston Quay, Burgh Quay or Georges Quay, depending on the outcome of more detailed analysis. General through traffic will be rerouted around the central area, circumnavigating this currently congested area of the city.

Removing private vehicle traffic from this area will dramatically improve the environment of this area, particularly for the 30,000 people per direction crossing each day at O'Connell Bridge. It will enable footpaths to be widened, better crossing arrangements to be introduced, reduce traffic pollution and allow the overall public realm to be improved. From a transport perspective, it will deliver the additional priority for public transport and cyclists required at this location, and allow the bus and Luas network to operate more efficiently.

Taken together with the proposed changes at Bachelors Walk, there will be more space available on both sides of the Quays for pedestrians and tourists, thereby enabling the banks of the River Liffey to become an attractive area in their own right, rather than the heavily trafficked thoroughfare they are today.

10.3 Interchange Locations

10.3.1 Overview

This Study has set out how public transport within the city will develop into an integrated, legible and user friendly system. Central to this is the concept of interchange, with passengers capable of, and encouraged, to change between public transport services/modes to traverse Dublin City. To facilitate this, some key locations will act as strategic public transport interchanges, where it will be possible to transfer between several modes, including intercity rail services.

10.3.1.1 Connolly Station/Busaras

The area of Amiens Street and Store Street represents, informally, the biggest public transport hub in the city, with Connolly Train and DART Station, Luas Red line and Busaras Intercity and Commuter bus station all located at this focal point.

Connolly Station and Busaras are two of the main entry points to visitors coming to Dublin City. The streetscape into which these visitors arrive however does not present a good first impression of the city. The area is particularly difficult for pedestrians and cyclists, with the dominance and intensity of traffic representing a significant barrier to movement between the Docklands and the north City Centre.

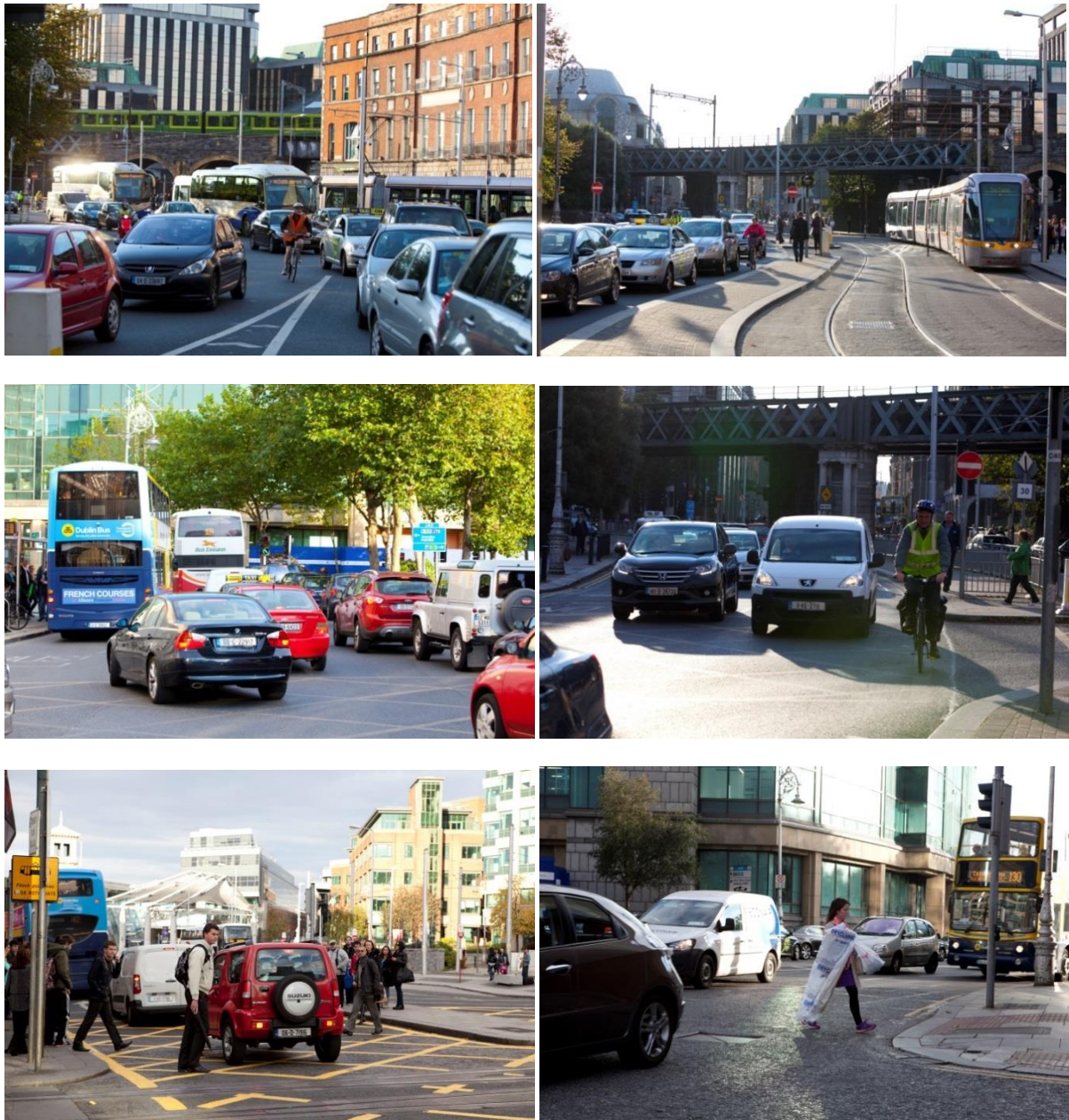
Amiens Street in the vicinity of Connolly Station and Busaras is a busy thoroughfare for traffic from the north east of the city, as well as backing onto the major employment centre of the IFSC. Amiens Street has narrow footpaths, and the limited road space has primarily been given over to catering for bus movement, Luas, and the high volumes of traffic. Pedestrians and cyclists are poorly served along the street, especially given the volumes which traverse the area daily to access public transport and work locations in the IFSC.

