Dublin City Centre Transport Study

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Údarás Náisiúnta Iompair
National Transport Authority

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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 199,943 in 2015. 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 circa 40,000 additional 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 4.1 million visitors in 2014) 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.

While these measures improved the reliability of public transport and its customer interface, the economic downturn, with a dramatic fall in the numbers at work, led to a significant drop in public transport patronage. 20,000 less passengers crossed the canal in the AM Peak in 2011 than in 2006. The fall in fare revenue associated with this led to a rationalisation of public transport services, with some services reduced or cut entirely. While the trend in passenger numbers has been reversed in more recent years, the loss of capacity in the public transport network means that the current levels of service will not be able to cope with a return to the 2006 levels of demand, 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 further investment continues and 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') has been developed as an input into the Dublin City Council Development Plan 2016-2022, and sets down a framework for how Dublin City's transport network can be redefined to cater for this increased demand, by better utilising the existing infrastructure available, and by moving towards a more sustainable and efficient use of the 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 as an input into the Dublin City Council Development Plan 2016-2022, 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, €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 guided by the Transport Strategy for the GDA 2016-2035. It also aligns with the Council's Draft City Development Plan 2016-2022. Working within the statutory planning framework of the City Council's Development Plan (outlined in section 2.5.1) and the Transport Strategy, 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 to the transport network.

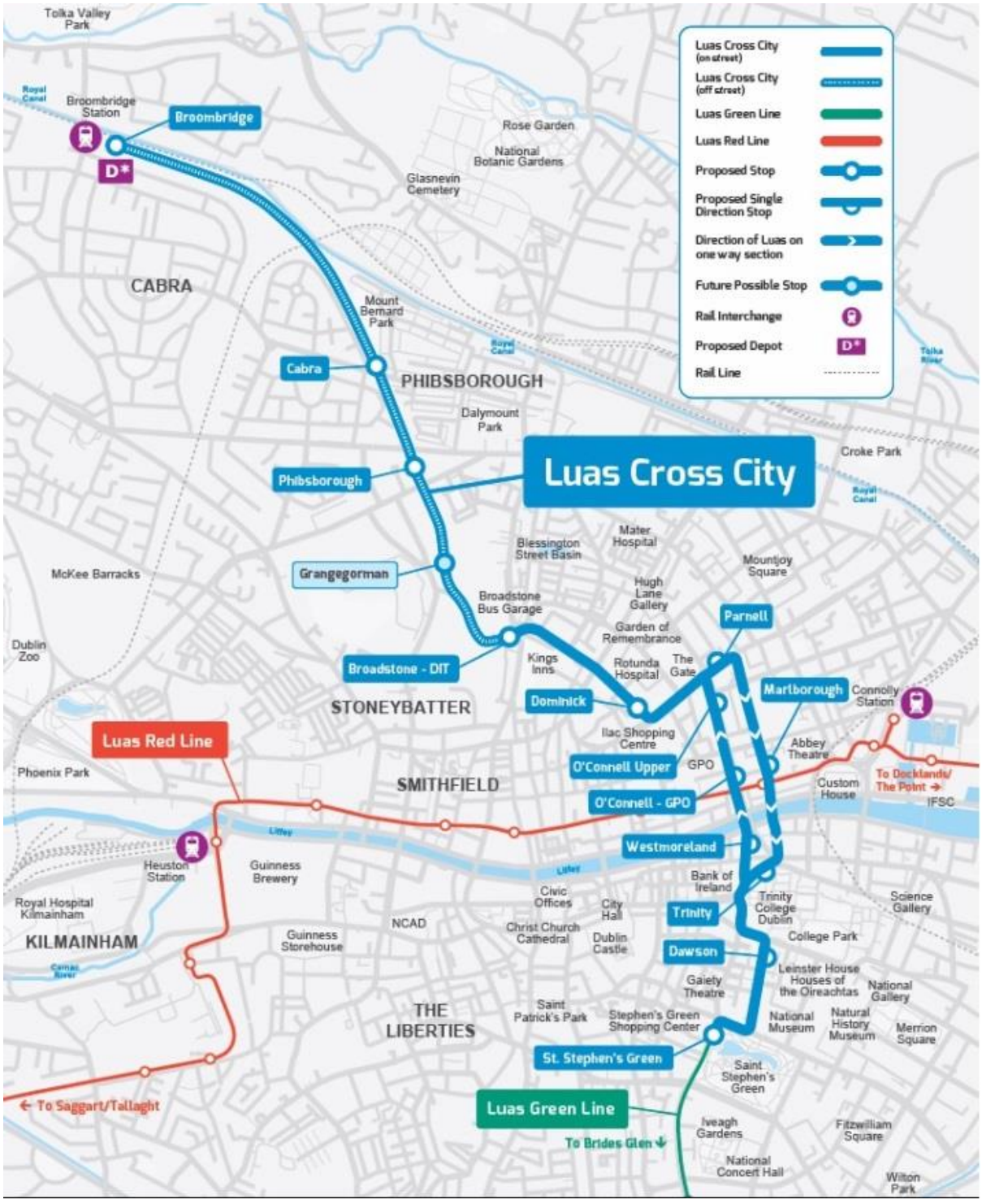
The Transport Strategy, which has been statutorily adopted under the provisions of Section 12 of the Dublin Transport Authority Act 2008, sets out the framework for the planning and delivery of transport infrastructure and services in the GDA over the next two decades. It identifies the trends in transport performance, including increasing road congestion, and sets out the need for a more balanced transport system through increasing travel by public transport, walking and cycling while reducing car based travel, particularly in relation to work commuting. The Transport Strategy sets out measures to enhance public transport provision, including additional road space and priority for bus movement, as well as the development of comprehensive cycling and pedestrian networks. The proposals set out in the Study are fully aligned with the objectives of the Transport Strategy.

This Study, and the timely implementation of the proposals outlined in it, is critical to ensure that transport in Dublin can continue to function effectively, 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 (Figure 1.1) 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. The development of a plaza at College Green will be the most visible expression of this new pedestrian environment, providing a seamless walking route from the River Liffey to St. Stephen's Green.

These networks will evolve over time, under constant review and refinement, in order to ensure that Dublin's transport system will meet the demands and future requirements of the city.

Figure 1.1: Luas Cross City and the existing 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 essential requirements for the city centre, including the need to:

- 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;
- Formulate an agreed set of transport networks, which are integrated and complementary;
- Develop a framework for infrastructural investment in the City Centre;
- Build on the existing and future investment in public transport within the city, and ensure that these assets are utilised appropriately into the future; Ensure that in operation, Luas Cross City can perform in an effective and efficient manner; 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 as set out in the NTA Transport Strategy;
- Improve the capacity, reliability and increased use 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 Public Consultation

A draft of this report was placed on display between June and August 2015, and submissions were invited from members of the public. In total, 7,779 submissions were received. There was a high level of support for many of the proposals but also a significant number of issues and concerns raised, primarily in relation to the retail impact, car park access and taxi exclusions.

Since that consultation period ended, DCC and the NTA engaged in a series of individual meetings with various groups, stakeholders, businesses, hotels and interested parties in order to understand

concerns raised and also in order to examine the specific issues raised in the submissions received. These issues can be summarised as follows:

- Strong support for cycling proposals;
- Concern over access to car parks and impact on retail;
- Concern over attractiveness of public transport as an alternative;
- Strong support for improvement to pedestrian facilities and for the College Green proposals;
- Opposition to full ban on taxis in College Green;
- Concern over access to hotels for taxis, coaches and private cars, access to their car parks and access for deliveries; and
- Concern over access for mobility impaired and disabled people.

As a result of the submissions received and the various meetings held, NTA and DCC have made various revisions to the original study which addresses some of the concerns raised while still meeting the overall objectives of this study. Some of the key changes to the study include (i) the retention of left turning only private car traffic on Bachelor's Walk to facilitate access to O'Connell Street northbound, including Arnott's car park; (ii) making Eden Quay public transport/cycling/pedestrian only at O'Connell Bridge to replace the Bus only section at Bachelors Walk; (iii) additional bus lanes on the South Quays, but no bus only sections, and (iv) redesign of College Green to facilitate Taxis on North-South alignment.

Appendix 1 contains a full report on the public consultation.

1.5 Structure of this Study

This Study begins by setting out the context in Chapter 2. It defines the area designated as the City Centre for the purposes of this analysis and 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 issues. 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 at critical locations which are proposed as part of the overall transport framework.

Chapters 11 and 12 summarise 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 circa 40,000 additional 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.

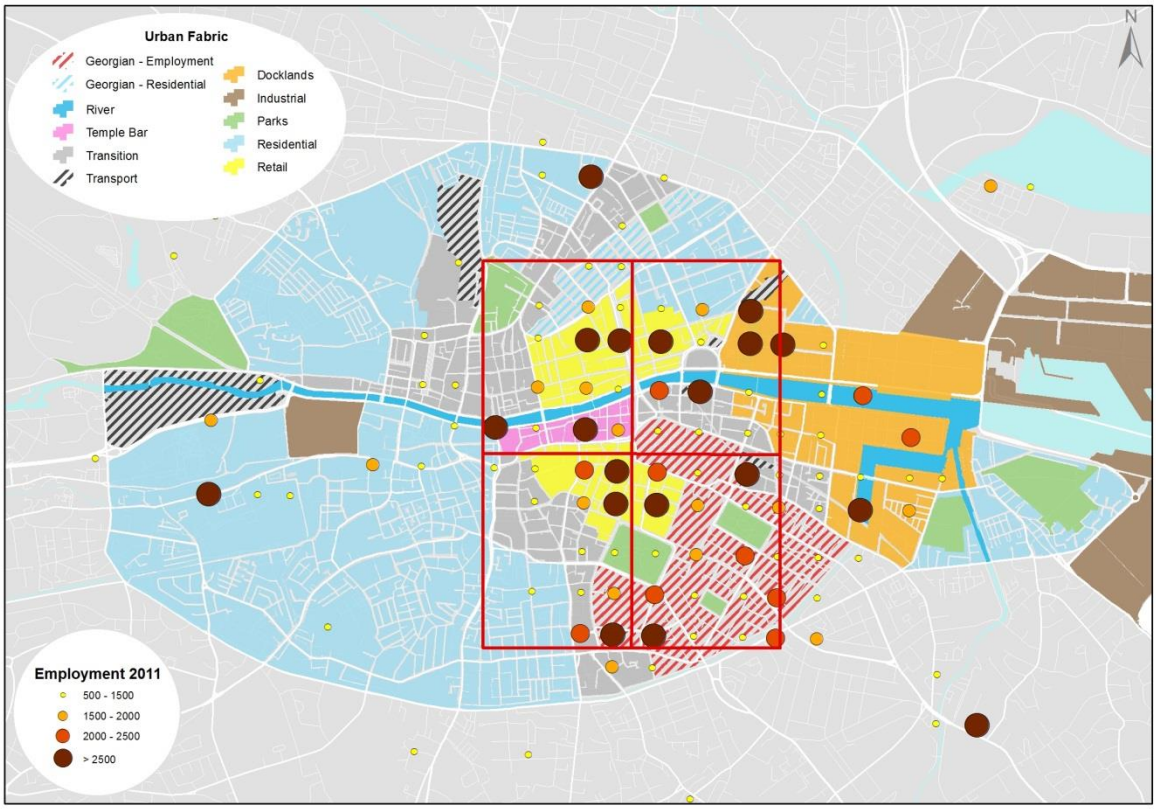
2.2 Existing Land Use Context

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, as illustrated in Figure 2.1. For analysis purposes, this Study focussed on the eastern side of the City Centre, which has the highest concentration of employment, retail, cultural and entertainment destinations. This area – defined as the "Core City Centre" – was further broken down 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



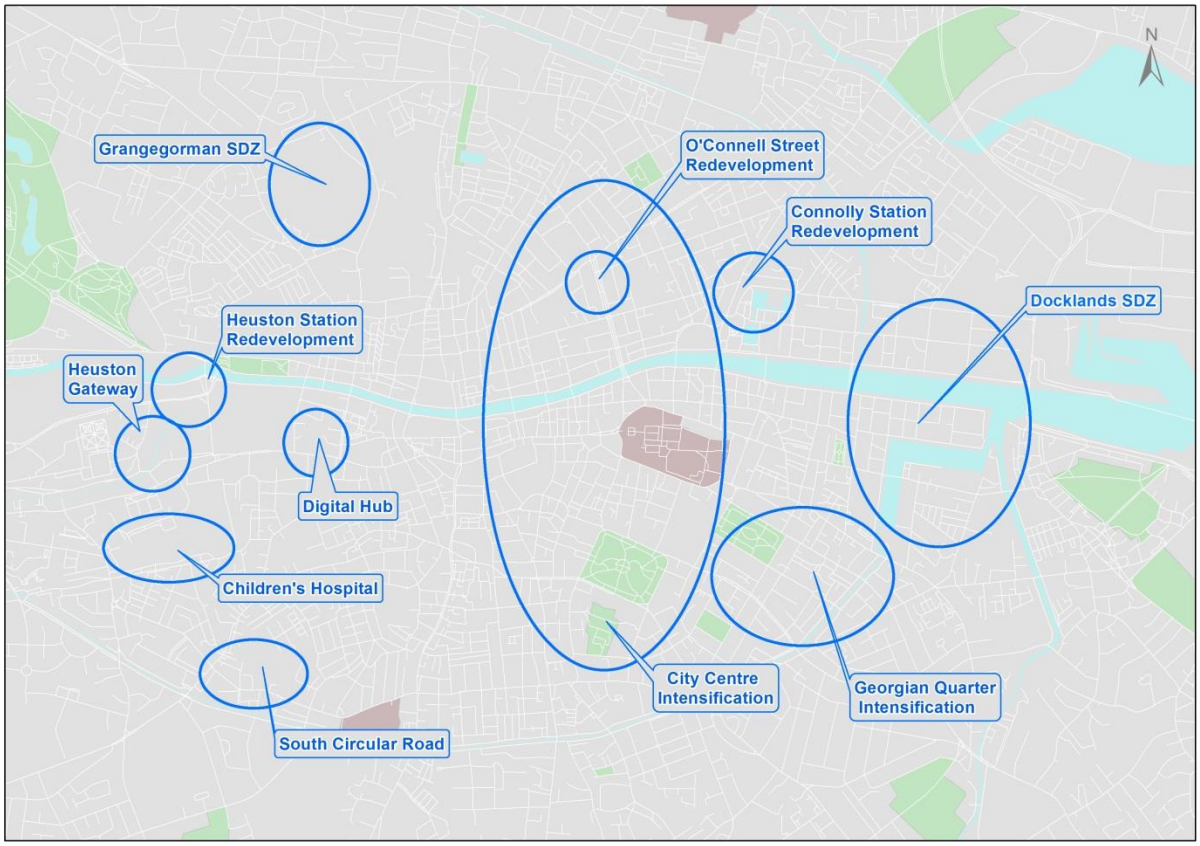
2.3 Growth in Dublin

A critical aspect of this Study is to ensure that Dublin City is future-proofed for its anticipated growth. The Dublin City 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, as well as maintaining links from existing suburbs, will be vital for Dublin to continue to expand as Ireland's primary urban centre.

2.3.1 Growth within the Canals

It is projected that population and employment will grow 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

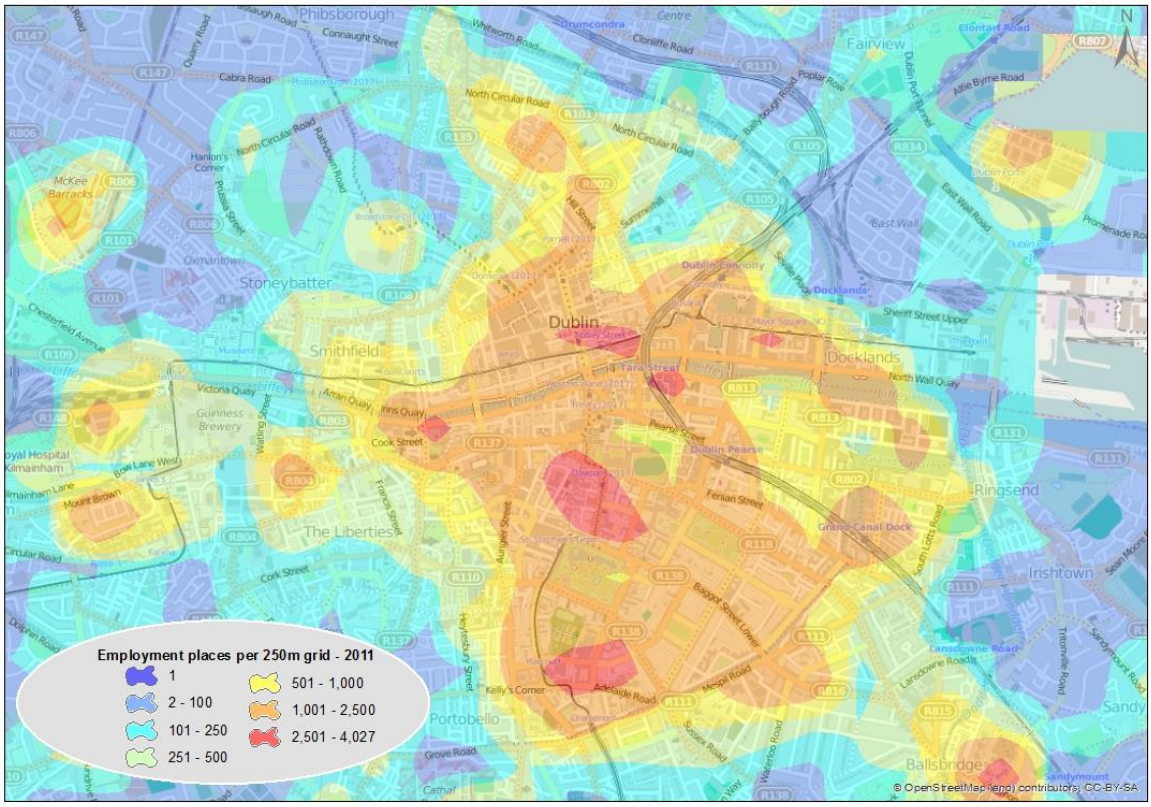


2.3.2 Concentration of Employment in the City Centre

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, but with more of an emphasis on Docklands, as the Strategic Development Zone is built out.

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



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 2015. 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 2015

Mode	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bus	1,680	1,740	1,814	1,704	1,688	1,539	1,503	1,539	1,504	1,528
All Public Transport	**1,680**	**1,740**	**1,814**	**1,704**	**1,688**	**1,539**	**1,503**	**1,539**	**1,504**	**1,528**
Car	58,664	58,686	58,897	58,232	58,047	55,745	55,343	54,458	53,033	53,064
Taxi	3,825	4,583	5,079	4,980	4,809	4,862	5,277	5,458	4,955	4,699
Walk	17,114	18,594	18,360	14,618	15,092	14,551	17,070	17,495	19,711	18,727
Cycle	4,839	5,676	6,143	6,326	5,952	6,870	7,943	9,061	10,349	10,893
Goods	2,291	1,445	1,223	1,087	993	1,176	1,099	1,045	1,087	1,082
Motor Cycle	2,395	2,429	2,375	2,060	1,656	1,485	1,425	1,423	1,372	1,390
Total	**90,808**	**93,153**	**93,891**	**89,007**	**88,237**	**86,228**	**89,660**	**90,479**	**92,011**	**91,383**

Table 2.2: Person Trips by Mode Crossing Canal Cordon - 2006 to 2015

Means of Travel	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bus	59,874	57,201	60,438	56,168	50,420	54,251	52,007	56,177	56,671	57,584
Rail	33,534	35,692	32,324	25,723	23,580	22,932	23,999	24,969	24,866	29,521
LUAS	9,029	9,171	9,242	8,776	9,111	9,949	10,014	10,835	11,670	12,503
All Public Transport	**102,437**	**102,064**	**102,004**	**90,667**	**83,111**	**87,132**	**86,047**	**91,981**	**93,207**	**99,608**
Car	76,850	71,597	67,732	71,043	71,978	69,681	68,626	68,072	64,169	65,269
Taxi	1,453	2,154	1,930	2,739	2,260	2,674	3,271	3,111	2,775	2,960
Walk	17,114	18,594	18,360	14,618	15,092	14,551	17,070	17,495	19,711	18,727
Cycle	4,839	5,676	6,143	6,326	5,952	6,870	7,943	9,061	10,349	10,893
Goods	2,291	1,445	1,223	1,087	993	1,176	1,099	1,045	1,087	1096
Motorcycles	2,395	2,429	2,375	2,060	1,656	1,485	1,425	1,423	1,372	1,390
Total Person Trips	**207,379**	**203,959**	**199,767**	**188,540**	**181,042**	**183,569**	**185,481**	**192,188**	**192,670**	**199,943**

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 2015 the total number of person trips is now back to 2008 levels but with significantly increased cycling and Luas numbers. 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 the heavy rail network. It is also clear that the use of rail to access the city centre has risen steadily again since its low point in 2011 and now stands at 29,500 trips in 2015.

In 2006 less than 5,000 people travelled into the city centre by bike, only 2.3% of total trips that year; however by 2015 this figure has more than doubled to almost 10,900 journeys or 5.4% of total

trips – an increase of 125%. The key entry routes into the city by bike are Rathmines Road, Newcomen Bridge, Harolds Cross Bridge, Drumcondra Road and Leeson Street Bridge. By way of example, it is worth noting that in the AM peak, only 100 more trips are made by car than by bike along Rathmines Road - 1333 by car; 1215 by bike.

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 fell consistently from 77,000 in 2006 to 64,000 in 2014 or a 17% decrease. There has been a slight increase in persons travelling by car in 2015 up to 65,000. 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.

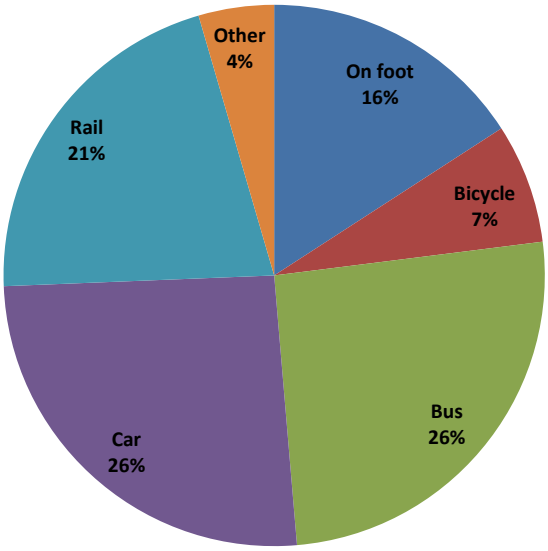
The overall mode share for car is now 33%, while 50% of people now travel into the city centre by public transport and 15% walking or cycling. This trend is explored in more detail in the next section.

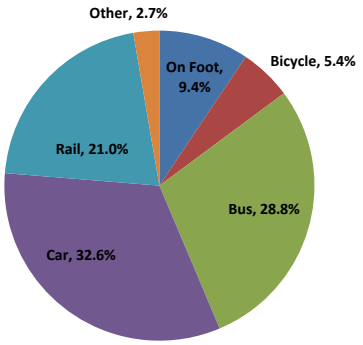
2.4.2 Travelling to Work in the City Centre

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's Core City Centre, as defined in section 2.2. 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 2.4: **Mode Split for People Working in Dublin Core City Centre**





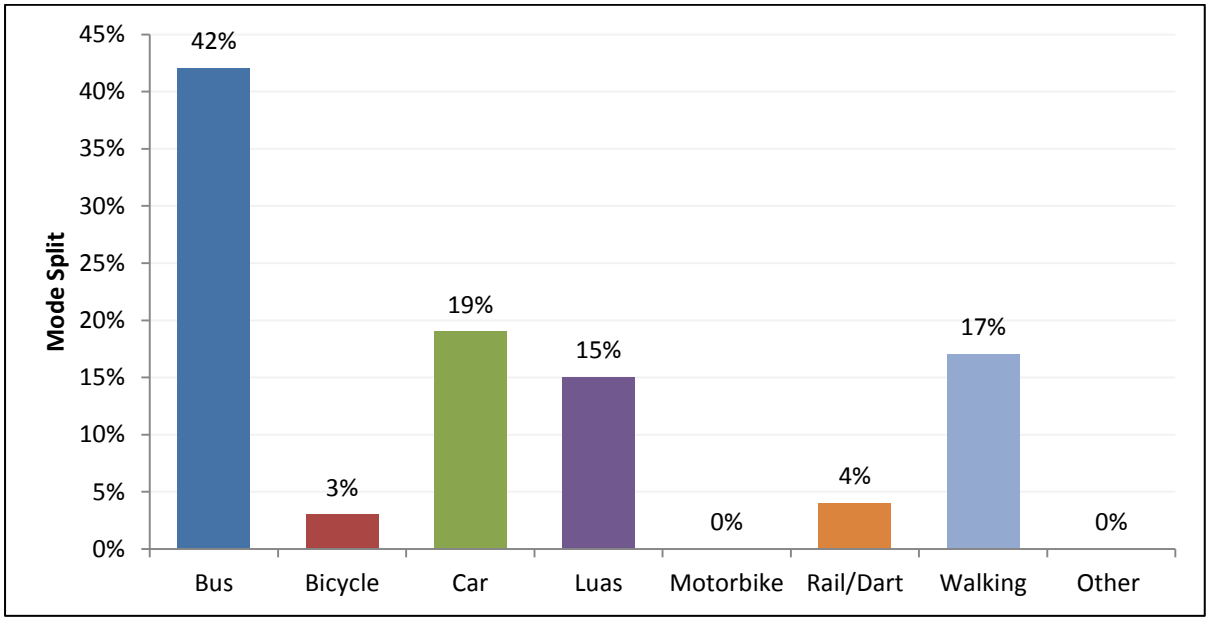
Comparison of People Crossing Canal Cordon 2015

2.4.3 Travelling to Shop 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 who were interviewed on Grafton Street and Henry Street 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. In terms of economic contribution to the city, car based shopping accounted for just over €1 in every €4 of retail spend, while public transport users accounted for more than double this amount.

