



SYSTRA

South Fingal **Transport Study**





South Fingal Transport Study

Final Report

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Abbreviations

AADT	Average Annual Daily Traffic
CSO	Central Statistics Office
CJRR	Clarehall Junction Relief Road
CBC	Core Bus Corridor
DECLG	Department of Environment, Community and Local Government
DTTAs	Department of Transport, Tourism and Sport
DMURS	Design Manual for Urban Roads and Streets
DAA	Dublin Airport Authority
DART	Dublin Area Rapid Transit
DCC	Dublin City Council
ERM	East Regional Model
EWLR	East West Link Road
EMRA	Eastern and Midlands Regional Assembly
EU	European Union
FCC	Fingal County Council
FDP	Fingal Development Plan 2017-2023
GDA	Greater Dublin Area
GTC	Ground Transportation Centre
ITS	Intelligent Transport Systems
LAPs	Local Area Plans
MASP	Metropolitan Area Strategic Plan
mppa	Million passengers per annum
MSCP	Multi-storey Car Parks
NDP	National Development Plan
NPF	National Planning Framework
NTA	National Transport Authority
POWSCAR	Place of Work and School Census of Anonymised Records
RSES	Regional Spatial and Economic Strategy
SFTS	South Fingal Transport Study
sqm	Square Meter
SDRA	Strategic Development and Regeneration Area
SFILT	Strategic Framework for Investment in Land Transport
SWDR	Swords Western Distributor Road
SWRR	Swords Western Relief Road
NCPF	the National Cycle Policy Framework
TEN-T	Trans-European Transport Network
TII	Transport Infrastructure Ireland

1 | Introduction

1.1 Background

In September 2017, Fingal County Council (FCC) commissioned SYSTRA Ltd. to undertake the South Fingal Transport Study (SFTS). The SFTS is a study of the transport network in South Fingal recommending key transport infrastructure and outline levels of land use development that will enable its sustainable growth leading up to the delivery of MetroLink and beyond. As such, some of the key questions that the SFTS seeks to address are:

- What are the most critical road, public transport and active travel schemes that Fingal should implement in the next decade?
- What infrastructure is required to meet demand in advance of MetroLink?
- What are sustainable ways of improving Fingal's integration and connectivity with Dublin City?
- What measures should Fingal County implement to ensure the strategic function of Dublin Airport is maintained and protected for the future?



1.2 Scope and Expected Outcomes

The need for the SFTS was identified in the Fingal Development Plan 2017-2023 (FDP) in objective MT07, which states:

“Objective MT07: Carry out a comprehensive feasibility study of the South Fingal area to produce a strategic ‘vision’ and overall strategy for the proper planning and sustainable development of the study area, based on a sustainable transport and smarter travel approach, planning for all transport modes and needs, whilst also being reflective of road network capacity and modal split assumptions. This will be carried out within two years of adoption of the Development Plan and will be used to inform the preparation of statutory Local Area Plans and Masterplans in the area. The preparation of the study will include implementation recommendations and will involve: Consultation with key statutory stakeholders including TII and the NTA, public consultation and engagement with relevant statutory bodies.”

- Managing sustainable growth of Fingal’s population and employment in line with the FDP core strategy and various Local Area Plans (LAPs); and
- Transport and land use integration, considering where investment in transport supply should be prioritised to meet the short and longer term needs driven by ongoing growth in Fingal and adjacent areas, including projected increases in passengers using Dublin Airport.

The scope of the SFTS is to determine the key infrastructure measures required within Fingal and adjacent areas to tackle existing constraints in transport capacity, identify appropriate levels of development to facilitate growth in population and employment, and encourage sustainable travel in the county and wider region.

The methodology for the SFTS consisted of analysis of existing population and travel patterns (Census 2016), development of population and employment forecasts for the study area and analysis of future network operation using strategic transport modelling. The geographic scope of the SFTS broadly follows the main areas of anticipated growth in the southern part of the county. These are in Swords, in Fingal/Dublin Fringe (e.g. the area stretching from Baldoyle to Clonshaugh including adjacent Dublin City Council areas such as Clongriffin and Belmayne), and in and around Dublin Airport. Each of these three broad areas has their own particular transport requirements and constraints and are as such examined in detail separately in this report.

Further to the above, the SFTS takes cognisance of the need to address the following critical issues as set out in the FDP:

- Implementing its transport related objectives, linked to national and regional policy and specifically the objectives of the NTA Transport Strategy for the Greater Dublin Area 2016-2035;
- Identifying the critical additional road and public transport connectivity and capacity required to enable the sustainable development of the county, supported by integrated proposals for active travel;

1.3 Key Policies

The policy drivers influencing the SFTS are numerous and wide ranging, and include:

- **National Planning Framework (NPF) and the National Development Plan (NDP).** The NPF sets out several strategic outcomes that Government is committed to delivering by 2040. Both Compact Growth and Sustainable Mobility objectives are of particular relevance to the SFTS.
- **A Strategic Framework for Investment In Land Transport (SFILT).** This framework policy sets out the importance of transport investment to economic growth and the principles which frame future investment in transport. It underlines the need to move away from car-based growth by investing in sustainable travel and improving spatial planning to make sustainable travel options more cost-effective.

- **Smarter Travel Policy (2009–2020).** This is a range of policies focussed on reducing the use of the private car to help ensure a more sustainable future. It recognises that recent trends in transport towards increasing car use will damage the economy and society as a whole in the long term.
- **NTA Transport Strategy for the Greater Dublin Area 2016-2035.** This Strategy provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) and provides transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure (such as housing, water and power) can align their investment priorities. Along

with investment programmes in other sectors, it is an essential component for the orderly development of the Greater Dublin Area over the next 20 years.

- **DoECLG Spatial Planning and National Roads Guidelines for Planning Authorities.** These guidelines seek to protect the carrying capacity, operational efficiency, safety and ongoing investment in national roads. This in particular includes M50 demand management and protection of the accessibility of gateway facilities for goods and services for international, national, and regional connectivity.

More detail on the relevant aspects of each of the above policies is presented in Chapter 3.



1.4 Report Structure

This report presents the main findings of the SFTS and is organised as follows:

Chapter 1: Introduction

This chapter provides background the study, its overarching objectives and expected outcomes, and introduces the key policies which guide the recommendations.

Chapter 2: Study Approach

This chapter explains the study approach applied to each of the three sub-areas, covering approaches to the review of existing travel and transport conditions, future land use assumptions, and transport recommendations arising from the analysis of future transport conditions based on transport modelling. The transport modelling methodology using the East Regional Model is summarised in this chapter and presented in more detail in the technical note SFTS Transport Modelling Approach.

Chapter 3: Policy Review

This chapter introduces the relevant policy drivers and guidelines from National, Regional, and Local Policy which form the basis for the SFTS.

Chapter 4: Study Area Overview

This chapter provides an overview of the three areas focussed on by the study: Swords, Fingal/Dublin City Fringe, and Dublin Airport.

Chapter 5: Swords Transport Assessment

This chapter follows the approach described in Chapter 2 to set out the land use assumptions and transport recommendations for Swords.

Chapter 6: Fingal/Dublin Fringe Transport Assessment

This chapter follows the approach described in Chapter 2 to set out the land use assumptions and transport recommendations for the Fingal/Dublin Fringe area.

Chapter 7: Dublin Airport Transport Assessment

This chapter follows the approach described in Chapter 2 to set out the transport / surface access recommendations for the Airport.

Chapter 8: Conclusions and Recommendations

Conclusions of the study and a summary of the recommendations set out in chapters five to seven are provided in this chapter.

1.5 SFTS Sub-Reports

This report is based on the following detailed area specific studies:

- **Swords Study.** This technical report focusses on Swords and uses a range of population and employment data, in combination with transport modelling, to examine issues and recommend improvements to the transport networks.
- **Fingal/Dublin Fringe Study.** This technical report focusses on the Fingal/Dublin Fringe area and uses a range of population and employment data, in combination with transport modelling, to examine issues and recommend improvements to the transport networks.
- **Dublin Airport Surface Access Issues Paper.** This technical report on surface access to Dublin Airport was developed as part of the wider SFTS. It considers broad issues relating to current and future surface access at Dublin Airport in addition to forecasting future effects on the transport network of continued passenger and employment growth using transport modelling.
- **SFTS Transport Modelling Report.** This report provides a detailed description of the modelling software used, the inputs, scenarios and assumptions applied and the key outputs used to inform study recommendations.

2 | Study Approach

2.1 Overview

The South Fingal Transport Study (SFTS) was developed using the following key elements.

2.1.1 Policy Review and Stakeholder Consultation

The aim of this task was to review relevant policy drivers and the existing transport supply context to establish the basis for setting the objectives of the SFTS. It included initial stakeholder engagement with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII), Dublin City Council (DCC) and Dublin Airport Authority (DAA) to establish the various goals and challenges for the county.

This task also involved developing a thorough understanding of the range of previous transport schemes, studies and background policy documents.

2.1.2 NTA Regional Modelling System

This element of the study involved preparing the inputs and data extraction processes required to run and interpret the NTA's East Regional Model (ERM). This included network coding of various road and public transport schemes and the preparation of planning data inputs to the overall models. The NTA forecast land use data for 2035 provided the starting point for the development of forecasts for the SFTS. The use of the ERM is covered in detail in the separate technical note SFTS Transport Modelling Approach.

2.1.3 Baseline Travel Behaviour and Network Evaluation

This task informed the identification of constraints and opportunities and formed a basis for the development of the key recommendations of the study. It focussed on quantifying existing travel behaviour and transport network operation using Census 2016 POWSCAR¹, the National Household Travel Survey, and the 2016 ERM transport model.

2.1.4 Future Land Use, Travel Behaviour and Network Evaluation

FCC and DCC planners were consulted to determine potential levels of population and employment in zones within the study area. This was based on an inventory of planning permissions and development potential for various areas. An initial forecast of population and employment in Fingal was provided by the main NTA reference case year of 2035. These data sets form the basis for the modelling of a potential future land-use situation with respect to development of the area.

For modelling future transport networks in the ERM, a range of transport schemes for both road and public transport were identified through a review of the NTA GDA Strategy, the FDP and various LAPs and were then input to the ERM. Examples of schemes include elements of the GDA Strategy such as the Core Bus Corridors and MetroLink, in addition to a range of road proposals as outlined in previous FDPs.

Mitigation measures were then identified to address specific issues highlighted from the modelling results (e.g. over capacity public transport services or congested roads and junctions), to generally improve the performance of both the public transport and road networks and enable sustainable travel choices. The analysis of POWSCAR in combination with the strategic modelling provides further rationale for the recommendations associated with walking and cycling improvement. This was an iterative process, whereby mitigation measures were used to generate new transport schemes, which were then re-assessed in the ERM. A series of workshops with FCC, DCC, NTA, and TII were undertaken to further develop options and solutions. The process is described in Figure 1.

1 Place of Work and School Census of Anonymised Records

2.2 Land Use Forecasts

The forecasts assumed in this study with respect to population and employment levels in South Fingal, and the modelled effects on the transport network, will inform future decisions on planning in Fingal County but should not be regarded as targets or as maxima or minima on future development permissible in a location.

In some cases the forecasts presented would constitute a highly intense level of development. Such forecasts are used in the modelling to ascertain impacts on transport but should not be regarded as

a recommendation or study outcome. In such areas reasonable and sustainable development levels may be different. The appropriate level would be subject to a more detailed feasibility assessment at LAP stage.

2.3 Timeframe

The SFTS focusses on a 2027 timeframe for the following reasons:

- Fingal is the fastest growing county in Ireland and needs to provide for increased travel demand in the short term;
- There is an immediate need to prioritise projects that relieve congestion at identified pressure points and improve the facilities available for walking and cycling;
- There is a need to consider now how the rapidly developing Fingal/Dublin Fringe area can be better integrated and connected with Dublin Airport and northern parts of Dublin without over reliance on M50 access;
- There is an immediate need to consider the impact of growth in patronage at Dublin Airport on the transport network and to identify the key surface access constraints that are expected to arise in advance of MetroLink;
- While MetroLink and Bus Connects will deliver step changes in the quality and capacity of public transport, these schemes are not expected to be fully complete and operational until at least 2027. The SFTS fills an important gap in determining the interventions required for the ongoing development of the county and adjacent areas; and
- It corresponds with the life-time of the FDP and associated LAPs and Masterplans, and hence the anticipated level of housing provision up to 2027.

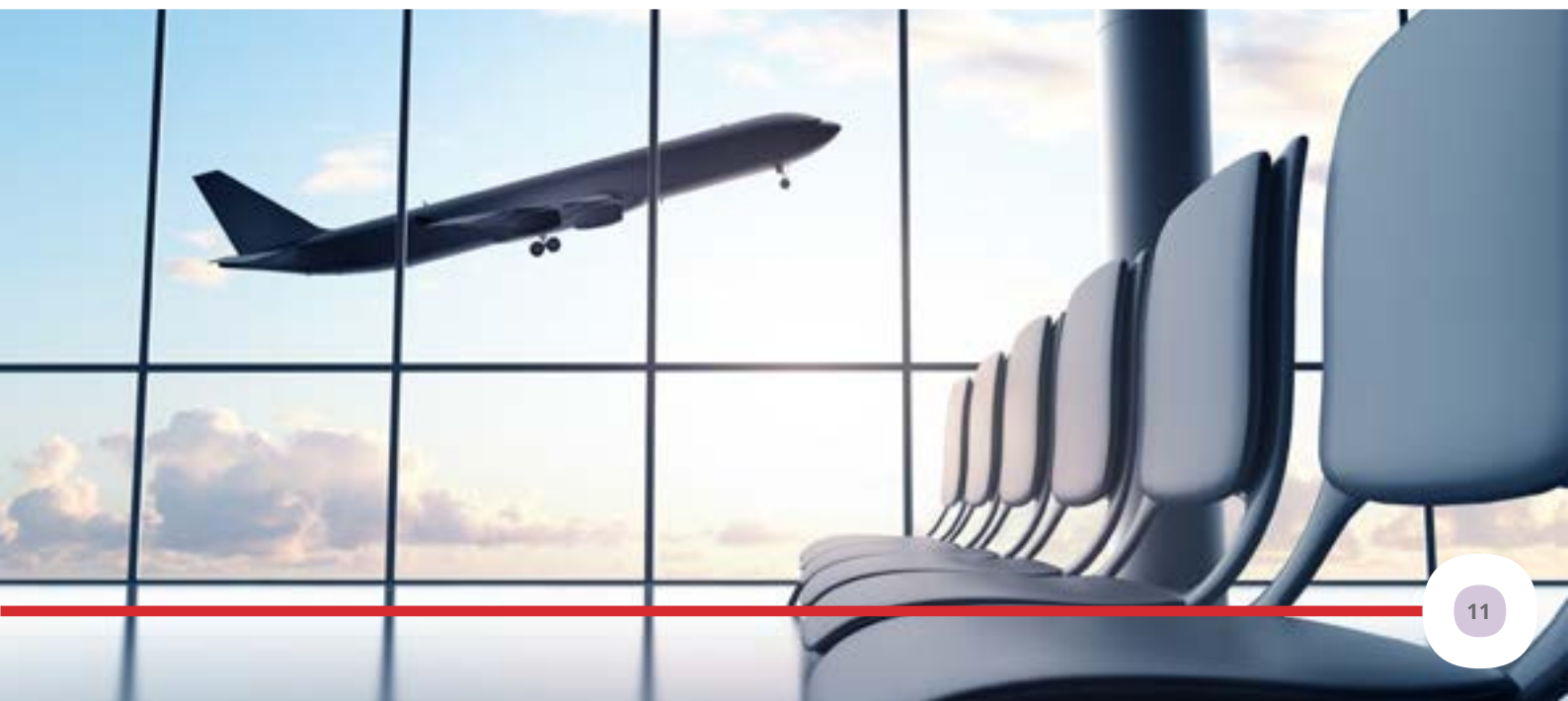
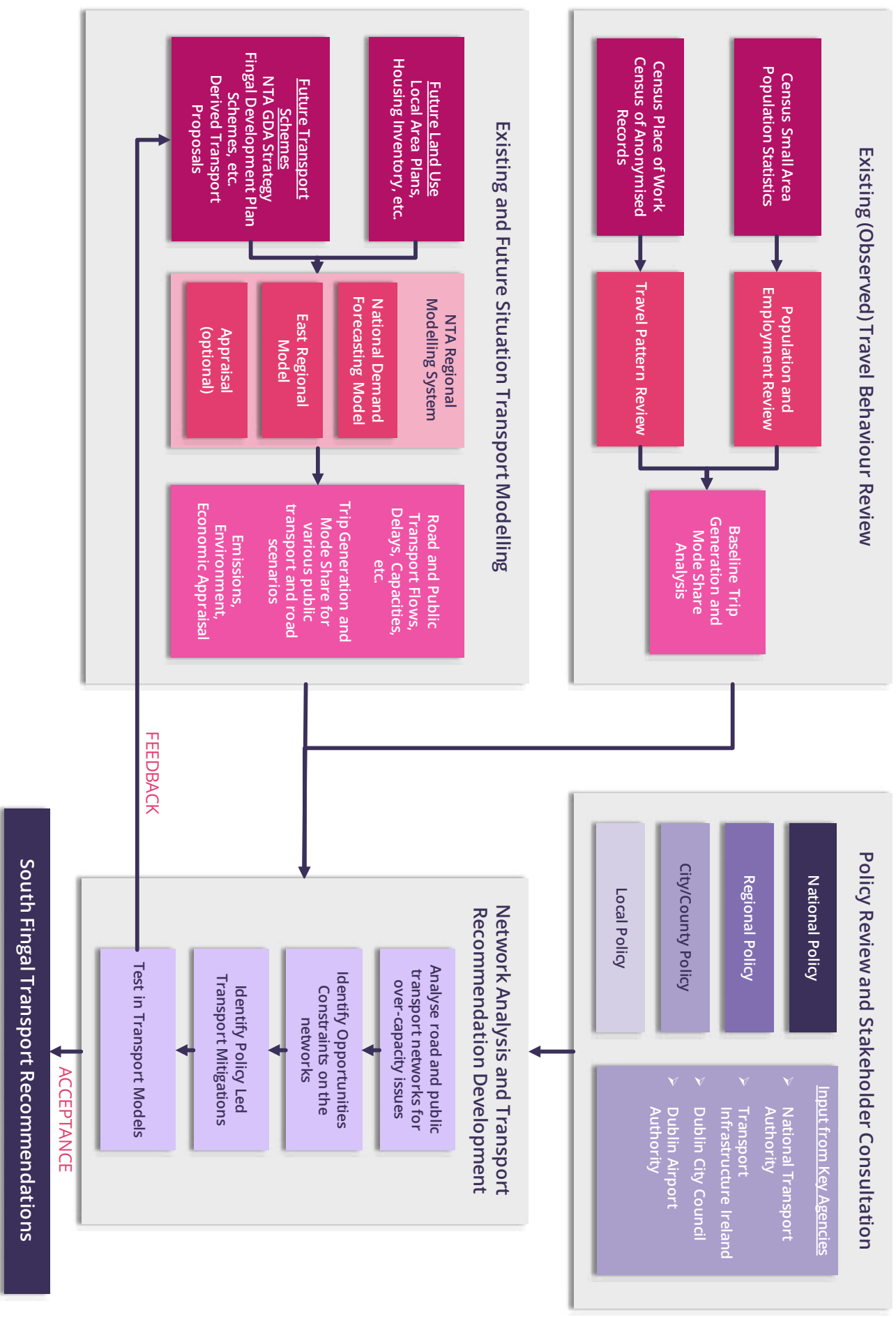


Figure 1. Overall Study Approach



3 | National, Regional, Local Policy

The policy requirements for the SFTS are numerous and wide ranging. This chapter reviews the most relevant elements of each policy/plan to the SFTS. Figure 2 summarises the most critical policies, guidelines and plans that underpin the SFTS recommendations.

Figure 2. Policy Framework



3.1 National Planning Framework 2040

The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040. Key objectives from the recently published NPF include:

- Guide the future development of Ireland in order to accommodate the projected one million increase in our population, the need to create 600,000 additional full time jobs and the need to build 550,000 more homes by 2040;
- Reduce the distances between places of work and homes in order to reduce current unsustainable trends of increased commuting, aiming to ensure most people have no more than a 30-minute commute from home to work;
- To secure more compact forms of urban development in all types of settlement;
- To regenerate rural Ireland by promoting environmentally sustainable growth patterns;
- To plan and implement a better distribution of regional growth, in terms of jobs and prosperity;
- To transform settlements of all sizes through imaginative urban regeneration and bring life and jobs back into cities, towns and villages; and
- To co-ordinate the delivery of infrastructure and services in tandem with growth.

It also outlines the preferred approach to 'macro-spatial' growth which is characterised as:

- One with regional parity for the East Midlands Regional Area in relation to the North West Regional Area and the South Regional Area;

- Regional concentration towards cities and potential for some regionally important larger settlements;
- A focus on contained growth and reduced sprawl by targeting infill lands, some of which will be brownfield sites in existing built-up areas; and
- Sequential provision of infrastructure with some strategic investment outcomes identified.

With respect to Fingal, the future key enablers for growth outlined in the NPF are the following:

- Delivering key rail projects including MetroLink and Dart Expansion;
- Development of a better bus system with better orbital connectivity and integration with other transport networks;
- Delivery of the metropolitan cycle network;
- Relocating some land uses to outside the M50 from existing built up areas; and
- Improving access to Dublin Airport – including improved public transport access, connections from the road network and in the longer-term consideration of heavy rail access to facilitate direct services from the rail network in the context of potential future electrification.



3.2 Strategic Framework for Investment in Land Transport (SFILT)

A first priority for SFILT is the steady state maintenance of the existing land transport infrastructure and services in the Greater Dublin Area. This will involve expenditure on maintenance and renewal in order to keep the existing transport system in an adequate condition, and ensure sufficient operating and management expenditure to continue to deliver adequate transport services.

The next priority is to address urban congestion and improve the efficiency and sustainability of the urban transport system in the GDA and Fingal County. The focus will be improved and expanded public transport capacity, improved and expanded walking and cycling infrastructure, and the use of Intelligent Transport Systems (ITS) to improve efficiency and sustainability.

Major new roads are generally not advocated by the SFILT framework as part of as the solution to congestion, although capacity enhancements to existing roads coupled with demand management measures can be justified in limited circumstances, as is the case for the SFTS.

3.3 Smarter Travel Policy

Objectives of this National Government policy include:

- Addressing the current unsustainable transport and travel patterns and to reducing the health and environment impacts of current trends;
- Delivering a sustainable transport system in line with climate change targets;
- Reducing work related commuting by car from a current modal share of 65% down to 45% by 2020; and
- Increasing commuting by alternative sustainable modes to 55% by 2020.