Beresford Place, fronting Bus Aras, is also heavily trafficked, acting as a weaving area for traffic joining and leaving the road system at the back of the Custom House. Due to the presence of bridge abutments north of Liberty Hall, there is considerable weaving of outbound traffic in order to be on the correct side of the railway bridge abutment for Fairview or Dorset Street. This one-way gyratory is prone to congestion every day, and especially in the evening peak. Despite the volume of bus and coach movements, the road layouts provide no bus priority due to the necessity for all traffic (private vehicles, buses, coaches and cyclists) to move between lanes to reach their required junction.

Access to Busaras is complicated due to the one-way nature of the street layout. Coaches are obliged to circle Busaras in order to enter the station, and then circle it again on departure. In addition, the access and egress points from Busaras present significant conflict risks to pedestrians and cyclists in the vicinity of the terminus.

The Luas stop at Connolly was the terminus stop for the Luas Red Line when it was opened in 2004. However, the subsequent extension to the Point has meant that a split service operates, with some trams stopping at Connolly and others not using the Connolly stop and traveling instead to the Point.

The ability of users to easily interchange between rail, bus and Luas services in this key area is singularly poor. In particular, the connections between Connolly Station and Busaras / the Luas stop on Store Street do not encourage easy and convenient movement between modes, which is a key characteristic of a good transport system.



An opportunity exists to significantly enhance connectivity between the different transport modes at this location. Options that could be considered include the removal of the Connolly Luas Stop, potentially transforming the space into a Commuter Bus terminus. It may also be possible to provide a new commercial space overhead, linking directly into Connolly Station and potentially linking via a walkway into Busaras. This would have the added advantage of allowing Connolly passengers to move directly into Busaras at grade, without having to cross Amiens Street at street level.

Given the significant potential that exists to properly connect all of the key transport modes in this area, coupled with the public realm opportunities in this sensitive area of architectural heritage, it is recommended that this element of the Study be developed further by way of a Masterplan, which could be opened up to an international design competition. This will ensure adequate attention is given to the design, implementation and subsequent delivery of this key element of the Study.