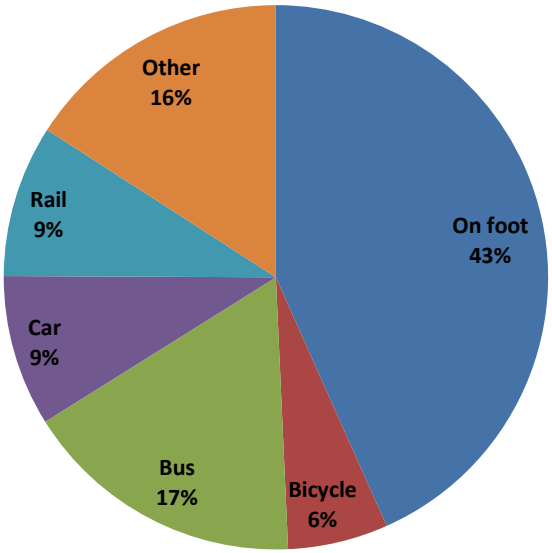
Figure 2.5: **Mode of Transport Used by Shoppers in the City Centre**

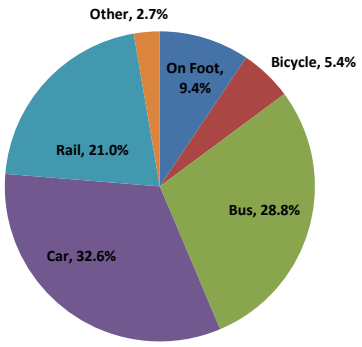


2.4.4 Living in the City Centre

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 2015

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 various measures and policies set out in the Transport Strategy for the Greater Dublin Area, 2016-2035.

It is expected that the proposals and objectives set out in the City Centre Transport Study will be considered for incorporation into the Dublin City Development Plan 2016-2022.

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 Draft Dublin City Development Plan 2016-2022

Following on from previous development plans and from statutory guidance, the strategic approach to transport in the Draft City Development Plan is based on the following principles:

- In accordance with the NTA Transport Strategy, a hierarchy of transport users is supported, with pedestrians, cyclists and public transport users at the top of this hierarchy, having their needs considered first in the planning of transport provision;
- Placing a stronger emphasis on sustainable forms of transport such as walking, cycling and public transport, particularly for short trips and journeys to work and school;
- Taking a pro-active approach to influencing travel behaviour and effective traffic management;
- Cycling is a healthy and environmentally friendly mode of transport, which can improve the health and wellbeing of citizens;
- Walking is a healthy and sustainable form of transport that can improve levels of health in the community, provide activity and vibrancy on the street and in public spaces and also reduce road traffic volumes;
- Prioritising transport and movement schemes, particularly those that increase the use of public transport, walking and cycling, that can be implemented in the short term, bearing in mind that major schemes take longer to deliver and will not by themselves provide the capacity to achieve transport targets;
- Restricting through traffic and calming traffic generally within the city centre, and to give increased levels of priority for pedestrians, cyclists and public transport, along with associated improvements to public realm;
- Underpinning all transport and movement measures with an integrated approach to land-use and transportation that promotes intensification in accessible areas;
- Achieving a reduction in pollution and greenhouse gas generation, so helping to mitigate climate change;
- Tackling these issues holistically so as to facilitate continued economic activity while reducing vehicular congestion and improving air quality, so having a positive impact on health; and

- Promoting a Green Dublin City as a green city is a healthy city.

The above principles are consistent with those set out in the existing development plan and the NTA Transport Strategy.

2.5.3 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.

2.5.4 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.

2.5.5 Transport Strategy for the Greater Dublin Area 2016-2035

The Transport Strategy for the Greater Dublin Area, 2016-2035 has been prepared and published by the National Transport Authority in accordance with Section 12 of the Dublin Transport Authority Act, 2008. It sets out how transport will be developed across the region, covering Dublin, Meath, Wicklow and Kildare, over the period of the strategy and has been approved by the Minister for Transport, Tourism and Sport in accordance with the relevant legislation. Under the relevant legislation development plans and local area plans across the region are required to be consistent with the Transport Strategy.

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 existing and Draft Dublin City Development Plans 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 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 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 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, with the numbers crossing the canal doubling over the past decade to just under 12,000, and approximately 13,000 trips being made on an average weekday on dublinbikes. 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 on-going 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.

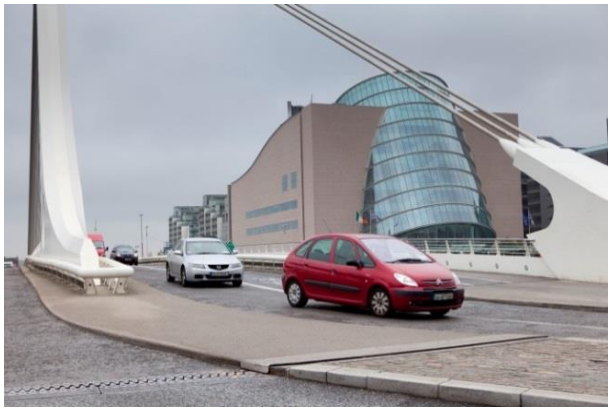
The introduction of new transport options into the city centre will significantly alter the current configuration and capacity of the modes currently using the streets of the city centre. Accordingly, it is important that the bus and private car networks within the core city centre are reconfigured to 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;
- That journey time information and route guidance should be provided via web and mobile devices, and this data should be 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 need to 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;
    - The location of a Freight Consolidation Centre for distribution within the City Centre and beyond; and
    - Develop pilot projects run in association with established logistics companies to investigate alternative delivery methods.

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 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;
- Any new transport proposals will comply with DCC's Road Safety Plan 2013 – 2020 and meet the approval of DCC's Road Safety Strategy Working Together Group; 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 on-going 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 the operation of existing transport networks 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 developed. 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 is aligned with the NTA Transport Strategy.
- 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 Transport Strategy.
- Real Time Passenger Information displays will continue to be rolled out at key transport stops and Interchange points.
- Continued substantial use and investment in Intelligent Transport Systems.
- 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.
- 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 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 be required. These interventions are critical, 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 live in the City Centre, and there is a strong desire to ensure that Dublin continues to enhance its attractiveness as a place to live, where the negative impacts of traffic are minimised.

With the return to economic growth, 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 levels continue to rise, 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 approximately 40,000 additional journeys each morning, an increase of almost 20%. It is not possible to cater for this increase by 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 frequent 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 Ha'penny 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 guiding transport policy in the Dublin region has moved away from the traditional approach, which was to increase road capacity in order to cater for increased levels of private car traffic. Instead the approach has been to prioritise public transport, walking and cycling. The basis for this policy is recognition that it is unrealistic and unsustainable to accommodate growth in travel demand across the region through car based movement. Growth must therefore 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;
- Alterations to certain streets to focus on public transport/cycling/pedestrian provision 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 Sandwith 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 Focussed Links

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 Gate. Its introduction provided significant benefits to buses in terms of journey times and reliability. 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.

To make bus transport more reliable and, therefore, more attractive to users, similar type measures are required on certain key public transport routes. Accordingly, this Study proposes the introduction of a number of other similar public transport focused links within the City Centre. These will include the following:

- Eden Quay Bus Only Link – the introduction of a public transport only link along Eden Quay at O'Connell Bridge, removing this link as a route for through car traffic along the north quays and emphasising the orbital routing for city access;
- South Quays Bus Lanes – the reduction of car traffic travelling through the City Centre along the south quays and the provision of double bus lanes along the south quays from George's Quay to Wood Quay;
- Grafton Street Lower – the provision of two-way public transport movement (Luas, Bus and taxi) on Grafton Street Lower, linking Naasau Street and College Green;
- Parliament Street – Conversion of Parliament Street to two-way bus use;
- Winetavern Street – Introduction of bus priority measures, potentially in both directions; and
- Public transport interchanges at Westmoreland Street/D'Olier Street.

Each of these 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 (prior to Luas Cross-City construction works) 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 in combination with bus network requirements and the need to improve cycling and pedestrian facilities, mean that it will be necessary to remove the right-turn for buses from College Green southbound onto Dame Street, as well as buses travelling to Westmoreland Street from Dame Street. As such, and in the absence of general traffic due to the existing bus gate, the requirement for any road space at this point no longer exists. It is therefore proposed to build a new major public plaza running from the shared Luas and bus carriageway outside Trinity College as far west as the junction of College Green and Church Lane. 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.

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 and 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-story 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 Multi-Storey Car Parks

To a certain extent, the arrangement of the traffic network in Dublin City has been constrained by the presence of certain multi-storey 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 needs 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 which will affect access to city centre car parks. While access to all of the existing multi-storey car parks will be maintained, the proposals set out in this Study will require some modifications to those access arrangements.

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 public 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. This will allow motorists to predetermine the access arrangements to specific car parks and reduce the need to facilitate access routes through the core central area. Indicative access arrangements to multi-storey City Centre car parks is shown in the Appendix 2. These access arrangements do not indicate all potential access routes and are instead intended to show key routes which could be signed as part of an overall car park access signing programme referred to below. 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, including electronic variable message signs, 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 into Public Transport Streets at set times only;
- Noise management for city centre loading activity; and
- Move towards a vision of a CO^2 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 cordon 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 120 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 14 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 predictability 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;
- To further optimise the routing of the bus corridors through the City Centre area, improving interchange arrangements and optimising the efficiency of the service; and,
- To maintain reliable and frequent bus access into the primary employment, retail and entertainment destinations in the core city centre.

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:

- Rerouting of certain bus services that currently use both Dame Street and College Green to a new dedicated bus link on Parliament Street in order to facilitate a new plaza at College Green;
- Rerouting of some bus services that currently use the South Great Georges Street corridor onto Dawson Street/ Lower Grafton Street corridor;
- 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 will include Eden Quay on the north quays and Parliament Street;
- Provision of a double bus lane on the south quays along George's Quay, Burgh Quay, Aston Quay, Wellington Quay and Wood Quay through the conversion of an existing general traffic lane;
- Provision of a contra-flow bus lane on Capel Street Bridge;
- Provision of a right turn for buses on O'Connell Bridge, allowing buses travelling southbound on O'Connell Street to turn directly onto Aston Quay;
- Introduction of bus priority measures, potentially in both directions, on Winetavern Street and provision of a bus lane on Tara Street; 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. In addition, other ancillary and related bus priority measures may be required at other locations in the city centre such as adjacent to, and approaching, Bus Aras.

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 vehicle monitoring 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, thus facilitating on-going 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.

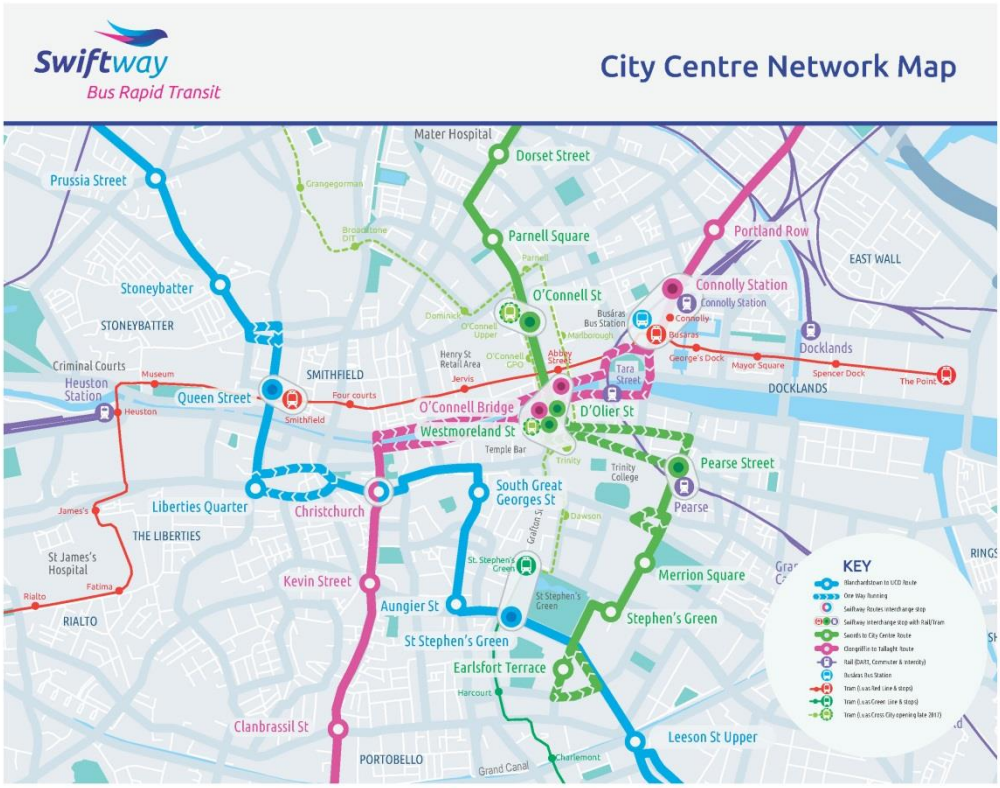
6.3.2 Development of Bus Rapid Transit (BRT)

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, based on the principle that buses will continue to serve the core city centre destinations.

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 Termini and Layover

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. In general, it is intended that the remaining core radial bus routes will be operated on a cross city basis, eliminating entirely 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. There may be a need to retain a small number of terminating services in the City Centre, for instance, to allow continued use of certain east / west services on Dame Street following the introduction of the plaza at College Green.

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 2015 Canal Cordon survey, 14.8% of the trips each morning are by train (DART/Commuter) while 6.3% 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 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 as a fast, convenient connection between the north and south city, in particular between the retail centres on both sides of the River Liffey at Henry Street and Grafton Street.

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, while also delivering on objectives for other modes.

Most of the required changes are dealt with in other sections of this Study. They include the removal of traffic to / from Dame Street 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 significantly 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 during weekdays.

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 / Busáras 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 facilitate 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, as set out in the NTA Transport Strategy. 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 2015 Canal Cordon Count referred to in Chapter 2.

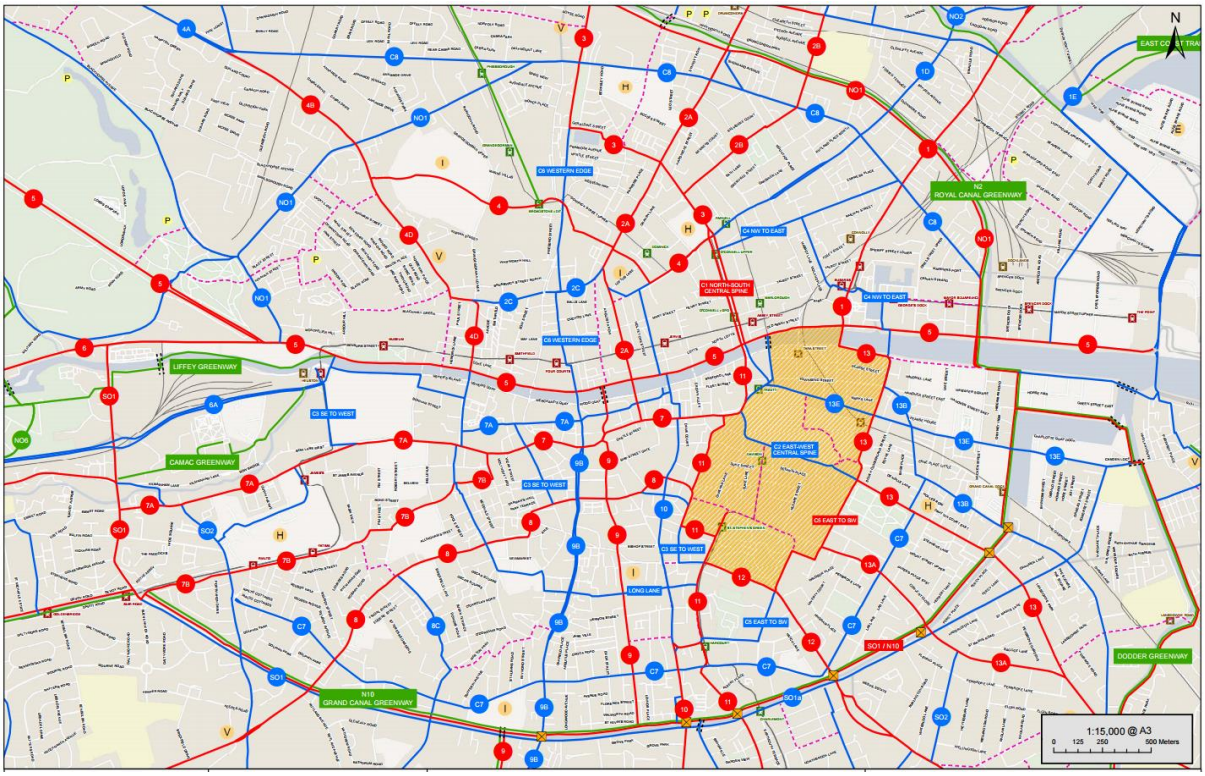
The core cycle network will provide high quality cycle facilities. It is intended that many of the key cycling routes will be developed as segregated facilities, with cyclists separated from vehicular traffic through the use of kerb separators or by having the cycleway at a higher level than the road 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

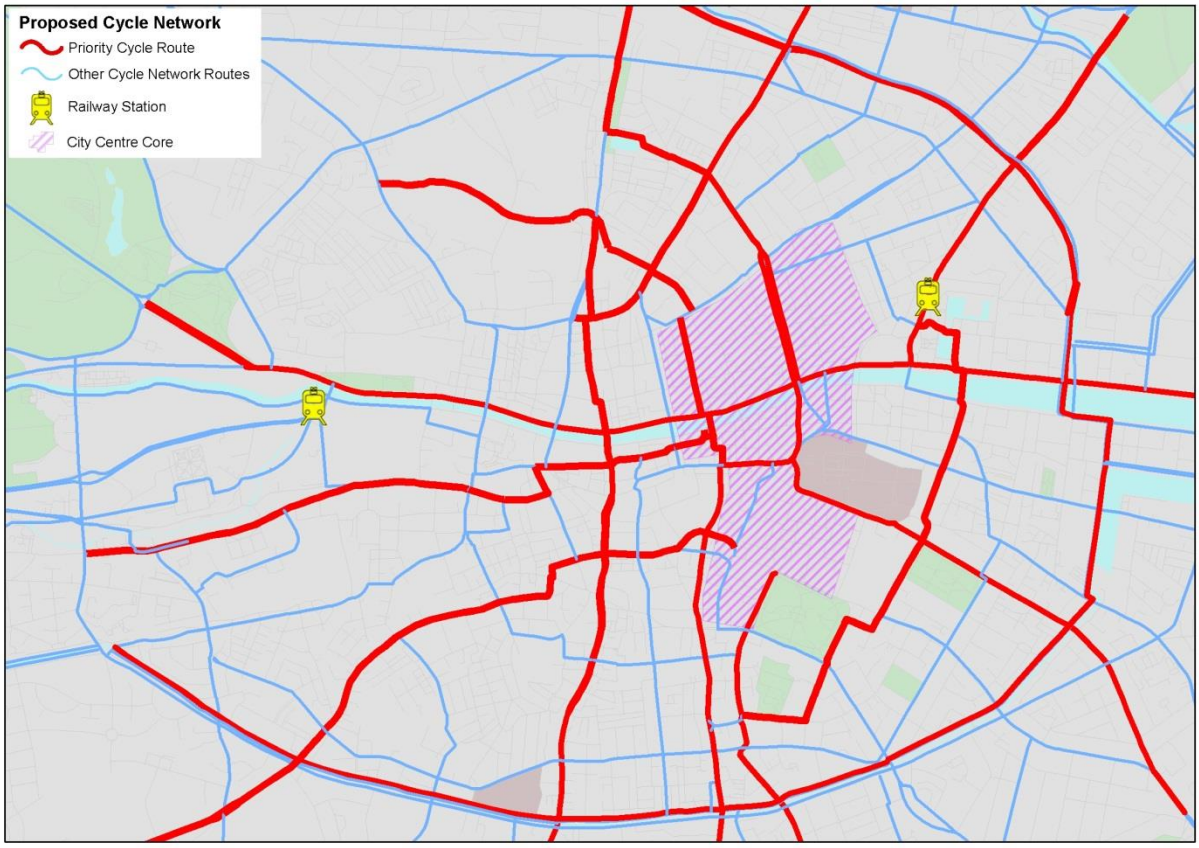


8.3 Key Changes

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 car park 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 amenities and attractions of the City Centre. The pedestrian environment also caters for the heavy flows of commuters moving to and from work every day. The growth in population and economic activity, and the associated much-enhanced 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 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.

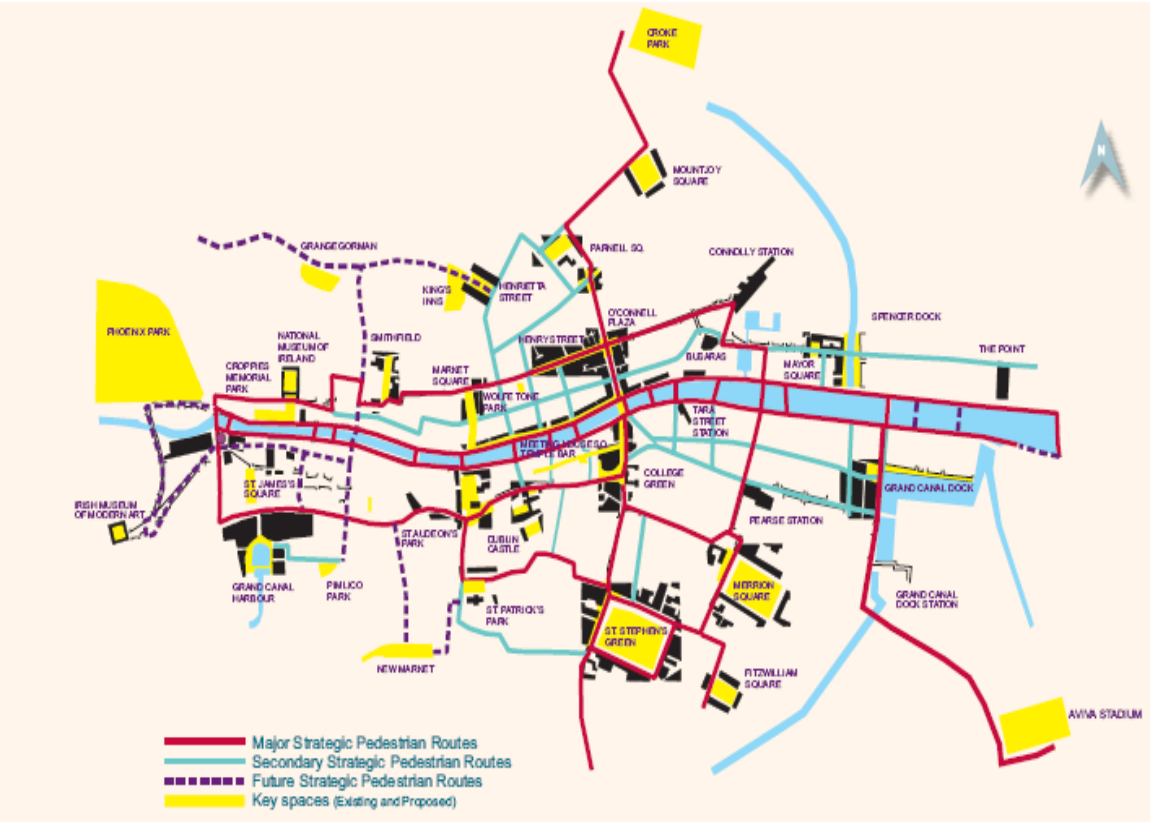
9.2 Proposals

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.