The document outlines five key goals necessary for achieving sustainability in transport. These are:

- Reduce overall travel demand and commuting distances travelled by car;
- Improve economic competitiveness through maximising the efficiency of the transport network and alleviating congestion and infrastructure bottlenecks;
- Reduce reliance on fossil fuels and thus improve security of energy supply;
- Minimise the negative impacts of transport on the local and global environment by reducing air pollutants and greenhouse gas emissions attributed to travel; and

- Improve accessibility to transport and improve quality of life with an emphasis on people with reduced mobility and those experiencing isolation as a result of a lack of transport.

The keys goals of the policy are to be achieved by the following four main actions:

- Reducing distances travelled by car and encourage usage of smarter travel by focusing development, population and employment growth in the same areas and actively encourage people to reside near places of work and use fiscal measures in order to illicit behavioural change;
- Increasing availability of alternatives to the car, centred around a radical improvement in public transport services and increasing investment in other modes of active transport such as walking and cycling;
- Improving the efficiency of motorised transport such as improved fleet structure, energy efficiency and alternative technologies; and
- Strengthening of institutional arrangements.

3.4 Draft Regional Spatial and Economic Strategy (RSES)

The draft Eastern and Midlands Regional Assembly (EMRA) RSES supports continued population and economic growth in Dublin City and suburbs, with high quality new housing promoted and a focus on the role of good urban design, brownfield redevelopment and urban renewal and regeneration. It promotes improvement in the provision of public transport and active travel and the development of strategic amenities to provide for sustainable communities.

The RSES identifies Swords, Maynooth and Bray as important in a regional and county context. They are noted to have the capacity and future growth potential to accommodate above average growth in the region with the requisite investment in employment creation, services, amenities and sustainable transport.

Relevant objectives of the draft RSES include:

RPO 4.24: Support the continued development of Swords as part of an emerging 'Green City' concept, building on its strategic location near Dublin Airport and linked to the delivery of MetroLink to provide for high density and people intensive uses in locations that are accessible to quality public transport nodes, existing and planned.

RPO 4.25: Future development required to achieve the growth vision for Swords shall:

- Support the regeneration of underused, vacant or derelict town centre lands for residential/mixed use development to facilitate population growth;
- Provide for the sustainable, compact and sequential infill of yet-to-be developed Masterplan and Local Area Plan zoned lands along the R132 and future MetroLink corridor; and
- Require the preparation of a Local Area Plan at Lissenhall to inform policy for the longer-term strategic area of Swords, in accordance with Your Swords: An Emerging City Strategic Vision 2035 or any update thereof.

RPO 4.26: Facilitate the strategic regeneration of Swords to increase the resilience of the local economy and provide for an enhanced urban environment with a particular focus on the following key objectives:

- Enhance the identity of the town centre through the development of Swords Civic Centre and Cultural Centre, the delivery of the conservation plan for Swords Castle, and the delivery of an enhanced public realm in Swords Town Centre, in accordance with a new healthy placemaking strategy to provide a prioritised, programmed and impactful package

of measures to co-ordinate investment and decision making across multiple stakeholders;

- Facilitate the creation of a new street fronting the river walk to the west of Main Street and support co-ordinated infill development on key strategic sites along Main Street and North Street; and
- Promote core recreational and amenity spaces, utilising in particular Ward River Valley Park, Swords Cultural Quarter including Town Park, Ward River Walk west of Main Street area.

The draft RSES provides further basis for the integration of land use and transport planning in the region, informing the preparation and implementation of plans, programmes and projects at all levels. To achieve this in the EMRA, Local Authorities the NTA and other agencies will seek to apply the following guiding principles in statutory land use plans:

- For urban-generated development, the development of lands within or contiguous with existing urban areas should be prioritised over development in less accessible locations. Residential development should be prioritised in lands (including infill and brownfield sites) which are or will be most accessible by walking, cycling and public transport;
- The predicted impact of the potential land use and transport infrastructure on modal split and transport greenhouse gas emissions should be assessed to deliver on national and regional targets;
- Large trip intensive developments, such as high employee dense offices and retail, should in the first instance be focussed into central urban locations;
- Within the Dublin Metropolitan Area, except in limited planned circumstances, trip intensive developments or significant levels of development should not occur in locations not well served by existing or proposed high capacity public transport;
- The strategic transport function of national roads and associated junctions should be maintained and protected; and
- All non-residential development proposals should be subject to maximum parking standards.

3.5 NTA Transport Strategy for Greater Dublin Area 2016–2035

3.5.1 National Transport Authority Mission and Objectives

The following outlines the NTA's vision, mission and relevant priorities and objectives as set out in the NTA Statement of Strategy 2018 – 2022:

NTA Vision:

“To provide high quality, accessible, sustainable public transport connecting people across Ireland.”

According to the document, in order to deliver this vision, the NTA will:

- Secure the provision of an efficient, accessible and integrated transport system in rural and urban Ireland;
- Transform and elevate customers' transport experience;
- Regulate privately operated transport services for the benefit of consumers;
- Contribute to the effective integration of transport and land use policies; and
- Advance Ireland's transition to a low emissions transport system.

The following top three priorities in the NTA's strategy are of relevance to the SFTS:

- **Priority 1:** Undertake strategic transport planning seeking the optimal alignment of land use and transport policy and practice, enabling an increased proportion of travel by sustainable modes;
- **Priority 2:** Promote the use of more sustainable modes of transport; and
- **Priority 3:** In line with available funding, implement an effective infrastructure investment programme that delivers sustainable and public transport infrastructure in a cost effective manner, complemented by appropriate traffic and demand management measures.

In order to help deliver the NTA's policy goals, and to enable the delivery of appropriate levels of transport investment in Fingal, the SFTS aligns with the above vision and priorities.

3.5.2 NTA GDA Strategy 2016-2035

The NTA GDA Strategy is based on a set of core principles that provide the framework for the planning and delivery of infrastructure and services in the GDA up to 2035. These are:

- As the capital city of Ireland and a major European centre, Dublin shall grow and progress, competing with other cities in the EU, and serving a wide range of international, national, regional and local needs;
- The Dublin and Mid-East Regions will be attractive, vibrant locations for industry, commerce, recreation and tourism and will be a major focus for economic growth within the Country;
- The GDA, through its ports and airport connections will continue to be the most important entry/exit point for the country as a whole, the European Union and the rest of the World. Access to and through the GDA will continue to be a matter of national importance;
- Development in the GDA shall be directly related to investment in integrated quality public transport services and focussed on compact urban form;
- Development within the existing urban footprint of the Metropolitan Area will be consolidated to achieve a more compact urban form; and
- Development in the Hinterland Area will be focussed on consolidation of development in key identified towns, separated from each other by extensive areas of strategic green belt land devoted to agriculture and similar uses.

To achieve these principles future development must:

- Integrate land use and transport to reduce the need to travel, the distance travelled, the time taken to travel, and to promote walking and cycling especially within development plans;
- Protect the capacity of the strategic road network;
- Ensure a significant reduction in share of trips taken by car, especially those trips which are shorter or commuter trips;
- Take into account all day travel demand from all groups; and
- Provide alternative transport modes to reduce strain on the M50, as the current increase in traffic is unsustainable.

Within the strategy significant investment is planned for Fingal and the corridor connecting Fingal and Dublin City Centre, including:

- MetroLink;
- DART Expansion Programme, which proposes the provision of high frequency DART services on the existing Northern rail line;
- Two Core Bus Corridors, one linking Swords and the Airport to the City Centre and the other linking Clongriffin along the Malahide Road to the City Centre;
- Construction of a distributor road to the west of Swords;
- Extension and improvement in cycling infrastructure; and
- Development of strategic park and ride facilities at Swords.

3.5.3 National Development Plan 2018-2027

There are a number of key transport infrastructure measures proposed by the NTA GDA Transport Strategy which now form a part of the NDP 2018–2027. These include DART Expansion, MetroLink, Luas and Bus Connects. These schemes, which will support the delivery of an environmentally sustainable low-carbon public transport system, will ensure that public transport meets the significant growth in passenger demand for public transport services in the Eastern and Midlands Region by 2040.

3.5.4 MetroLink



The MetroLink project, shown in Figure 3, is the development of a north-south urban railway service that will run along a high-demand corridor between Swords and Sandyford, connecting key destinations including Dublin Airport and the City Centre along its 26km route. There will be a total of 25 stations (including 15 new stations), 3,000 additional Park and Ride spaces and a journey time of approximately 50 minutes from Swords to Sandyford. Four of its stations are in Swords. From south to north these are Fosterstown, Swords Central, Seatown, and Estuary. The latter will include a Park and Ride.

NTA/TII have concluded the public consultation process at the time of writing this report. A “Preferred Route” for the scheme will be published in 2019, on which the public will again be invited to submit their views. The Preferred Route will then proceed to planning and it is anticipated that a Railway Order Application to An Bord Pleanála will be made in Q3 2019.

Figure 3. MetroLink Alignment



Latest MetroLink Route from City Centre

3.5.5 DART Expansion

The DART Expansion Programme is a series of projects that will create a linked and interconnected metropolitan area DART network for Dublin. Initial investment will deliver the non-underground tunnel elements of the programme using the recently opened rail link and existing connector tunnel under the Phoenix Park. This includes buying additional fleet for the DART network and measures such as re-signalling, junction and station changes to provide expanded services. The next stage will be to provide fast, high-frequency electrified services to Drogheda on the Northern Line, Celbridge/Hazelhatch on the Kildare Line, Maynooth and the M3 Parkway on the Maynooth/Sligo Line. DART services will continue to be provided on the South-Eastern Line as far as Greystones. New stations to provide interchange with bus, Luas and Metro networks will be included.

This integrated rail network will provide a core, high-capacity transit system for the region and will deliver a very substantial increase in peak-hour capacity on all lines from Drogheda, Maynooth, Celbridge/Hazelhatch

and Greystones. The capacity increase of the Drogheda line under the DART Expansion programme will support growth in eastern parts of the Fingal Area.

3.5.6 Bus Connects and Core Bus Corridor Project

In advance of the MetroLink being constructed, it will be necessary to provide a higher level of public transport capacity on the corridor linking Swords and the Airport to the city centre. This will take the form of a Core Bus Corridor (CBC) type upgrade along the route. The final arrangement would be designed to be complementary to the MetroLink project.

A CBC along the Malahide Road to Clongriffin will also be provided as a means of upgrading the existing bus corridor to provide for additional demand not readily served by DART at locations such as Belcamp, Balgriffin, Belmayne, Donnycarney, Artane, Coolock and Darndale.

Figure 4 illustrates the CBCs proposed to serve North Dublin as part of Bus Connects.

Figure 4. Bus Connects CBCs North Dublin



3.5.7 Road Network

The NTA GDA Strategy includes a distributor road on the western side of Swords, in addition to a distributor road around Donabate. These are required to provide for development access and to address congestion issues in the general localities. The Strategy further identifies the intersection of the Malahide Road with the east-west R139 at Balgriffin/Clare Hall (the Clarehall Junction) as a major source of delay on both routes and notes the requirement for road proposals to address these deficiencies.

3.5.8 Greater Dublin Area Cycle Network Plan

Based upon the National Cycle Policy Framework (NCPF), the plan outlines the present situation of the existing cycle route network and its relatively low usage

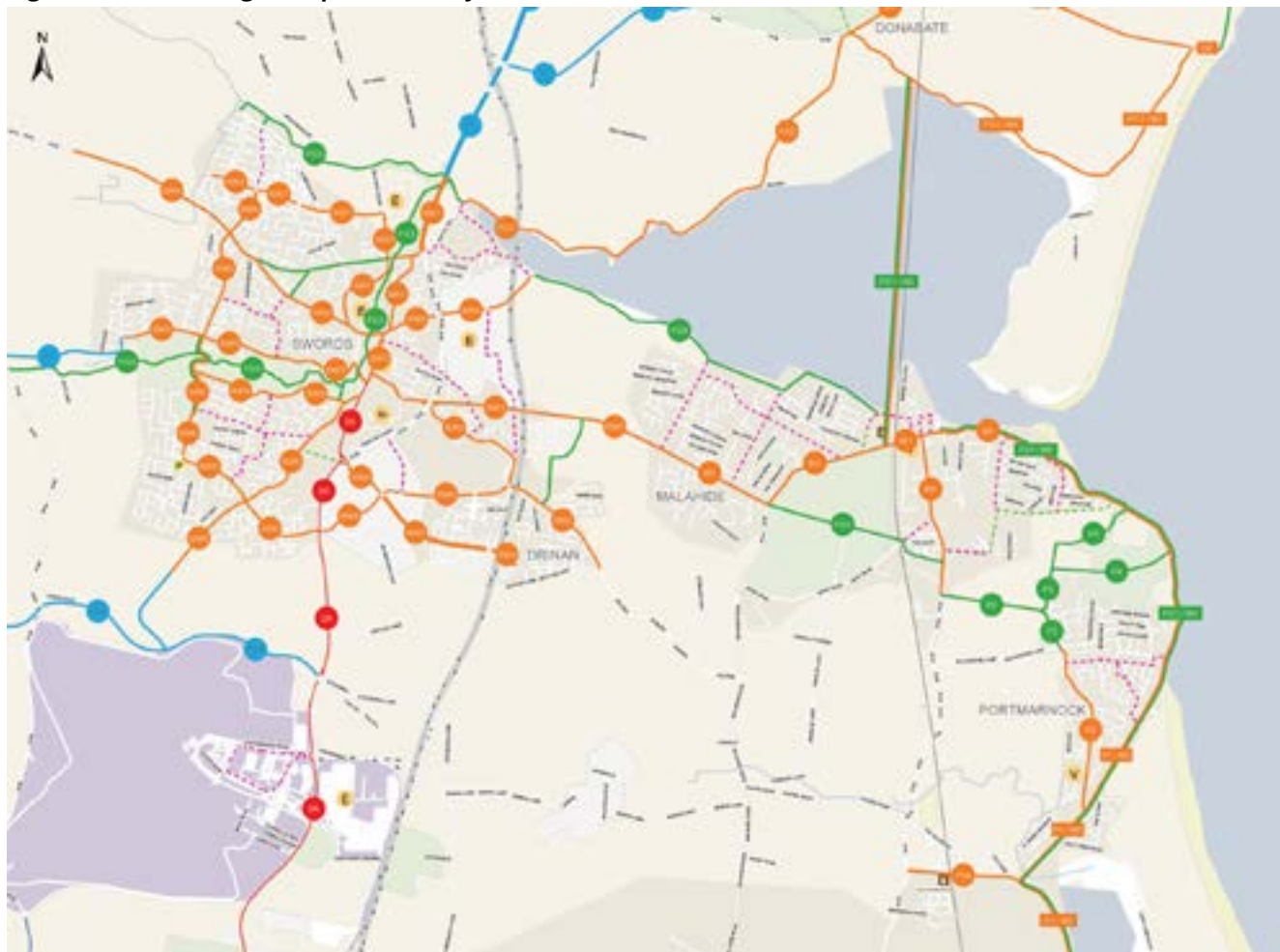
in parts. In Fingal, the report documents how the cycling provision within the county is poor, with limited cycling facilities in urban and rural areas.

As part of a planned additional 2340km expansion of cycle routes in the GDA, some of the proposed routes in Fingal include:

- Primary radial cycle route (Route 1A) reaching Baldoyle, Portmarnock and Malahide;
- Primary radial cycle route (Route 2A) reaching Swords;
- Radial Route 3B – extension from Finglas Village along St Margaret's Road from Finglas Road to Charlestown; and
- A comprehensive and integrated network of cycle routes within Swords.

Figure 5 below shows an extract of the Plan's proposed network in South Fingal.

Figure 5. South Fingal Proposed NTA Cycle Network



3.6 Spatial Planning and National Roads Guidelines, DECLG/DTTaS 2012

These guidelines set out planning policy considerations relating to development affecting national primary and secondary roads, including motorways and associated junctions, outside the 50-60 kph speed limit zones for cities, towns and villages. The SFTS complements these guidelines by seeking to protect the capacity and safety of the national road network in the study area.

3.7 Fingal Development Plan 2017-2023

The Fingal Development Plan 2017-2023 (FDP) outlines the Council's objectives, policies and vision for the long term development of the County as an integrated network of vibrant and socially and economically successful settlements and communities. The plan emphasises the importance of sustainable transport to the future economic, social and physical development of Fingal.

The main aims of the FDP relating to transport and land use planning include:

- To protect and improve the quality of the built and natural environment;
- To ensure the provision of adequate housing, necessary infrastructure and community facilities;
- To incorporate sustainable development, climate change mitigation, social inclusion, high quality design and resilience as fundamental principles;
- To develop a hierarchy of high quality, vibrant urban centres favouring expansion in areas nearest to existing or planned public transport nodes;
- To ensure an adequate supply of zoned lands to meet forecasted and anticipated economic and social needs, while avoiding an oversupply which would lead to fragmented development, dissipated infrastructural provision and urban sprawl;
- To promote and facilitate movement to, from and within Fingal, by integrating land use with a high quality, sustainable transport system that prioritises walking, cycling and public transport;
- To provide an appropriate level of safe road infrastructure and traffic management, in particular to support commercial and industrial activity and new development; and
- To work with all relevant stakeholders to seek a reduction in greenhouse gas emissions from transport.

New housing is to be provided by consolidating existing zoned lands and maximising the efficient use of existing and proposed infrastructure. This is to help ensure that land use and transport strategy is in line with the current National and Regional policies. A target of nearly 40,000 new units is set out across a range of settlements in Fingal as part of the Fingal Settlement Strategy.

This strategy, illustrated in Figure 6, sets out to physically consolidate the majority of future growth in strong and dynamic urban centres in the metropolitan area, whilst directing development in the hinterland to towns and villages to discourage dispersed settlement and unsustainable travel patterns. Land has been zoned to accommodate future anticipated population growth through a mix of varied house types and size in areas equipped with good public transport links. Growth will be managed in accordance with the overarching hierarchy of settlement centres as set out in the table below.

Table 1. Main Towns by Settlement Type in Fingal

Metropolitan Area		Hinterland Area	
<p>Metropolitan Consolidation Town Swords Blanchardstown</p> <p>Consolidation Areas Within Gateway Baldoyle Castleknock Clonsilla Howth Baskin Mulhuddart Village Portmarnock Sutton Santry (Incl. Ballymun) Balgriffin & Belcamp Charlestown & Meakstown</p>	<p>Moderate Sustainable Growth Towns Donabate Malahide</p> <p>Small Town Portrane</p> <p>Villages Coolquay Kinsaley Rivermeade Rowlestown</p>	<p>Large Growth – Level 2 Balbriggan</p> <p>Moderate Sustainable Growth & Other Towns Lusk Rush Skerries</p>	<p>Other Hinterland Towns/Villages Balrothery Loughshinny</p> <p>Villages Ballyboghi Naul Balscadden Oldtown Garristown Ballymadun</p>

Figure 6. Core strategy map for Fingal County



Table 2 to Table 5 below summarise the significant strengths and planned development identified in

the FDP for some of its key metropolitan towns and consolidation areas.

Table 2. Swords Strengths and Planned Development

Strengths	Planned Development
<ul style="list-style-type: none"> Level 2 Major Town Centre Access to Dublin-Belfast economic corridor and to high quality regional road network (R125 and R132) Close proximity to Dublin Airport Strong industrial base Important centre for employment in the County 	<ul style="list-style-type: none"> Promote Swords as Fingal's primary growth centre for residential development and a multimodal transport hub Facilitation of sufficient employment, retail, community and cultural facilities to serve Swords MetroLink Bus priority from West Swords into Main Street

Baldoyle, Portmarnock, Balgriffin and Belcamp are identified as consolidation towns. The policy in these areas seeks to ensure maximum benefit from existing transport, community and social infrastructure through

continued consolidation, with future development to occur in a planned, efficient manner utilising opportunities to increase density.

Table 3. Baldoyle Strengths and Planned Development

Strengths	Planned Development
<ul style="list-style-type: none"> Range of urban services with the capacity to meet the needs of existing and expanding populations 	<ul style="list-style-type: none"> Baldoyle Public Transport Bridge Baldoyle Link road Maintain greenbelt land Facilitated improvements to pedestrian access to Howth junction station and bus stops Preparation of a Local Plan for the area

Table 4. Portmarnock Strengths and Planned Development

Strengths	Planned Development
<ul style="list-style-type: none"> Linked to Dublin-Belfast commuter railway 	<ul style="list-style-type: none"> Implementation of an Urban Centre Strategy and a Public Realm Strategy Use of greenbelts to protect the character of the town Enhance the rail station and rail service and improve facilities for cyclists, provision of feeder buses and improve pedestrian and cycling linkage between Chapel Lane and the station Prepare and implement a local plan for the strategic development of the area

Table 5. Balgriffin and Belcamp Strengths and Planned Development

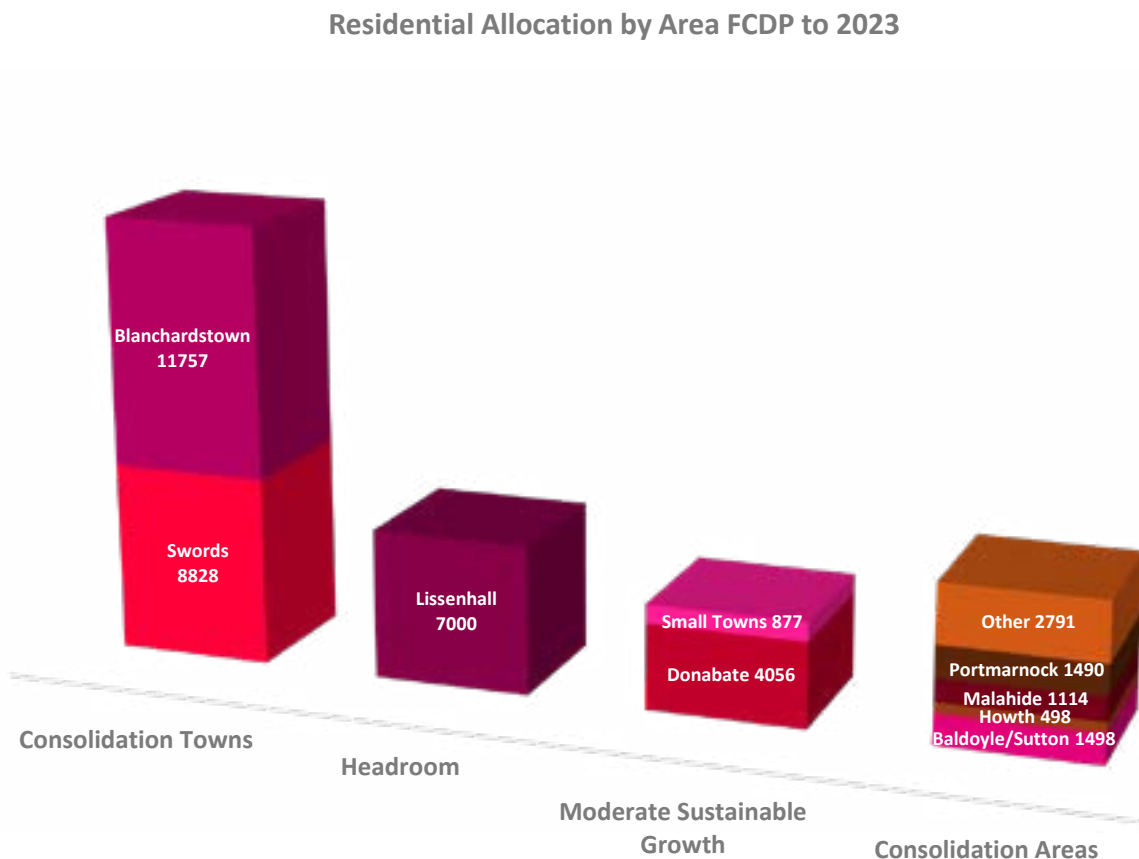
Strengths	Planned Development
<ul style="list-style-type: none"> Potential for integration with Clongriffin / Belmayne Proximity to future Core Bus Corridors 	<ul style="list-style-type: none"> Prepare a local plan for Belcamp to provide a sustainable mixed use urban district with the necessary infrastructure Ensuring all new communities are built with accessible local services Promoting green infrastructure linkages

3.7.1 Housing Allocation Summary

A summary of the FDP’s housing unit allocations is presented graphically in Figure 7, categorised by Consolidation Town, Consolidation Area, Moderate Sustainable Growth Town, and Headroom. The

‘Headroom’ allocation relates to potential housing at Lissenhall (north of Swords). The ‘Other’ category includes Balgriffin and Belcamp, amongst other smaller sites around the county.