In tandem with this approach, consideration will be given to whether the one way traffic gyratory system in the area of Beresford Place and Memorial Road, which currently presents a challenge for all road users, could be modified to improve the efficiency and safety of movement within the area.

10.3.1.2 Heuston Station

Dublin City Council is currently preparing a Local Area Plan for the 'Heuston Gateway'. Part of this Study is to build on the existing public transport connectivity of Heuston Station and develop an expanded Public Transport Interchange facility.



The proposed plan will see a new road link being constructed between Conyngham Road and Heuston through the Dublin Bus garage to provide access by all modes into the rear of station. This will improve permeability for pedestrians, cyclists and public transport users to the expanded Interchange facility. The proposal would also provide access to a new multi-story car park which would serve intercity train users as well as commuters accessing public transport options at Heuston Station.

The new traffic arrangements may also be linked with a greater role for traffic travelling from the west into the city. Instead of the majority of traffic continuing along St John's Road West, vehicular traffic could be diverted up South Circular Road onto Conyngham Road and Parkgate Street. This would facilitate traffic wishing to use the proposed car parking at Heuston Station, and would also reduce the amount of traffic crossing the front of Heuston Station, making the environment safer for pedestrians and cyclists, and reducing the potential for delay to public transport services operating out of the revised Heuston Station Transport Hub.

The provision of a car parking facility and public transport interchange at this edge of city centre will offer the potential for private car traffic to avoid the city centre and use the range of public transport options available at Heuston to undertake their onward journeys. This will help reduce the overall quantum of traffic in the central core. The provision of a pedestrian link through the station site from the Phoenix Park all the way through to the Irish Museum of Modern Art will provide a seamless and safe link between some of the city's principal tourist attractions. It will form part of the wider pedestrian network of the city, and will be a significant improvement of the existing environment for pedestrians and cyclists in the vicinity of Heuston Station.

10.4 Specific Improvement Schemes

10.4.1 Overview

A number of specific schemes are currently under consideration and fit into the context of this Study. These schemes offer the opportunity to enhance the current arrangements of the mode in question, whilst also improving the overall transport function of the city by rationalising or adding to the transport network.

10.4.2 Liffey Cycle Route

The Liffey Quays are currently an unattractive place to cycle in the city centre. The heavy traffic volumes and one-way traffic system mean that the roads fluctuate from congested slow moving traffic to high speed traffic, depending on the time of day. The existing quality and provision for cycling infrastructure along this route is low, especially given the high volume of cyclists moving along this east-west axis.



In March 2015 a non-statutory public consultation process for four design options for the Liffey Cycle Route was carried out. There was overwhelming backing for a segregated two way cycle track along the river side of the northern quays, with 73% of the submissions supporting such a proposal. It is proposed to progress the implementation of a two way segregated cycle track along the north quays of the Liffey. This route is seen as critical to developing the cycle network across the city and will form a central 'spine' for cyclists running from Heuston Station to the Docklands. This route will cater for commuter and leisure cyclists, as well as providing a safe and convenient route linking *dublinbikes* stands along the Quays.

The finalised plans for the route are still being developed, however a photomontage example of how the scheme might look is illustrated in Figure 10.7.

Figure 10-7: Photomontage of proposed Liffey Cycle Route (Easterly Aspect)