9.3.3 Proposed College Green Plaza

The development of the Luas Cross City project has necessitated a renewed focus on traffic and junction arrangements along its route. At College Green, those revised arrangements, reflecting the reduced road capacity following the commencement of Luas operations, will enable the creation of a new civic plaza, framed by Trinity College to the east, the Bank of Ireland to the north and a row of protected structures which form part of the Grafton Street Architectural Conservation Area, to the south. Following the introduction of Luas Cross City, there will be one shared tram and bus lane in each direction running north-south outside Trinity. From there west as far as Church Lane will be the plaza. Cyclists will be provided with dedicated lanes though the plaza to connect with segregated

facilities on Dame Street and Westmoreland Street. This will be a radical change which will deliver one of the most important urban planning schemes in Dublin's recent history.

As well as delivering a focal space for the City Centre, the new plaza will provide a continuous pedestrian link, extending from the south quays to St. Stephen's Green, eliminating a significant severance barrier to north-south pedestrian movement. It will further strengthen the connection between the key shopping districts to the north and south of the City Centre.

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

1 College Green
A new pedestrianised public plaza. Facilitating east-west movement of cyclists, and north-south movement of Luas, buses, and taxis.

2 Grafton Street Lower
Two-way traffic for Luas, buses and taxis. No private vehicular traffic.

3 Suffolk Street and St. Stephen's Green
To be pedestrianised, extending the existing Grafton Street pedestrianised area.

4 Westmoreland Street
Widened footpaths, Luas, cycle lanes, bus/BRT lanes and general traffic.

5 D'Olier Street
Wide central median to provide additional bus stops to ease congestion. Cycle lanes, bus/BRT lanes and general traffic.

6 Parliament Street – Dame Street – South Great George's Street
A key bus link will be created. Parliament Street to become a two-way public transport only street with a contraflow bus lane on Capel Street Bridge.

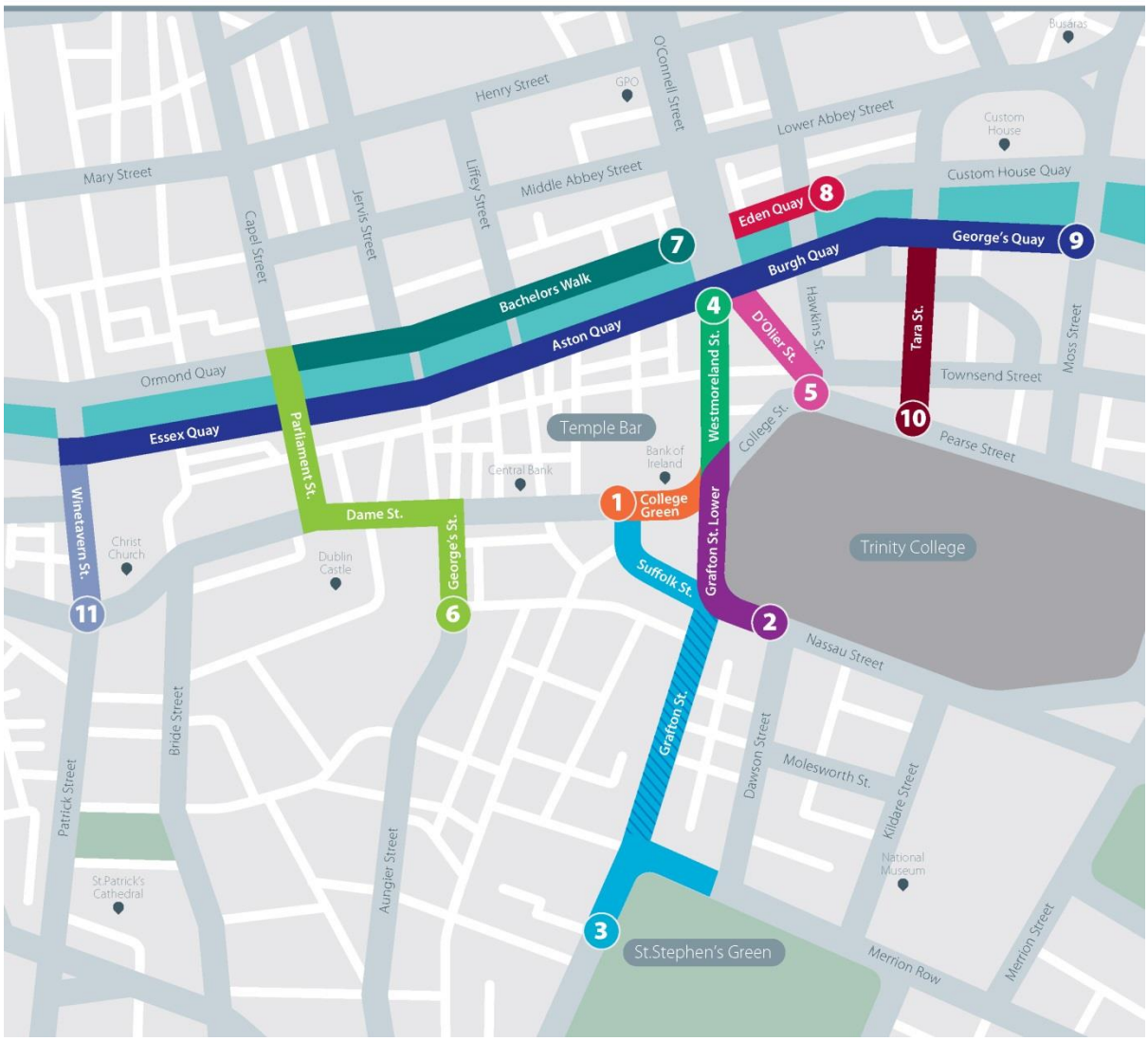
7 North Quays – Bachelors Walk
Additional bus lane and bus stops. Left turn only for private vehicular traffic at O'Connell Street junction, facilitating car park access.

8 Eden Quay
Only Buses, Taxis, Cyclists and Pedestrians. No private vehicular traffic. Arrangements for deliveries and local access will be provided.

9 South Quays (George's Quay to Essex Quay)
Additional bus lane and bus stops.

10 Tara Street
New bus lane connecting into Burgh Quay bus lane.

11 Winetavern Street
Southbound contra-flow bus lane.



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 Street 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 creation of a plaza removing all private cars and taxis from the section of College Green adjoining Dame Street. Trams and buses will run northwards and southwards along Grafton Street Lower and through College Green, connecting to Westmoreland Street and College Street, and sharing the same road / track space. Taxis will be able to use the same corridor in both directions. These changes will improve the social and commercial opportunities, enhance the public realm, and better facilitate public transport movement. In addition, the proposed arrangements will remove potential traffic conflicts and will provide safe movement for all road users at this location, including, in particular, pedestrians and cyclists.

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 seamlessly between Grafton Street and the Quays without needing to wait and traverse through signalised road crossings.

The introduction of the proposed transport changes will allow people to appreciate 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. This proposal will recognise College Green's historic and architectural importance, and by creating a public plaza, will provide a major focal point for the city, intersecting Dublin's Civic Spine – the route running from Parnell

Square to Christchurch Place, which incorporates some the most important historic sites in the country, such as the G.P.O. and Dublin Castle.

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 College Green plaza 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 buses, 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 plaza in College Green, and the reconfiguration of Eden Quay 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 narrow 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 reallocation 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 the tourist centre on Suffolk Street, and extending through Temple Bar to the River Liffey.

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 north-western 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 The North Quays – Bachelors Walk / Eden Quay / Custom House Quay

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 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 the end of 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. As it is proposed to provide this as a segregated two-way cycle track along the entire length of the river in the City Centre, this will impact upon the current road layout on Bachelors Walk, requiring a reallocation of road space.

It is proposed that left turning general traffic will be allowed to access Bachelors Walk as far as O'Connell Bridge. This will facilitate access to car parks and deliveries into the O'Connell Street, Henry Street and Abbey Street areas. It is also intended to remove general vehicular traffic from Eden Quay at O'Connell Bridge and to reconfigure Eden Quay as far as Marlborough Street as a public transport, cycling and pedestrian only link. Eden Quay is likely to consist of two eastbound bus lanes (one for buses stopping) on the north side of the road and a taxi rank on the river side. The right turn from Bachelors Walk onto O'Connell Bridge will be removed. This will remove through traffic from the area, and encourage traffic onto the orbital routes for access to the city centre. It will also have the ancillary effect of reducing traffic on Bachelors Walk, with only cars wishing to turn left onto O'Connell Street remaining on this section. Buses will be able to make right turns at the recently constructed Rosie Hackett Bridge.

The removal of significant levels of through general traffic from sections of the north quays, together with corresponding changes on the south quays, set out below, will allow a more integrated central city area to develop, with a greater level of connection between areas north and south of the river.

10.2.8 South Quays – Georges Quay to Essex Quay

Similar to issues highlighted on the North Quays, the South Quays experience a similar degree of traffic congestion, which impedes the westerly movement of vehicular traffic, public transport and cyclists. This vehicular movement along the South 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 north quays changes – it would concentrate the issue more acutely on the Aston Quay / Westmoreland Street junction.

The south quays represent a critical artery for bus movement, with city bus services, regional bus services and Inter-city bus services all active along this corridor. While a bus lane has been provided

along sections of the south quays, the lack of bus lay-by space has meant that the existing bus lane is used for stopping vehicles which impede following vehicles. This is particularly true in the case of coaches which have longer loading and unloading times than buses. There is a clear need for additional bus space provision along the south quays to address the delays and deficiencies that currently exist.

Critically, the need to cater for Luas Cross City, provide increased priority for bus and BRT movement, and the requirement 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 enhance the provision for bus along the quays by providing for an additional bus lane along Georges Quay, Burgh Quay, Aston Quay and Wellington Quay. This will facilitate the provision of additional bus stopping points, and the overtaking of stopping buses. One lane of general traffic will be retained along this length of the south quays, which will limit the level of westbound through traffic while facilitating access for retail and commercial premises.

These changes will dramatically improve public transport provision on the south quays, allowing faster and more reliable bus journeys along this corridor. They will also enable footpaths to be widened, better crossing arrangements to be introduced, reduce traffic noise and air pollution, and allow the overall public realm to be improved.

Taken together with the proposed changes on the north quays, 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.

10.2.9 Parliament Street – Dame Street- Georges Street Bus Corridor

To facilitate the operational requirements of north – south public transport, in particular Luas Cross City, and to provide Dublin with a new premium civic space, the Dame Street section of College Green will be closed to all through traffic, including buses. This corridor is currently an important link for buses, and as such this link will be replaced by providing a new routing from the Quays to South Great Georges Street via Parliament Street.

Parliament Street will become a two-way public transport / access only street with a contraflow northbound bus lane on Capel Street Bridge to allow buses to travel northwards on Parliament Street, cross this bridge and turn right onto Ormond Quay towards Bachelors Walk.

Buses that currently travel northwards along South Great Georges Street and continue through College Green will instead turn left onto Dame Street before using Parliament Street to access the north quays. With the reduced traffic and enhanced bus provision on the north quays, this will provide a fast and reliable bus route through the City Centre.

In the southbound direction, buses and taxis that previously went through College Green will use the south quays and Parliament Street to access the South Great Georges Street corridor.

10.2.10 Winetavern Street – Bus Contraflow Lane

In addition to the rearrangement at Parliament Street to facilitate better north-south public transport movement, additional bus priority provision will be introduced on Winetavern Street. This will include the introduction of a contra-flow bus lane which will allow buses to travel directly from the Quays to Clanbrassil Street, providing a new, fast connection for buses travelling to the south west of the city, as well as providing another routing alternative for bus services currently using the Dame Street corridor.

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/Busáras*

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 Busáras Intercity and Commuter bus station all located at this focal point.

Connolly Station and Busáras 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.

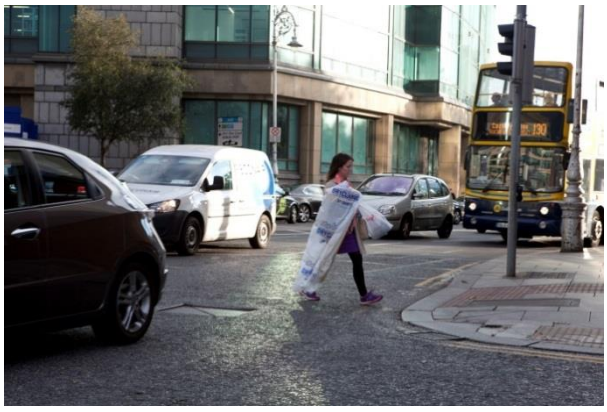
Amiens Street in the vicinity of Connolly Station and Busáras is a busy thoroughfare for traffic from the north east of the city, as well as backing onto the major employment centre of the IFSC. Amiens Street has narrow footpaths, and the limited road space has primarily been given over to catering for 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 Busáras, 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 Amiens Street or Gardiner Street. This one-way gyratory is prone to congestion every day, particularly 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 Busáras is complicated due to the one-way nature of the street layout. Coaches are obliged to circle Busáras in order to enter the station, and then circle it again on departure. In addition, the access and egress points from Busáras 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 Busáras / 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 Busáras. This would have the added advantage of allowing Connolly passengers to move directly into Busáras 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, particularly with regard to the function of Busáras, and to embrace the significant public realm opportunity of the Customs House/Beresford Place/Busáras.

10.3.1.2 *Westmoreland Street / D'Olier Street*

Westmoreland Street and D'Olier Street form an important interchange hub in the heart of the City Centre, with Luas, bus and BRT services all operating, or planned to operate, on these streets. With a large number of high frequency services stopping on these streets, they allow easy access into the central area and offer convenient and easy interchange between a large number of transport services. DART services are also easily accessed via the nearby Tara Street DART station, with taxi ranks and cycle facilities nearby.

Accordingly it is intended that the linked streets of Westmoreland Street and D'Olier Street will be a focus for transport interchange. As outlined earlier, the pedestrian environment of these streets is intended to be significantly enhanced. As part of that enhancement improved interchange facilities such as well-designed transport stops incorporating high-quality information facilities, will be provided. As part of the development of the enhanced pedestrian environment and transport stop layouts, consideration will be given to the provision of carefully designed passenger shelters, which are sympathetic to, and in keeping with, the overall street environment.

10.3.1.3 *Heuston Station*

Dublin City Council has designated the Heuston Station Area and its Environs as a Strategic Development and Regeneration Area (SDRA) in the recent draft Dublin City Development Plan 2016-2022, building on the previous Local Area Plan developed for the area.

One of the guiding principles of the SDRA is to develop a new urban gateway character area focused on the transport node of Heuston Station. It is intended that is will involve the development of new public transport interchange facilities, with the aim of creating a new vibrant economic quarter which can become a new destination within the city in which to live, work and socialise. It is intended that this will encompass a new public realm with a high standard of architectural design.

The provision of a car parking facility and public transport interchange at this edge of centre location will offer the potential for private car traffic to avoid the core 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.

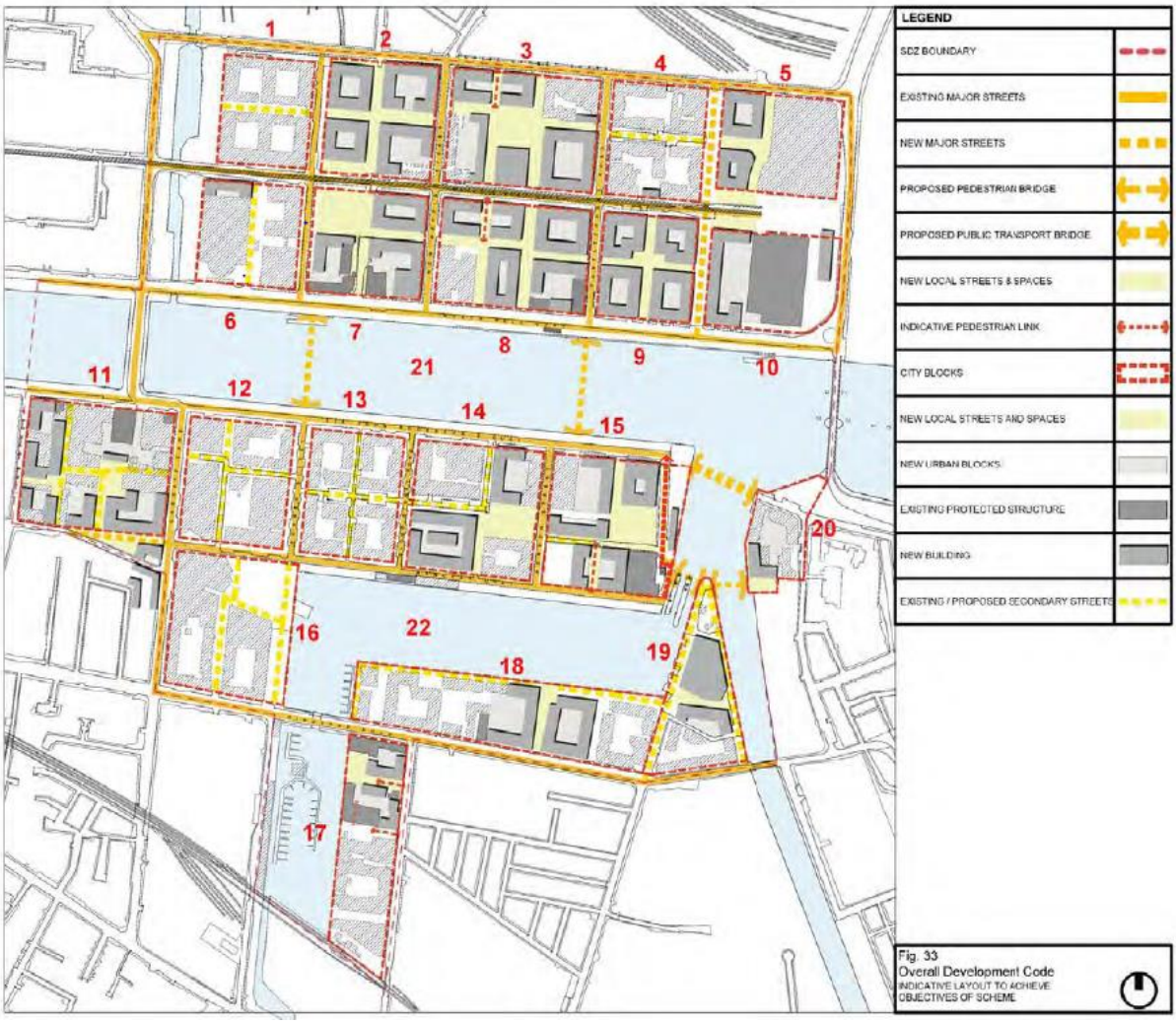
In March 2015 a non-statutory public consultation process for four design options for the Liffey Cycle Route was carried out. There was overwhelming backing for a segregated two way cycle track along the river side of the northern quays, with 73% of the submissions supporting such a proposal. It is proposed 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.

10.4.3 Dockland Bridges

An Bord Pleanala 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 10.7.

Figure 10.7: 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.

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; and
- Dame Street.

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 Transport Integration

A significant outcome of the implementation of this study's proposal, as well as the wider roll out of the proposal set out in the GDA Transport Strategy, is the ability to deliver integrated transport options. Although the study sets out the physical interventions, a key element of their implementation will be the reorientation and utilisation of the public transport network, which will provide considerably improved travel options for passengers.

The revised city centre transport infrastructure will facilitate an efficient, integrated and appropriate network of transport services capable of catering for user demand, and able to make use of new ticketing and passenger information technologies. Specifically, the study will promote the use of 'Smarter Mobility' within the city centre to facilitate the delivery of:

- Appropriate public transport access across the city, and linking into the suburbs and commuter towns by increasing opportunities to transfer between modes and services;
- Fast and convenient interchange facilities for transfer between services and modes (e.g. from bus to Luas);
- Reliable and predictable journey times;
- A more legible transport network for all users, locals and visitors;
- A simplified and integrated fare structure, which enables easy transfer between services without unnecessary penalty; and
- An easy-to-use cashless payment system for public transport trips and other services, such as car parking, which will enable multi modal trips within the city centre.

It is envisaged that as the physical elements of the study are implemented, the role and usage of the transport network within the city centre will evolve. There will be a better integration between transport modes, allowing users to easily switch between modes to complete their journey, facilitated by an integrated and transferable charging system, and better transport user information to ease the movement of people entering and moving through the city centre by all modes. These elements are set out below in more detail.

11.1 Integrated Traffic Management

In order to facilitate the movement of significantly more people into and within the city centre over the next decade, it is vital that the use of road space is carefully managed, and that the movement of public transport, particularly buses is organised to minimise congestion on key arterial routes into and through the city centre. It is intended that Intelligent Transport Systems (ITS) will be integral to ensuring the appropriate management of transport in Dublin City and continued investment will be made in the area of smart transport technology.

11.1.1 Vehicular Traffic Management

Dublin City Council's Urban Traffic Management Centre (UTMC) is critical to the organisation and management of vehicular traffic across the city, and will continue to function as the central control of all traffic, public and private vehicles moving with the central areas. Linked to this, it is envisaged that improved road traffic signage, including additional Variable Message Signage (VMS) will be introduced to improve driver information, particularly in relation to directing vehicles onto strategic and along strategic road corridors, and as a means of managing and improving access to city centre car parks. Also as technologies improve, it is intended that real time travel information will be communicated directly to in-vehicle sat navs, this will allow for pre-emptive traffic management.

11.1.2 Real Time Passenger Information

The introduction of Real Time Passenger Information (RTPI) on Dublin Bus and Bus Eireann networks, in addition to the provision already in existence on the Luas and Irish Rail network, saw a major improvement in the live information available to both passengers and operators.

With the RTPI technology it is possible for passengers to access up to date, real time information on buses, both from the RTPI poles at bus stops, as well as via mobile aps, such as the Transport for Ireland Journey Planner. It is intended that the roll out and usage of RTPI data will continue to evolve improving the usability and reliability of the bus services for passengers. Equally, the information gathered from the RTPI data, and associated AVL data will allow Dublin City Council, and the operators to continue to improve the reliability and scheduling of public transport services running through the city centre.

11.2 Integrated Transport Fares and Payment

The introduction of the Leap Card in 2011 offered public transport users an easy to use pre-paid public transport payment card. The Leap Card offers lower travel fares than cash, and can be used on all public transport modes. Building on the success of the Leap Card platform it is intended to further develop the integrated payment model, utilising new technologies as they mature, and ultimately transitioning to an account based system using mobile phones and / or other payment methods.

11.2.1 Integrated Transport Payment

By developing new technologies it will be possible to better integrate how people pay for their travel within the city. In this regard, it is intended to develop a mechanism whereby not only public transport fares are integrated, but also potentially car parking and toll charges. In this way it will be possible to incentivise different travel options, as well as discount for off peak travel, be it by car or public transport. By way of example, it is ambition of the study that it would be possible to use an edge of town car park, transfer to Luas or bus, and the overall cost would be combined, at a discounted rate.

11.2.2 Public Transport Fare Structure

To improve the legibility of the public transport network for residents and visitors, as well as facilitate easy interchange between public transport services, it is intended to move towards a zonal fare structure. This will allow passengers to travel to a destination within a designated zone, and within a certain time limit on the same fare. This ensures that interchange is not financially penalised with multi leg or multi modal trips possible, and also ensures that passengers are not required to pay twice for changing service.

12 Positive Outcomes for Dublin City

12.1 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.

12.2 Future Proofing the City

It is expected that Dublin City will maintain its primary role in Ireland's economy, 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 circa 40,000 additional trips into the city each day by 2023 when compared to 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.

12.3 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. Public Transport only links will be introduced on the north quays at Eden Quay, and at Parliament Street. An additional bus lane will be provided on the south quays. North-south movement through College Green will be dedicated to public transport, pedestrians and cyclists. 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.

12.4 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 in order 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.

12.5 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.