Figure 7. Fingal Development Plan Housing Unit Allocation



3.8 Design Manual for Urban Roads and Streets

The *Design Manual for Urban Roads and Streets (DMURS)* is a mandatory strategy used by Local Authorities which sets out design standards for urban roads and streets. It balances the **place** function (the needs of residents and visitors) and the **transport** function (the needs of pedestrians, cyclists, public transport, cars and goods vehicles).

By utilising DMURS, the end goal is that well-designed streets are placed at the heart of sustainable communities to promote access to walking, cycling and public transport. The standards, approaches and

principles set out in DMURS apply to the design of all urban roads and streets where the speed limit is 60kph or less.

DMURS recognises the importance of creating secure and connected places that work for all, characterised by creating new and existing streets as attractive places which prioritise access from pedestrians and cyclists whilst also balancing appropriate vehicular access and movement.

The following four DMURS principles help to achieve a more place-based and integrated approach to road and street design. These are:

- **Connected Networks** – high levels of permeability and legibility for all, with an emphasis on more sustainable forms of transport;
- **Multi-functional Streets** – place based streets which balance the needs of all users in self-regulating environment;
- **Pedestrian Focus** – the quality of street environment is measured by the quality of the pedestrian environment. Pedestrians and cyclists are the preferred users; and
- **Multi-disciplinary Approach** – greater co-operation between design professionals and a plan-led approach to design.

3.9 Permeability: A Best Practice Guide (NTA, 2015)

Permeability: A Best Practice Guide sets out guidance on how best to facilitate demand for walking and cycling in existing built-up areas. The scope extends to linkages for people to walk and cycle from their homes to shops, schools, local services, places of work and public transport stops and stations.

Permeability is defined as the extent to which an urban area permits the movement of people by walking or cycling. Characteristics of a permeable environment are:

- Interconnected pedestrian and cycle street networks;
- Absence of high walls and fences segregating housing areas and local/district centres;
- Absence of cul-de-sacs for pedestrians and cyclists; and
- Secure, well-lit, overlooked pedestrian and cycle links between housing areas and between housing and local/district centres.

4 | Study Area Overview

4.1 South Fingal Area

The SFTS study area is presented in Figure 8 and covers the main areas of anticipated growth in South Fingal. These areas include Swords, Fingal/Dublin Fringe – the area stretching from Baldoyle to Clonshaugh including adjacent Dublin City Council areas such as Clongriffin and Belmayne – and in and around Dublin Airport. Each of these three broad areas has their own unique transport requirements and constraints and are discussed separately within this report.

An overview of the three key areas examined by the SFTS is presented below.

Figure 8. Map of the Study Area



4.2 Swords

Swords is a large town situated 14km north of Dublin City at the fringe of its metropolitan area. A new Metro line is to be built by 2027 linking Swords, the Airport, and Dublin City Centre with connections to the rail network. The strategic vision for Swords is to continue to grow into a sustainable new city with a population of 100,000 (“Your Swords, An Emerging City, Strategic Vision 2035, Fingal County Council 2008). The town’s population was 43,000 according to the most recent 2016 Census; 6,000 more than the Census of 2011, making Swords one of the largest and fastest growing towns in Ireland. The Airport is just 4km to the south along the R132. Census data suggests that of the Airports’ 12,000 workers, 2,000 live in Swords.

Housing in Swords is predominantly situated to the west of the town, typically in the form of semi-detached estates, arranged along several former rural roads such as Rathbeale Road, Brackenstown Road and Forest Road. In contrast to its housing orientated western areas, eastern Swords includes a diverse range of residential and commercial land uses along the Main Street, the R132, and along the edges of the M1. Main Street retains a vibrant character and provides a broad mix of shops, bars and restaurants. There is a mix of low density housing and a large shopping centre between Main Street and the R132. Light industrial uses occupy the western side of the Ward River just north of Main Street.

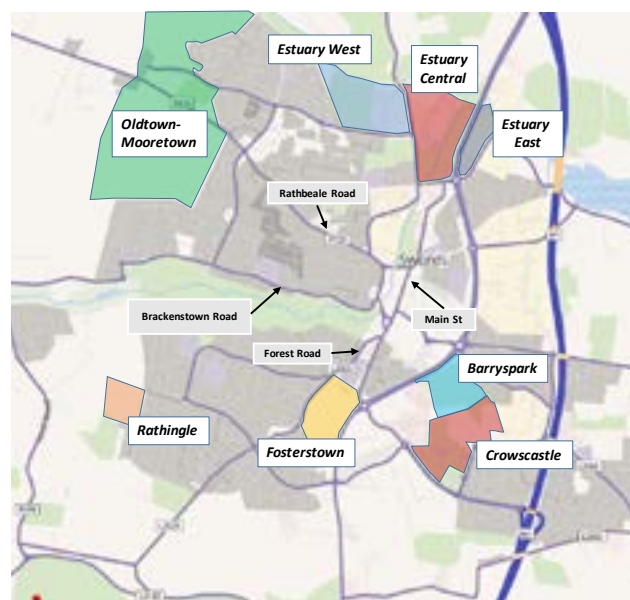
The strategic road network is predominantly orientated on a north-south axis, due to Swords’ historical development along the Dublin-Belfast road (R132), which has now been superseded by the M1. Various business and retail parks are located along the R132, such as Airside and Swords Business Park. Formerly the R132 served as a by-pass of Swords on the old Dublin-Belfast Road. The R132 has since become an integral part of Swords’ urban fabric, and functions as a local traffic distributor for the town’s population to access places of work and commerce.

Swords is identified as a Metropolitan Consolidation town in the FDP. It has an important role as both a developing town in the Dublin region, and as the main County Town in Fingal. It is identified in the National Planning Framework (NPF) as an example of a Metropolitan location which can significantly grow with urban expansion or sustainable infill development. The NPF states that up to 20% of the growth targeted for

the overall Dublin City region can be accommodated in such outer suburban metropolitan locations. Swords is highlighted in the NPF because the delivery of MetroLink will enable significant and sustainable non-car dependant growth.

The development of Swords is also guided by the Swords Emerging City Vision 2035 and the Swords Town Centre Masterplan (2009), which emphasise Main Street as the future centre of Swords with strong links to the MetroLink corridor. The Local Area Plan (LAP) areas within the town boundary are illustrated in Figure 9.

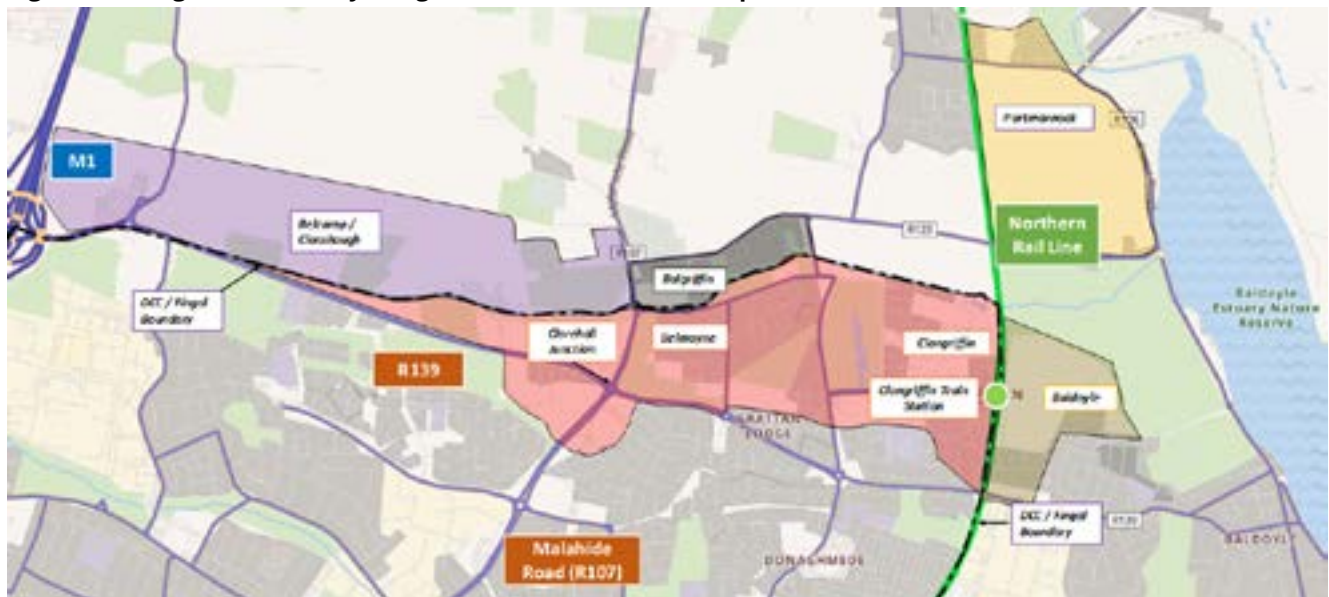
Figure 9. Swords Transport Network and Growth Areas



4.3 Fingal/Dublin City Fringe

The Fingal/Dublin City Fringe is a newly developing area situated 7km north-east of Dublin City Centre at the border between Dublin City and Fingal County. The area is illustrated in Figure 10 and includes Baldoyle, Portmarnock South, Balgriffin, Clonshaugh, Dardistown in Fingal, and Belmayne and Clongriffin in Dublin City. The figure also illustrates the key transport links currently serving the Fingal/Dublin City Fringe area.

Figure 10. Fingal / Dublin City Fringe Growth Areas and Transport Links



The area is served by the Dublin-Belfast Railway Line, with DART currently operating 3 trains per hour at peak hour at the Clongriffin station. The future DART Expansion programme will see an increased service frequency on the line. Several Dublin Bus lines (e.g. 15, 27X and 43) also serve this area.

The largest part of the area is located in DCC and includes Clongriffin and Belmayne. These lands were initially designated for development in 1999/2000. In Fingal County, several areas (Balgriffin, Baldoyle and South Portmarnock) have developed mainly residential uses. There is significant further development potential in these areas, as well as in greenfield areas west of the R107 in Belcamp and Clonshaugh.

The main road link from the Fingal/Dublin Fringe to the City Centre is the R107 Malahide Road, running north to south through the area. The other main link is the R139, which connects the directly to the M1 and M50 in an east to west direction. The two routes form the critical Clarehall Junction that is central to traffic flow in the area. The local distributor network includes the Hole in the Wall Road between Clongriffin and Belmayne, the R123 North of Balgriffin and the R124 in South Portmarnock. Transport provision is challenging

due to the constrained road network, with the M1/M50 at the area's western boundary, and limited direct road access into the city on the Malahide Road. The M1 is recognised under EU regulation as a Trans-European Transport Network (TEN-T), linking Dublin, Dublin Airport and Belfast. The sections of motorway leading to the M1/M50 junction are the amongst busiest sections of road in the country, and as such must be protected from development related traffic generation as far as possible.

Within the Fingal/Dublin Fringe area, key transport infrastructure proposals included in the FDP are the R107 Malahide Road Alignment and the East-West Distributor Road. The SFTS considers the need for these in the context of increased levels of population and employment. The local, neighbourhood level requirements, such as a more pedestrian friendly environment around Clarehall, are balanced against the need to provide strong north-south and east-west transport links. Within this context, access from this area to other key destinations such as Dublin Airport, and to interchange opportunities with future transport links such as the A-spine Bus Connects corridor and MetroLink are also considered.

4.4 Dublin Airport

The SFTS examines a range of Dublin Airport issues related to surface access. According to Dublin Airport Authority's Airport Masterplan, Dublin Airport is forecast to grow to 55 million passengers by 2040. Airport capacity enhancements are at various stages of planning, including construction of the second runway and the possibility of additional passenger processing facilities. Areas within the Dublin Airport campus are currently zoned for intensive commercial office space. A phase of the associated Dublin Airport Central development is currently under construction, which has the potential to increase vehicular demand on an already constrained network. Related to this the management of car parking and questions around how much and where space should be provided for car parking need to be considered.

Figure 11. Dublin Airport Location Map



The SFTS considers how to maintain and protect accessibility to Dublin Airport as a strategically critical national asset and has included an assessment of surface access both with and without MetroLink. It considers the road network around Dublin Airport to ensure that future demand growth, coupled with increasing employment both within and immediately

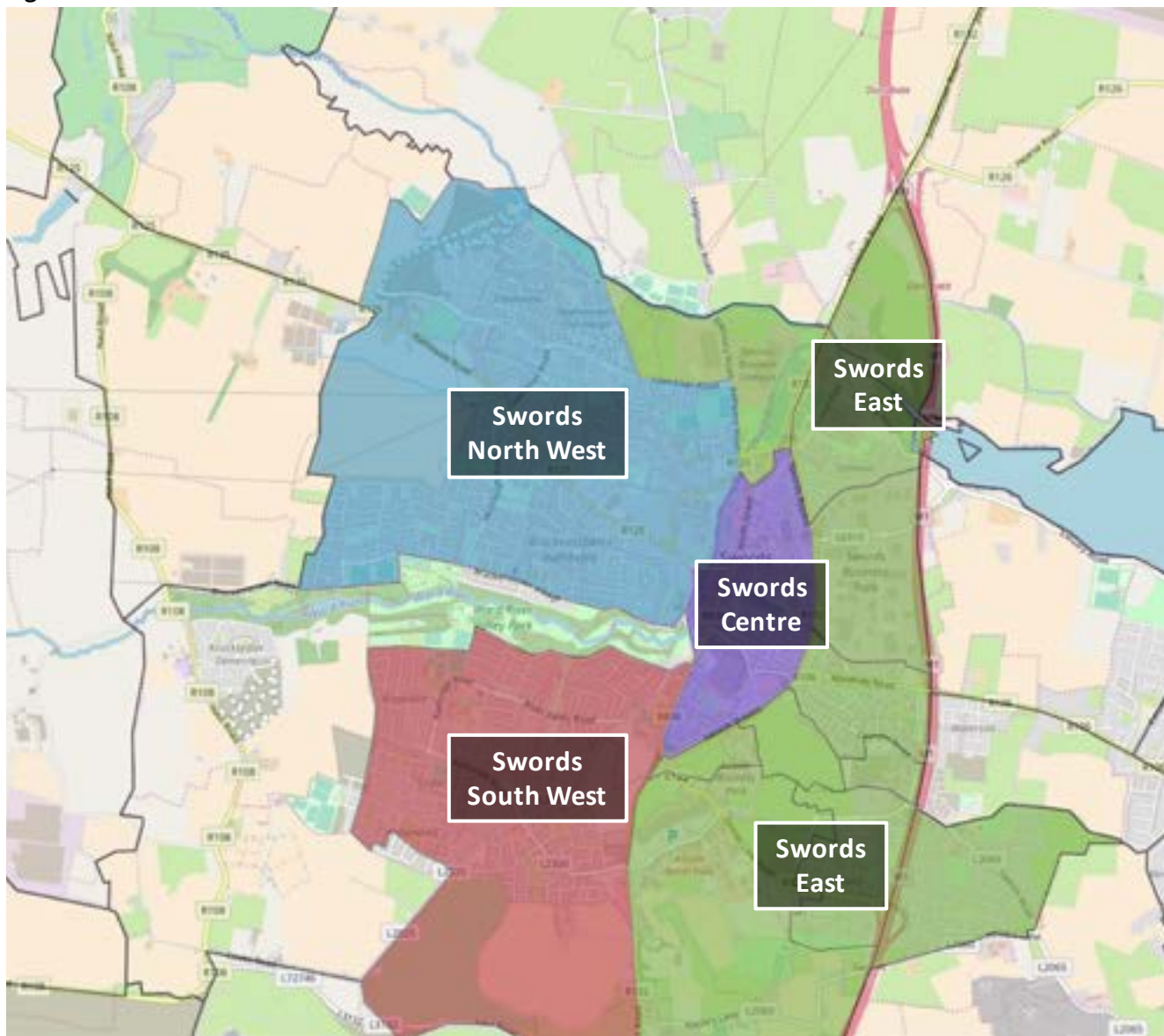
adjacent to Dublin Airport can be accommodated within current and planned capacity levels. The study recommends mitigation measures and performs a comparative analysis of these measures based on the outputs of the transport model and qualitative assessments.

5 | Swords Transport Assessment

5.1 Overview

For the purposes of this assessment Swords has been grouped into four main sectors, shown below in Figure 12, to enable description of its key population and employment areas.

Figure 12. Swords Sectors



5.2 Existing Population and Travel Review

This section presents an analysis of the population of Swords and typical daily travel behaviour based on Census 2016 and the POWSCAR² dataset. According to these data sources, around 30,000 people live in western Swords, with around 17,000 residing north of the River Ward, and 13,500 to its south.

Table 6. Swords Population and Employment by Sector

Swords Sectors	2016 Population	2016 Employment
Swords South West	13,500	500
Swords East	10,000	9,500
Swords North West	17,000	1,500
Swords Centre	2,500	3,500
Grand Total	43,000	15,000

The main areas of employment are the business parks, retail centres, and industrial/service uses located along the R132 Swords Road. There are over 6,500 jobs in the Swords and Airside business/retail parks, 1,500 jobs in the offices and light industries to the north end of Main Street and over 3,000 jobs in Main Street and Swords Pavilions.

5.2.1 Travel Patterns – Swords Analysis

Figure 13 and Figure 14 illustrate the total number of work and school related trips segmented by their destination area based on an analysis of POWSCAR. The data shows:

- The population of Swords generates total daily work and school trips of around 21,000 and 10,500 respectively.
- Of the 21,000 work trips, nearly 5,000 stay within Swords. Over 9,000 travel within the M50, and around 2,000 travel to Dublin Airport.
- Of the 10,500 school trips, 6,000 stay within Swords, 2,000 travel within the M50, and 1,600 travel to Malahide or Portmarnock.

- Of the 11,000 work and school trips that stay within Swords, 43% are active modes, 49% car and 8% public transport.
- Of the nearly 6,000 work related trips within the M50 (excluding Dublin city centre) 84% travel by car. Around 3,000 trips are destined for the city centre, however 42% of these go by car and 55% take public transport.

Work trips to Malahide/Portmarnock and the Fingal/Dublin Fringe areas are comparatively small, amounting to only around 1,000, ranging from 70% to 80% car, and 3% to 6% active modes. However, the former attracts the most school trips of any area outside Swords, amounting to 1,600, and of these 65% are by car and 24% are by public transport.

Dublin Airport is the largest single destination for work trips from Swords, with nearly 2,000 trips going there from Swords each day. The nearly 2,000 trips to Dublin Airport are split 75% car and 21% public transport with less than 100 trips by active modes.

5.2.2 Travel Pattern Summary

The POWSCAR data, which is illustrated in the charts below, reveals that for work and school trips:

- The only significant public transport mode share is from Swords to the City Centre (60% PT);
- The only significant active travel mode share is for those trips which stay within Swords (43% active modes);
- Given its proximity to Swords, work trips to Dublin Airport are car dominated (75% of the approximately 2,000 trips); and
- The share of public transport from the western areas of Swords is around 17-20%; with nearly all of these travelling to the City Centre.

² Census POWCAR provides a record of responses to the Census questions 'what is your usual place of travel to work or school' on a typical day in April 2016, with home and destination locations defined at the Census Small Area level.

Figure 13. Swords POWSCAR Commuter Destinations and Mode Shares

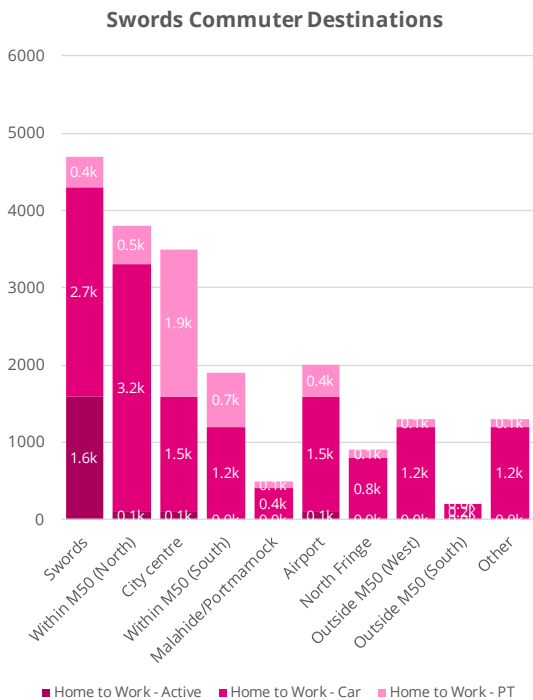
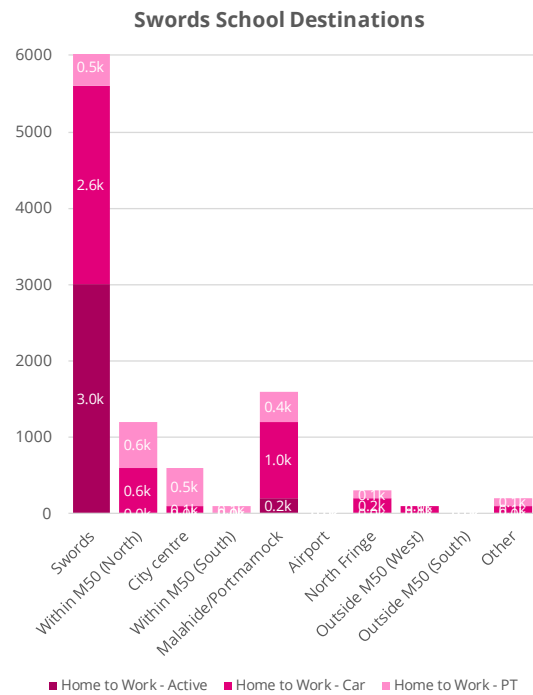


Figure 14. Swords POWSCAR School Destinations and Mode Shares



5.3 Swords Land Use Forecasts

This section presents the growth assumptions applied in Swords with respect to the timeframe to 2027, coinciding with the anticipated opening year of MetroLink. The primary scenario on which the key transport recommendations are based is termed “Recognised Development”, which includes development underway or likely to occur by 2027.