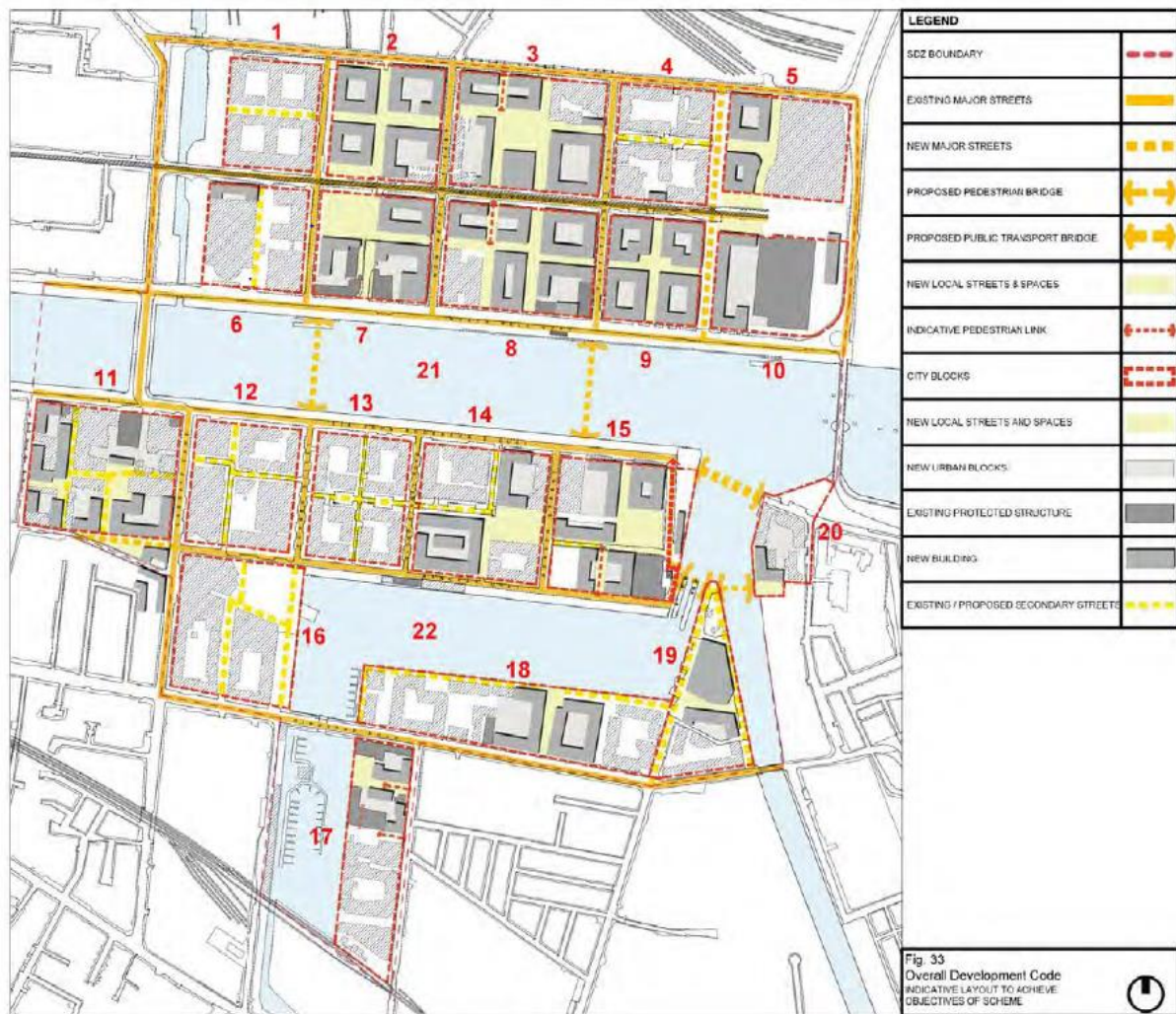


10.4.3 Dockland Bridges

An Bord Pleanála approved the Docklands Strategic Development Zone (SDZ) planning scheme in 2013. This SDZ planning scheme prescribes the proposed build out of the lands within the SDZ lands, including a detailed outline of associated infrastructural proposals. Three bridges have been proposed; two pedestrian/ cycle only links across the River Liffey, and a road bridge over the River Dodder between Sir John Rogerson's Quay and Thorncastle Street.