12.6 Improved Urban Realm, Civic Space and Ambience

12.6.1 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.

12.6.2 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.


12.7 Tourism, Commercial and Retail Benefits

12.7.1 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.

12.7.2 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 the new College Green Plaza 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 unified whole, rather than one severed by heavily trafficked streets and bridges. It will also raise the profile and attractiveness of the retail premises

along the central civic spine, facilitating, for example, the re-emergence of Westmoreland Street as a prime retail and commercial street.

APPENDIX 1 - Note on Public Consultation for City Centre Transport Study

Introduction

A draft of this report was placed on display between June and August 2015, and submissions were invited from members of the public. In total, 7,779 submissions were received. There was a high level of support for many of the proposals but also a significant number of issues and concerns raised, primarily in relation to the retail impact, car park access and taxi exclusions.

Since that consultation period ended, DCC and the NTA engaged in a series of individual meetings with various groups, stakeholders, businesses, hotels and interested parties in order to understand concerns raised and also in order to examine the specific issues raised in the submissions received. These issues can be summarised as follows:

- Strong support for cycling proposals;
- Concern over access to car parks and impact on retail;
- Concern over attractiveness of public transport as an alternative;
- Strong support for improvement to pedestrian facilities and for the College Green proposals;
- Opposition to full ban on taxis in College Green;
- Concern over access to hotels for taxis, coaches and private cars, access to their car parks and access for deliveries; and
- Concern over access for mobility, impaired and disabled people.

These are expanded on below, and the measures that are proposed to be taken to address them are set out after each summary.

Cycling

There was strong support for cycling initiatives particularly those which would make cycling a safer and more pleasant experience. Submissions were received from cycling groups and campaigns and operators. One submission included a petition signed by almost 1,600 cyclists stating “We support a pedestrian and cycling space in Dublin City Centre as outlined in the Transport Study ” along with individual comments.

The issues raised from the cycling groups broke down into the following broad sections:

1. Infrastructure;
2. Behaviour;
3. Bike share scheme;
4. Traffic Management Measures;
5. Maintenance of existing systems; and
6. Cycle safety.

Measures arising from this:

A number of schemes including Sutton to Sandycove and the Royal Canal Greenway are being progressed during 2016. Many of these schemes are segregated schemes, which should improve the safety for cyclists and pedestrians alike, and in all cases the proposed infrastructure will be of a high quality. Schemes are designed in accordance with the National Cycle Manual, the Design Manual for Roads and Streets and the GDA Cycle Network Plan.

A Walking and Cycling Officer has been appointed in Roads and Traffic Planning Section of DCC, who will engage with users in order to improve overall behaviour. Dublin Cycling Campaign, An Garda Siochana and DCC are developing a training programme for young cyclists.

A separate programme upgrading a number of existing pedestrian crossings to Toucan crossings is being rolled out across the city. Five sites were upgraded in 2015 and it is hoped that double this number will be upgraded in 2016. This programme of upgrade will ensure pedestrians and cyclists can cross the road in a safer manner without conflict.

Private Cars

There were concerns expressed on how commuters, shoppers and mobility impaired users will be affected by the proposed measures and how they will still be able to access the City Centre. The car park owners/operators were particularly concerned about reduced access to their facilities and stated that car-borne shoppers would be more likely to take their business to out of town shopping centres instead of driving into the city to shop. It was also felt that the report was anti-car and that the importance of the car mode for shopping and other activities was not reflected in the report.

The main issues raised from these groups broke down into the following broad sections:

1. Access to car parks;
2. Poor quality public transport;
3. Poor access to public transport;
4. High cost of public transport for families;
5. Local car access is needed for residents;
6. The impact of the proposed measures on the road network;
7. Access to disabled parking bays are necessary for car users;
8. A greater justification for the measures in the report is needed;
9. Proposals should take into account future transport projects, (new Luas lines, future BRT, Metro North etc.); and
10. Climate change considerations.

Measures arising from this:

DCC and the NTA held discussions with retailers and car park operators and undertook a review of the measures in the study based on the submissions received. Following this review a number of changes were made to the study proposals. In particular left turn access for general traffic from Bachelors Walk to O Connell Street will be retained, and the vehicular restrictions on the South Quays have been reviewed. It is now envisaged that there will be one continuous bus lane on the South Quays, with indented bus bays and one general traffic lane.

The orbital routes North and South of the city are to be strengthened, with appropriate signage and reconfiguration of junctions where necessary.

A car park guidance system which is currently in place consisting of both electronic and static signage will be enhanced and expanded. Information in relation to the car parks and route guidance for access will be further developed for mobile devices. A survey was carried out of the disabled car parking bays affected by the proposed measures. Any bays which are removed as a result of this measures will l be accommodated in close proximity.

Public Transport

There is strong support for improvements to public transport. Many commented that they would consider taking public transport instead of the car but are put off by the cost, uncompetitive journey times and lack of reliability. They considered that it is quicker and easier to travel by car.

Many issues were raised relating particularly to buses, including a need for more orbital routes; increased frequency; that buses should run through the night or run for longer and start earlier to reflect the shift-work people do; buses should be given greater priority at junctions; buses and cyclists should be separated as buses are being slowed by cyclists; and parents with buggies find they sometimes have to wait for a number of buses to pass before a bus has space.

The comments in this category can be broadly summarised into the following headings:

1. Make Public Transport more attractive, including: reduce fares, provide faster journey times, improve bus priority, increase the frequency of services, spread the bus network, have great access for families, extend the operating hours, segregate from cycle lanes and install additional on-street RTPI signs;
2. There were concerns about anti-social behaviour in the city centre; and
3. Location of bus stops

Measures arising from this

The NTA have a program underway to modernise and upgrade the bus fleet.

The NTA are in the process of strengthening the Core Bus Network, with design teams appointed to develop initial designs for all of the key radial bus routes into the City Centre. Luas Cross City will also

be operational towards the end of 2017. The existing bus services will be reconfigured to accommodate any changes which are implemented in the City Centre.

The NTA have rolled out integrated ticketing and are in an on-going process to migrate towards a more integrated fare system, facilitating easy interchange between services and modes.

A collaborative bus priority project, DPTIM, is underway in the city, between DCC, NTA and Dublin Bus, to improve bus priority at individual locations where delays to services is evident. A number of routes have been enhanced to date, reducing waiting times for PT users.

Pedestrians

There was strong support for improvement to pedestrian facilities and for the College Green proposals. Many pedestrians feel that pavement widths are too narrow for the volume of pedestrians in certain areas and that wider footways throughout the city centre are needed.

The main issues can be summarised as:

1. Increase footpath widths and general pedestrianised areas;
2. Increase pedestrian priority at traffic signals;
3. Reduce street clutter; and
4. Segregation from cyclists.

There was also comment on the perception that the proposals were more weighted to the south side of the city and that there were few improvements suggested for the north side of the city.

Measures arising from this:

Public Consultation is currently underway on the traffic management measures associated with the construction of a Plaza civic space at College Green.

It is a proposal of the Study that pedestrians will have priority at key locations and junctions

It is a proposal of the Study that wider footpaths will be constructed at key locations.

There are a number of segregated cycle schemes, including Sutton to Sandycove and the Royal Canal Greenway, which are being progressed during 2016 - these will segregate pedestrians from the cyclists.

Taxis and Limousines

Taxis operators highlight that they should be considered part of the public transport system.

The main comments raised relating to taxis was opposition to a ban of taxis through College Green. There was concern on how banning taxis from this area will affect tourists, elderly people and

business trips. Respondents commented that the College Green ban shouldn't be 24 hours and the area could feel very quiet and people might feel unsafe once public transport has ceased for the day.

Limousine drivers have raised the issue of not being able to use the Bus Lanes in the City; this is due to the national legislation in place for Bus Lanes, and would require the Department of Transport, Tourism and Sport to enact revised legislation.

Other comments raised included Taxis should use contra flow bus lanes, and the problem of illegal taxi parking outside ranks.

The main issues from Taxi Drivers included:-

1. Access to College Green should not be altered for Taxis;
2. Right Turn to Cathal Brugha Street Should be maintained;
3. Right Turn to Eden Quay from O'Connell Bridge should be retained;
4. Issue of Rickshaws in the city centre;
5. Taxis should be able to use the contraflow bus lanes; and
6. Illegal parking outside taxi ranks.

Measures arising from this:

Taxis under the new College Green proposal will be able to use the North-South public transport corridor around by Trinity College and Lower Grafton Street.

The banned right turn to Cathal Brugha Street is part of the Luas Cross City works.

Retail Sector

Submissions were received from various retailers, including many of the major retailers in the city centre such as Arnotts, Marks and Spencer, Weir and Sons and Brown Thomas as well as business and retail groups including Dublin Town, Dublin City Business Association, Dublin Chamber of Commerce, Retail Ireland and IBEC.

Some felt that the study was flawed and did not integrate transport policies or respect the requirements of the development plan.

The major issues from the retailers included:

1. They felt the report lack clarity in terms of the statutory basis under which it could be implemented;
2. The public transport provision is inadequate both existing and planned, it is felt additional funding needs to be sought;

3. Continued access for the car into the retail locations and into the car parks;
4. They do not want shoppers using cars to be confused with commuters using cars;
5. They feel that the public and civil servants should pay for their car parking;
6. They feel the proposed measures if implemented will reduce the overall spend in the city centre, that people will decamp to outlining shopping centres;
7. Access for deliveries needs to be maintained; and
8. An economic report should be carried out to inform any decisions, as they feel the current report will result in a 20% decline in turnover with subsequent loss of jobs.

In summary the retail sector are extremely concerned that putting in place any restrictions which would make shopping by car in the city centre less convenient would have severe consequences for turnover and employment in the sector. A particular fear was that the car borne shopper would transfer to out of town shopping centres.

Measures arising from this:

Direct engagement has taken place by DCC and the NTA with many of the retailers and the associations representing them, as a result of these discussions the following will occur:

A number of the specific measures from the original proposal have been amended to alleviate the concerns of the retail sector.

Some of the key changes to the study include (i) the retention of left turning only private car traffic on Bachelor's Walk to facilitate access to O'Connell Street northbound, including Arnott's car park; (ii) making Eden Quay public transport/cycling/pedestrian only at O'Connell Bridge to replace the Bus only section at Bachelors Walk; (iii) additional bus lanes on the South Quays, but no bus only sections, and (iv) redesign of College Green to facilitate Taxis on North-South alignment.

Multi-storey car parks within the city centre area were mapped with key access and egress routes highlighted; this will be complemented on the ground through the enhancement of the existing electronic and static car park signage scheme.

An Economic Impact Study is being carried out, commissioned by NTA, which will be made available alongside this study.

Hotels

Many hotels did welcome the principles and objectives of the study and the aim to remove through traffic from the city centre and ensure high quality public transport; they did also call for a business impact assessment to be undertaken.

Individual hotels had a number of concerns were raised relating to access to hotels for taxis, coaches and private cars, access to their car parks and access for deliveries. The proposed for removal of taxis from College Green changes raised objections with many hotels against the proposal and others calling for further details studies to be done.

The Fitzwilliam hotel on Stephens Green raised issues with the proposal to pedestrianise St. Stephen's Green North and requested that access to their hotel be maintained at all times.

Measures arising from this:

As mentioned above the vehicular restrictions previously proposed on Bachelors Walk are to be moved to Eden Quay, and the left turn from Bachelors Walk onto O'Connell Street is to remain for all modes.

Multi-storey car parks within the city centre area were mapped with key access and egress routes highlighted; this will be complemented on the ground through the enhancement of the existing electronic and static car park signage scheme.

As outlined above, the revised proposals facilitate north-south movement of taxis through College Green

Access to individual hotels will be maintained.

Other Stakeholders

Twenty-seven submissions were received from other interested Stakeholders.
Many stated their support for some or all of the measures of the Study including the proposed interchange at Connolly Station.

Concerns raised included access for deliveries to premises around the College Green area, access for private cars to car parks and to different areas of the city, and comments on Foster's Place, St Stephen's Green North and Suffolk Street. Most submissions had comments relating specifically to their organisation.

Trinity College in their submission welcomed the study, supported the College Green plaza provided access to the college could be maintained. They also welcomed the bus and rail proposals and proposed that the taxi rank in Fosters Place be removed.

UPS in their submission regarding deliveries in the city centre proposed having a mobile delivery point in the city centre from which UPS would deliver and collect packages on foot and by bicycle. This is currently operating in Hamburg and a pilot project is being progressed in Dublin.

An Taisce made a submission broadly supporting the proposals in the study.
The Temple Bar Company in their submission requested access to the Fleet Street car park be maintained and that taxis be relocated from Fosters Place, as well as extension of the pedestrian areas of Temple Bar.

Bank of Ireland made a submission supported the development of pedestrian areas within the City Centre and wishes to work with Dublin City Council and other stakeholders to ensure the experience for those who live, work and visit the area is a positive one.

The Bank of Ireland's view is that College Green and Foster Place should be considered as a single entity and the current use of Fosters Place by Taxis should be changed and the area pedestrianised. They also believed the proposed Plaza area should be on the South side of College Green.

The bank drew attention to their vehicular access to the bank premises both for their customers as well as for cash in transit deliveries. They emphasised their belief that a space in the City Centre devoid of safe and viable commercial activity cannot be the desired outcome.

Dublin Friends of the Earth also made a submission the main points of which are:-

1. Welcome for the proposed measures to enhance public transport, make walking and cycling safer, restrict private car use and improve the public realm;
2. Criticism of the omission in the Transport Study of the climate change context for all transport planning and development;
3. Concern at the aspirational nature of many proposals in the Study;
4. Advocacy of additional and stronger proposals to promote public transport and to deter private car use; and comments on cycling and bus fleet issues; and
5. Need for public awareness campaign on how transport improvements can improve health and wellbeing in Dublin and help to reduce dangerous carbon emissions.

Measures arising from this:

Climate change policy has been an integral part of many of the development of the proposals in the Study, with the focus of increasing the level of travel by sustainable modes.

Direct engagement has taken place between DCC, NTA and many of the main stakeholders, and some of the issues highlighted here have been address already.

An Economic Impact Study is being carried out, commissioned by NTA, which will be made available upon completion.

Others

A number of submissions were received from members of the public, while seven submissions were received from elected representatives (Councillors, TDs and Senators), some on behalf of political parties. There was support for some elements of the Study, and some objections. The concerns that were raised include the restrictions on private cars on the Quays and College Green; access to the city centre and parking; inadequate public transport alternatives; need for improved cycle facilities and parking; access for residents; arrangements for travelling to city centre schools and the economic impact of implementation of the plan and requests for further studies to be undertaken.

These submissions have been considered in the revised final report.

Public Transport and Ferry Operators

Submissions were received from public transport operators and transport bodies. There was support for elements of the Plan with broad support for the objectives and principles. The proposed restrictions to College Green were supported as it should improve journey times and reliability for bus passengers.

Both private and public operators raised areas of concern regarding coach parking in the city centre; bus stop capacity and locations, impacts of cycling provision on public transport and the desire to ensure that there was a good public transport service which serves the city centre and delivers passengers to where they wish to go.

A number of Ferry operators made submissions regarding the potential impact which changes to the North and South Quays would have for their passengers and in particular that restrictions should only apply at the peak periods and not 24 hours.

Other issues:

There were many other issues commented on in the online survey including:

- Access for deliveries;
- Access for mobility impaired users;
- Effect on businesses both positive and negative;
- Access to car parks;
- Anti-social behaviour issues;
- Trees at College Green;
- The behaviour of various road users;
- Park and Ride locations; and
- Interchange locations.

APPENDIX 2 - Car Park Access Maps

DUBLIN CITY CENTRE CAR PARKS

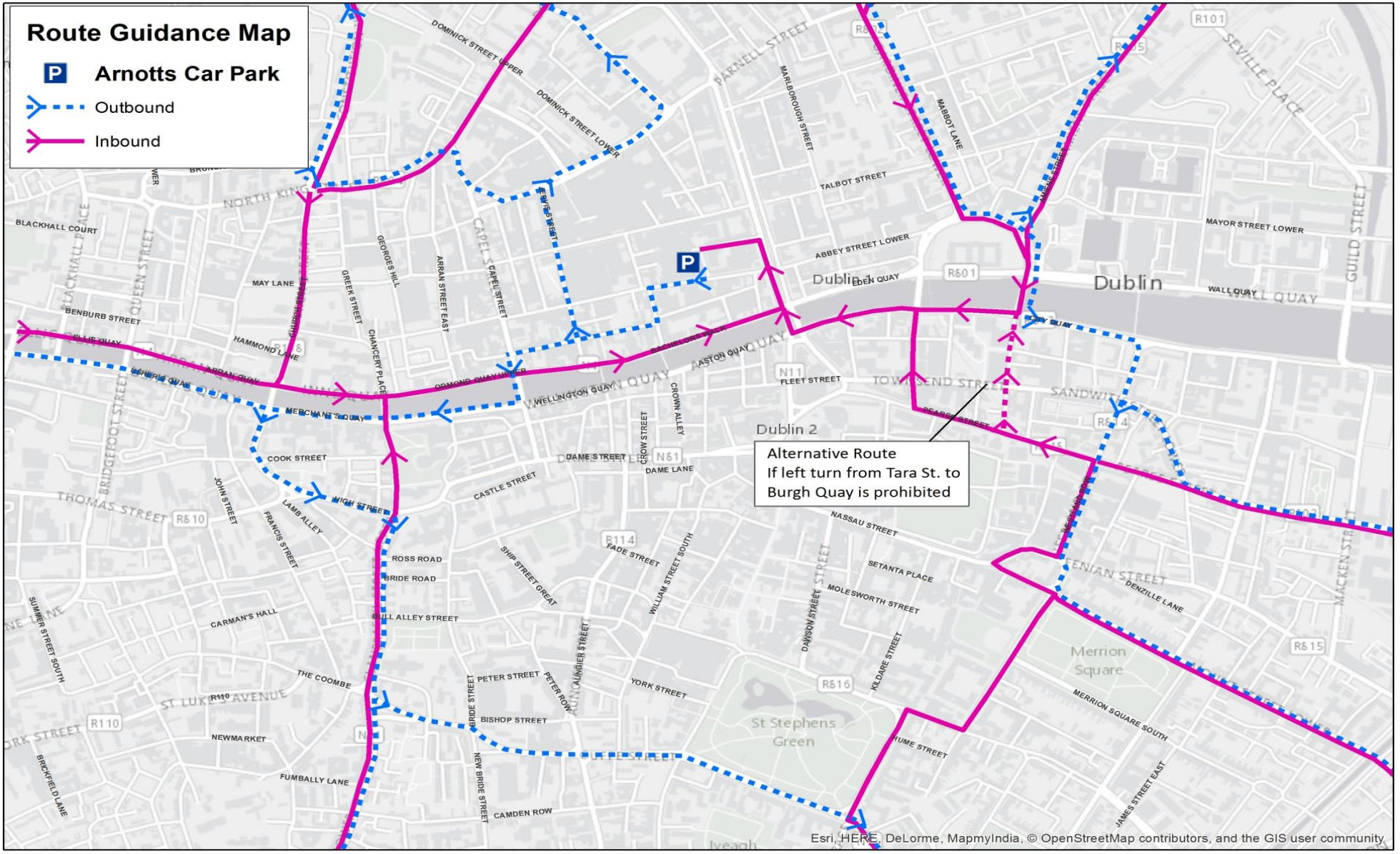
ROUTE GUIDANCE MAPS

Note:

- The attached maps indicate the primary proposed vehicular routes to multi-story city centre car parks and are subject to finalisation in consultation with car park operators.
- These are not the only vehicular routes to these car parks: however these are the routes likely to be considered as part of an overall access signage programme.

Dublin City Centre Multi-Story Car Parks:

North Side	South Side
Arnotts Car Park	Stephen Green Area Car Parks
ILAC Car Park	Setanta Car Park
Irish Life Centre (ILC) Car Park	Dawson Street Car Park
Parnell Car Park	Drury Street Car Park
Clerys Car Park	Drury Street Underground Car Park
Jervis Shopping Centre Car Park	Brown Thomas Car Park
Jervis Street Car Park	Fleet Street Car Park
Gresham Car Park	Trinity Street Car Park
Smithfield Market Car Park	Christchurch Car Park
IFSC Car Park	Usher's Quay Car Park
	Thomas Street Car Park