5.3.1 Recognised Development

Within the Recognised Development scenario growth was derived from the following sources:

- As envisaged in the relevant LAPs;
- Development with planning permissions or currently underway; and
- Areas identified by Fingal County Council where near-term potential exists for infill development.

Based on the assumptions around the number of units and household occupancy, the population in Swords under the Recognised Development scenario is 60,000, an increase of 17,000 above its Census 2016 population.

Under the Recognised Development scenario, the north-western neighbourhoods will increase from 17,000 to a total population of around 25,500. This increase is mainly driven by the development of new neighbourhoods in Oldtown and Mooretown,

comprising about 3,000 units with an approximate residential population of over 8,000 people. The south-western part of Swords with an existing population of about 13,500 people increases to around 16,500 – principally driven by development of around 1,100 units in Rathingle and Fosterstown. Swords East is also assumed to grow substantially, with the Business Park assumed to grow through infill development amounting to a total of 850 units and Drinan by an additional 300 units. Barrysparks and Crowscastle are also anticipated to grow substantially, with Masterplans in preparation. Together these areas in Swords East are assumed to accommodate 1,650 units or up to 5,000 additional inhabitants. In Swords Centre, 250 additional units are assumed as infill. Figures 15 and 16 provide an overview of population and employment assumptions growth in Swords for the Recognised Development scenario.

Figure 15. Population Growth Map - Recognised Housing

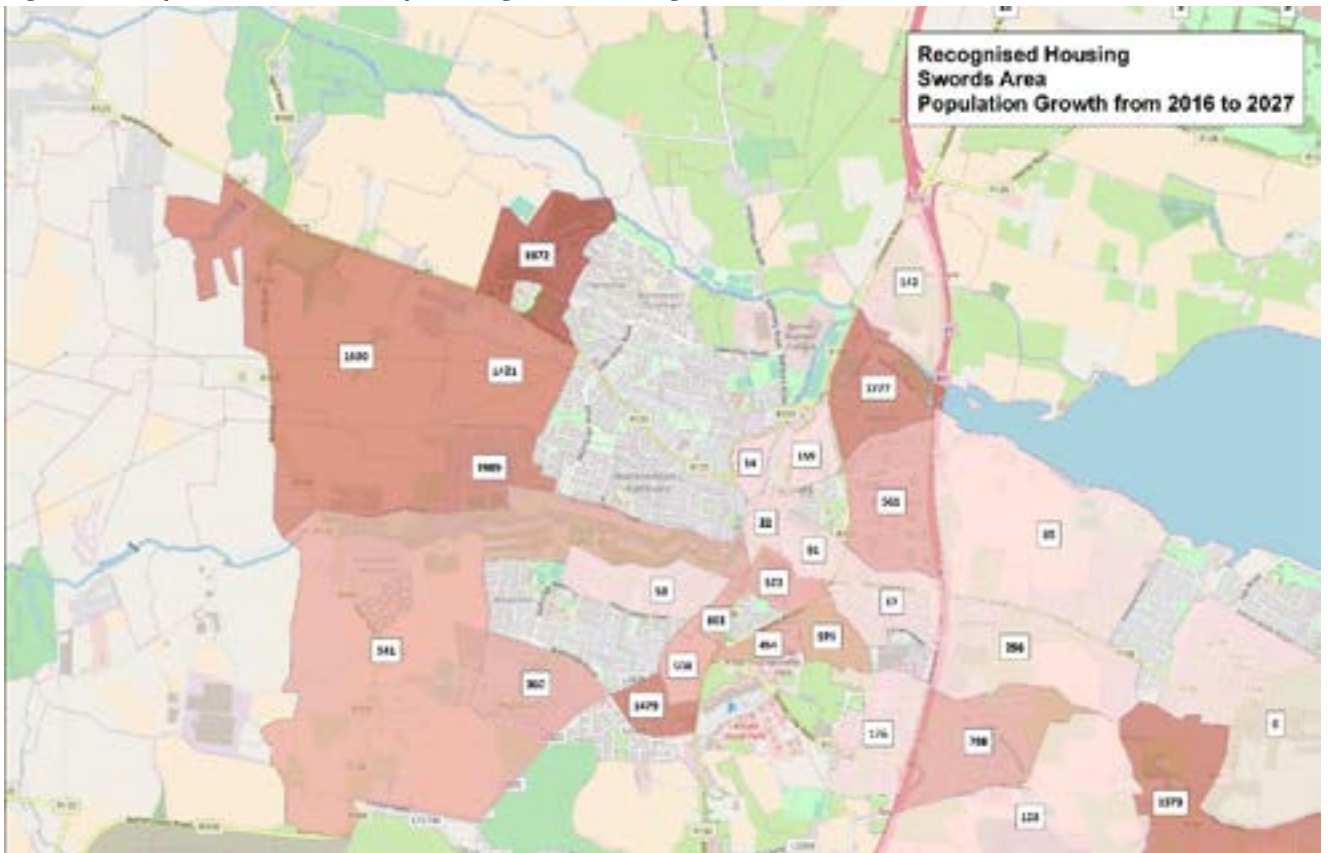


Figure 16. Employment Growth Map



5.4 Network Analysis and Recommendations

5.4.1 Overview

This section examines impacts on the transport network due to the growth in population and employment under the Recognised Development scenario. Network analysis is performed by comparing the difference between one network and another for a particular indicator, such as flows or delays using the ERM. These indicators can be shown as increases or decreases on the links and at junctions in one network relative to the other (usually the Do-Min vs Scenario). Model data and analysis is presented according to the sectors outlined Figure 12 above.

5.4.2 Analysis & Recommendations

Swords North West

Swords North West is a key area in terms of the study of Swords due to the increased demands being placed on the network in the short term by Oldtown and Mooretown. Critical routes in Swords North West include the Rathbeale Road (R125), Glenn Ellan Road, Balheary Road, and Brackenstown Road. Rathbeale Road and Brackenstown Roads meet with a very constrained road network just west of Main Street. The Estuary Roundabout provides the only means of bypassing the narrow roads around Swords Main Street for car trips accessing the wider road network. Balheary Road and Glenn Ellan Road provide access to this junction.

From this area, future 2027 trips to local places of work or education are estimated to comprise approximately 4,600 active mode trips and 5,000 car trips. Approximately 1,800 of these are local car trips, and many of these could potentially switch to cycling with appropriate investment in infrastructure.

Of these, up to 1,000 extra AM peak car trips will be generated by the Oldtown/Mooretown areas. These contribute to moderately increased delay towards Swords on Glenn Ellan Road and Rathbeale Road. The modelling shows that although enhanced public transport helps (e.g. CBCs and MetroLink), car trips are higher than today's levels in this scenario.

SFTS Recommendation 1: Increasing the number of traffic lanes on Balheary Road is not required in the short term. However, providing bus lanes to enable a high frequency service to run reliably and maintain bus priority through junctions is required to encourage bus use and to limit car use near to present day levels.

SFTS Recommendation 2: In addition or complementary to the services outlined in the Bus Connects consultation document, a feeder service should be provided to Oldtown and Mooretown through the developments and onward to Swords via the Glenn Ellan Road.

Rathbeale and Brackenstown Roads are key arterial routes from Swords NW, and are the most direct routes into Swords for most of the area's population. In their current configurations they are unattractive routes for cyclists. Implementation of appropriate high quality facilities would likely attract a much greater level of cycling and offset the increase in car trips that are predicted by the model in 2027.

SFTS Recommendation 3: Rathbeale and Brackenstown Roads should be prioritised to support the advancement of the GDA Cycle Network Plan in Swords. As primary cycle routes in Swords, they should be developed to the highest of standards in accordance with the National Cycle Manual.

Traffic delays under the Recognised Development scenario increase most significantly in Swords North West on the approach to Church Road from Brackenstown Road, which is already over capacity in 2016. As there is no spare capacity and excessive demand, any increase in traffic makes the situation worse. The traffic modelling has shown that the high volume to capacity at this junction can be reduced if additional capacity is provided over the Ward River.

SFTS Recommendation 4: Additional capacity is required to relieve Brackenstown Road/Church Road, which is over capacity in the forecast scenarios. A realignment and widening of the existing narrow Church Road on the western side of Main Street and creation of a junction with Brackenstown Road could achieve the desired impact without building an additional river crossing. Alternatively, a new route such as that proposed as the Inner Ward River Crossing would have a similar mitigating effect. Route option development should take cognisance DMURS, the future function of Main Street and associated traffic calming in the area.

At the time of writing, the primary future Bus Connects routes serving western areas of Swords are the A4 and the 282 at a frequency of one bus every 10 to 15 minutes on both services. No bus lanes exist on the stretches of road used by these services, e.g. Main Street, Rathbeale Road, River Valley, and Forest Road. The reliability required for these services to provide an attractive means of accessing the town centre would necessitate an improvement in bus priority on each of these roads.

SFTS Recommendation 5: It is crucial to provide continuous high quality bus and cycle priority along Ardian Park to Castlevue Ext./ Glen Ellan Rd/Balheary Road route, and the sections of Forest Road and Rathbeale Road that are subject to congestion, in order to provide the necessary priority to attract a sufficient share of trips by bus.

The Swords Western Distributor Road (SWDR), forms a spine access route through the Oldtown and Moorestown LAP areas, connecting at numerous points to the internal street network. The LAP states that the design of the SWDR within the Oldtown-Moorestown areas should be urban in character and accommodate high quality facilities for walking and cycling. Where it joins with existing roads such as Rathbeale Road and Glen Ellan Road, traffic speed reduction measures are to be employed. Forecasts of traffic flow on the SWDR support its design as a low capacity route. As such its full extension to Brackenstown Road/Ward River Valley could be considered as a pedestrian and cycle only route. Its northern extension, however, should be progressed to enable access to the future Estuary MetroLink Park and Ride Station, particularly to serve active travel to the station. As it is desirable

to encourage active travel to the park and ride and limit additional local car trips in Swords, the extension of the SWDR to Estuary Park and Ride should consider adopting the same low-capacity urban boulevard type design that is proposed internally to Oldtown-Mooretown.

SFTS Recommendation 6: The Swords Western Distributor Road will form a crucial link from north west Swords to the future Estuary MetroLink station and Park and Ride. From Oldtown-Mooretown to Estuary the road alignment should consider similar design principles as set out in the LAP/Masterplans. Its southern extension to Brackenstown Road/Ward River Valley should be considered as a pedestrian and cycling only route.

Swords South West

The trip demand analysis for Swords SW shows that this area will significantly benefit from public transport investment, as future development in the area is closer to a wider range of PT services. Projections to 2027 indicate that PT share increases from around 26% in 2016 to 37% in 2027 in the GDA Strategy, offsetting increases in car trips in this sector. However, local access to Swords is limited to a single junction from Forest Road, which shows a persistently high level of congestion. When the additional Forest Road link is introduced the performance of the junction improves to a more manageable level.

SFTS Recommendation 7: The Fosterstown Link Road is required as a priority to relieve existing pressures on the approach to Swords on Forest Road.

With 30% of the Swords population, the Swords SW area generates approximately 1,400 local car trips to work and school on a daily basis. Many of these could potentially switch to cycling with improved infrastructure.

SFTS Recommendation 8: The primary cycle route on Forrest Road should be prioritised in delivering the GDA Cycle Network Plan in Swords. As a primary cycle route in Swords, it should be developed to the highest of standards in accordance with the National Cycle Manual.

Swords Centre and East

Main Street functions both as an attractive social and commercial destination and as a through-route for traffic travelling from west Swords. Traffic reduction on Main Street is a stated aim of the Development Plan and will be a requirement of any scheme which aims to increase priority for non-car modes. Bus Connects levels of frequency will be around 20 buses per hour per direction in off-peak times. This equates to a bus every three minutes, and during peak times, this could rise to more than one bus every two minutes. To provide the timetable reliability required for the revised bus network, it is likely that continuous bus priority will be required through Main Street. Furthermore, the primary cycle network envisaged in the GDA Cycle Network Plan includes a primary route on Main Street, which then links to the 2A primary strategic cycle route along the R132 to Dublin Airport and then the city centre.

The transport modelling undertaken for the SFTS shows it is possible to reduce traffic flows on Main Street through a traffic management system which restricts movement through the full length of the street but enables local access. A bus-gate system on Main Street could be implemented without significant negative impact on the overall network, as many trips could be diverted onto the R132. A traffic management scheme such as this increases the need for an upgrade to Church Road or an Inner Ward River crossing and for improved access from Forest Road.

Any loss in on-street parking could be mitigated through the provision of additional parking off Main Street in off-street facilities. Longer term, it would be expected that mode shift away from car and towards other modes could reduce the requirement for current levels of car parking on Main Street.

SFTS Recommendation 9: As part of achieving reduced traffic levels required on Main Street, it may be necessary to reduce levels of parking and/or provide parallel parking instead of the current arrangements. Such a reconfiguration would allow more space for the required GDA Cycle Network route in addition to the required bus priority, traffic lanes, and footpaths.

SFTS Recommendation 10: Bus priority and associated cycleway facilities should be implemented on Main Street, Rathbeale Road, Glenn Ellan Road and Forest road. Immediate improvements would be realised for travel from Swords to the city centre through the increases in bus frequency, reliability and accessibility. Access by local traffic to on and off street car parking should be maintained while reducing through trips. The overall level of parking provision should be regularly reviewed to align with the mode share of those accessing Swords Main Street.

The R132 Swords Road provides an opportunity for Swords to rebalance the provision of road space on Main Street towards pedestrians, cyclists and bus users. On the R132 in Swords, there are deficiencies with respect to the pedestrian and cycle networks. However, it is not part of the GDA Cycle Network plan, nor are any Bus Connects services planned to run along it.

Whilst the road primarily performs the role of a town bypass for vehicular traffic, in the context of the delivery of MetroLink and the planned expansion of Swords to the east of the corridor, the R132 Swords Road will need to provide a multi modal function, balancing the needs of through and local movements.

Key design recommendations with respect to the R132 in Swords include:

SFTS Recommendation 11: Improve connectivity for pedestrians and cyclists travelling across the R132 Swords Road from existing and proposed development lands to the town centre. This will be achieved by replacing the existing roundabouts with signalised junctions and incorporating controlled Toucan crossings. This will replace or supplement the existing footbridges.

SFTS Recommendation 12: Creation of a more active frontage along the R132 Swords Road by providing footpaths, segregated cycle facilities and encouraging new developments to face onto the street.

SFTS Recommendation 13: Encourage higher density mixed use developments adjacent to the MetroLink stations with improved connectivity for pedestrians and cyclists and provide a controlled level of access to future developments along the R132 Swords Road.

SFTS Recommendation 14: Safeguard the vehicular capacity of the road by retaining the number of trafficked lanes, while implementing measures to reduce the speed and dominance of traffic.

Whether undertaken as part of the MetroLink design, or as part of a pre-Metro reconfiguration, the main junctions along the R132 Swords Road should be signalised, with improved accessibility for pedestrians and cyclists, whilst accommodating the forecast needs of vehicular traffic.

SFTS Recommendation 15: Junctions on R132 Swords Road should be improved from a pedestrian and cyclist point of view. The Council should engage with the NTA and TII on preliminary designs with a view to developing a complementary scheme that achieves the required improvements and prepares for the Metro alignment.

The level of movement from western parts of Swords and Main Street to the new MetroLink will be considerable. The network between Main Street and the R132 provides few good quality pedestrian and/or cycling connections. In particular, the section of road that the two proposed cycle routes on Forest Road and Brackenstown Road converge towards is relatively cut off from the future MetroLink alignment by the Swords Pavilions shopping centre.

SFTS Recommendation 16: The Brackenstown Road and Forest Road cycle schemes should ultimately continue uninterrupted around the Swords Pavilions to the MetroLink.

Barrysparks Local Area Plan (2011) lands are located contiguous to Swords town centre, east of the R132 and adjoin the planned MetroLink 'Swords Town Centre'

stop. The development of Barrysparks LAP (approx. 10 ha in area) will facilitate Swords' consolidation and growth as a vibrant multi-functional town centre, with a thriving economy, along a sustainable high quality transport route. Currently a Barrysparks-Crowscastle Masterplan is being developed in line with the area covered by the LAP. The development of this area necessitates the completion of the Airside-Feltrim Link Road.

SFTS Recommendation 17: The Barrysparks Link Road (also referred to as the Airside-Feltrim Link Road) should be completed to facilitate the development of the Barrysparks-Crowscastle Masterplan area. The new link should include high quality facilities for pedestrians and cyclists on and across its alignment and where it connects to existing junctions.

Similarly it is necessary to ensure that future connectivity to MetroLink by the population within its catchment is maximised by high quality pedestrian and cycling facilities.

SFTS Recommendation 18: The Barrysparks Masterplan should ensure pedestrian and cycling permeability is maximised between the residential areas around the Feltrim Hall area and MetroLink in the design of its street network. The network should be designed to provide an uninterrupted direct link to the proposed Brackenstown cycle scheme.

Swords Emerging City Vision

The Swords Emerging City Vision is an adopted component of the latest Fingal Development Plan. It sets out the long term growth of Swords to a city of 100,000 population, and its proposals include the Swords Western Relief Road and the Green Link across the River Ward from St. Cronin's Avenue to support this growth.

SFTS Recommendation 19: It is recommended that the Green Link is considered as part of a future overall strategy to improve cycle facilities in Swords, and particularly to improve the connectivity between the extensive neighbourhoods north and south of the Ward River.

The Swords Western Relief Road (SWRR) is proposed to serve this significantly larger future population and to provide a strategic link between the M1 and the western Dublin Airport area/N2 Corridor. Transport modelling undertaken for longer term growth scenarios (e.g. 75,000 population in Swords) has shown that the SWRR can provide a strategic function, by reducing flow on the M1 by around 400 pcu/hr in the AM peak, obtained southbound on the section south of the Lissenhall Junction, representing 13% of the total flow.

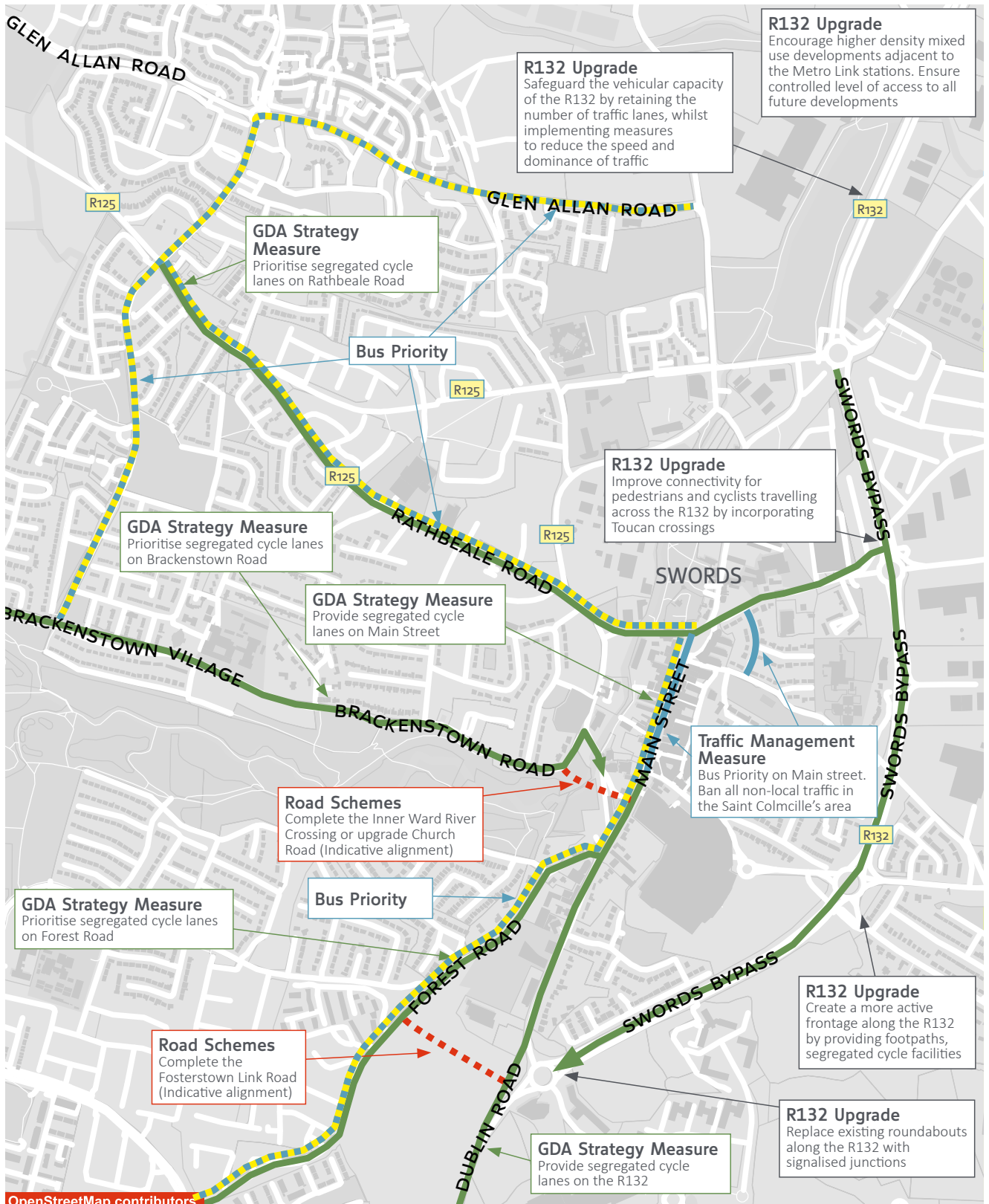
SFTS Recommendation 20: The SWRR is not required to enable the growth of Swords in the short to medium term, however in the longer term it should be evaluated as part of the overall roads strategy/policy in the Greater Dublin Area. This would include assessment against the criteria set out in Section 5.8.3 of the NTA Transport Strategy for the GDA, as per Objective MT41 of the FDP as part of a pre-feasibility assessment, followed by more detailed multi-criteria analysis, route options assessment and full economic cost-benefit appraisal.