The Liffey bridges will provide additional crossing points for pedestrians and cyclists, increasing north-south accessibility in this rapidly developing part of the city, while the Dodder Bridge will provide a key linkage from the Docklands eastwards to Poolbeg. This bridge will enable traffic to run from the Poolbeg area along the south Quays serving the new developable lands, while also providing an important pedestrian and cyclist link eastwards to link residents with Dublin Bay. These new linkages are highlighted in Figure 10.8.

Figure 10.8: Docklands SDZ Transport Proposals



10.4.4 Coach Parking Facilities

There are a number of private coach operators running commuter services in the morning and evening peak. Throughout the year tourist coaches also serve the City Centre ferrying tourists to attractions such as Trinity College. At present, coach parking and layover takes place primarily on streets across the City Centre, with a number of designated areas, such as Nassau Street and Mountjoy Square being heavily used.

It is proposed that a Coach Parking Facility will be developed close to the City Centre, providing secure bus parking and driver facilities off-street, within easy access of the main city attractions/employment areas. A planning application is currently being prepared for such a facility at a site in the Dublin Docklands area.

This facility will provide safe, secure parking for both commuter and tourist coaches within a short distance of the city centre. It will also provide rest and convenience facilities for bus drivers. It is anticipated that this facility will work in conjunction with short term set down Coach Stops within the city centre, where passengers and tourists can be dropped off/picked up in close proximity to their destination.



Such a facility will remove a large amount of bus layover from the city centre, which will have a number of benefits for the city's public realm, with the removal of stationary buses from the streetscape, particularly in areas of architectural heritage (Mountjoy Square/Marlborough Street/Merrion Square).

10.4.5 City Centre Taxi Ranks

There are currently in the region of 18,000 taxis authorised to operate nationally, and some 10,500 of these are registered in the Dublin area. The number of taxis serving the City Centre can, and has, resulted in insufficient taxi rank space being available. This can mean that taxis queuing at a rank can overspill into the carriageway at rank locations, or that taxis are forced to circulate around the streets and bus lanes unnecessarily. In addition, taxis often park at inappropriate and unauthorised locations, impacting traffic movements and causing safety issues.

There is a need for additional taxi rank capacity beyond what currently exists. Accordingly, it is proposed to identify opportunities to extend taxi rank provision in the City Centre area, whether on a full-time or night-time basis. The potential for the provision of alternative storage arrangements is also to be considered.



There are certain locations in the centre of Dublin, such as O'Connell Street, St. Stephen's Green North and Dawson Street, which currently accommodate large, well utilised taxi ranks, which need to be relocated due to the introduction of Luas Cross City. Other ranks may also be relocated to better manage how taxis entering service will access the traffic network, while new ranks may be located in areas such as Temple Bar/Drury Street/South William Street which currently have issues with taxis circulating slowly while waiting for a fare.