Route Guidance Map
Arnotts Car Park
Outbound
Inbound
Dublin 2
Alternative Route
If left turn from Tara St. to
Burgh Quay is prohibited
Dublin
Merrion Square
St Stephens Green
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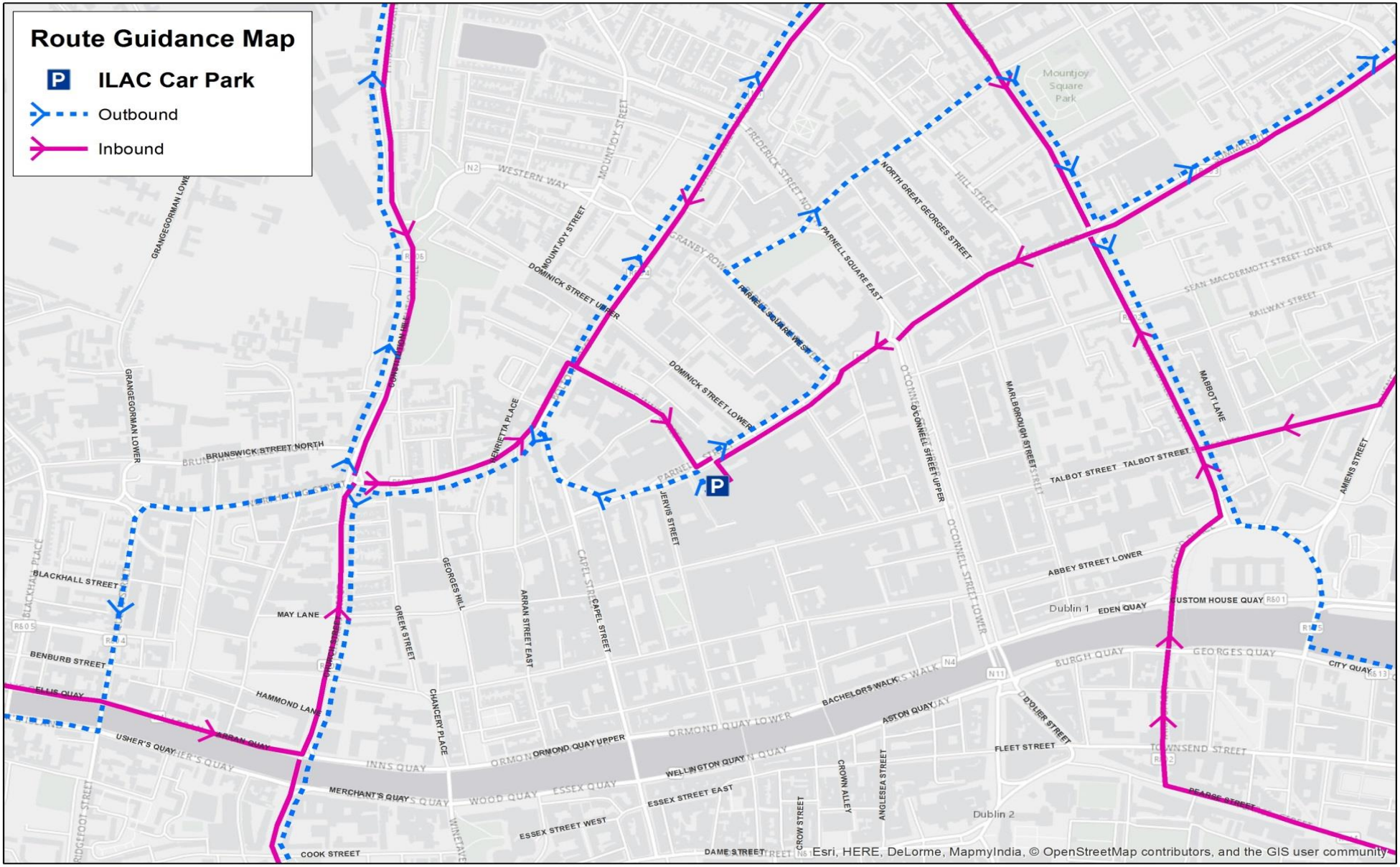
Route Guidance Map
ILAC Car Park
Outbound
Inbound
Mountjoy Square Park
WESTERN WAY
MOUNTJOY STREET
DOMINICK STREET UPPER
GRANBY ROW
PARNELL SQUARE EAST
NORTH GREAT GEORGES STREET
HILL STREET
SEAN MACDERMOTT STREET LOWER
RAILWAY STREET
MABBOT LANE
AMIENS STREET
GRANGEGORMAN LOWER
BRUNSWICK STREET NORTH
HENRIETTA PLACE
DOMINICK STREET LOWER
PARNELL SQUARE WEST
O'CONNELL STREET UPPER
MARLBOROUGH STREET
TALBOT STREET
ABBEY STREET LOWER
Dublin 1
EDEN QUAY
CUSTOM HOUSE QUAY
BURGH QUAY
GEORGES QUAY
CITY QUAY
BLACKHALL STREET
MAY LANE
BENBURB STREET
ELLIS QUAY
USHER'S QUAY
HAMMOND LANE
GREEK STREET
GEORGES HILL
CHANCERY PLACE
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
BACHELORS WALK
ASTON QUAY
D'OLIER STREET
FLEET STREET
TOWNSEND STREET
ORMOND QUAY UPPER
ORMOND QUAY LOWER
INNS QUAY
WELLINGTON QUAY
MERCHANT'S QUAY
WOOD QUAY
ESSEX QUAY
ESSEX STREET EAST
ESSEX STREET WEST
CROW STREET
CROWN ALLEY
ANGLESEA STREET
Dublin 2
COOK STREET
DAME STREET
PEARSE STREET
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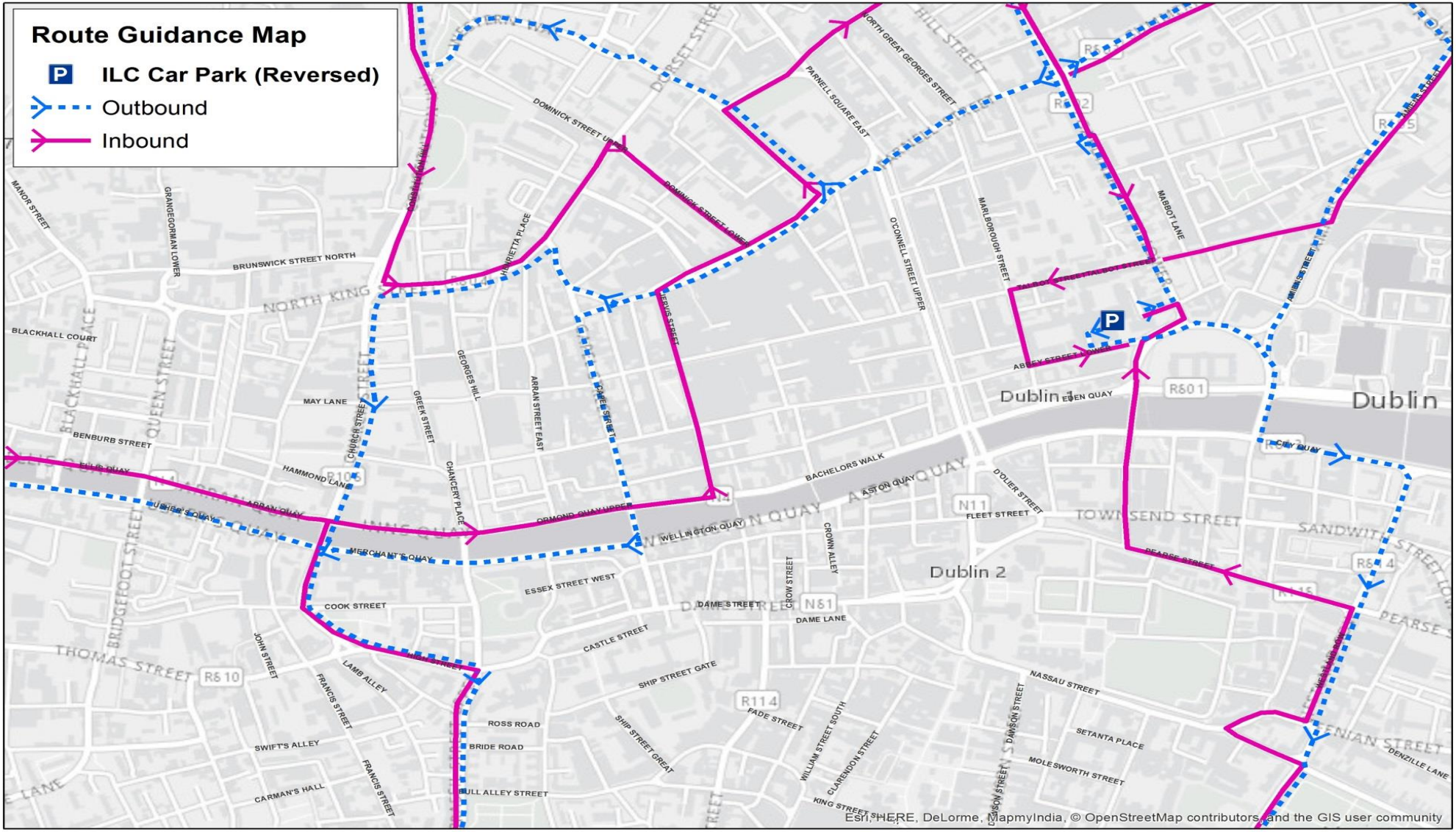
Route Guidance Map
ILC Car Park (Reversed)
Outbound
Inbound
Dublin 1
Dublin 2
Dublin
NORTH KING STREET
BRUNSWICK STREET NORTH
MANOR STREET
GRANGEGORMAN LOWER
BLACKHALL PLACE
BLACKHALL COURT
QUEEN STREET
MAY LANE
BENBURB STREET
CHURCH STREET
GREEN STREET
GEORGES HILL
CHANCERY PLACE
ARRAN STREET EAST
ARRAN QUAY
USHER'S QUAY
HAMMOND LANE
R108
MERCHANT'S QUAY
ORMOND QUAY UPPER
WELLINGTON QUAY
BACHELORS WALK
ASTON QUAY
D'OLIER STREET
N11
FLEET STREET
TOWNSEND STREET
PEARSE STREET
SANDWITH STREET LOWER
R514
R802
ESSEX STREET WEST
COOK STREET
DAME STREET
CROW STREET
CROWN ALLEY
N81
DAME LANE
CASTLE STREET
SHIP STREET GATE
SHIP STREET GREAT
R1140
FADE STREET
WILLIAM STREET SOUTH
CLARENDON STREET
DAWSON STREET
NASSAU STREET
SETANTA PLACE
MOLESWORTH STREET
KING STREET SOUTH
DENZILLE LANE
THOMAS STREET
R610
JOHN STREET
FRANCIS STREET
LAMB ALLEY
SWIFT'S ALLEY
CARMAN'S HALL
ROSS ROAD
BRIDE ROAD
BULL ALLEY STREET
BRIDGEFOOT STREET
DOMINICK STREET UPPER
DOMINICK STREET LOWER
PARNELL SQUARE EAST
NORTH GREAT GEORGES STREET
HENRIETTA PLACE
HENRY STREET
O'CONNELL STREET UPPER
MARLBOROUGH STREET
MABBOT LANE
ABBEY STREET MIDDLE
ABBEY STREET LOWER
EDEN QUAY
R801
CITY QUAY
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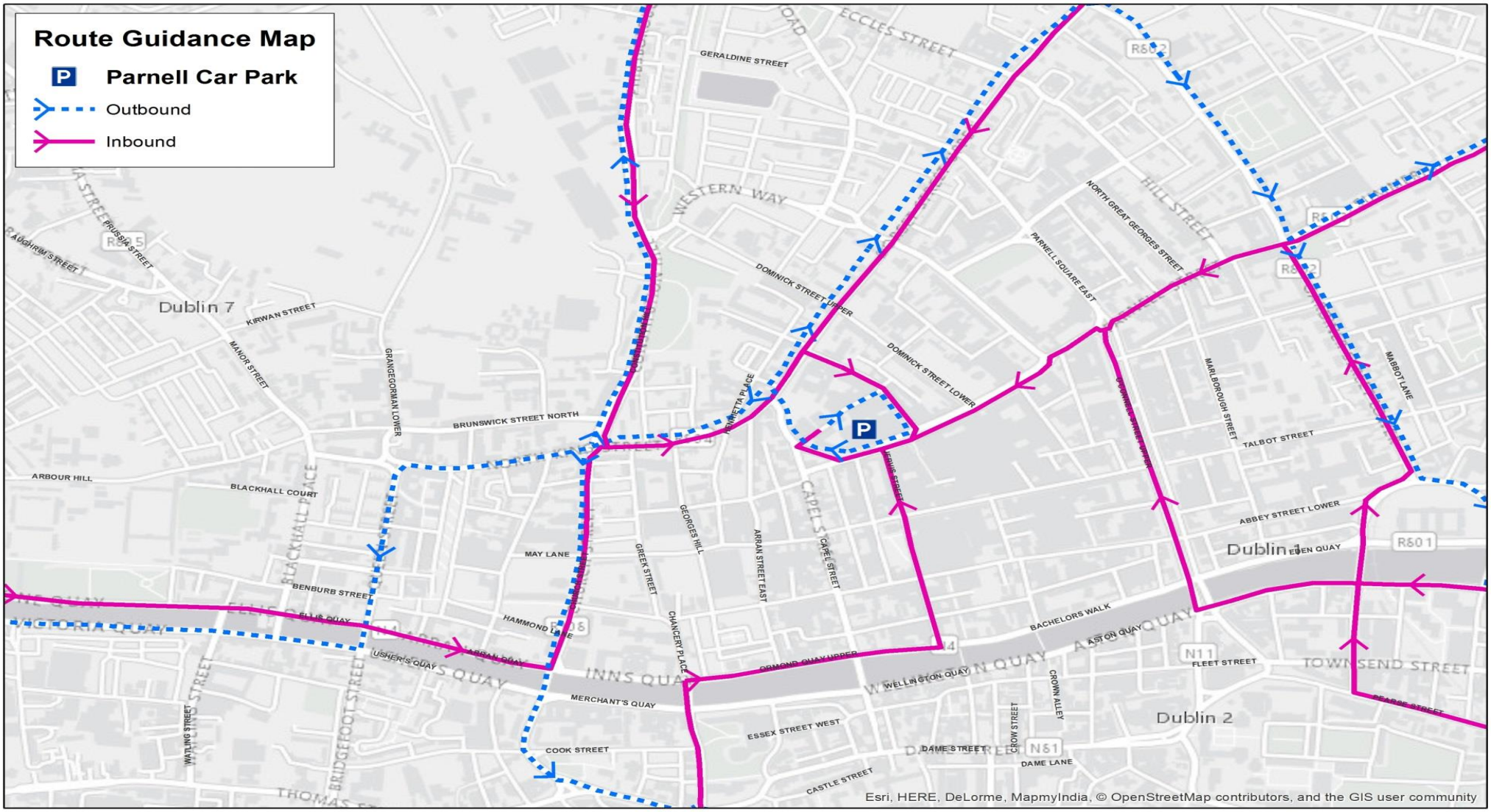
Route Guidance Map
Parnell Car Park
Outbound
Inbound
Dublin 7
Dublin 1
Dublin 2
GERALDINE STREET
ECCLES STREET
WESTERN WAY
PRUSSIA STREET
AUGHRIM STREET
KIRWAN STREET
MANOR STREET
GRANGEGORMAN LOWER
BRUNSWICK STREET NORTH
ARBOUR HILL
BLACKHALL COURT
BLACKHALL PLACE
BENBURB STREET
ELLIS QUAY
USHER'S QUAY
MAY LANE
HAMMOND LANE
GREEK STREET
GEORGES HILL
ARRAN STREET EAST
CAPEL STREET
CHANCERY PLACE
INNS QUAY
MERCHANT'S QUAY
WATLING STREET
BRIDGEFOOT STREET
COOK STREET
ESSEX STREET WEST
DAME STREET
DAME LANE
CASTLE STREET
CROW STREET
CROWN ALLEY
ORMOND QUAY UPPER
WELLINGTON QUAY
BACHELORS WALK
ASTON QUAY
O'CONNELL BRIDGE
FLEET STREET
TOWNSEND STREET
PEARSE STREET
EDEN QUAY
ABBEY STREET LOWER
MARLBOROUGH STREET
TALBOT STREET
MABBOT LANE
NORTH GREAT GEORGES STREET
PARNELL SQUARE EAST
DOMINICK STREET UPPER
DOMINICK STREET LOWER
PARNELL STREET
HILL STREET
R801
N11
N81
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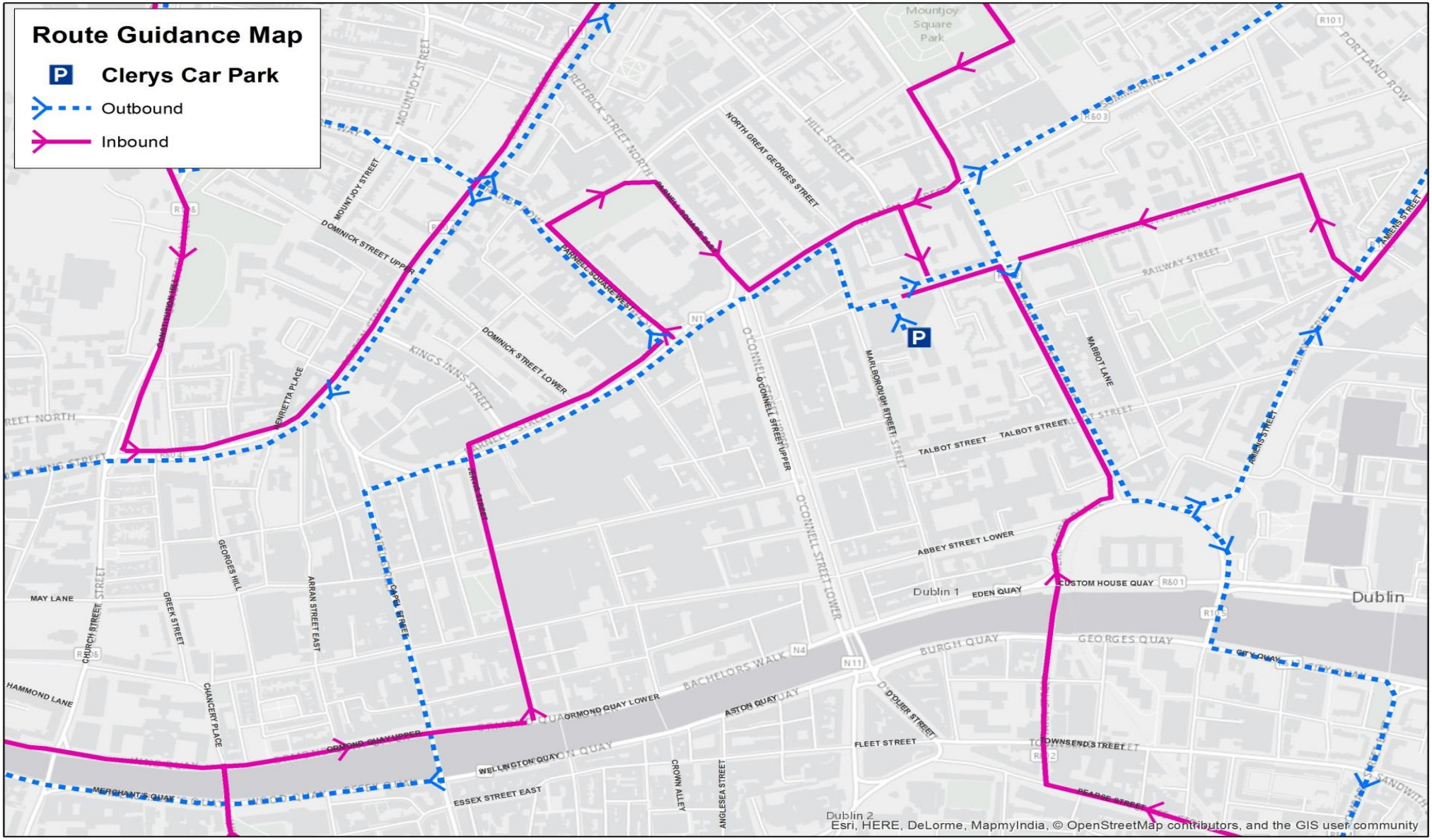
Route Guidance Map
Clerys Car Park
Outbound
Inbound
Mountjoy Square Park
MOUNTJOY STREET
DOMINICK STREET UPPER
PARNELL SQUARE WEST
NORTH GREAT GEORGES STREET
HILL STREET
PORTLAND ROW
RAILWAY STREET
AMIENS STREET
DOMINICK STREET LOWER
KINGS INNS STREET
HENRIETTA PLACE
O'CONNELL STREET UPPER
O'CONNELL STREET LOWER
MARLBOROUGH STREET
MABBOT LANE
TALBOT STREET
ABBEY STREET LOWER
CUSTOM HOUSE QUAY
EDEN QUAY
Dublin 1
Dublin
BURGH QUAY
GEORGES QUAY
CITY QUAY
BACHELORS WALK
ORMOND QUAY LOWER
ASTON QUAY
O'CONNELL BRIDGE
D'OLIER STREET
FLEET STREET
TOWNSEND STREET
PEARSE STREET
WELLINGTON QUAY
ESSEX STREET EAST
MERCHANTS QUAY
CROWN ALLEY
ANGLESEA STREET
Dublin 2
MAY LANE
CHURCH STREET
GREEN STREET
GEORGES HILL
ARRAN STREET EAST
CAPEL STREET
HAMMOND LANE
CHANCERY PLACE
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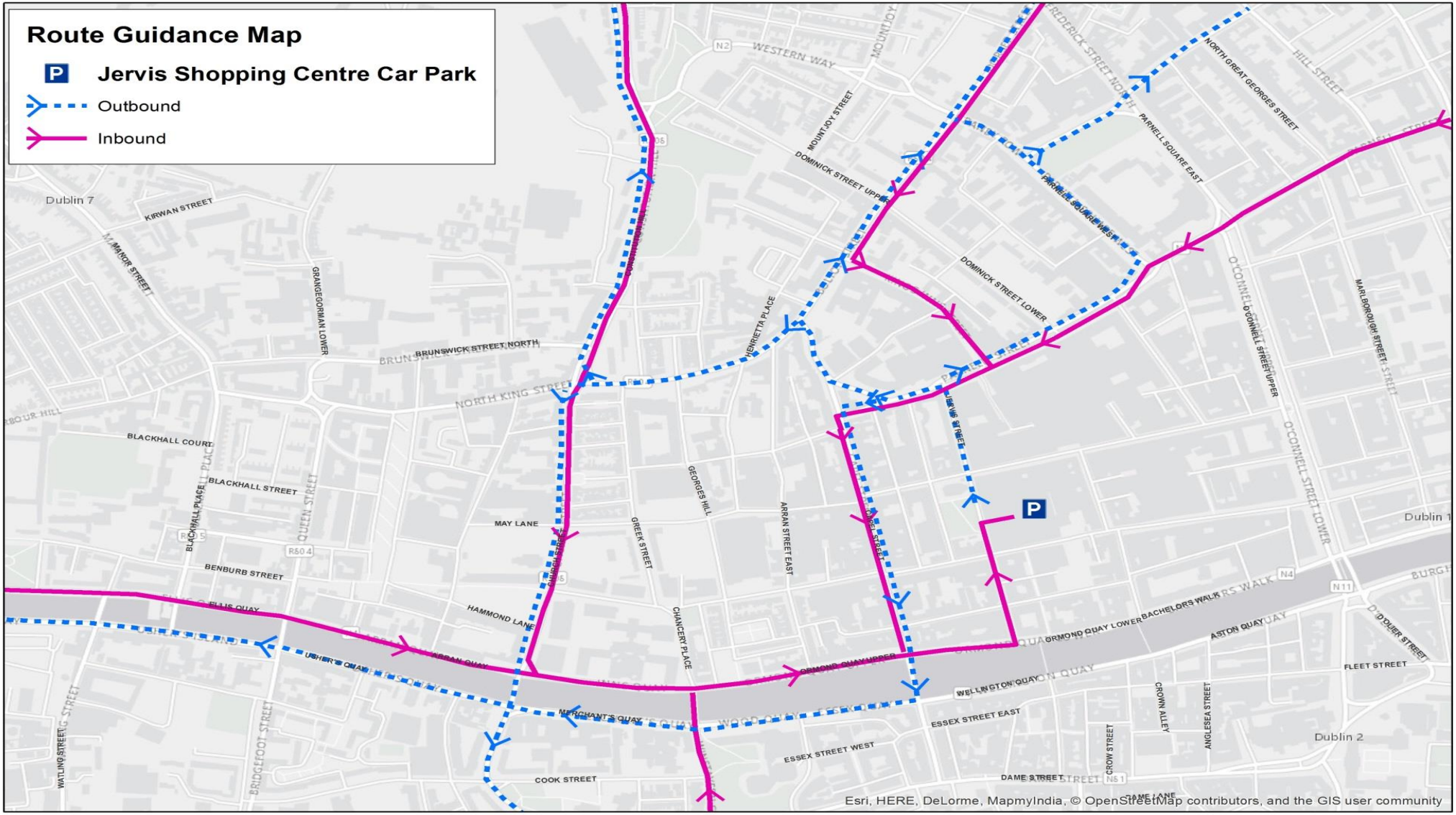
Route Guidance Map
Jervis Shopping Centre Car Park
Outbound
Inbound
Dublin 7
KIRWAN STREET
MANOR STREET
GRANGEGORMAN LOWER
BRUNSWICK STREET NORTH
NORTH KING STREET
BLACKHALL COURT
BLACKHALL PLACE
BLACKHALL STREET
QUEEN STREET
R804
BENBURB STREET
ELLIS QUAY
USHER'S QUAY
WATLING STREET
BRIDGEFOOT STREET
MAY LANE
HAMMOND LANE
COOK STREET
GREEK STREET
GEORGES HILL
CHANCERY PLACE
ARRAN STREET EAST
HENRIETTA PLACE
DOMINICK STREET UPPER
DOMINICK STREET LOWER
MOUNTJOY STREET
WESTERN WAY
N2
FREDERICK STREET NORTH
PARNELL SQUARE EAST
PARNELL SQUARE WEST
NORTH GREAT GEORGES STREET
HILL STREET
O'CONNELL STREET UPPER
O'CONNELL STREET LOWER
MARLBOROUGH STREET
ORMOND QUAY LOWER
ORMOND QUAY UPPER
BACHELORS WALK
ASTON QUAY
O'DONOVAN ROSSA BRIDGE
FLEET STREET