5.5 Swords Recommendations Summary

- There is significant potential to increase the level of walking and cycling in Swords, due to the high number of trips with distances travelled of less than 4km.
- The low public transport mode share within Swords could be improved by providing more frequent services.
- The GDA Cycle Network Plan should be implemented in Swords, prioritising routes from the west on Rathbeale Road, Brackenstown Road, Glenn Ellen Road, and Forest Road. Rathbeale Road provides a direct route into Swords Centre for much of the substantial Swords North West catchment and should therefore be prioritised.
- It is crucial to provide continuous high quality bus and cycle priority along Ardcian Park to Castleview Ext./Glen Ellen Road/Balheary Road route in order to attract a sufficient share of trips by bus and bike.
- In addition to the services outlined in the Bus Connects consultation document, a feeder service should be provided to Oldtown and Mooretown through the developments and onward to Swords via the Glenn Ellen Road.
- The road space on Main Street should be rebalanced away from car parking and towards cycle lanes and bus lanes, enabling at least 20 buses per hour per direction in the peak periods while also providing for fully integrated direct cycle routes from western Swords into and through the town centre.
- Bus priority should be provided on Main Street, to improve the environment for non-car users and make way for increased bus priority.
- The Swords Western Distributor Road would provide additional resilience to the local network in the context of diverting traffic from Main Street, and in addition to providing direct access to the MetroLink Park and Ride at Estuary.
- Future interchange to the MetroLink from other modes, including bus, walk and cycle, should be considered as part of any redevelopment of Swords Main Street and the R132 Swords bypass.
- Balheary Road does not exhibit excessive pressure in the Recognised Development scenario in Swords, and therefore widening of this road is not recommended, particularly in the context of the future extension of the Swords Western Distributor Road to the R132 Swords Road.
- The R132 Swords Road in Swords should be reconfigured with more active frontages and with junctions reconfigured to provide a safe environment at grade for non-car users.
- The Swords Western Relief Road is an objective of the Fingal Development Plan with a strategic function to provide a link between the M1/M50 and Dublin Airport to support the long term growth of Swords. As such, a detailed evaluation of the scheme should be undertaken in line with the latest hierarchy of project appraisal guidance issued by Department of Public Expenditure and Reform, Department of Transport, Tourism and Sport, and TII.
- The full suite of SFTS Swords recommendations should be taken forward as a single or small number of packages, leading to a more detailed transport assessment of the town, and the preliminary design of individual schemes. This package(s) of measures would ideally be combined with a public realm strategy for the town centre and should be aligned with future opportunities and constraints presented by the emerging MetroLink route in Swords.

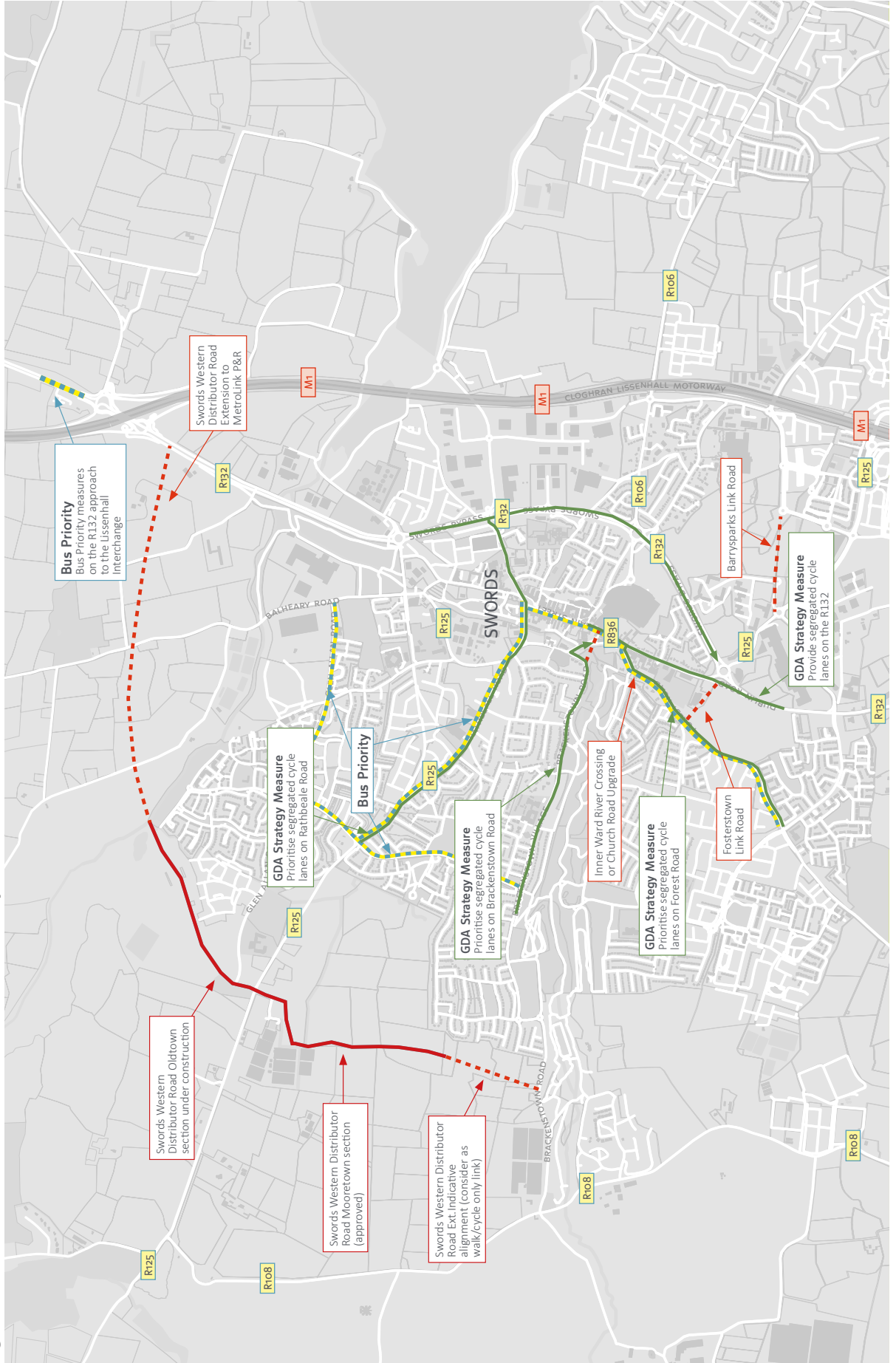
5.6 Swords Recommendations Map (Local)

Figure 17. Swords Short Term Recommendations Map (Local)



5.7 Swords Recommendations Map (Full Area)

Figure 18. Swords Short Term Recommendations Map (Full Area)



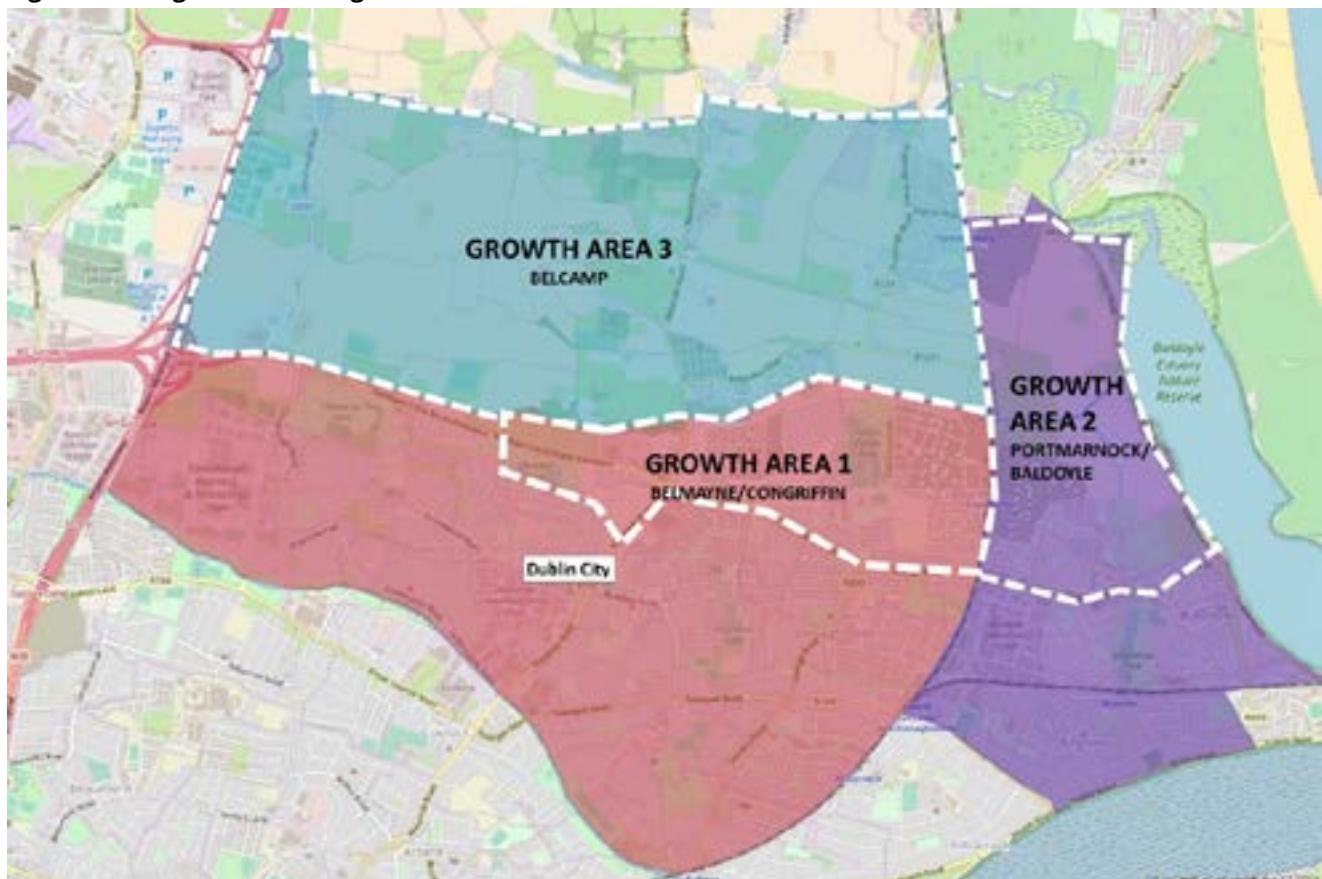


6 | Fingal/Dublin Fringe Transport Assessment

6.1 Overview

The Fingal/Dublin Fringe has been defined according to the three main growth areas shown in Figure 19 below as Belmayne/Clongriffin (Growth Area 1), Portmarnock/Baldoyle (Growth Area 2), and Belcamp (Growth Area 3). The Dublin/Fingal administrative boundary is defined by the Mayne River and the Northern Rail Line, with Fingal to the north and east of these respectively. The larger sectors outside the dotted lines represent the areas for which POWSCAR data was extracted and presented in the following section.

Figure 19. Fingal/Dublin Fringe Sectors



6.2 Existing Population and Travel Review

This section presents an analysis of Fingal/Dublin Fringe Sector population and typical daily travel behaviour. According to the 2016 Census around 63,500 people live in the area defined within the three main Fingal and Dublin sectors (as defined above), with around 48,000 residing in the Dublin City Council area and 15,500 in the Fingal area, as shown in Table 7 below.

Table 7. Fingal/Dublin Fringe Population and Employment by Sector

Fingal/Dublin Fringe Sectors	2016 Population	2016 Employment
Dublin City (larger sector)	48,000	7,500
Belcamp	3,500	200
Portmarnock/Baldoyle (larger sector)	12,000	2,500
Grand Total	63,500	10,200

The main areas of employment are located south of the R139 with POWSCAR indicating over 7,500 jobs in Dublin City Council's administrative area, and around 2,700 jobs in Fingal Council's administrative area.

6.2.1 Existing Travel Patterns

This section presents an analysis of travel patterns of work and school trips from the wider sector area defined above, as per the 2016 Census POWSCAR dataset.

Figures 20 and 21 below present the total numbers of work and school related trips segmented by their destination area. The data shows:

- the population of Fingal/Dublin Fringe generates total work and school trips of approximately 17,500 and 11,500 respectively.
- Of the 17,500 work trips, just over 3,000 stay within the Fingal/Dublin Fringe, which is indicative of its relatively suburban nature with most people commuting out of the area to work.
- Of the nearly 5,500 work related trips that are within the M50 and north of the city centre, 71% travel by car.
- Over 5,000 travel to the city centre, however just 28% of these are by car, and 66% take public transport. Just under 2,000 trips continue further to the south of the city but inside the M50, mostly by car.

Work trips to other Fingal areas (Dublin Airport, Swords, Malahide) are comparatively small, amounting to only around 1,750 (10% of all trips from the area), with a 80% car mode share and 15% PT mode share. School trips to other Fingal areas are also relatively small amounting to 500 trips to Swords and Malahide combined.

The data shows that a significant proportion of commuter destinations from the area are spread out between the M50 and Dublin City Centre. This makes it difficult to reduce the car mode share, which is currently 58% for Fingal/Dublin Fringe. However, a reduction in car usage for Fingal/Dublin Fringe could come through an increase in active modes use for short distance trips to school and employment opportunities. As shown in Figure 22, around half of the 8,000 local work and school trips (i.e. those that begin and end within the sectors defined above) are by car, a significant number of which due to their short average trip length could be encouraged to walk or cycle.



Figure 20. Fingal/Dublin Fringe POWSCAR Commuter Destinations and Mode Shares

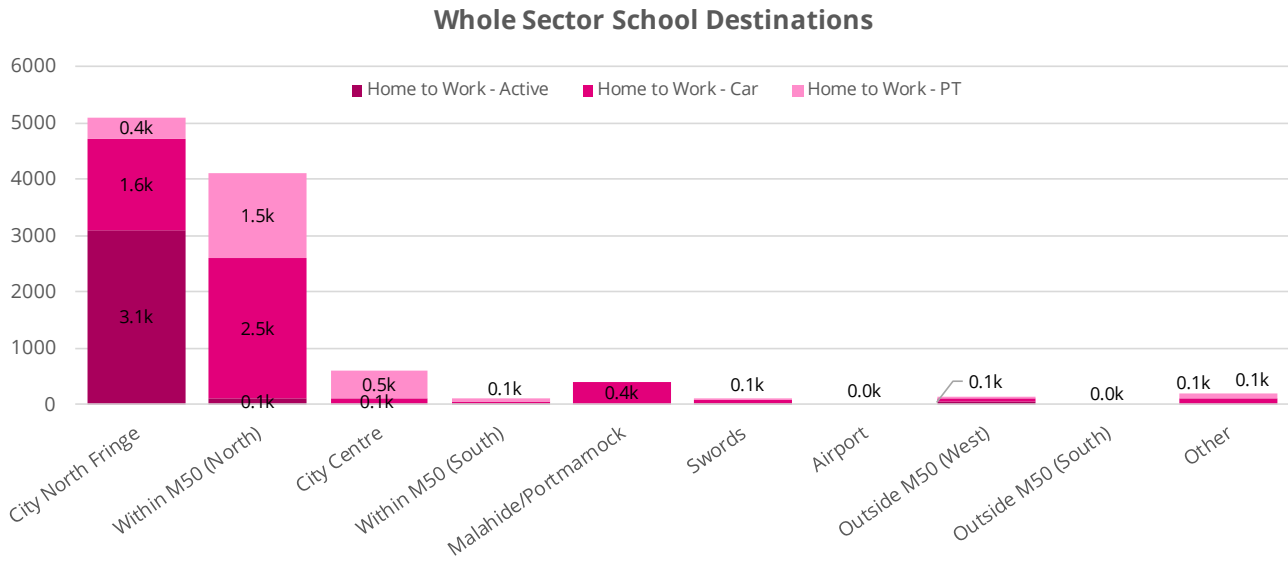


Figure 21. Fingal/Dublin Fringe POWSCAR School Destinations and Mode Shares

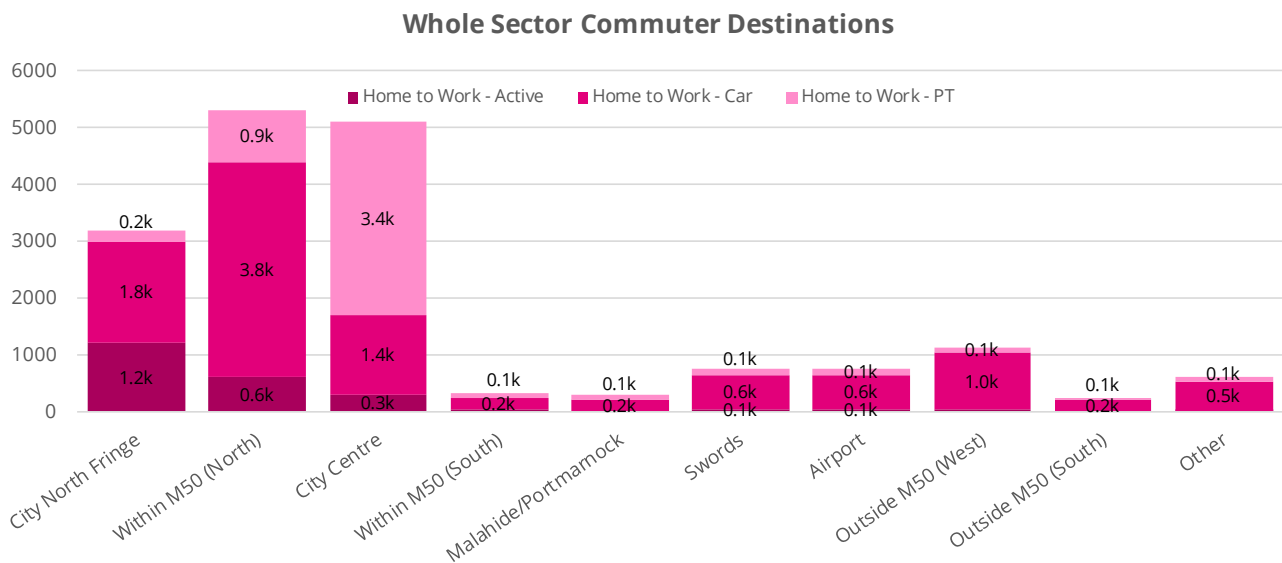
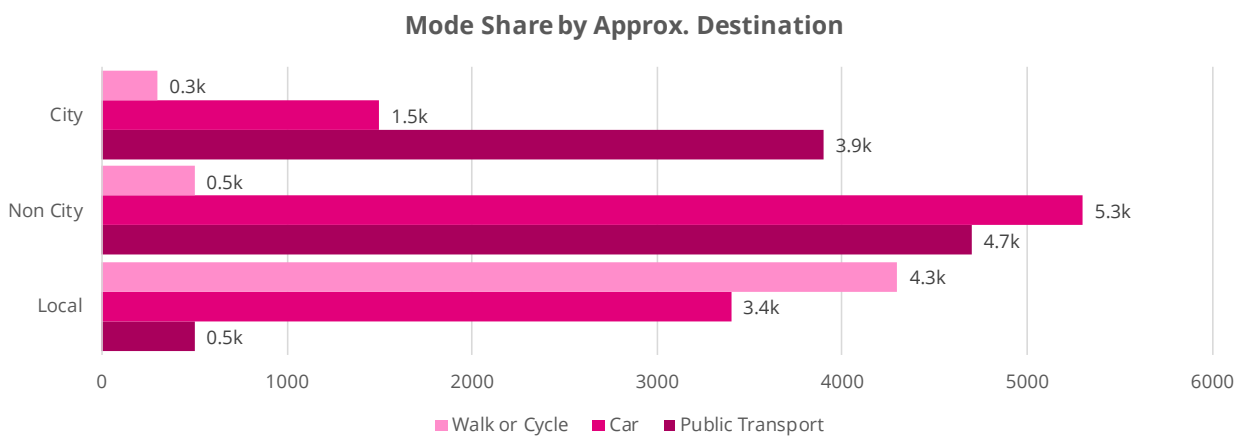


Figure 22. Summary of POWSCAR Work and School Trips Combined



6.3 Future Land Use Assumptions

Future development in the Fingal/Dublin Fringe area is governed by a number of LAPs, e.g. Baldoyle-Stapolin (FCC), Portmarnock South (FCC) and Clongriffin/Belmayne (DCC). Figure 23 below shows the full range of development areas considered in both FCC and DCC areas.

Other significant areas of potential development have been identified through consultation with FCC, such as lands at Belcamp and Balgriffin. The Belmayne and Clongriffin area is identified as a Strategic Development and Regeneration Area (SDRA) in the DCC Development Plan. Figure 24 below shows an extract of the FDP land use zoning map. A significant site is zoned at

Clonsbaugh adjacent to the M1/M50 interchange for employment generating land uses. A high level of employment has been assumed for this site in order to evaluate, at a high level, its suitability for significant development from the perspective of the Fingal Development Plan objectives in relation to transport sustainability.

Figure 23. Locations of New Housing Units per CSA in the Clongriffin Area



Figure 24. Extract of Fingal Development Plan in Fingal South



Figures 25 and 26 below show absolute growth in population and employment levels respectively from 2016 to 2027, based on information provided by FCC

and DCC. These form the basis for the future model runs of the ERM. The data is tabulated by area in Tables 8 and 9.