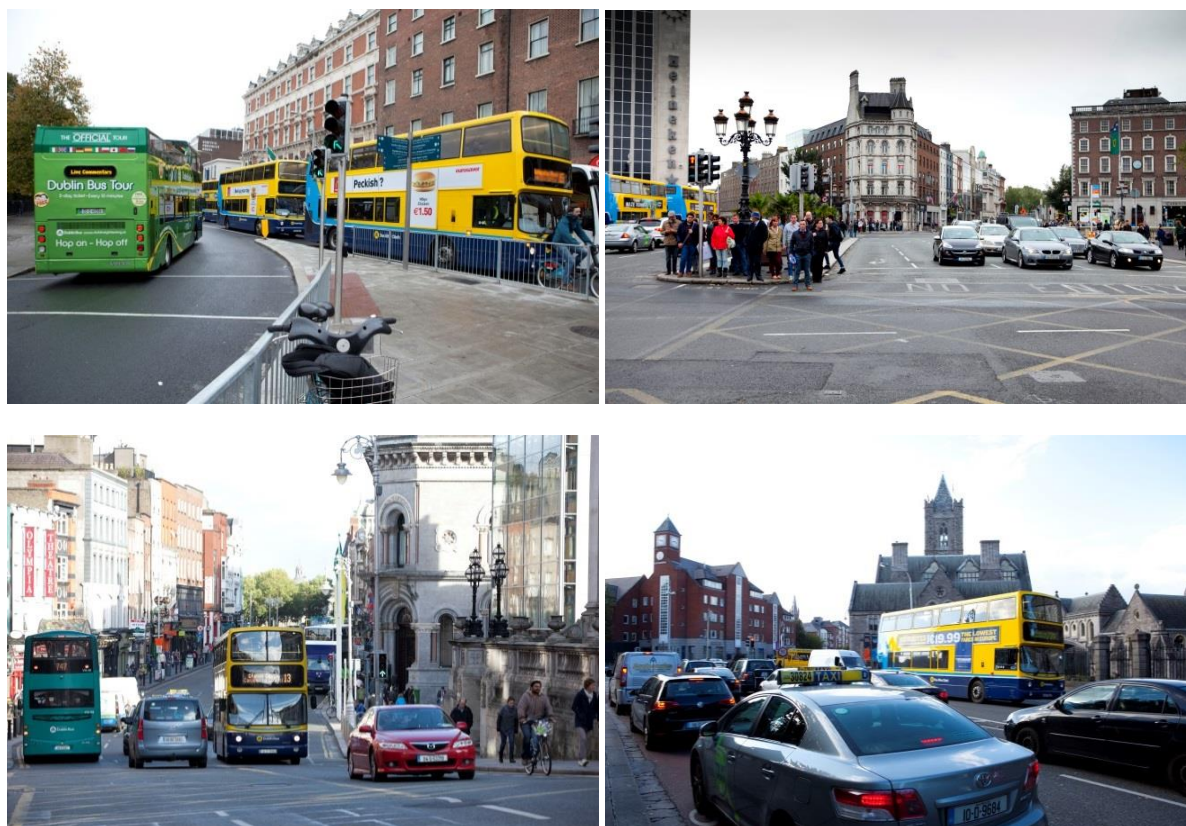
A review of taxi rank provision will be undertaken which will consider full-time or night-time only rank locations, as well as new opportunities such as the use of off-street facilities, such as a multi-storey car park, as large scale taxi depots/ranks, operated in a similar fashion to the taxi facility successfully serving Dublin Airport.

The removal of overcrowded taxi ranks spilling into the roadway, or taxis parking up illegally, will result in better traffic flow for all road users. The better location and management of taxi ranks will also benefit consumers and drivers equally by improving access to taxis and taxi journey time reliability. The proposed use of new taxi storage facilities would remove the issue of taxis circulating in areas of high demand, while also allowing taxi drivers to park up and rest, particularly when demand is low.

10.4.6 Additional Public Realm Improvements

The reconfiguration of the road space within the city centre will offer opportunities to develop and enhance the streetscape and public realm within the city centre. This is in line with the objectives set out in both Dublin City Council's Development Plan and Public Realm Strategy.

By utilising the space within the city centre in a more efficient way, it is possible to use space in a better way. The majority of this Study sets out how transport can function more efficiently, but it is worth pointing out that the reconfiguration of street space can also facilitate an improved public realm and amenity for residents and visitors within the city.



It is not proposed to address exactly how the public realm could change throughout the city centre in this document. It is, however, noted that the reduction in traffic volumes, coupled with better traffic management arrangements around the city centre, will facilitate a review and potential

redevelopment of key locations across the city. Outside of the major interventions outlined earlier in this Study, such as College Green and Westmoreland Street, a number of additional potential locations where the revised transport arrangements may enable additional public realm enhancements include;

- The Georgian Squares;
- Christchurch;
- O'Connell Street;
- Smithfield;
- Dame Street; and,
- Croppy's Acre.

While a more efficient transport system, which enables more people to access the City Centre, is the primary objective of this Study, the potential for additional improvement to the public realm is a key outcome. The improvements to the streetscape throughout the city, not just at key focal points, will be a clear indication of the success of this overall proposal. Improving the vibrancy and vitality of the city, and making it a liveable and attractive place, is an important benefit of the Study and will contribute positively to the economic and commercial future of the city.