WELLINGTON QUAY
MERCHANT'S QUAY
ESSEX STREET EAST
ESSEX STREET WEST
CROW STREET
CROWN ALLEY
ANGLESEA STREET
DAME STREET
DAME LANE
N51
N4
N11
Dublin 2
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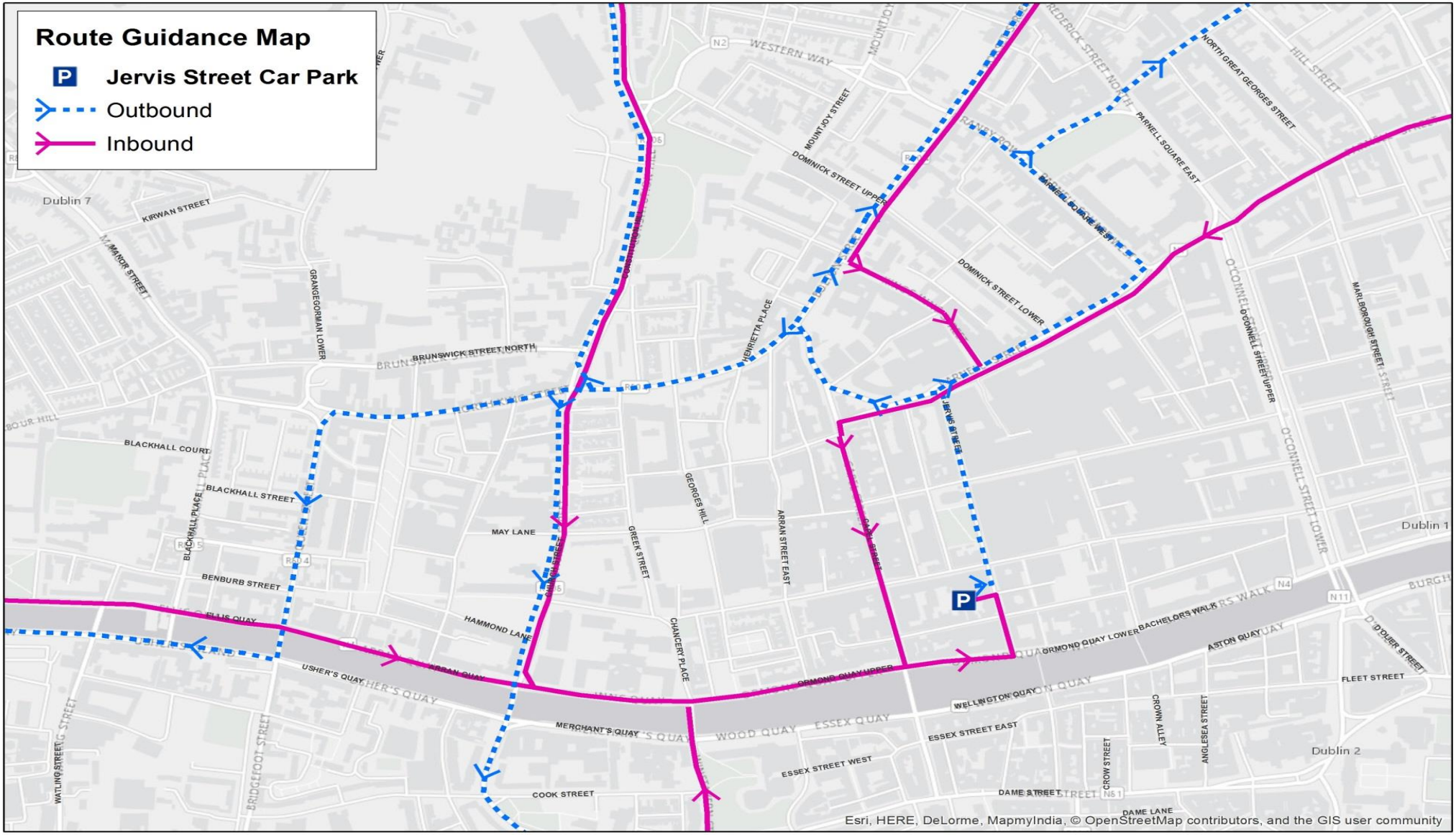
Route Guidance Map
Jervis Street Car Park
Outbound
Inbound
Dublin 7
KIRWAN STREET
MANOR STREET
GRANGEGORMAN LOWER
BRUNSWICK STREET NORTH
BLACKHALL COURT
BLACKHALL PLACE
BLACKHALL STREET
BENBURB STREET
ELLIS QUAY
USHER'S QUAY
MAY LANE
HAMMOND LANE
GREEK STREET
GEORGES HILL
CHANCERY PLACE
ARRAN STREET EAST
HENRIETTA PLACE
MOUNTJOY STREET
DOMINICK STREET UPPER
DOMINICK STREET LOWER
PARNELL SQUARE EAST
NORTH GREAT GEORGES STREET
HILL STREET
O'CONNELL STREET UPPER
O'CONNELL STREET LOWER
MARLBOROUGH STREET
Dublin 1
ORMOND QUAY LOWER
BACHELORS WALK
ASTON QUAY
O'DONOVAN ROSSA QUAY
O'CONNELL BRIDGE
FLEET STREET
WELLINGTON QUAY
ESSEX QUAY
ESSEX STREET EAST
ESSEX STREET WEST
MERCHANT'S QUAY
WOOD QUAY
CROWN ALLEY
ANGLESEA STREET
CROW STREET
Dublin 2
COOK STREET
DAME STREET
DAME LANE
WATLING STREET
BRIDGEFOOT STREET
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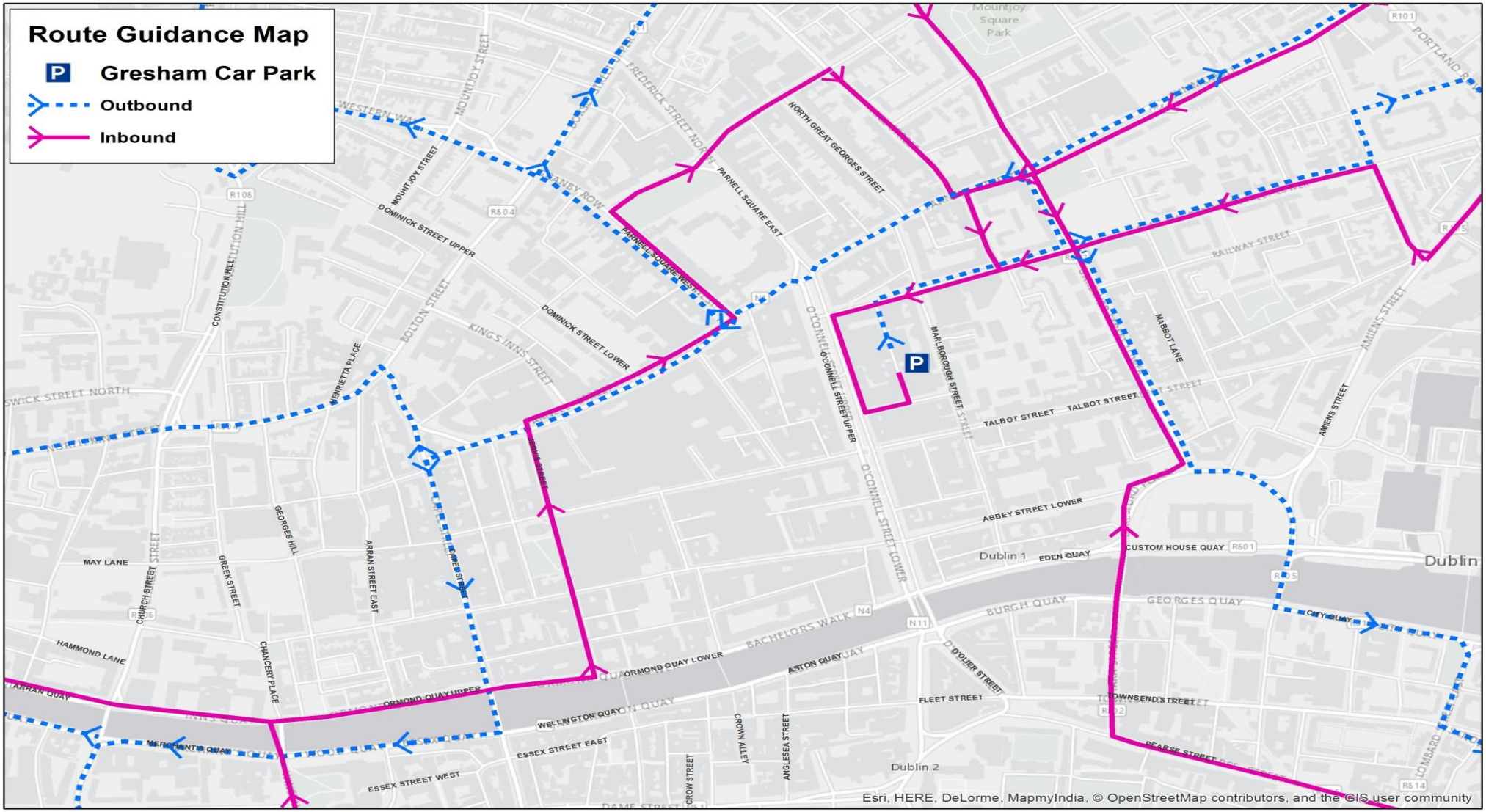
Route Guidance Map
Gresham Car Park
Outbound
Inbound
Mountjoy Square Park
MOUNTJOY STREET
DOMINICK STREET UPPER
DOMINICK STREET LOWER
PARNELL SQUARE EAST
PARNELL SQUARE WEST
NORTH GREAT GEORGES STREET
CONSTITUTION HILL
BOLTON STREET
KINGS INNS STREET
HENRIETTA PLACE
O'CONNELL STREET UPPER
O'CONNELL STREET LOWER
MARLBOROUGH STREET
TALBOT STREET
MABBOT LANE
AMIENS STREET
RAILWAY STREET
ABBEY STREET LOWER
CUSTOM HOUSE QUAY
EDEN QUAY
Dublin 1
Dublin
BURGH QUAY
GEORGES QUAY
BACHELORS WALK
ORMOND QUAY LOWER
ORMOND QUAY UPPER
ASTON QUAY
O'DWYER STREET
FLEET STREET
TOWNSEND STREET
WELLINGTON QUAY
ESSEX STREET EAST
ESSEX STREET WEST
CROW STREET
CROWN ALLEY
ANGLESEA STREET
Dublin 2
MAY LANE
HAMMOND LANE
CHURCH STREET
GREEN STREET
GEORGES HILL
ARRAN STREET EAST
CHANCERY PLACE
MERCHANTS QUAY
PEARSE STREET
LOMBARD STREET
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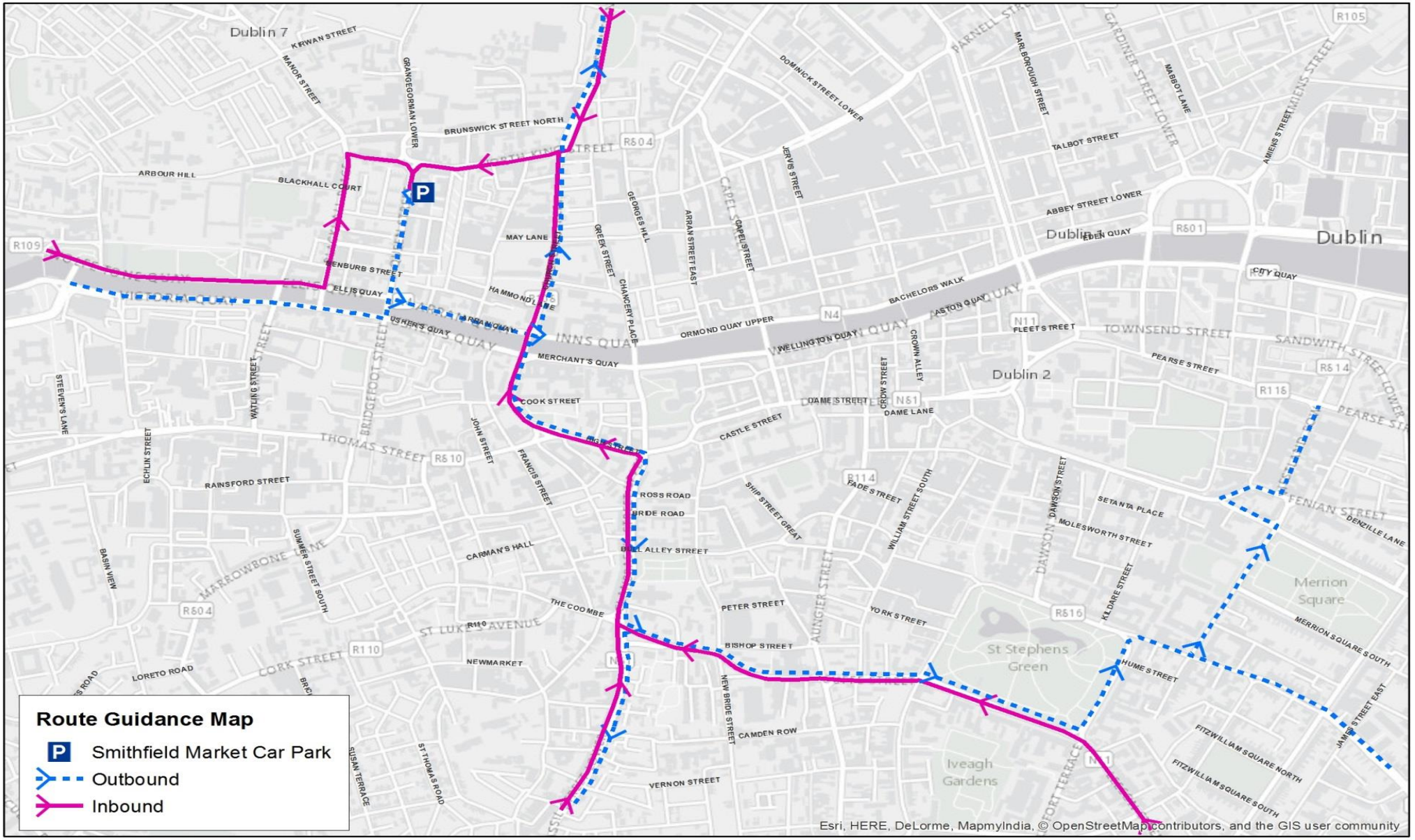
Route Guidance Map
Smithfield Market Car Park
Outbound
Inbound
Dublin 7
KERWAN STREET
MANOR STREET
GRANGEGORMAN LOWER
BRUNSWICK STREET NORTH
ARBOUR HILL
BLACKHALL COURT
MAY LANE
GREEK STREET
GEORGES HILL
CHANCERY PLACE
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
DOMINICK STREET LOWER
MARLBOROUGH STREET
TALBOT STREET
ABBEY STREET LOWER
AMIENS STREET
MARBOT LANE
GARDINER STREET LOWER
EDEN QUAY
CITY QUAY
Dublin
Dublin 1
Dublin 2
R105
R804
R801
R109
N4
N11
R814
R116
N51
R810
R114
R816
R110
ORMOND QUAY UPPER
BACHELORS WALK
ASTON QUAY
WELLINGTON QUAY
FLEET STREET
TOWNSEND STREET
SANDWITH STREET LOWER
PEARSE STREET
MERCHANT'S QUAY
COOK STREET
DAME STREET
DAME LANE
CROW STREET
CROWN ALLEY
CASTLE STREET
USHER'S QUAY
USHER'S ISLAND
ELLIS QUAY
HAMMOND LANE
INNS QUAY
VICTORIA QUAY
STEEVEN'S LANE
WATLING STREET
BRIDGEFOOT STREET
JOHN STREET
FRANCIS STREET
THOMAS STREET
ECHLIN STREET
RAINSFORD STREET
ROSS ROAD
BRIDE ROAD
BULL ALLEY STREET
CARMAN'S HALL
SHIP STREET GREAT
FADE STREET
WILLIAM STREET SOUTH
DAWSON STREET
SETANTA PLACE
MOLESWORTH STREET
DENZILLE LANE
FENIAN STREET
BASIN VIEW
SUMMER STREET SOUTH
MARROWBONE LANE
ST LUKE'S AVENUE
THE COOMBE
PETER STREET
YORK STREET
KILDARE STREET
Merrion Square
MERRION SQUARE SOUTH
HUME STREET
BISHOP STREET
AUNGIER STREET
St Stephens Green
NEWMARKET
CORK STREET
LORETO ROAD
NEW BRIDE STREET
CAMDEN ROW
JAMES STREET EAST
FITZWILLIAM SQUARE NORTH
FITZWILLIAM SQUARE SOUTH
Iveagh Gardens
VERNON STREET
ST THOMAS ROAD
SUSAN TERRACE
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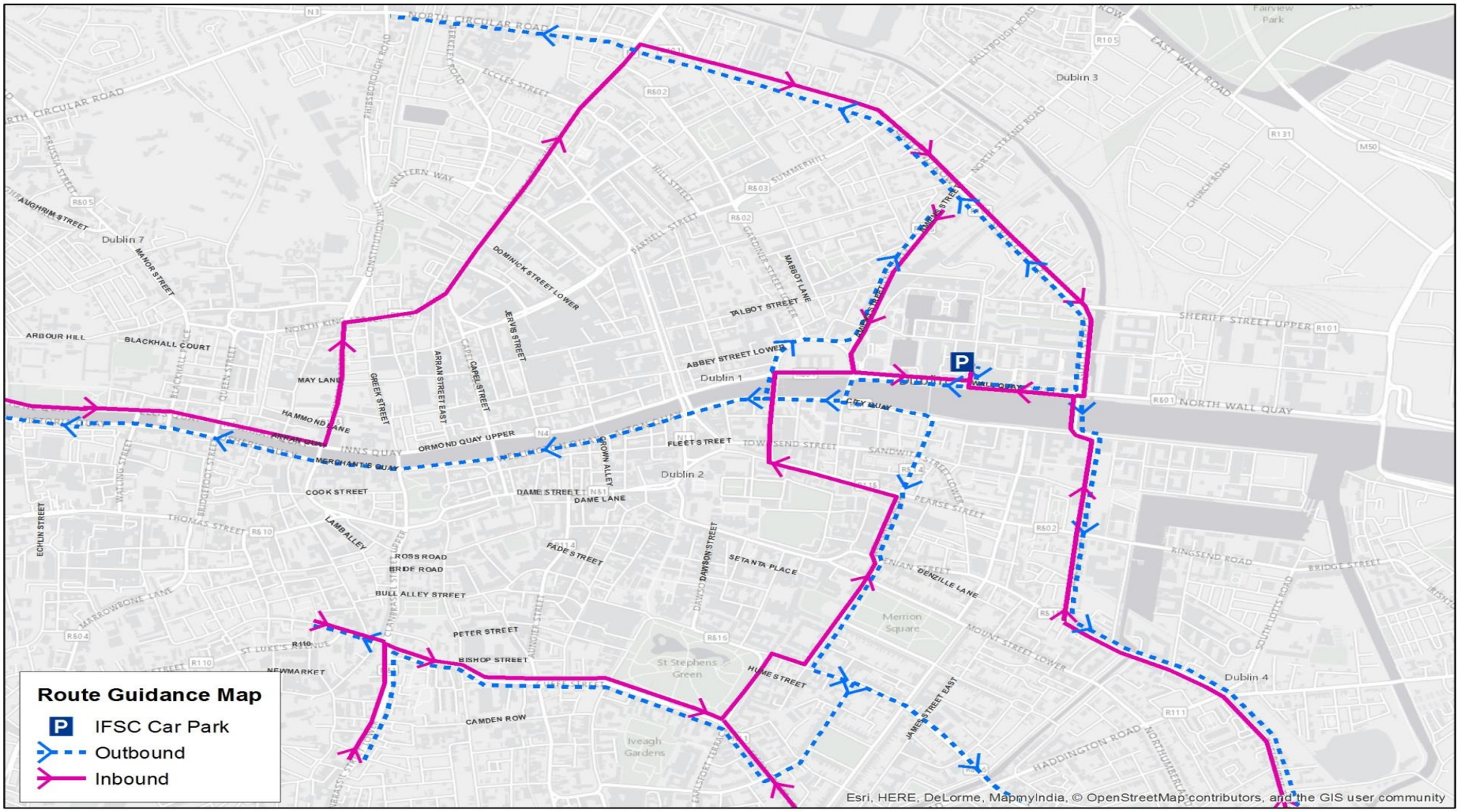
Route Guidance Map
IFSC Car Park
Outbound
Inbound
Dublin 1
Dublin 2
Dublin 3
Dublin 4
Dublin 7
NORTH CIRCULAR ROAD
DOMINICK STREET LOWER
TALBOT STREET
ABBEY STREET LOWER
SHERIFF STREET UPPER
NORTH WALL QUAY
CITY QUAY
ORMOND QUAY UPPER
INNS QUAY
MERCHANTS QUAY
HAMMOND LANE
MAY LANE
ARBOUR HILL
BLACKHALL COURT
MANOR STREET
GREEK STREET
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
FLEET STREET
TOWNSEND STREET
DAME STREET
DAME LANE
COOK STREET
LAMB ALLEY
ROSS ROAD
BRIDE ROAD
BULL ALLEY STREET
PETER STREET
BISHOP STREET
NEWMARKET
CAMDEN ROW
FADE STREET
SETANTA PLACE
DENZILLE LANE
HUME STREET
JAMES STREET EAST
PEARSE STREET
RINGSEND ROAD
BRIDGE STREET
MOUNT STREET LOWER
HADDINGTON ROAD
THOMAS STREET
ECHLIN STREET
MARROWBONE LANE
ST LUKE'S AVENUE
Merrion Square
St Stephens Green
Iveagh Gardens
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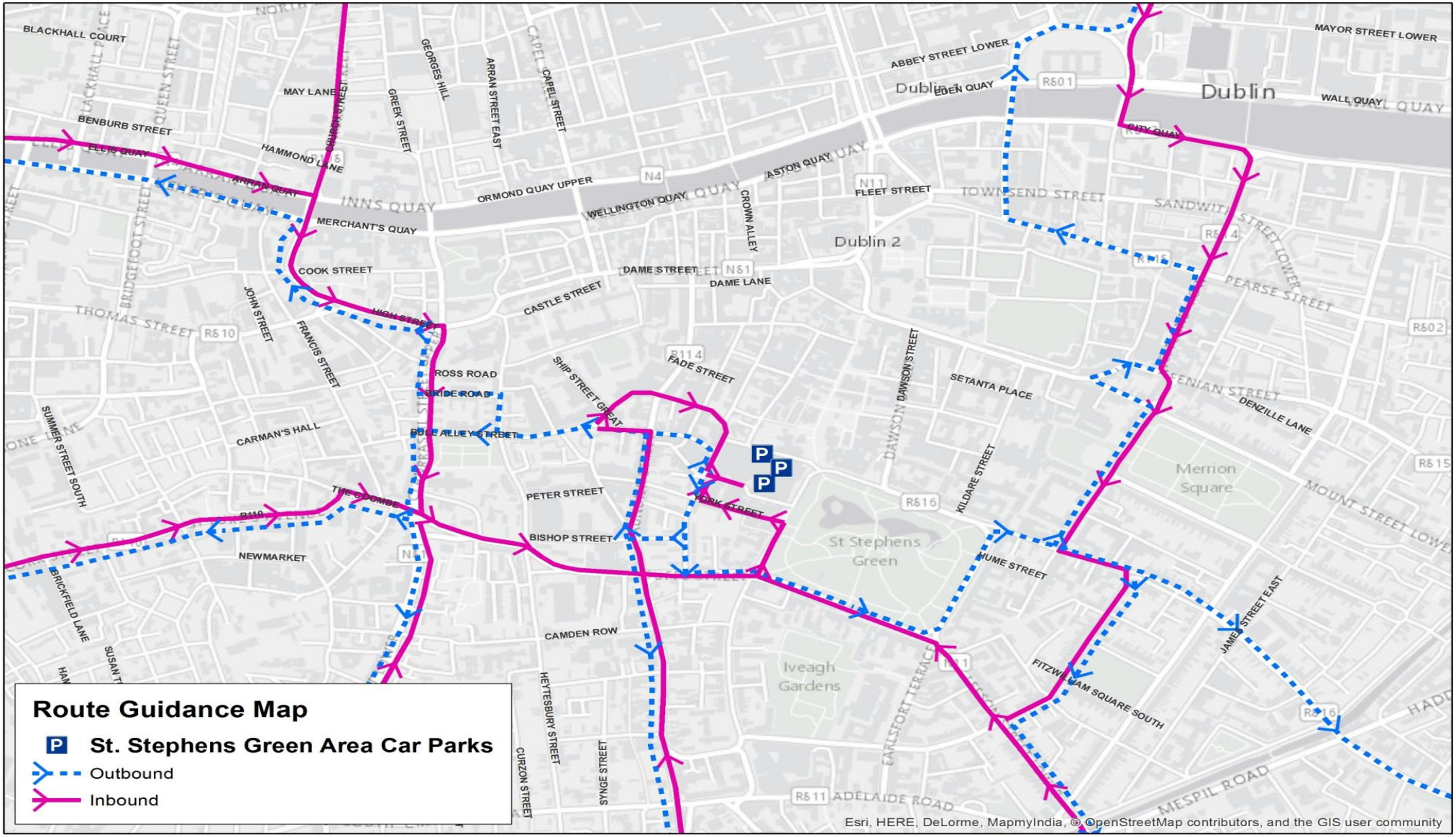
Route Guidance Map
St. Stephens Green Area Car Parks
Outbound
Inbound
BLACKHALL COURT
MAY LANE
BENBURB STREET
ELLIS QUAY
HAMMOND LANE
ARRAN QUAY
INNS QUAY
MERCHANT'S QUAY
COOK STREET
THOMAS STREET
JOHN STREET
FRANCIS STREET
HIGH STREET
ROSS ROAD
BRIDE ROAD
BULE ALLEY STREET
CARMAN'S HALL
SUMMER STREET SOUTH
THE COOMBE
NEWMARKET
BRICKFIELD LANE
GEORGES HILL
GREEK STREET
ARRAN STREET EAST
CAPEL STREET
ORMOND QUAY UPPER
WELLINGTON QUAY
ASTON QUAY
CROWN ALLEY
CASTLE STREET
DAME STREET
DAME LANE
SHIP STREET GREAT
FADE STREET
PETER STREET
YORK STREET
BISHOP STREET
CAMDEN ROW
HEYTESBURY STREET
CURZON STREET
SYNGE STREET