Figure 25. Fingal/Dublin Fringe Population Projections

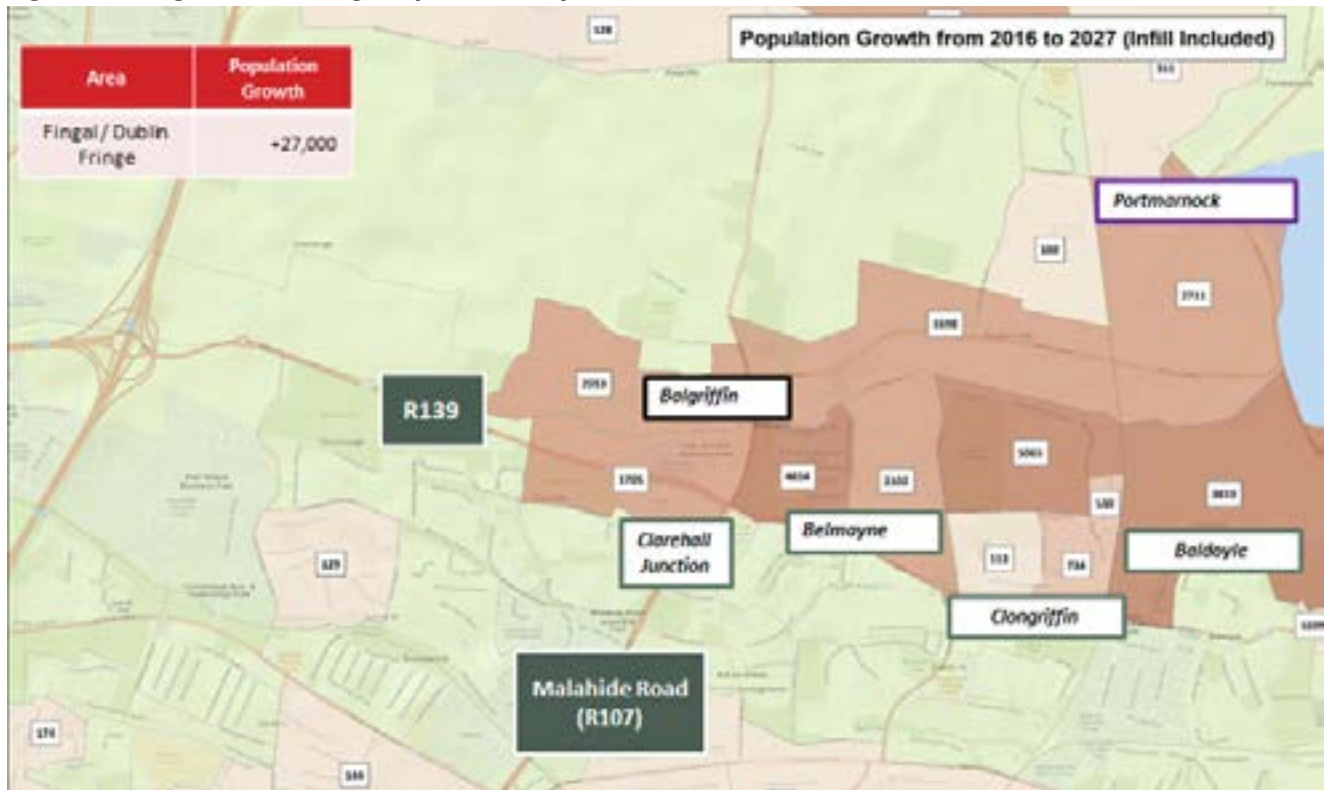


Figure 26. Fingal/Dublin Fringe Employment Projections



Table 8. Fingal/Dublin Fringe Population and Employment Projection Summary

Fingal/Dublin Fringe Sectors	2016 Population	2027 Population	2016 Employment	2027 Employment
Dublin Fingal/Dublin Fringe (Clongriffin/Belmayne)	8,000	21,000	300	4,000
Belcamp	3,500	8,000	200	8,500
Baldoyle	12,000	19,000	2,500	3,000
Grand Total	23,500	48,000	3,000	15,500

Table 9. Fingal/Dublin Fringe Growth Areas Summary by Housing Units

Site	Units Allowed By Lap	Units Assumed In 2027 Baseline	Location
Clongriffin	1,350	1,400	Growth Area 1
Belmayne	950-1,300	1,200	Growth Area 1
Other areas identified by DCC around Clarehall Junction	1,080-1,250	850	Growth Area 1
Lands outside of LAP phasing strategy	1,450	1,450	Growth Area 1
Belcamp (non LAP)	n/a	1,100	Growth Area 2
Balgriffin (non LAP)	n/a	250	Growth Area 2
Baldoyle LAP	1,500-2,000	1,350	Growth Area 3
South Portmarnock LAP	1,200	1,000	Growth Area 3
Non LAP – Portmarnock	n/a	450	Growth Area 3
Total		9,050	

6.4 Network Analysis and Recommendations

6.4.1 Overview

The creation of a reliable and efficient network that provides residents with a choice of sustainable travel modes will be critical to the sustainable growth of the Fingal/Dublin Fringe area. Therefore a key part of the SFTS is identifying what infrastructure will be required in the medium and long term to maintain an efficient network, enabling sustainable growth in Fingal, and supporting the objectives of the FDP, BusConnects and DCC LAP objectives in an integrated manner across the area.

6.4.2 Existing Situation

The eastern side of this area near Baldoyle and Clongriffin has good existing public transport connectivity to the City Centre, provided by the

Malahide Road Quality Bus Corridor, 14/15 Dublin Bus services, and DART/Commuter Rail services stopping at Clongriffin Station. Bus services to and from this area terminate at Clongriffin Train Station and run along Clongriffin Main Street. It is proposed to extend

Belmayne Avenue fully to the west to meet with the Malahide Road and to configure this as a bus only link. A higher frequency DART service is proposed by the early 2020s. In the longer term, an expanded higher capacity system is proposed as part of the DART Expansion programme.

The two most critical routes in the area—the R107 Malahide Road to the city and the R139 providing access to the M1 or M50—meet at Clarehall Junction, forming a large traffic dominated junction. It serves as a gateway to the M50 for a large part of the north city and the starting point for the Malahide Bus Corridor, which is one of the busiest in the city.

6.4.3 Clongriffin Core Bus Corridor

Planning is underway to further improve the level of bus priority on the Malahide Road, to the south of the R139, to the level of “Core Bus Corridor (CBC)”, which is part of the Bus Connects programme. This will include segregated bus lanes and priority for buses at signal controlled junctions. It is understood at present that Bus Connects and the associated CBC designs will also include segregated high quality cycle facilities along all CBC routes. The CBC upgrade will enable the ongoing improvement to bus service frequencies that is required for the Fingal/Dublin Fringe to function from a transport perspective as it continues to grow, with nearly 10,000 more units expected in the next 10 to 15 years.

The allocation of road capacity for bus services on the Malahide Road through Bus Connects CBCs will limit the ability to cater for additional private vehicular traffic capacity into the city. It is also understood that Dublin City Council may pursue a reduction of the footprint of the Clarehall junction as part of enhancements of urban realm, local amenity and pedestrian/cycle friendliness. Therefore providing a robust network in and around Clarehall Junction becomes all the more critical from the point of view of maintaining an efficient road transport network serving the overall area.

6.4.4 Access to Dublin Airport

Access to Dublin Airport is relatively indirect from Fingal/Dublin Fringe. While only 5km from Dublin Airport as the crow flies, the shortest journey is 8km via the M1. Those wishing to walk or cycle to Dublin Airport must take a relatively indirect route, either via Stockhole Lane (meeting with the R132 Swords Road north of Dublin Airport), or via Oscar Traynor Road/Coolock Lane (meeting the R132 south of Dublin Airport). The non-motorway distances are eight to ten kilometres

for these routes respectively. This indirectness makes providing for bus services and active modes for these movements challenging. For example, accessing the R132 Swords Road and potentially interchanging with the future A Spine of the Bus Connects network is indirect, and addressing this deficiency would require new road connectivity within the Dublin/Fingal Fringe road network, possibilities for which are examined later.

6.4.5 Schemes Considered in the SFTS

Figure 27 below shows the various road scheme possibilities considered in the modelling. Improved east/west and north/south capacity, in addition to relieving the critical Clarehall Junction, would potentially offer the following benefits:

- Reduced pressure on the M50, M1/M50 Interchange and R139;
- Relief of pressure on low capacity rural roads;
- Improved access to development lands along the corridor at Dardistown, Belmayne, Belcamp, and Clongriffin; and
- Improved orbital priority for bus travel.

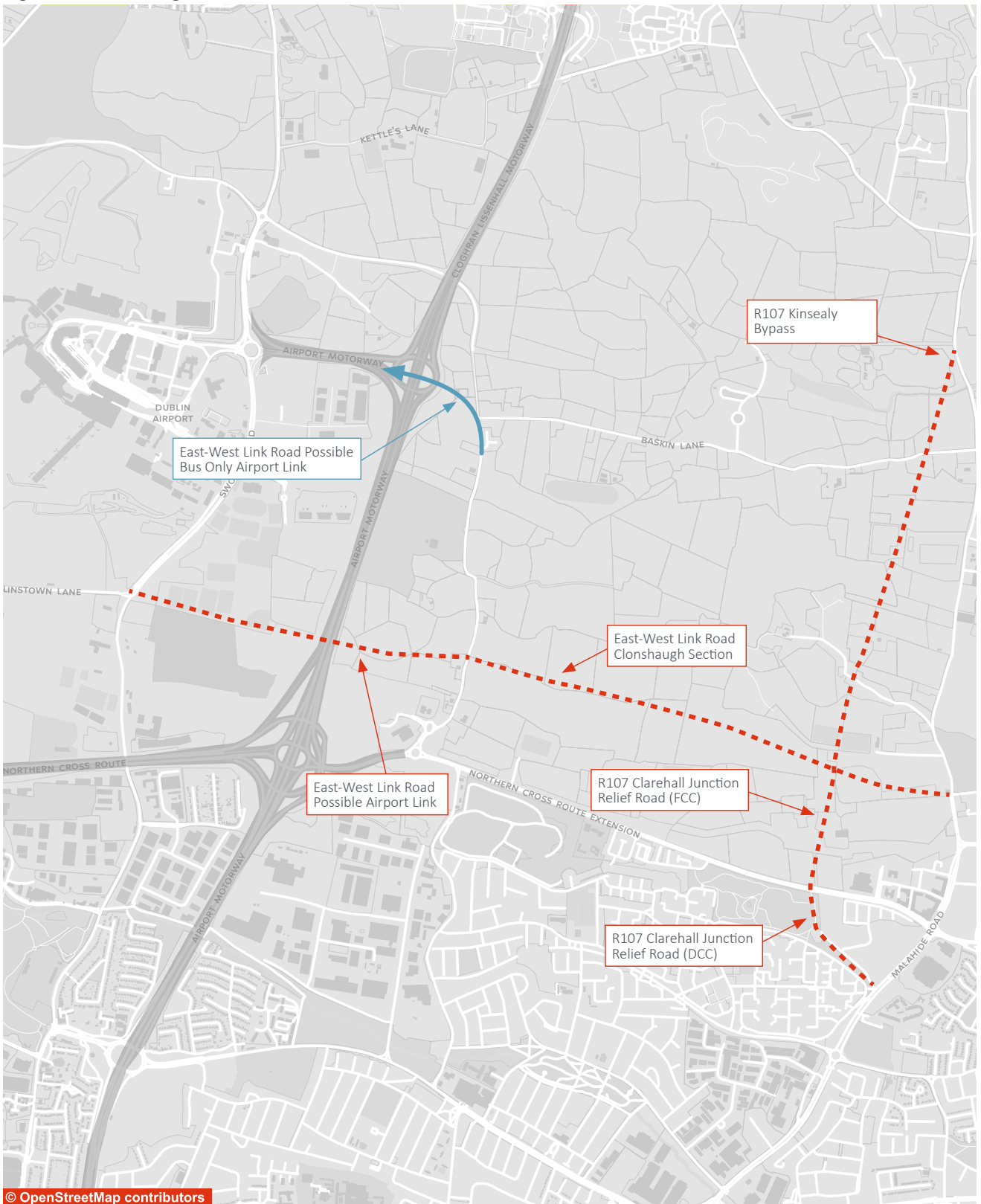
The R107 Bypass and the East-West Road were considered as part of a 2012 transport modelling review of a similar study area³. While both are named in the FDP, the present study has revaluated their function and roles in helping to progress the sustainable transport objectives of the FDP. This is necessitated by the considerable changes to the transport policy and investment context that have emerged in the ten or more years since these schemes were first proposed. For example, the CBCs, Bus Connects and MetroLink, will form a substantially different transport network than what was originally envisaged. Metro West is no longer a part of transport strategy for the Greater Dublin Area and the proposed DART extension⁴ to Dublin Airport will not be considered at least until MetroLink is significantly advanced.

Within this context, the SFTS has considered what new public transport investment could provide similar support for public transport users who do not wish to travel to the city but rather to employment locations such as Dublin Airport and Swords, which attract many commuters and will continue to grow as major employment areas.

3 See figures 5.1 and 6.2 of the 2012 South Fingal Transport Study (RO'D/AECOM)

4 according to the NPF, with states it is a 'longer term' strategic objective

Figure 27. Road Alignments Considered



6.4.6 Analysis and Recommendations

The high-level trip generation modelling indicates that private vehicular demand will rise substantially over the 2016 modelled levels, almost doubling in the general Fingal/Dublin Fringe area as the population grows to its full potential. There is a high demand for public transport within this population growth, but the capacity of the system and the fact that many trips are not city-centre bound, place a limit on the share of future travel demand that public transport is capable of accommodating. Therefore, it is prudent to begin planning now for significant upgrades to the road network, incorporating public transport priority, in order to provide relief of the impacts associated with the full build-out of both the Fingal and Dublin City lands comprising this growth area.

The Clarehall Junction currently operates at capacity and given further traffic growth to 2027 the delay on its approaches will worsen, particularly on its approach from the east. Delays on this approach could double, with very little additional traffic above present day levels getting through the junction in the hour due to capacity constraints. From the north, there is like to be a moderate increase in delay and flow. The modelling also suggests some of the additional traffic generated in the area will travel toward the city via Belmayne Avenue and the Hole in the Wall Road and onward through Donaghmede and the Grange Road, due to excessive demand at Clarehall Junction.

In order to mitigate the above effects, various bypasses of the Clarehall Junction in combination with reductions in scale of the main junction were tested in the modelling. The following section presents a review of the preferred option, termed the Clarehall Junction Relief Road (CJRR), arising from the high level modelling.

Clarehall Junction Relief Road

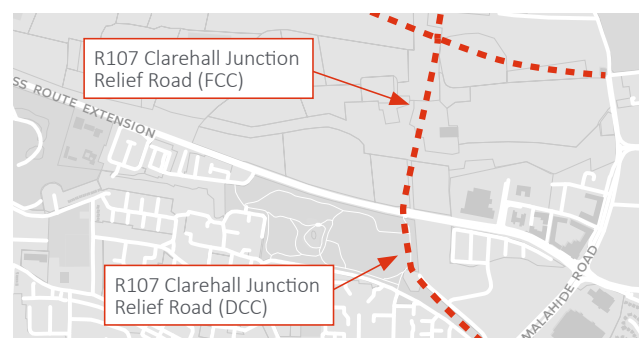
The modelling results indicate that the complete CJRR (Figure 28), combining DCC and FCC sections, reduces the delay at the Clarehall Junction and along the R139 in the westbound direction. It indicates that flow and delay can be reduced on the approach from the north by a third as part of a capacity rebalancing at the junction, due to traffic diverted to the proposed Relief Road. The alignment of the CJRR is assumed to form a four arm junction with Balgriffin Road.

SFTS Recommendation 21: Additional means of traffic distribution within and around the areas adjacent to Clarehall Junction, particularly to its north is recommended through construction of a small-scale bypass in the context of the need to reconfigure the existing Clarehall junction to rebalance capacity towards public transport and/or pedestrians and cyclists. It is recommended that future junctions be limited in scale as far as possible to avoid creating a car dominated environment, instead designing in favour of pedestrians and cyclists.

As part of this scheme both the DCC and FCC sections of the CJRR should be progressed as an integrated scheme, as indicatively outlined in Figure 28 below. This will provide extra resilience and capacity at this critical section of the overall transport network. Reducing the concentration of traffic demand at this location will then afford the possibility of modifying Clarehall Junction in line with NTA and/or DCC objectives related to Bus Connects and the local urban realm.

The modelling undertaken indicates that there are clear benefits from the early implementation of the CJRR, and longer-term benefits from its implementation as a section of the East West Road (described below). Notwithstanding that, there is a clear inter-dependency between both schemes, as well as significant levels of detail to be confirmed as the design process develops. Furthermore, the southern section of the CJRR lies in the DCC administrative area – therefore its implementation would be a matter for DCC directly, either as a DCC project or via an agreed implementation plan with FCC. In any event, given the considerable level of overlap and interdependency, the progression of both schemes (CJRR and EWLR) should be closely coordinated. Further detailed study is recommended to address phasing issues, such as whether this scheme (or part of it) should be considered in conjunction with the East-West road as proposed below.

Figure 28. Clarehall Junction Relief Road Scheme



R107/Balgriffin Road Junction

Increasing delays are experienced on the southbound single lane carriage way approach to Balgriffin Road, with demand for the left turn into Balgriffin increasing substantially as the Fingal/Dublin Fringe develops.

SFTS Recommendation 22: The R107/Balgriffin Road junction should be upgraded to include additional left turning capacity for the southbound movement (e.g. adding a left turn flare), while also providing a safe and attractive environment for pedestrians and cyclists.

East-West Link Road (EWLR)

The EWLR has the potential to provide much needed additional capacity to the area's road network, and in particular afford a more direct route to the Swords Road and Dublin Airport with the opportunity to provide high levels of priority to bus and bicycle users as part of the scheme.

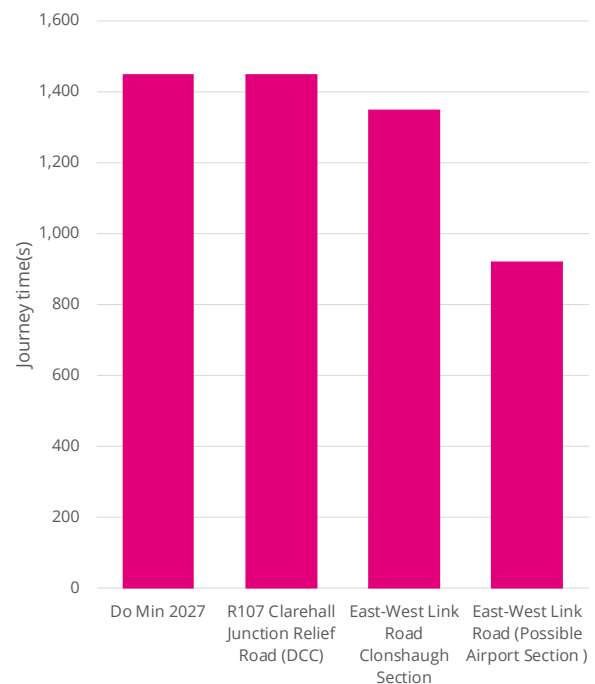
It is assumed that the EWLR would be aligned with, and essentially form a continuation of, the FCC section of the Clarehall Junction Relief Road, as described above. Traffic volumes are estimated at around 800 vehicle units in the peak hour, indicating a single traffic lane per direction is sufficient. The scheme should be developed to include additional continuous bus and segregated cycle priority.

The modelling indicates that only the Clonshaugh section of the route is needed to ease pressure on traffic flows in the overall Fingal/Dublin Fringe area. Ideally a public transport only link would be developed to connect Stockhole Lane with the M1 Dublin Airport Spur, thus creating a relatively direct link to Dublin Airport to serve the substantial population of the area.

In terms of network efficiency, the effects of the EWLR are most apparent at the Clarehall Junction on its eastern and western approaches. Delays reduce substantially to levels comparable to current conditions (to around a minute from the west and five minutes from the east) in both the partial and full scheme scenarios, indicating a strong case for developing the scheme initially between Clongriffin and Stokehole Lane only.

Journey times to Dublin Airport from the Fingal/Dublin Fringe Area under various configurations of the CJRR and the EWLR are illustrated in Figure 29. The results indicate that journey times are substantially reduced if the EWLR is developed all the way to the R132 Swords Road (from around 20 to 15 minutes).

Figure 29. Journey Time from Fingal / Dublin Fringe to Airport



In summary:

- Accessibility to Dublin Airport from the Fingal/Dublin Fringe is improved with the full EWLR.
- Most of the traffic using the EWLR comes from Fingal/Dublin Fringe area.
- With the full EWLR, trips from Dublin Airport may encounter congestion at the EWLR/R132 Swords Road Intersection, resulting in some increase in southbound flow on the M1;
- The EWLR Clonshaugh section reduces traffic at Clarehall Junction significantly and similarly to the full route;
- Journey Time along the R107 is reduced with EWLR (Clonshaugh section) but not with Full EWLR, due to additional induced traffic.

SFTS Recommendation 23: Developing a new link between the Clarehall Junction Relief Road and Stockhole lane to improve options for vehicular traffic entering/leaving the overall Fingal/Dublin Fringe area is recommended. This link would potentially cater for an orbital bus service linking the employment zoned lands north of the R139 with Dublin Airport and Swords. In the longer term this link would also cater for high quality walking and cycling trips via a more direct and safe route to Dublin Airport and for interchange with the future Swords CBC.

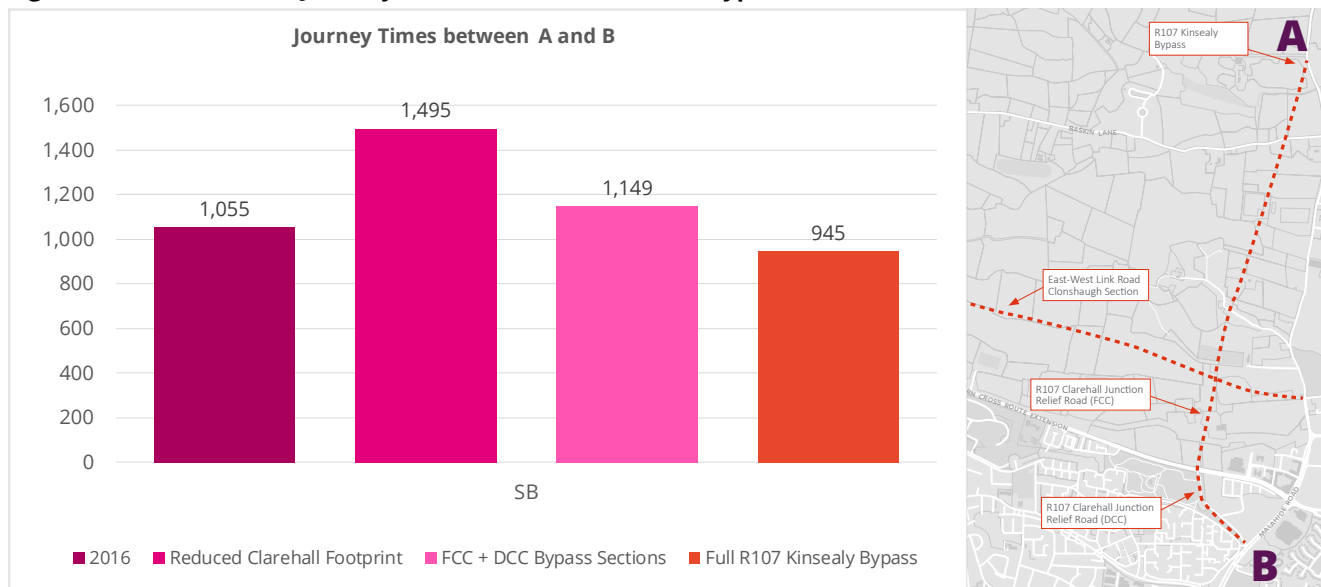
Kinsealy Section of the R107 Bypass

It is acknowledged that the extension of the Clarehall Junction Relief Road north of Kinsealy would provide some local relief to the village of Kinsealy. However, with respect to the objectives of Fingal/Dublin Fringe outlined previously, the modelling indicates that there is no added net benefit to developing this bypass section of road from the perspective of sustainable transport within the Fingal/Dublin Fringe area. The benefits of this route would be allocated to vehicular journeys

travelling south towards the city from Malahide. Journey times are shown below in Figure 30.