11 Positive Outcomes for Dublin City

11.1 Overview

This Study has been developed to ensure that Dublin has the transport infrastructure and space to grow as a city both physically and economically, whilst also creating a better public place to be enjoyed by residents and visitors alike. The transport framework and proposed transport measures outlined in the Study will have the cumulative effect of transforming how transport in the city functions, facilitating better efficiency, increased usage and higher capacity. This chapter summarises the positive benefits the implementation of this Study can bring to Dublin City.

11.2 Future Proofing the City

It is expected that Dublin City will continue to lead the way in terms of Ireland's economic recovery, and with this it is projected that the population and employment within Dublin City and suburbs will continue to grow. It is anticipated that Dublin City Centre will have to cater for an additional 42,000 commuter trips into the city each day by 2023 in comparison the amount observed in Census 2011. In this regard, the measures set out in this Study will ensure that this increase in demand can be met, whilst also providing a solid foundation on which further improvement and investment in Dublin's transportation networks can be made. This will allow the future transport planning for Dublin City Centre to be done on a proactive basis, and ensure that Dublin has the ability to deal with unforeseen network interruptions, as well as having the capacity to facilitate growth of the city for years to come.

11.3 Facilitating New Transport Infrastructure

The forecast growth in population and employment over the coming years will result in the more people travelling in and out of the City each day. Most of these additional trips will be accommodated by the Bus / BRT system. To cater for the increased capacity of the bus system, the introduction of a BRT system, as well as the commencement of Luas Cross City services in 2017, fundamental changes in the operation of the City Centre street system are required.

This Study has addressed these issues. Vehicular traffic which currently travels through the City Centre will be re-routed around the central area. Bus gates will be introduced on the north and south Quays, and the operational time period of the College Green bus gate will be extended. Faster bus movement through the central area will be delivered, along with high quality, safer cycling routes. Vehicular access to the city centre will however continue to be facilitated, particularly in relation to the retail and commercial activity, where an appropriate level of parking provision will be maintained.

11.4 Improved Efficiency

This Study has been developed to maximise the use of limited resources within Dublin City. Space within the city centre is at a premium, and this Study ensures that the road space is used efficiently

to maximise the amount of people that can be moved. It is proposed to reconfigure and reroute bus services, and utilise interchange both between buses, and with other modes, to allow more people to access more parts of the city, more easily. By utilising the street space efficiently, it will also be possible to improve the public realm, giving over space for residents and visitors to enjoy and move around the city.

Most significantly, the measures proposed will protect the investments that have been, and continue to be, made in public transport provision in the city, thus ensuring that the full benefits of investment are realised.

11.5 Improved Environment

The reconfiguration of the streetscape within Dublin City Centre as proposed in this Study will mean that some parts of the city centre have a vastly reduced level of traffic passing through or along them. These areas, particularly at the heart of the city (Westmoreland Street – D'Olier Street – College Green - the City Quays) will become much more pleasant places, with reduced noise and air pollution due to the reduction in traffic. This will improve the overall natural and built environment of the city centre.

11.6 Improved Urban Realm, Civic Space and Ambience

11.6.1 The Urban Realm

The reconfiguration of the movement of vehicular traffic away from the City Centre, and a rationalisation of how public transport will serve the centre, will allow much more space to be devoted to pedestrians, and facilitate the development of new landmark civic spaces such as at College Green. This is in line with the Vision and Priorities outlined in the Dublin City Council Development Plan and objectives of the Council's Public Realm Strategy. The proposals will vastly improve the ambience of the City Centre, transforming heavily trafficked thoroughfares into pedestrian friendly streets, where people can walk, shop, socialise and appreciate their surroundings in a stress free environment.



The proposed improvements to the urban realm will provide a much more attractive environment for people choosing to live in the city centre. This in turn will assist the marketing of central Dublin

as a place where a wide spectrum of people can live, work and socialise, increasing the potential for mixed use and consolidated development within the City Centre.