ABBEY STREET LOWER
EDEN QUAY
Dublin
MAYOR STREET LOWER
WALL QUAY
FLEET STREET
TOWNSEND STREET
Dublin 2
PEARSE STREET
DAWSON STREET
SETANTA PLACE
KILDARE STREET
DENZILLE LANE
Merrion Square
MOUNT STREET LOWER
St Stephens Green
HUME STREET
JAMES STREET EAST
FITZWILLIAM SQUARE SOUTH
Iveagh Gardens
EARLSFORT TERRACE
ADELAIDE ROAD
MESPIL ROAD
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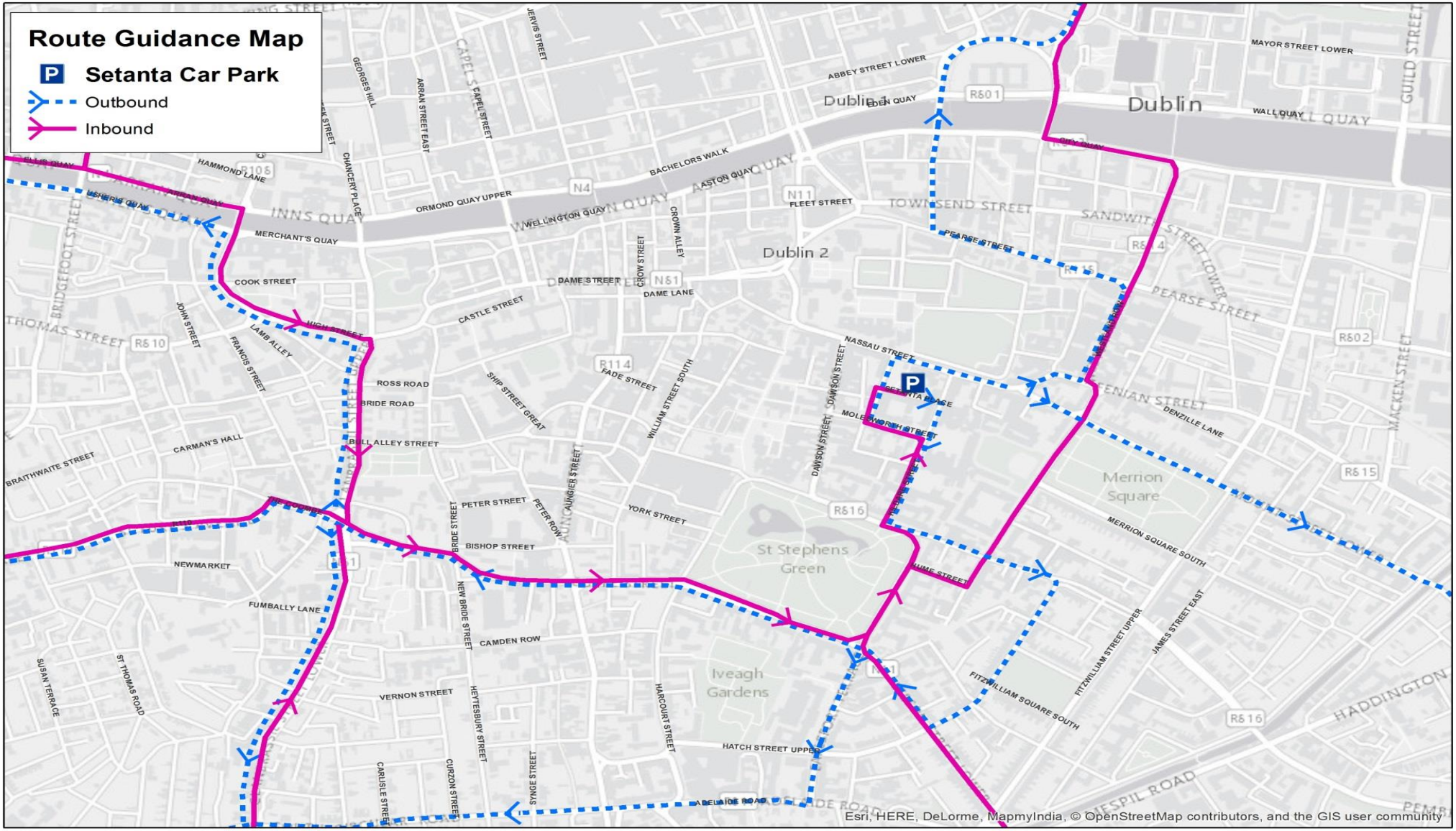
Route Guidance Map
Setanta Car Park
Outbound
Inbound
Dublin 1
Dublin
Dublin 2
Merrion Square
St Stephens Green
Iveagh Gardens
ABBEY STREET LOWER
EDEN QUAY
MAYOR STREET LOWER
WALL QUAY
GUILD STREET
R801
HAMMOND LANE
R105
CHANCERY PLACE
GEORGES HILL
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
BACHELORS WALK
ORMOND QUAY UPPER
N4
ASTON QUAY
WELLINGTON QUAY
INNS QUAY
N11
FLEET STREET
TOWNSEND STREET
SANDWITH STREET LOWER
PEARSE STREET
R814
R816
R802
MERCHANT'S QUAY
COOK STREET
DAME STREET
N81
DAME LANE
CROW STREET
CROWN ALLEY
CASTLE STREET
HIGH STREET
THOMAS STREET
R810
JOHN STREET
FRANCIS STREET
LAMB ALLEY
ROSS ROAD
BRIDE ROAD
BULL ALLEY STREET
CARMAN'S HALL
BRAITHWAITE STREET
SHIP STREET GREAT
R114
FADE STREET
WILLIAM STREET SOUTH
NASSAU STREET
DAWSON STREET
MOLESWORTH STREET
SETANTA PLACE
DENZILLE LANE
R815
MERRION SQUARE SOUTH
LIME STREET
PETER STREET
PETER ROW
BRIDE STREET
YORK STREET
AUNGIER STREET
BISHOP STREET
NEWMARKET
FUMBALLY LANE
NEW BRIDE STREET
CAMDEN ROW
VERNON STREET
HEYTESBURY STREET
HARCOURT STREET
HATCH STREET UPPER
FITZWILLIAM SQUARE SOUTH
FITZWILLIAM STREET UPPER
JAMES STREET EAST
R816
HADDINGTON
ADELAIDE ROAD
CARLISLE STREET
CURZON STREET
SYNGE STREET
SUSAN TERRACE
ST THOMAS ROAD
MACKEN STREET
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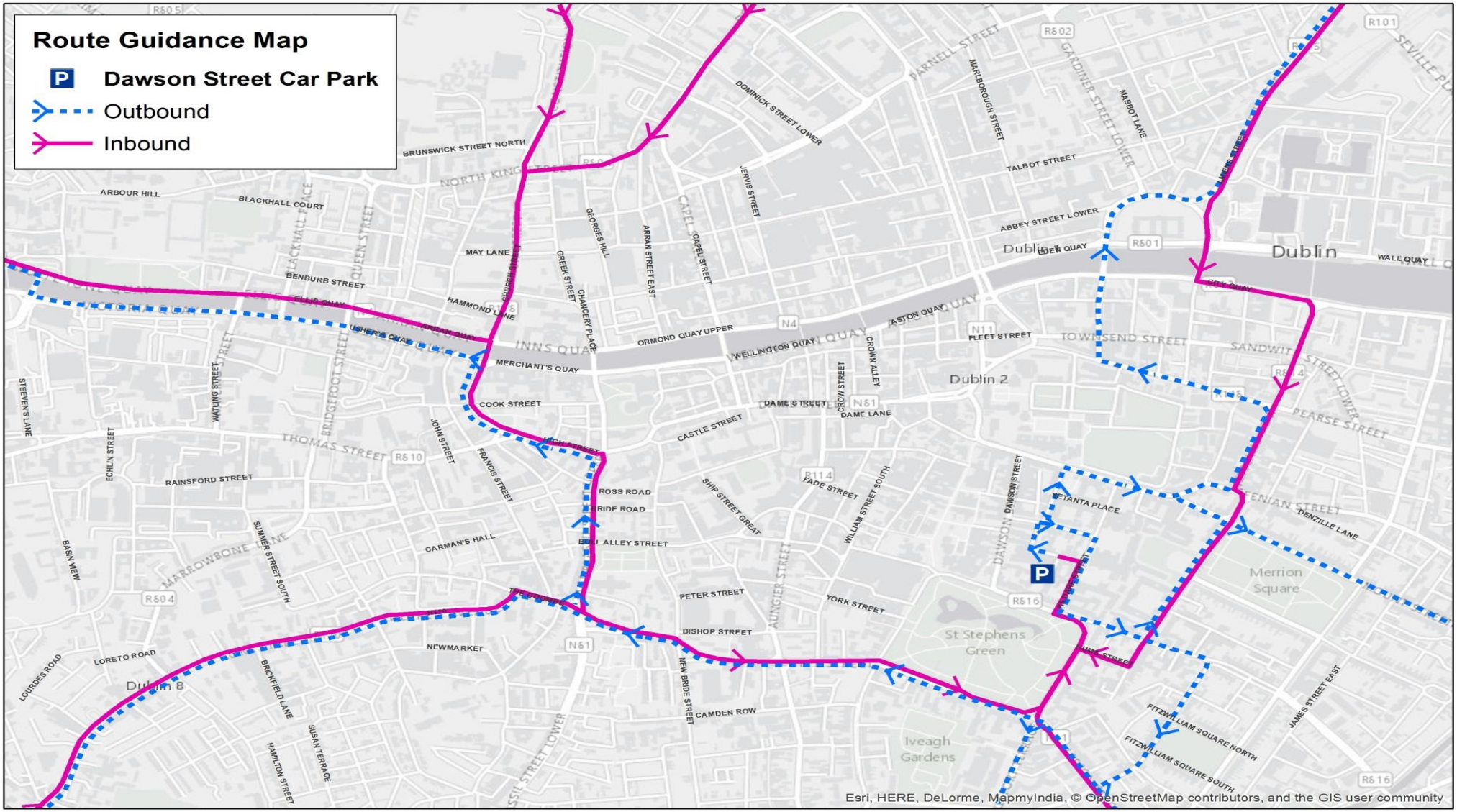
Route Guidance Map
Dawson Street Car Park
Outbound
Inbound
BRUNSWICK STREET NORTH
NORTH KING STREET
DOMINICK STREET LOWER
PARNELL STREET
MARLBOROUGH STREET
GARDINER STREET LOWER
MABBOT LANE
TALBOT STREET
ABBEY STREET LOWER
JAMES STREET
ARBOUR HILL
BLACKHALL COURT
BLACKHALL PLACE
QUEEN STREET
MAY LANE
GEORGES HILL
GREEK STREET
CHANCERY PLACE
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
BENBURB STREET
HAMMOND LANE
EDEN QUAY
Dublin
WALL QUAY
ELLIS QUAY
USHER'S QUAY
INNS QUAY
ORMOND QUAY UPPER
WELLINGTON QUAY
ASTON QUAY
O'CONNELL BRIDGE
FLEET STREET
TOWNSEND STREET
SANDWITH STREET LOWER
PEARSE STREET
MERCHANT'S QUAY
COOK STREET
DAME STREET
DAME LANE
CROWN STREET
CROWN ALLEY
Dublin 2
CASTLE STREET
STEEVEN'S LANE
WATLING STREET
BRIDGEFOOT STREET
ECHLIN STREET
THOMAS STREET
JOHN STREET
FRANCIS STREET
HIGH STREET
RAINSFORD STREET
ROSS ROAD
BRIDE ROAD
BELL ALLEY STREET
SHIP STREET GREAT
FADE STREET
WILLIAM STREET SOUTH
DAWSON STREET
BETANTA PLACE
DENZILLE LANE
BASIN VIEW
SUMMER STREET SOUTH
HARROWBONE LANE
CARMAN'S HALL
PETER STREET
AUNGIER STREET
YORK STREET
Merrion Square
St Stephens Green
BISHOP STREET
NEWMARKET
LORETO ROAD
LOURDES ROAD
BRICKFIELD LANE
HAMILTON STREET
SUSAN TERRACE
NEW BRIDE STREET
CAMDEN ROW
Iveagh Gardens
FITZWILLIAM SQUARE NORTH
FITZWILLIAM SQUARE SOUTH
JAMES STREET EAST
R805
R802
R101
R801
R804
R810
R114
R816
N4
N11
N51
N81
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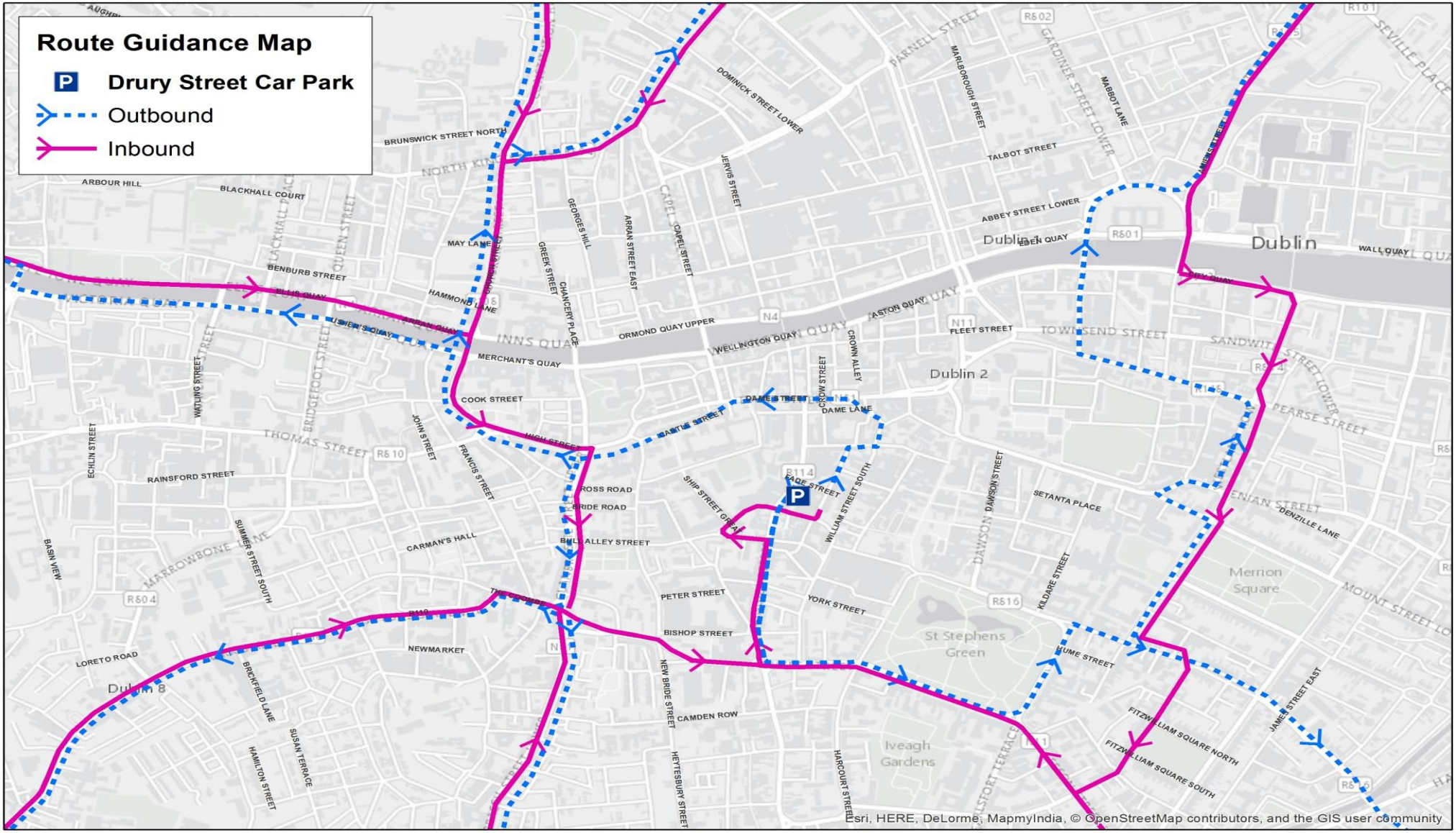
Route Guidance Map
Drury Street Car Park
Outbound
Inbound
BRUNSWICK STREET NORTH
ARBOUR HILL
BLACKHALL COURT
BENBURB STREET
MAY LANE
HAMMOND LANE
GREEK STREET
GEORGES HILL
CHANCERY PLACE
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
DOMINICK STREET LOWER
PARNELL STREET
MARLBOROUGH STREET
GARDINER STREET LOWER
MABBOT LANE
TALBOT STREET
ABBEY STREET LOWER
EDEN QUAY
Dublin 1
Dublin
WALL QUAY
ORMOND QUAY UPPER
WELLINGTON QUAY
ASTON QUAY
FLEET STREET
TOWNSEND STREET
MERCHANT'S QUAY
COOK STREET
DAME STREET
DAME LANE
CROW STREET
CROWN ALLEY
Dublin 2
THOMAS STREET
JOHN STREET
FRANCIS STREET
HIGH STREET
CASTLE STREET
ECHLIN STREET
WATLING STREET
BRIDGEFOOT STREET
RAINSFORD STREET
CROSS ROAD
BRIDE ROAD
BULL ALLEY STREET
CARMAN'S HALL
SHIP STREET GREAT
FADE STREET
WILLIAM STREET SOUTH
DAWSON STREET
SETANTA PLACE
DENZILLE LANE
PEARSE STREET
BASIN VIEW
SUMMER STREET SOUTH
MARROWBONE LANE
PETER STREET
YORK STREET
KILDARE STREET
Merrion Square
MOUNT STREET LO
BISHOP STREET
NEWMARKET
LORETO ROAD
Dublin 8
BRICKFIELD LANE
HAMILTON STREET
SUSAN TERRACE
NEW BRIDE STREET
CAMDEN ROW
HEYTESBURY STREET
HARCOURT STREET
St Stephens Green
Iveagh Gardens
HUME STREET
JAMES STREET EAST
FITZWILLIAM SQUARE NORTH
FITZWILLIAM SQUARE SOUTH
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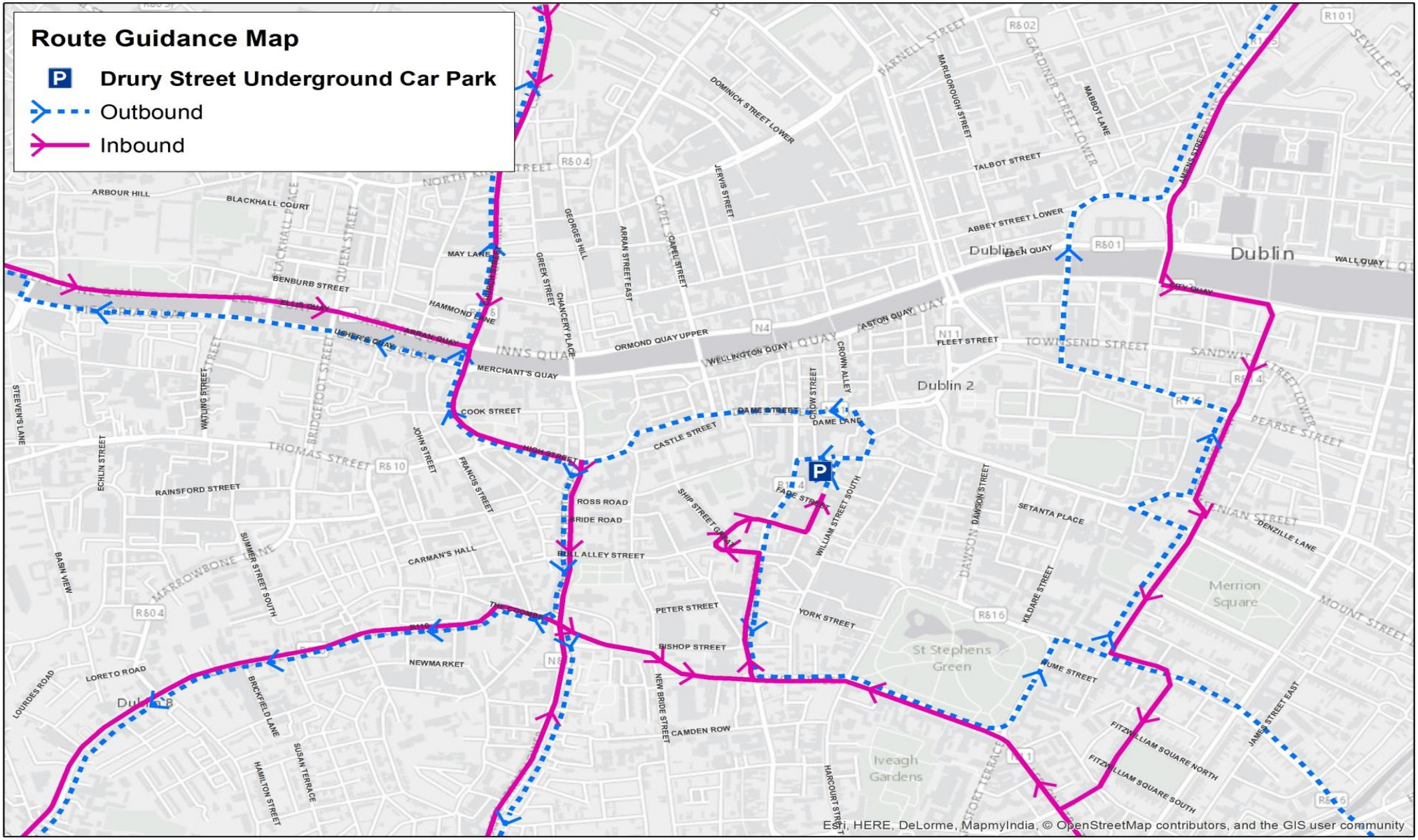
Route Guidance Map
Drury Street Underground Car Park
Outbound
Inbound
Dublin
Dublin 2
Dublin 8
ARBOUR HILL
BLACKHALL COURT
BENBURB STREET
MAY LANE
HAMMOND LANE
USHER'S QUAY
MERCHANT'S QUAY
INNS QUAY
ORMOND QUAY UPPER
WELLINGTON QUAY
ASTON QUAY
EDEN QUAY
WALL QUAY
ABBEY STREET LOWER
TALBOT STREET
DOMINICK STREET LOWER
PARNELL STREET
MARLBOROUGH STREET
GARDINER STREET LOWER
MABBOT LANE
JERVIS STREET
GEORGES HILL
GREEK STREET
CHANCERY PLACE
ARRAN STREET EAST
CAPEL STREET
FLEET STREET
TOWNSEND STREET
CROWN ALLEY
CROW STREET
DAME STREET
DAME LANE
COOK STREET
CASTLE STREET
HIGH STREET
THOMAS STREET
JOHN STREET
FRANCIS STREET