This shows that the Clarehall Junction Relief Road brings the journey times back near to present day levels. Adding the Kinsealy section improves journey times to better than present day levels. However no further benefits are realised at the crucial Clarehall Junction in terms of sustainable transport with the Kinsealy section. On this basis the Kinsealy section of the R107 is not recommended.

Figure 30. Vehicular AM Journey Times with/without R107 Bypass



6.4.7 Public Transport

Malahide Road CBC

The CBC on the Malahide Road and an appropriate high frequency bus service is crucial for the growth of the overall area. Southbound in the AM the modelling indicates that demand for bus travel could be as much as 3,500 people an hour on the outermost sections of the Malahide Road CBC going towards the city centre. In reality, the route may fall short of this level of flow if sufficient bus capacity and priority through the road network is not provided, which would have negative knock-on effects on the road network.

Fingal/Dublin Fringe - Dublin Airport - Swords Bus Route

The modelling analysis in the ERM shows there is strong demand for an orbital public transport route running between Clongriffin, Dublin Airport and Swords with the future land uses assumed for the SFTS. In addition to the bus services proposed by the NTA GDA Strategy,

it is recommended that this future orbital connectivity is provided to help reduce car dependency for trips not travelling to the city, but to major employment areas potentially along the R139. It will also serve Dublin Airport and Swords, where large scale future employment generating developments will be driven by MetroLink but will attract trips from the wider areas including from Fingal/Dublin Fringe.

The level of demand suggests a high frequency bus service (every five to ten minutes) would be required to meet peak period demand. However, a relatively direct and reliable service would require the development of the EWLR Clonshaugh section and a link over the M1 to Dublin Airport, either by completing the suggested public transport only link over the M1 Dublin Airport spur interchange, or by providing the full EWLR. The relative costs and benefits of these alternatives would have to be carefully assessed.

SFTS Recommendation 24: To further consider the feasibility of a Fingal/Dublin Fringe – Dublin Airport – Swords Bus Route when Bus Connects and MetroLink are more advanced. The current phases of planning for these projects must give priority to those services already identified in the NTA GDA Strategy 2016-2035.

However, a review of the NTA GDA Strategy is due to be undertaken by the end of 2022, at which point it would be timely to assess the potential inclusion of the proposed orbital bus service for delivery post 2027.

6.5 Fingal/Dublin Fringe Recommendations Summary

Figure 31 below shows the main transport recommendations for the Fingal/Dublin Fringe. In summary, these are:

Public Transport Recommendations

- In addition to the bus services proposed by the NTA GDA Strategy, and in the longer term, it is recommended that orbital connectivity is provided to help reduce car dependency for trips not travelling to the city, but to major potential employment areas along the R139, onward to Dublin Airport and to Swords.
- It is recommended that the potential for this route is revisited in the early 2020's with a view to deciding upon its inclusion in the NTA GDA Strategy review in late 2022.

Cycle Recommendations

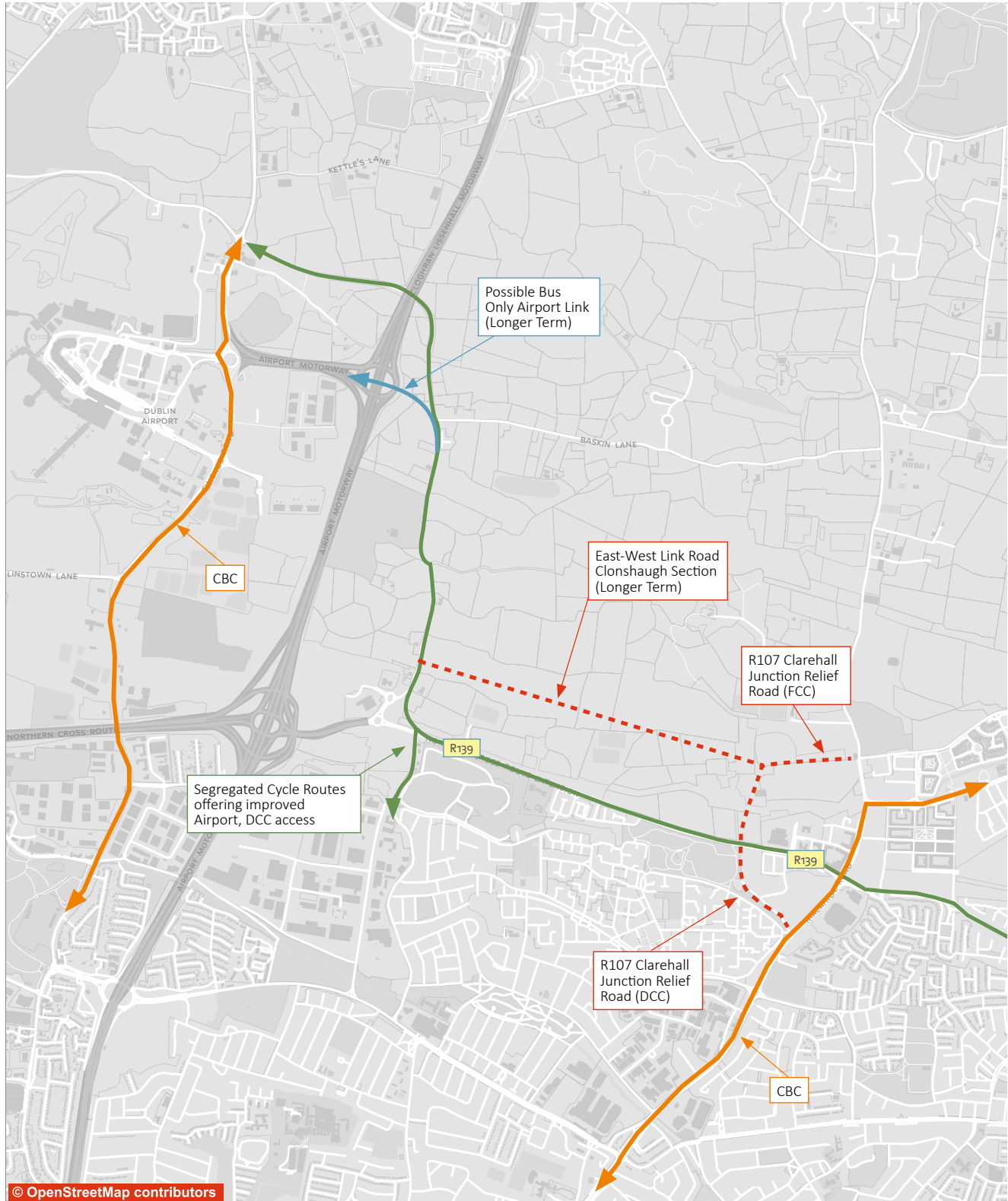
- As noted in the discussion above, travel from this area relies heavily on the M1/M50 junction. Less direct access is also possible, for example via the R132 old Dublin Road. This indirectness is likely to result in fewer people opting to cycle than would otherwise be the case. It is therefore important to improve the quality of facilities along the route.
- There is potential for such improvement along the R139 up to and including Stockhole Lane for travel to Dublin Airport and Swords, and along Clonshaugh Road for access to the city. The cycle route could extend up and over the M1 to tie in with the R132.

Road Recommendations

- Progress the design of both the Clarehall Junction Relief Road (CJRR) and the EWLR as a single scheme package due to potential interdependencies between both. The initial feasibility study should examine whether the EWLR section should be delivered as a single scheme between Malahide Road and Stockhole Lane, with the remaining section of the CJRR potentially delivered as a subsequent phase.
- As part of this, a feasibility study should be undertaken to determine what prospect there is of creating a bus (and potentially cycle) only link across the M1 junction and onto the M1 spur into Dublin Airport.
- All new road schemes should be DMURS compliant and provide high quality cycle and pedestrian facilities between and through junctions.
- The strategic function of the M1/M50 should be protected and any development near this junction should be carefully assessed for any impacts on its operational capacity. As part of this objective, the nearby roundabouts in Clonshaugh should be assessed for potential impacts on the M1/M50 junction if any further trip generating development emerges in this area.

6.6 Fingal/Dublin Fringe Recommendations Map

Figure 31. Fingal/Dublin Fringe Area Recommendations





7 | Dublin Airport Transport Assessment

7.1 Overview

This section presents issues relating to current and future surface access at Dublin Airport. Transport to Dublin Airport is referred to as Surface Access in this section of the report, in order to distinguish it from all airside travel.

Dublin Airport is located near the southern edge of Fingal County, approximately ten kilometres north of Dublin City Centre. Primary strategic road access is from the M50 via the M1 motorway to the M1 Spur between Dublin Airport and the motorway. The M1 is recognised under EU regulation as a Trans-European Transport Network, linking Dublin, Dublin Airport and Belfast. Access is also possible from the M2/N2 motorway via the local road network (i.e. the R108/R132 Swords Road & R135). Dublin Airport is a key national asset, providing global connectivity to trade and tourism markets.

The relative importance of Dublin Airport in a national context has grown significantly over the past 12 years and the share of total passengers at Dublin Airport as a percentage of the national aggregate continues to increase. CSO indicates that Dublin Airport's market share of passengers increased from 73% in 2005 to 84% in 2015. With 29.6 million passengers passing through its doors, and nearly 216,000 commercial aircraft movements using its runways in 2017, Dublin Airport is currently the 11th largest airport in the European Union and the fastest growing of Europe's largest 20 airports.

Fingal County Council is in the process of preparing a new Dublin Airport Local Area Plan (LAP) to supersede the existing 2006-2015 LAP. The previous Dublin Airport Local Area Plan was adopted in June 2006 and its associated original six-year timeframe was extended by a further five-year period. The aims of the LAP included respecting Dublin Airport as an important economic entity whilst also addressing the needs of the local communities and infrastructure in its vicinity. The SFTS supports the forthcoming LAP by strategically examining the future infrastructural requirements for the ordered planning and sustainable development of the area.

In parallel to the LAP process, Dublin Airport Authority (DAA) are preparing the Dublin Airport Masterplan, which is expected to be based on a forecast growth to 55 million passengers annually by 2040. The SFTS assumes a level of passenger and employment growth in line with this forecast and performs an analysis of the future transport network under this scenario up to 2027, with background growth in population and employment consistent with forecasts described previously for Swords and the Fingal/Dublin Fringe, i.e., approximately 50,000 additional population and 35,000 jobs to 2027 in the SFTS study area.



7.2 Existing Surface Access and Transport Facilities

7.2.1 Dublin Airport Overview

There is currently no rail access to Dublin Airport; as such, the main means of surface access are private car, taxi and an extensive network of bus and coach services.

Dublin Airport has two passenger terminals, located approximately 300 metres apart. Terminal 1 primarily serves short haul flights, while Terminal 2 is now the transatlantic gateway for flights to the United States as it features a US pre-clearance immigration facility. The Dublin Airport Ground Transportation Centre (GTC) is a term that is applied to the various pick-up/set-down areas, car parking, and bus/coach boarding alighting facilities. Many of these facilities are terminal-specific and were not designed as a single coordinated facility.

Flight movements at Dublin Airport primarily comprise those operated by two major airlines – Aer Lingus and Ryanair – each handling around 40% of total movements.

Aside from land uses relating directly to airport operations, there are a number of other land uses within the airport environs. These include commercial car parking, offices, logistics, industrial, aviation related business operations, and hospitality and leisure related uses. In the immediate vicinity of the terminals land uses primarily comprise hotels, airport offices and hospitality functions. Further away from the terminals, there are various long-stay car parking facilities, logistics areas and aviation support facilities.

The existing Dublin Airport internal road network consists primarily of a one-way circulation system travelling in a clockwise direction. The one-way system splits at the main internal junction with Corballis Road South, with the southern route serving Terminal 1 and its associated car parks, and the northern route serving Terminal 2 and its associated car parks.

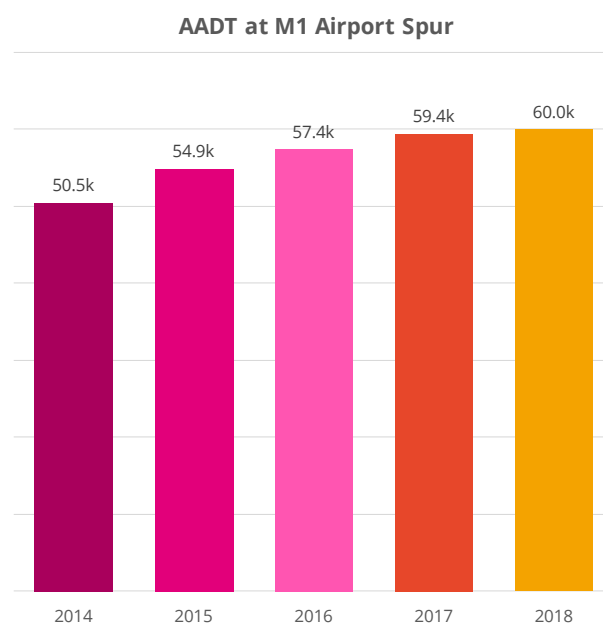
7.2.2 Dublin Airport External Road Network

For vehicular access, Dublin Airport is primarily served by the M50/M1 road corridors. Traffic volumes on the M50 and M1 in the vicinity of Dublin Airport are the highest daily traffic flows on the national motorway network. Figures provided by TII indicate average annual daily traffic (AADT) of 133,000 daily vehicles on the M1 north of the M50 and 144,500 AADT on the section leading to the M1 in 2017. Currently these sections in the vicinity of Dublin Airport operate at or above capacity during the peaks.

Road access to Dublin Airport is heavily dependent on the M1 Spur route. This means that any full or partial closure of this road due to a road traffic accident or other incident would seriously impact travel to/from Dublin Airport. Within Dublin Airport it is clear that the roundabout where the M1 Spur meets the R132 (referred to as the Airport Roundabout) is of critical importance. The Airport Roundabout is partially signalised and is expected to experience congestion as Dublin Airport expands.

The chart below in Figure 32 shows a trend of increasing traffic volumes at the M1 Spur. Traffic volumes increased by 20% in the past five years, with half of that growth occurring from 2014 to 2015. Traffic growth appears to have slowed recently, with 2018 AADT only marginally above 2017 AADT. In terms of the critical AM peak hours, the TII data shows that the weekday AM peak volume (between 8am and 9am) toward the airport increased from an average of 2,200 to 2,500 between 2016 and 2017. At this level the Airport Roundabout is at or near to its capacity on its westbound approach. In 2017 the maximum flow recorded was 2,914 vehicles on the 10th October.

Figure 32. AADT at M1 Airport Spur



(Source: TII Traffic Counter Data)

7.2.3 Bus Boarding/Alighting

Bus transport is responsible for the largest share of public transport surface access to Dublin Airport. There are three main bus stop locations:

- Pick-up/set-down areas outside Terminal 1;
- Pick-up/set-down areas outside Terminal 2; and
- Within the Ground Transportation Centre.

The bus stops located outside Terminal 1 and 2 are used by Aircoach services and Route 747 (Airlink), though all buses may set down here. Route 747 (Airlink) and Route 700 (Aircoach) provide premium express access to Dublin City Centre. In addition to local services, Aircoach provides a range of bus services nationally to regional cities and towns. The GTC provides bus stops for shuttle bus services to the long-term car parks, for Bus Éireann services which are routed through Dublin Airport and other Dublin Bus services. A coach parking area is provided within the GTC serving other chartered coach services, with an overflow also located in the DAA-owned long term car park to the east of the R132 Swords Road.

7.2.4 Private Car/Taxi Drop Off

Private car/taxi drop-off activities are catered for via designated departures kerbs immediately adjacent to Terminal 1 and Terminal 2. These are well laid out facilities with separate lanes for drop-off activities and through traffic movements. It is understood that pick up activities also 'informally' take place at the departures kerb. Enforcement of drop-off activities at departures kerbs is a common problem at airports around the globe so this is not surprising. The use of departures kerbs for pick up activities can cause significant operational problems because:

- Vehicles waiting to pick up a passenger often dwell at the kerb for longer since they do not know the exact time the passenger will arrive; and
- Such activities use up space intended for vehicles dropping off passengers, potentially causing capacity issues.

7.2.5 Private Car/Taxi Pick Up

Private car pick-up activities are officially permitted in the short stay car parks serving Terminal 1 and Terminal 2. The use of short stay car parks for private car pick up activities at airports is a common practice. Some airports offer a short period of free parking (20 or 30 minutes) to facilitate this. Taxi pick-up activities are undertaken in designated taxi ranks serving Terminal 1 and Terminal 2.

7.2.6 Private Car Parking

Car parking facilities comprise a mixture of short and long stay sites, with some sites controlled by the DAA and others controlled by private operators, as shown in Figure 33 below.

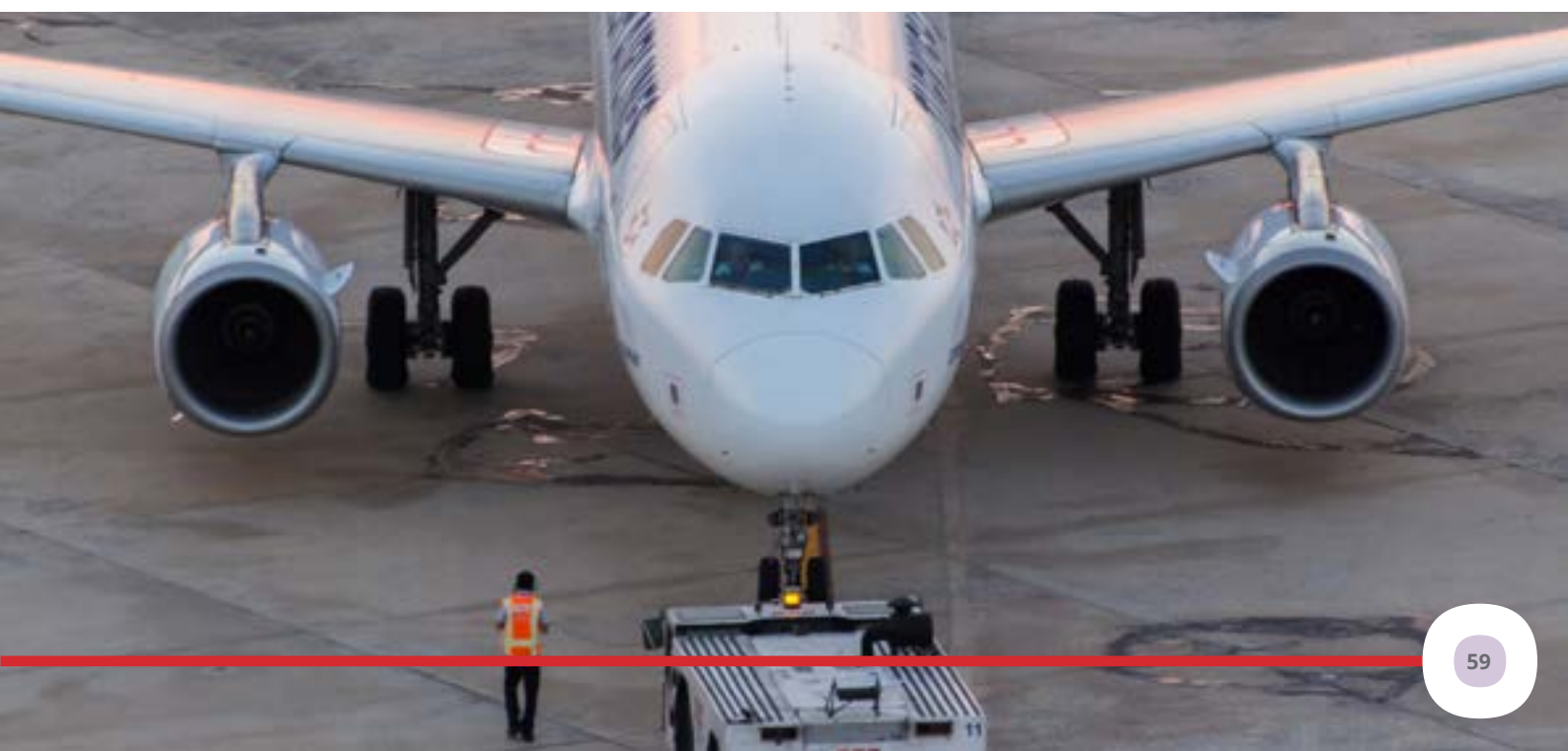


Figure 33. Short-Term Air Passenger Car Parks



(Source: DAA website)

Short-term car parking spaces are provided within the multi-storey car parks (MSCP) located near Terminal 1 and Terminal 2 and the surface short-term car park on land adjacent to the Coach Park. In total, there are around 3,400 short-term spaces available to passengers. Currently, planning permission limits the short stay car parking provision to 4,000 spaces in total. Higher parking charges apply to the short-term car parks (€3 for the first hour and €4.50 per hour for additional hours up to a maximum of €40 per day) as compared to the long-term parking (€7-10 per day) to encourage greater turnover of parking spaces.

7.2.7 Long-Term Air Passenger Car Parks

Long-term car parks are located along the R132 Swords Road and R108 roads and are more remote from the terminal buildings. Passengers making use of these car parks are transferred via shuttle bus to and from the terminal buildings. Transfer times vary depending on

their location but all travel times are generally around 5-10 minutes. There are currently more than 25,000 long-term car parking spaces serving Dublin Airport. Of these, around 19,000 are controlled and operated by DAA with the remainder being operated by 'QuickPark', a private operator. Currently, planning permission limits the long stay car parking provision to 26,800 spaces in total.

Current total parking provision at Dublin Airport is around 28,400 spaces which is equivalent to around 1,000 spaces per million passengers per annum handled at Dublin Airport. Comparing this level of provision with that at similarly sized European airports suggests that Dublin Airport is towards the upper end of the range. This may, in part, be related to the absence of a rail link to Dublin Airport – meaning that users are more dependent on the private car for access. It may also be due to the fact that Dublin Airport also serves the entire island of Ireland, where some parts have only sparse public transport services.