11.6.2 Civic Spaces

Landmark locations within the City Centre, such as College Green, are currently dominated by traffic, significantly reducing their utilisation as premium city attractions. A significant benefit of the proposals outlined in this study will be the potential to reallocate space at key landmark locations, to improve the public realm in these areas and allow for their transformation into key civic spaces worthy of the buildings/amenities surrounding them. The improved public realm will allow people to enjoy some of the best of Dublin's architectural heritage in comfort and space, and significantly raise the profile and attractiveness of the commercial properties at these locations.



11.7 Tourism, Commercial and Retail Benefits

11.7.1 Tourism

The recommendations set out in this Study have the potential to enhance Dublin as a premier European tourist destination. The creation of a new civic space at College Green is an ambition that has existed for many years – the transport changes in this Study will facilitate its delivery. Tourists, like residents, will have more space to appreciate and dwell at Dublin city's principal landmarks.



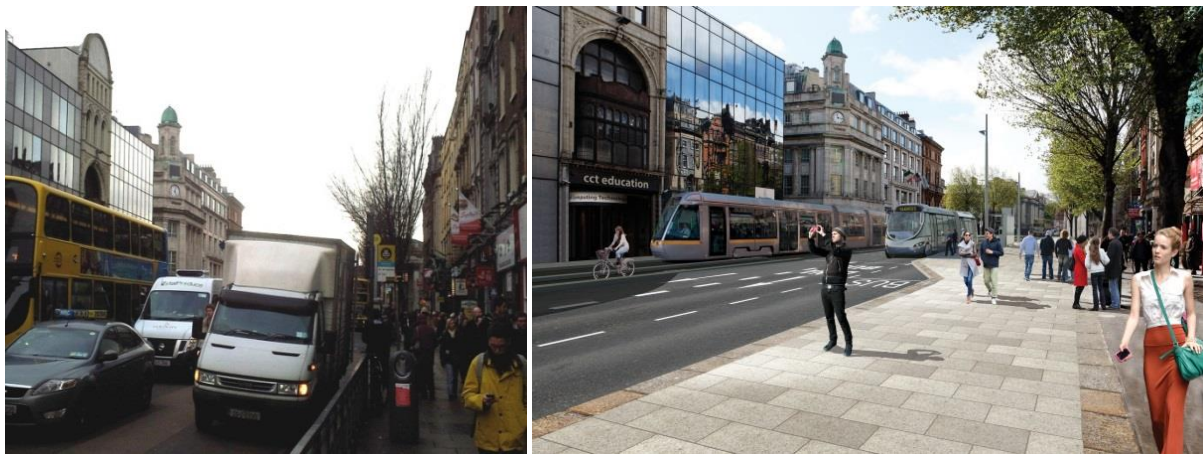
The recommendations of this study propose a significant alteration to the public transport network, making it more legible, user friendly and integrated. The improved environment and legibility of the

proposed pedestrian and public transport networks is of particular benefit to tourists and visitors not familiar with the layout of the city.

11.7.2 Commercial/Retail

The proposed changes to the Public Transport network will considerably increase the potential number of people who have quick and easy access to Dublin City Centre to work and to shop. These improvements, in addition to the enhancements in the public realm and ambience of Dublin City Centre will significantly boost the attraction of Dublin as a shopping destination.

The improved facilities for pedestrians, including the proposed pedestrianisation of Suffolk Street and St. Stephen's Green North, will greatly benefit the retailers operating on these streets, and in adjacent areas like Lower Grafton Street and Dame Street. This will create a contiguous pedestrianised shopping space, effectively extending the premium Grafton Street 'shopping precinct'.



In addition, the proposed improvement to the pedestrian environment along the central civic spine of the city from O'Connell Street, via Westmoreland Street and College Green to Grafton Street, coupled with the completion of Luas Cross City will provide a vastly improved link between the core shopping areas on the north and south sides of the city. This will benefit the perceived retail offer of Dublin City Centre as a whole, while also specifically raising the profile and attractiveness of the retail premises along the central civic spine, benefitting in particular areas such as Westmoreland Street, which has degraded badly over the years as a retail destination.