RAINSFORD STREET
ECHLIN STREET
WATLING STREET
BRIDGEFOOT STREET
STEEVEN'S LANE
ROSS ROAD
BRIDE ROAD
BELL ALLEY STREET
CARMAN'S HALL
SHIP STREET GREAT
FADE STREET
WILLIAM STREET SOUTH
DAWSON STREET
SETANTA PLACE
DENZILLE LANE
PEARSE STREET
KILDARE STREET
Merrion Square
MOUNT STREET
PETER STREET
YORK STREET
BISHOP STREET
NEWMARKET
NEW BRIDE STREET
CAMDEN ROW
HARCOURT STREET
St Stephens Green
Iveagh Gardens
RUME STREET
JAMES STREET EAST
FITZWILLIAM SQUARE NORTH
FITZWILLIAM SQUARE SOUTH
SUMMER STREET SOUTH
BASIN VIEW
MARROWBONE LANE
LORETO ROAD
LOURDES ROAD
BRICKFIELD LANE
HAMILTON STREET
SUSAN TERRACE
R101
R802
R804
R801
R810
R816
N4
N11
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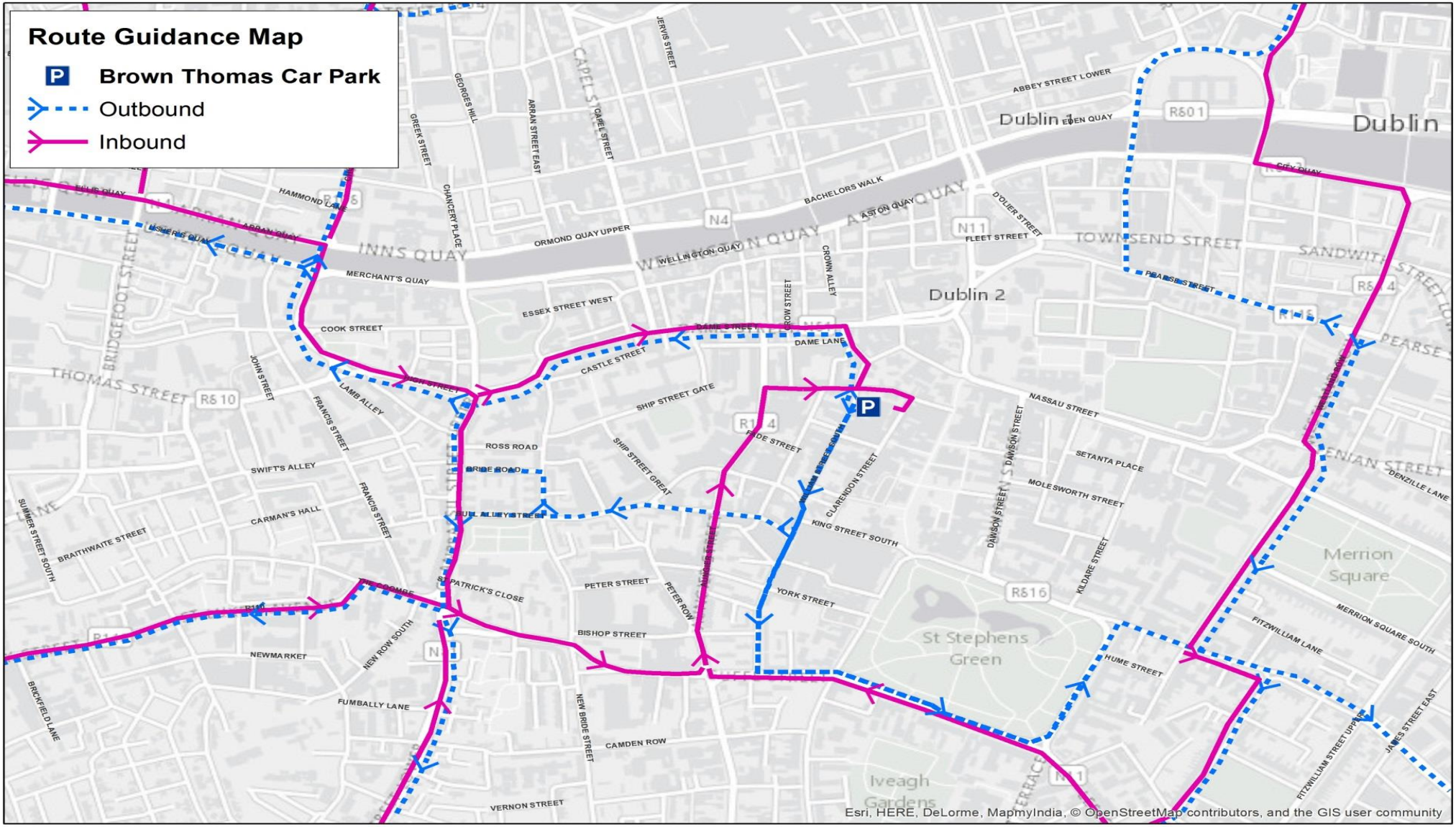
Route Guidance Map
Brown Thomas Car Park
Outbound
Inbound
Dublin 1
Dublin 2
Dublin
INNS QUAY
WELLINGTON QUAY
ASTON QUAY
ORMOND QUAY UPPER
BACHELORS WALK
EDEN QUAY
ABBEY STREET LOWER
TOWNSEND STREET
FLEET STREET
D'OLIER STREET
CROWN ALLEY
CROW STREET
GEORGES HILL
GREEK STREET
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
CHANCERY PLACE
HAMMOND LANE
MERCHANT'S QUAY
ESSEX STREET WEST
COOK STREET
DAME STREET
DAME LANE
CASTLE STREET
SHIP STREET GATE
SHIP STREET GREAT
ROSS ROAD
BRIDE ROAD
BRIDE STREET
BRIDGEFOOT STREET
JOHN STREET
FRANCIS STREET
LAMB ALLEY
THOMAS STREET
SWIFT'S ALLEY
CARMAN'S HALL
BRAITHWAITE STREET
SUMMER STREET SOUTH
PATRICK'S CLOSE
PETER STREET
PETER ROW
WERBURGH STREET
BISHOP STREET
NEWMARKET
NEW ROW SOUTH
FUMBALLY LANE
BRICKFIELD LANE
NEW BRIDE STREET
CAMDEN ROW
VERNON STREET
YORK STREET
KING STREET SOUTH
CLARENDON STREET
DAWSON STREET
NASSAU STREET
SETANTA PLACE
MOLESWORTH STREET
KILDARE STREET
DENZILLE LANE
Merrion Square
MERRION SQUARE SOUTH
FITZWILLIAM LANE
HUME STREET
St Stephens Green
Iveagh Gardens
FITZWILLIAM STREET UPPER
JAMES STREET EAST
PEARSE STREET
SANDWITH STREET
R801
R810
R816
N4
N11
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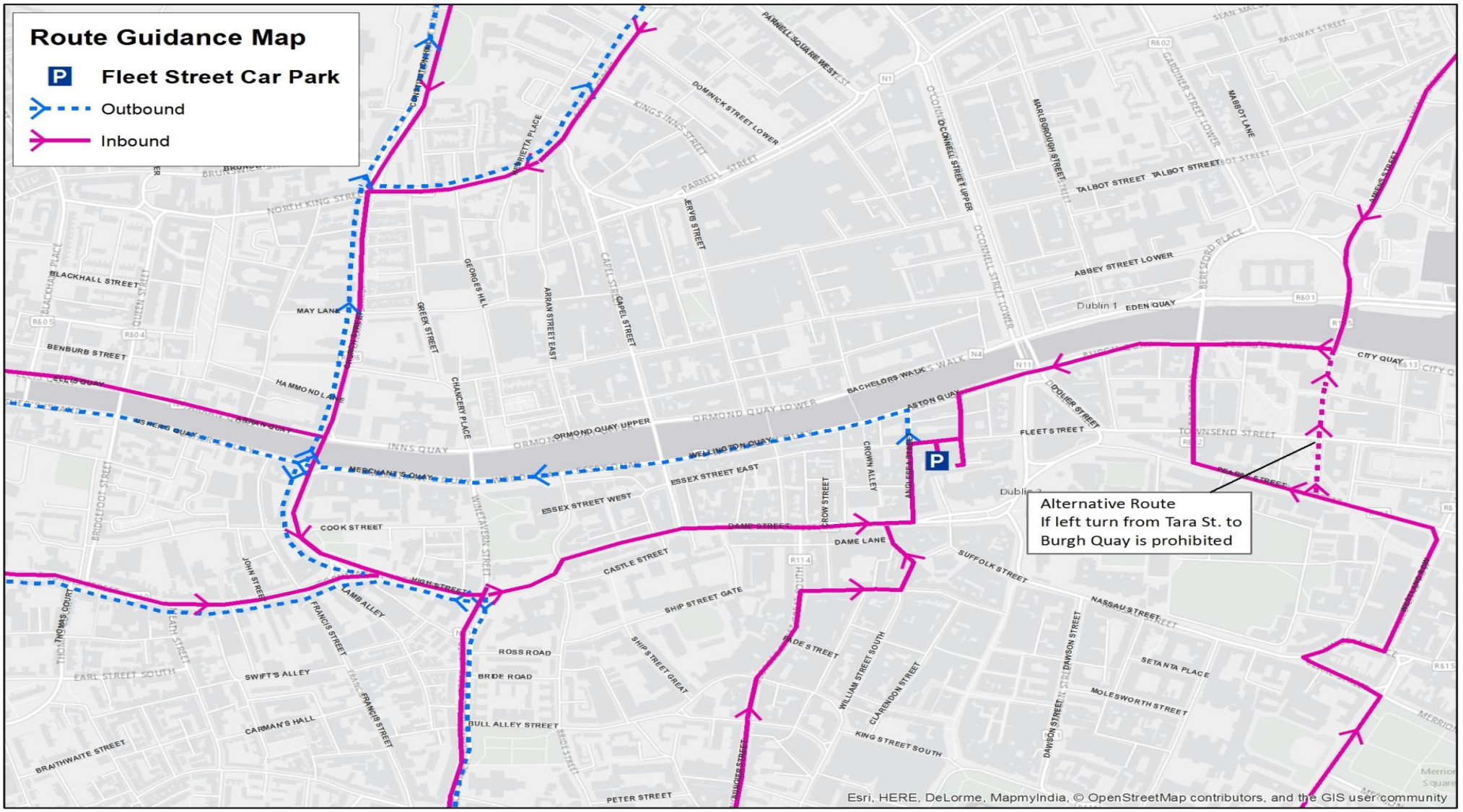
Route Guidance Map
Fleet Street Car Park
Outbound
Inbound
Alternative Route
If left turn from Tara St. to
Burgh Quay is prohibited
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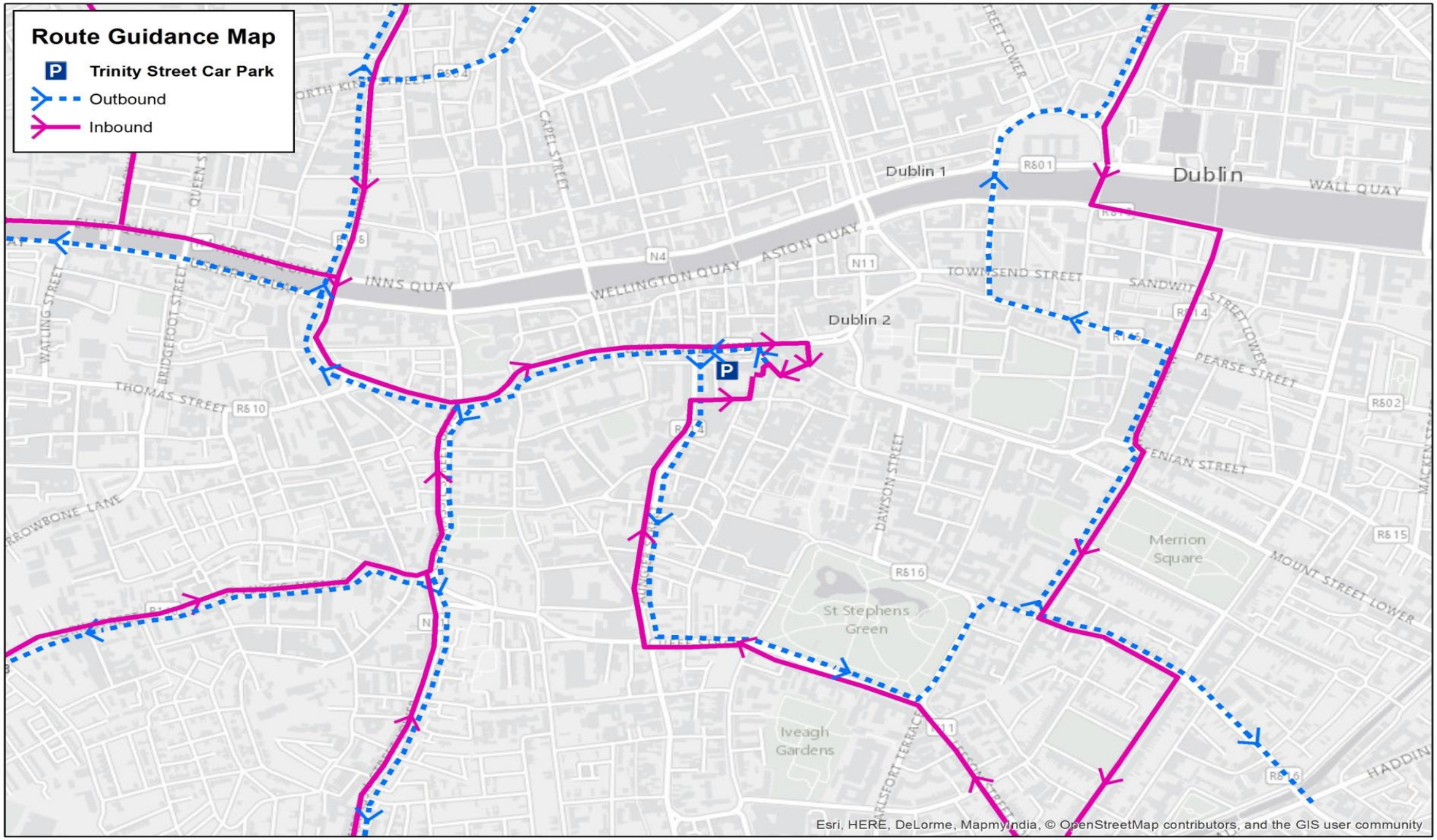
Route Guidance Map
Trinity Street Car Park
Outbound
Inbound
Dublin 1
Dublin
Dublin 2
WALL QUAY
INNS QUAY
WELLINGTON QUAY
ASTON QUAY
TOWNSEND STREET
PEARSE STREET
THOMAS STREET
CAPEL STREET
DAWSON STREET
Merrion Square
St Stephens Green
Iveagh Gardens
MOUNT STREET LOWER
R801
R802
R810
R815
R816
N4
N11
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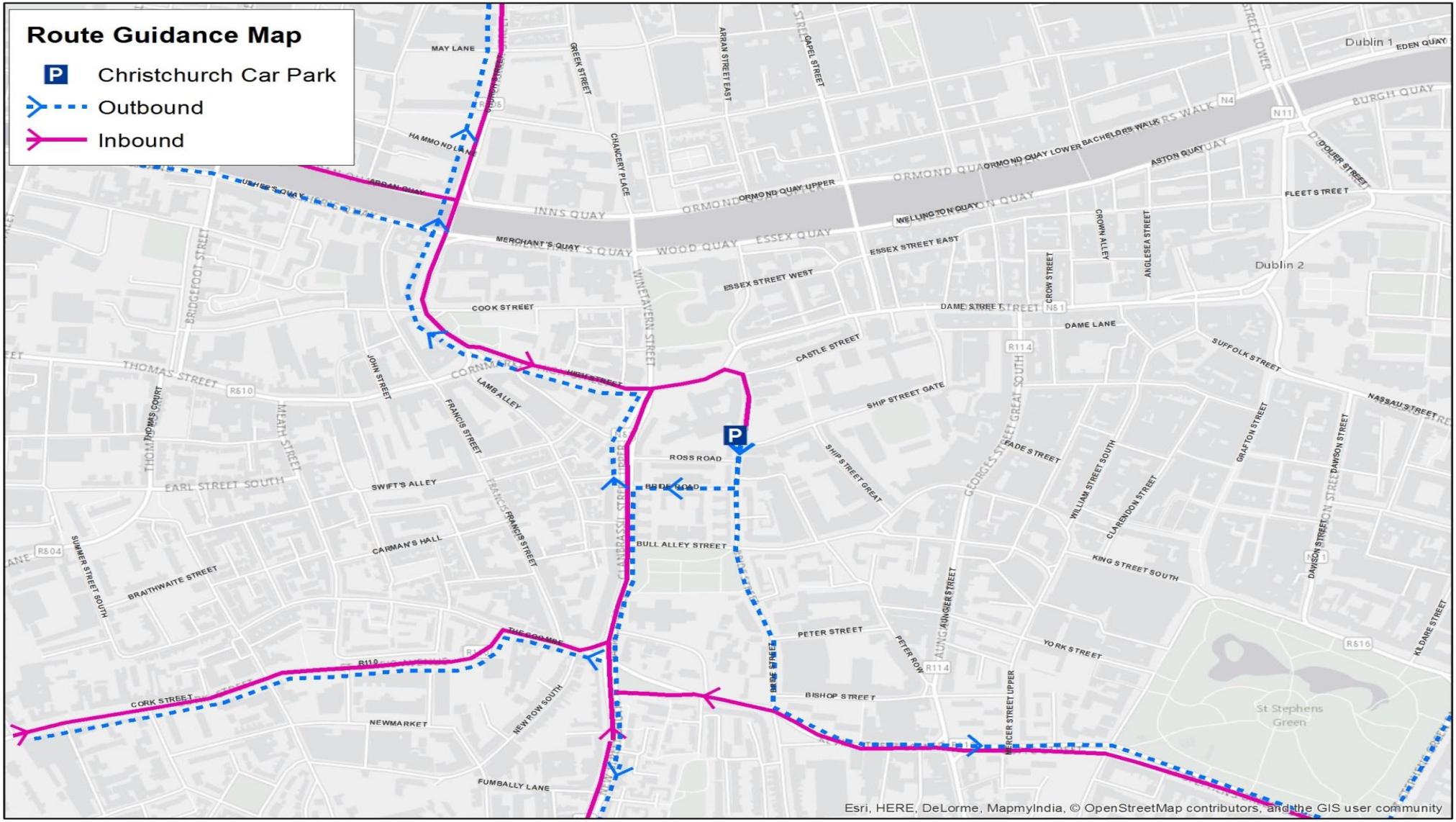
Route Guidance Map
Christchurch Car Park
Outbound
Inbound
MAY LANE
GREEK STREET
ARRAN STREET EAST
CHANCERY PLACE
HAMMOND LANE
INNS QUAY
ORMOND QUAY UPPER
ORMOND QUAY LOWER
BACHELORS WALK
ASTON QUAY
BURGH QUAY
EDEN QUAY
Dublin 1
Dublin 2
FLEET STREET
WELLINGTON QUAY
MERCHANT'S QUAY
WOOD QUAY
ESSEX QUAY
ESSEX STREET EAST
ESSEX STREET WEST
COOK STREET
DAME STREET
DAME LANE
CASTLE STREET
SUFFOLK STREET
NASSAU STREET
SHIP STREET GATE
SHIP STREET GREAT
GRAFTON STREET
DAWSON STREET
CROW STREET
CROWN ALLEY
ANGLESEA STREET
WINETAVERN STREET
BRIDGEFOOT STREET
THOMAS STREET
JOHN STREET
LAMB ALLEY
FRANCIS STREET
MEATH STREET
EARL STREET SOUTH
SWIFT'S ALLEY
CARMAN'S HALL
BRAITHWAITE STREET
SUMMER STREET SOUTH
ROSS ROAD
BULL ALLEY STREET
PETER STREET
PETER ROW
BISHOP STREET
YORK STREET
KING STREET SOUTH
CLARENDON STREET
WILLIAM STREET SOUTH
GEORGES STREET GREAT SOUTH
AUNGIER STREET
MERCER STREET UPPER
KILDARE STREET
St Stephens Green
CORK STREET
NEWMARKET
NEW ROW SOUTH
FUMBALLY LANE
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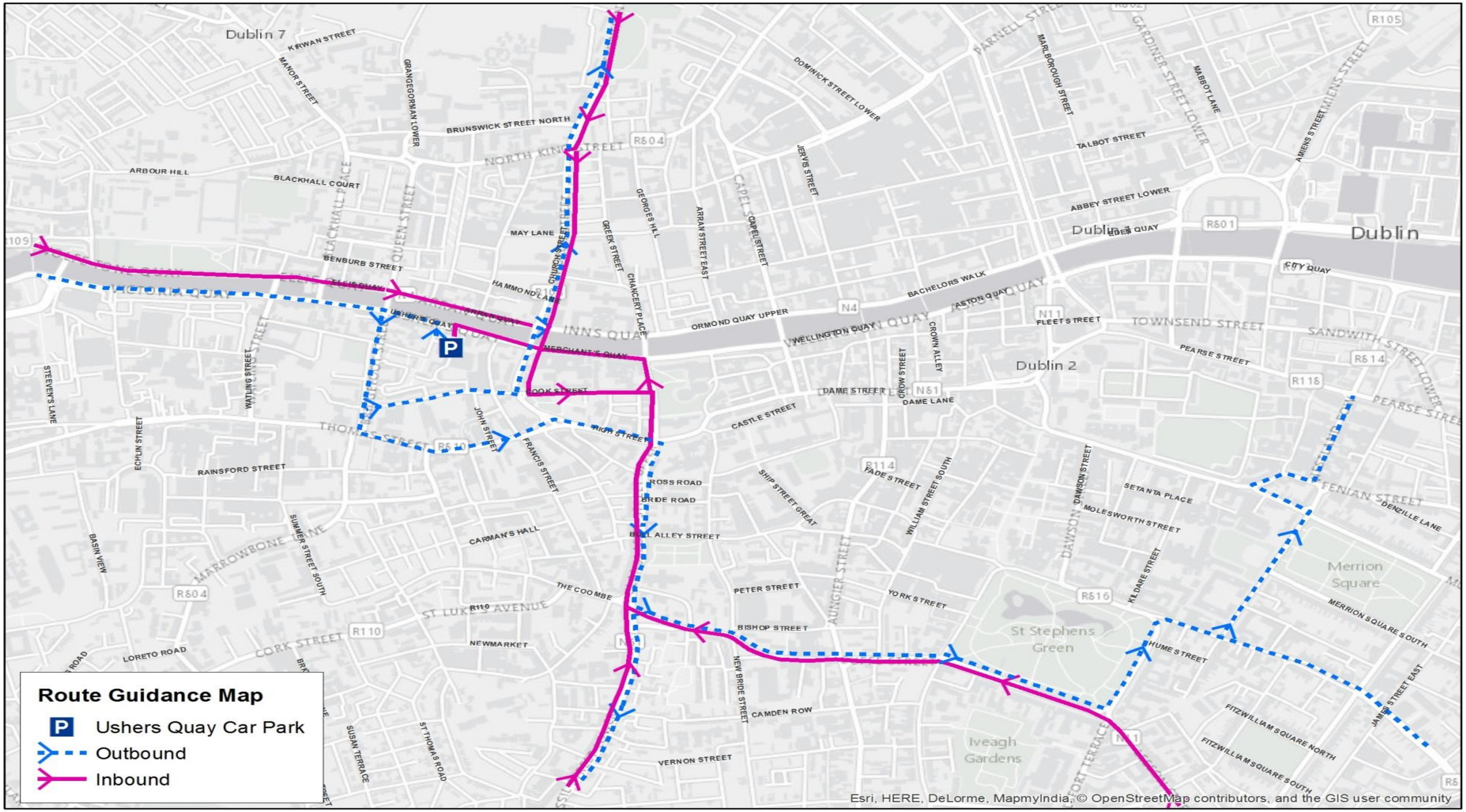
Route Guidance Map
Ushers Quay Car Park
Outbound
Inbound
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Dublin 7
Dublin 2
Dublin
KIRWAN STREET
MANOR STREET
GRANGEGORMAN LOWER
BRUNSWICK STREET NORTH
NORTH KING STREET
ARBOUR HILL
BLACKHALL COURT
MAY LANE
BENBURB STREET
HAMMOND LANE
GREEK STREET
CHANCERY PLACE
GEORGES HILL
ARRAN STREET EAST
CAPEL STREET
JERVIS STREET
DOMINICK STREET LOWER
PARNELL STREET
MARLBOROUGH STREET
GARDINER STREET LOWER
MABBOT LANE
TALBOT STREET
ABBEY STREET LOWER
AMIENS STREET
CITY QUAY
BACHELORS WALK
ORMOND QUAY UPPER
WELLINGTON QUAY
ASTON QUAY
FLEET STREET
TOWNSEND STREET
PEARSE STREET
SANDWITH STREET LOWER
INNS QUAY
MERCHANT'S QUAY
USHERS QUAY
COOK STREET
HIGH STREET
JOHN STREET
FRANCIS STREET
THOMAS STREET
STEEVEN'S LANE
ECHLIN STREET
WATLING STREET
RAINSFORD STREET
CASTLE STREET
DAME STREET
DAME LANE
CROW STREET
CROWN ALLEY
FADE STREET
SHIP STREET GREAT
WILLIAM STREET SOUTH
ROSS ROAD
BRIDE ROAD
BULL ALLEY STREET
CARMAN'S HALL
SUMMER STREET SOUTH
MARROWBONE LANE
BASIN VIEW
THE COOMBE
ST LUKE'S AVENUE
PETER STREET
YORK STREET
AUNGIER STREET
BISHOP STREET
NEWMARKET
CORK STREET
LORETO ROAD
NEW BRIDE STREET
CAMDEN ROW
VERNON STREET
SUSAN TERRACE
ST THOMAS ROAD
DAWSON STREET
SETANTA PLACE
MOLESWORTH STREET
KILDARE STREET
FENIAN STREET
DENZILLE LANE
Merrion Square
MERRION SQUARE SOUTH
St Stephens Green
HUME STREET
Iveagh Gardens
FITZWILLIAM SQUARE NORTH
FITZWILLIAM SQUARE SOUTH
JAMES STREET EAST
R105
R801
R804
N4
N11
N81
R114
R116
R814
R810
R816
R110