7.2.8 Staff Car Parks

Staff car parking facilities are located in the vicinity of the buildings they serve in the wider campus area, and there is also a large dedicated facility just to the east of the main terminal road network on the eastern side of the R132 Swords road. There are approximately 5,360 car parking spaces available to Dublin Airport staff. Facilities are included in Zone 1 and Zone 2 (serving the passenger terminal buildings), adjacent to the Cargo Terminal, Hangar 6, Hangar 1-5, the Old Central Terminal and the Terminal 1 building. An employee shuttle bus is provided for staff travelling between a number of car parks and the main terminal buildings.

Table 10 summarizes the position with respect to car parking provision at Dublin Airport, based on the source documents referred to be below the table. These documents suggest planning permissions would allow the implementation of just over 2,000 additional spaces serving air passengers. No material increase in the number of employee car parking spaces is permitted.

Table 10. Car Parking Provision at Dublin Airport

Parking Type	Provision (Spaces)	
	Current	Permitted
Short Stay Air Passenger Parking	3,400	4,000
Long Stay Air Passenger Parking	25,280	26,800
Sub-Total	28,680	30,800
Airport Staff Parking	5,360	5,360
Total	34,040	36,160

Source: Dublin Airport Central Masterplan p. 12 (FCC, 2016) and Dublin Airport Terminal 2 Planning Application p.304

7.2.9 Taxi Staging

It is understood that taxi staging at Dublin Airport comprises an on-site facility of approximately 150 spaces plus an off-site facility of approximately 350 spaces. This level of taxi staging is consistent with similar sized airports in other jurisdictions.

7.2.10 Non Mechanised Modes

Pedestrian provision and footpath facilities are generally good within Dublin Airport and its environs. In many locations, covered walkways and dedicated footpaths have been provided to encourage walking within the airport grounds and provide connection between terminals, public transport nodes, car parking spaces, and offices. A recent upgrade of Dublin Airport's internal road network included new cycle facilities on the approach routes into Dublin Airport from the R132 Swords Road and on the R132 Swords Road itself. The cycle facilities serve both the terminal buildings and also many of the employment centres located through Dublin Airport and environs.

The cycle facilities provided within Dublin Airport are connected to the wider adjoining networks. For example, on-street cycle paths are provided on the R132 Swords Road connecting to Swords to the north and Dublin city to the south. The extent to which these facilities are utilised for travel to Dublin Airport is not directly known, although evidence from POWSCAR on modes shares to Dublin Airport suggest it is quite low.

Possibilities for improving cycle facilities at Dublin Airport include:

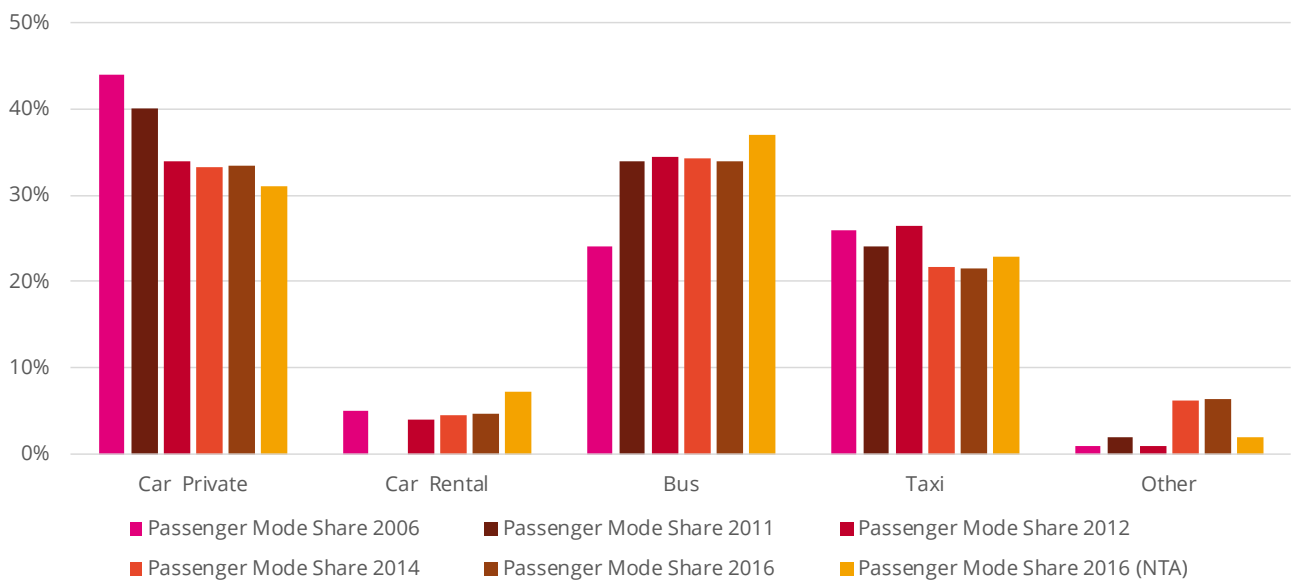
- Staff working at the airport should be incentivised to cycle to work through the mechanism of sustainable travel plans;
- Provision for cyclists should be planned holistically, including a good network of cycle paths combined with secure, well-located cycle parking facilities;
- The volume of bike parking provision would depend on the take-up of cycling by staff. Suitable locations should be identified and set aside for such future use;
- A shared facility close to the Terminals could be made available to both staff and passengers should there be demand for such, potentially providing changing facilities and lockers; and
- The future metro station offers a potential opportunity to expand the role of cycling through the development of a cycle hub in close proximity.

7.3 Travel Characteristics of Staff and Passengers

7.3.1 Dublin Airport Surface Access Mode Shares

Figure 34 shows air passenger surface access mode shares for departing passengers for 2006, 2011, 2012, 2014, and 2016 (transfer and transit passengers are excluded). The recently observed public transport mode share of around 33% is relatively high compared to other airports of a similar scale. Just over half is vehicular based, split between private car (33%) and taxi (22%), with the remainder being small proportions of travel by rental car and non-mechanised modes.

Figure 34. Air Passenger Surface Access Mode Shares



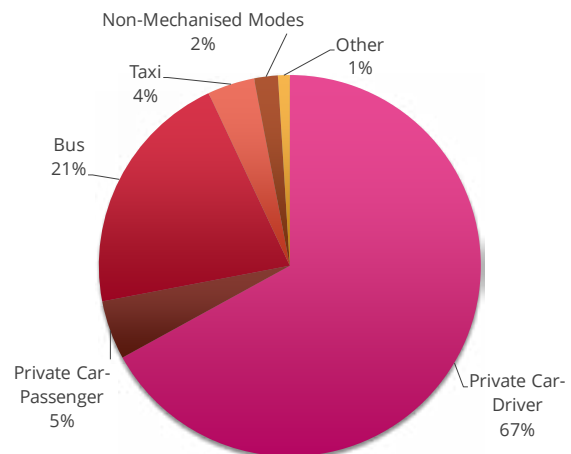
Source: Dublin Airport Mobility Management Update (June 2017) and NTA Travel Survey 2016

7.3.2 Dublin Airport Employee Surface Access Mode Shares

Currently, the majority of Dublin Airport staff drive to work. DAA supports sustainable travel initiatives although the share of non-mechanised mode share is still relatively low at around 1-2%.

Figure 35 below shows mode shares for employees in 2017. Travel to Dublin Airport by staff is dominated by private car, either self-driven (67%) or as a passenger (5%). Around one-fifth of Dublin Airport staff (21%) use bus, with small proportions using taxi, non-mechanised modes and other modes.

Figure 35. Dublin Airport Employee Mode Share



Source: Dublin Airport Mobility Management Update (June 2017)

7.3.3 Dublin Airport Staff (POWSCAR Analysis)

Airlines are the dominant employer at Dublin Airport, with around 5,600 staff. The second largest employer is the DAA itself with around 2,200 employees, followed by contractors and suppliers.

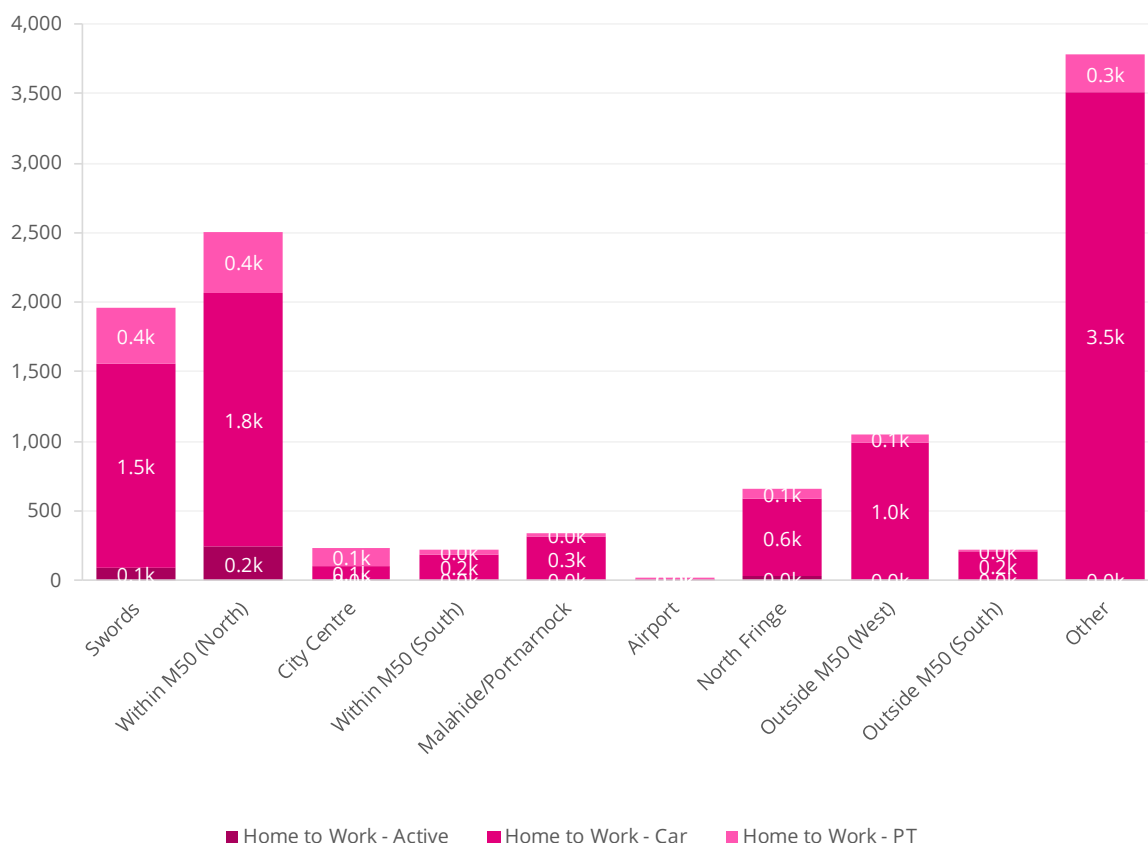
Figure 36 below shows where Dublin Airport workers commute from based on Census POWSCAR analysis, which records a total of 11,000 work trips. Information provided by the DAA indicates that there are 16,000 employees at the Airport. The difference is likely to be due to offsite or irregular work that may not have been counted in the Census data. Of the 11,000 trips recorded, around 3,500 were made to Terminal 1 and Terminal 2 workplaces, making them the largest destinations for workers.

It is evident from the data shown in Figure 36 that many Dublin Airport workers travel from areas nearby their place of work such as Swords and areas in north Dublin City. These areas exhibit the highest levels of public transport or active mode trip making, although the share for these modes is still relatively low.

A low proportion of Dublin Airport workers reside in the City Centre, which may be reflective of the lack of alignment between with the current bus network and Airport’s typical hours of operation and shift patterns. Around 3,500 Dublin Airport workers drive to work from remoter areas (e.g. ‘Other’ in the chart), with few taking public transport. A further finding of note is that the Fingal/Dublin City fringe (e.g. ‘North Fringe’ in the chart) has seven hundred airport workers, which is a significant concentration.

Figure 36. POWSCAR Analysis of Dublin Airport workers

Quantities and Mode Shares of Trips to Airport from the following areas



7.4 Future Demand Assumptions

7.4.1 Dublin Airport Passenger Growth Forecast

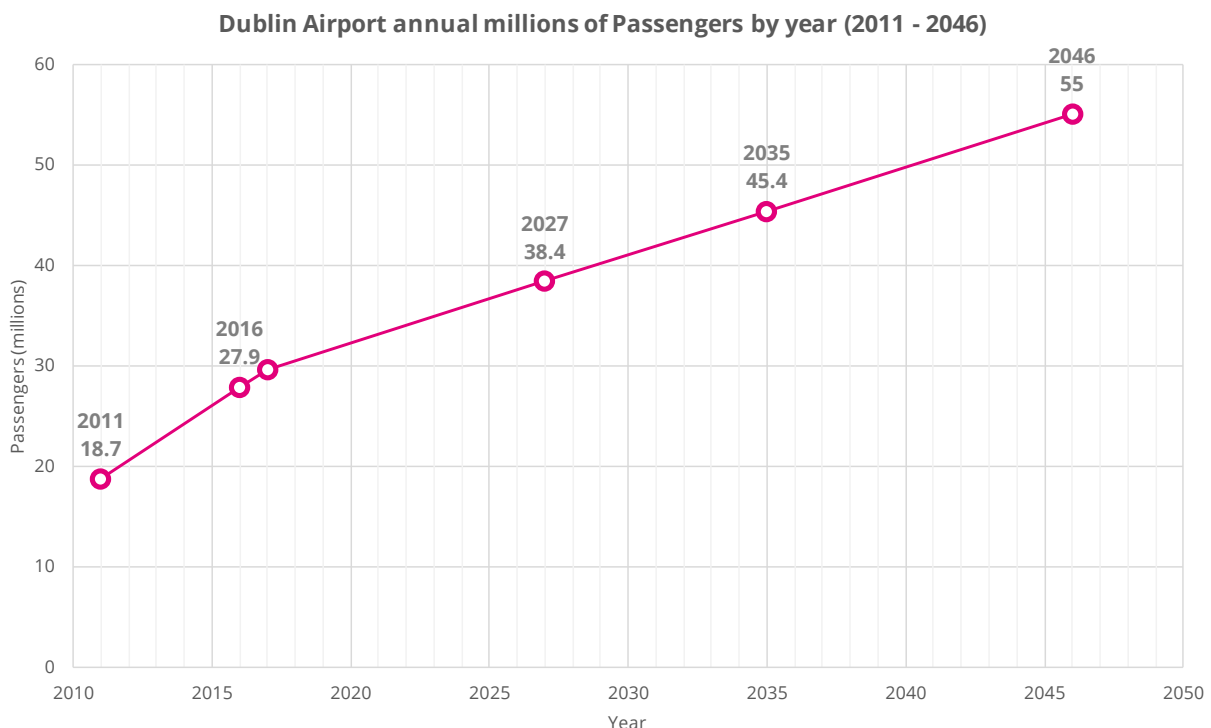
Annual Dublin Airport throughput stood at just under 30 million passengers per annum (mppa) in 2017. Growth to around 55 mppa by 2046 is forecast. Within these headline numbers, the proportion of transfer passengers, which currently stands at around 5%, may grow to around 10%. Such passengers do not generate surface access trips – hence this proportion is of critical importance in determining future surface access demand.

Figure 37 below presents the assumed passenger growth forecasts. For SFTS it has been assumed that by 2027 the level of passenger demand at Dublin Airport will increase to 38mppa from 28 mppa in 2016 including transfers, a growth of 36%. While the transfer rate of passengers may increase, no definitive information has been identified that could provide more clarity. Therefore, the transfer rate has been assumed to remain at 5%. If the transfer rate doubles to 10% there

would be a corresponding reduction in trips impacting surface access equating to nearly 2 mppa. Therefore the analysis presented in this study would equate to both:

- A 2027 forecast of 40mppa with a transfer rate of 10%, and
- A 2027 forecast of 38mppa with a transfer rate of 5%.

Figure 37. Dublin Airport Passenger Projections 2017 – 2046



7.4.2 Dublin Airport Staff

In broad terms it is expected that the workforce will increase in line with passenger numbers, such that as passenger throughput grows to 40 and then 50 mppa the workforce will be significantly larger than the

roughly 16,000 seen today. The transport modelling supporting the SFTS has applied similar levels of growth to the existing levels of employment in Dublin Airport.

7.4.3 Dublin Airport Property Development

The Dublin Airport Central Masterplan (Fingal County Council) is a non-statutory framework for future office development in lands located within Dublin Airport campus. The areas identified for potential development comprise two parcels of land referred to as Zone 1 and Zone 2. The Masterplan enables development of a part of Zone 1 only, which is split into two phases. Phase 1 of Zone 1 is planned to provide for high quality, high value office accommodation supplemented with ancillary uses up to a maximum of 41,677 sqm. It is

stated in the Masterplan document that “on the basis of the transportation assessment undertaken to inform the Masterplan, only Phase 1 and office floor space up to a maximum of 41,677 sqm is provided for within the context of this Masterplan. Development of Phase 2 and additional floor space above this level will be the subject of further traffic assessment to be undertaken in the preparation of the Dublin Airport Local Area Plan.” The SFTS therefore assumes Zone 1 Phase 1 in its associated 2027 employment forecasts.

7.5 Future Network Analysis and Recommendations

7.5.1 Overview

This section examines impacts on the transport network due to the growth in passengers and employment outlined above. Network analysis is performed by comparing increases or decreases on links and at junctions, in one network relative to the other (usually the Do-Min vs Scenario).

It should be noted that this assessment is relatively high level and does not consider certain important details such as future car parking locations and type, nor the location of a future third terminal. However, the model is sufficiently robust to examine strategic issues arising on the network, for example at the critical M1 Spur link and the traffic accessing the main Airport campus from the M1 and M50. The modelling includes a full representation of the various modes by which Dublin Airport can be accessed such as taxi, bus, pick-up/drop-off, and by the future MetroLink.

Key assumptions / parameters for this modelling include:

- Incremental scenarios tested for increasing levels of road and public transport provision; i.e. GDA Strategy without MetroLink, GDA Strategy with MetroLink, GDA Strategy with MetroLink and further road network Improvements;
- Passenger throughput in the scenarios tested includes both 38 million and 55 million passengers per annum; and
- Car parking availability was assumed to be constrained to roughly similar levels as at present.

7.5.2 MetroLink

MetroLink and its associated airport station will provide a step-change in surface access to Dublin Airport. Passengers and airport staff using the service to travel to/from Dublin Airport will experience a guaranteed journey time as a result of the service not being subject to traffic congestion. The service will be used by regular commuters to/from Dublin City Centre and Swords, air passengers, airport staff, and staff working at commercial office developments in the Airport vicinity.

The exact location of the MetroLink stop for Dublin Airport is likely to be at the Ground Transportation Centre, just north of Terminal 2; however, this location has not been finalised. Construction of the new MetroLink is intended to commence in 2021, with a view to the service being operational by 2027.

Documentation relating to the Planning Appeal for Terminal 2 suggests that the implementation of MetroLink might reduce total private car trips to the airport by around 20%. However, the background assumptions and basis of this forecast is not known.

Table 11 summarises forecast passenger boardings and alightings at the Dublin Airport MetroLink Station under the 38 million passengers per annum scenario. These estimates include both air passengers and airport staff. These are considered to be high-side estimates due to the parking constraints assumed.

Table 11. Estimated MetroLink Patronage at Dublin Airport Station – 38mppa

Movement	Am Peak Hour		Pm Peak Hour	
	Northbound	Southbound	Northbound	Southbound
Boarding Passengers	100	2,400	700	5,200
Alighting Passengers	5,900	1,100	2,800	300
2-Way Total	6,000	3,500	3,500	5,500

A high level analysis was undertaken to understand the implications of these patronage estimates in terms of future surface access mode shares at Dublin Airport, considering the following:

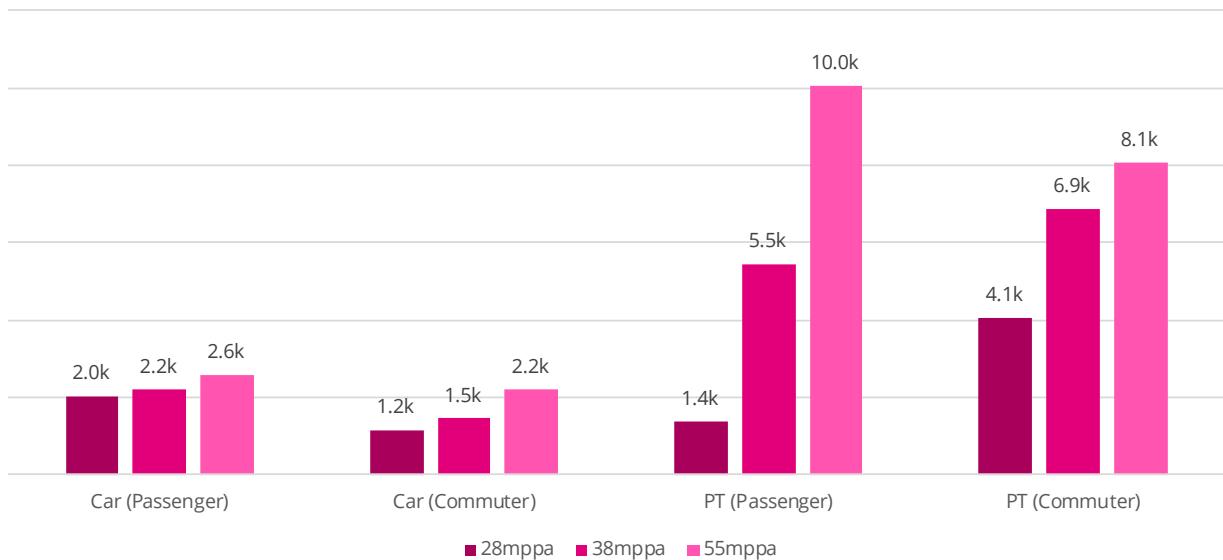
- Origin-destination passengers (i.e. excluding transfer passengers) on an average day at the airport;
- Airport staff travelling to work on a daily basis; and
- Existing Dublin Airport surface access mode shares.

This analysis suggests that when Dublin Airport reaches 38 million passengers per annum throughput, MetroLink could capture around 40-45% of total peak hour travel to/from the airport. As mentioned, this is considered to be a high-side estimate which is built on a series of assumptions each of which would need to be verified to increase the level of confidence. In

particular, the modelling has not assumed incremental parking provision in line with passenger growth, and therefore the MetroLink patronage figures above could be less if the level of parking assumed was increased. An effect of parking constraint in the ERM Airport Module is to concentrate growth in trips in public transport while limiting growth in car trips. This applies to both passenger and commuter trips. Therefore the estimates considered above should be regarded as on the high-side of what could be achieved in terms of public transport mode share.

Figure 38 below summarises AM peak period (7-10am) passenger and employee (commuter) trips to Dublin Airport at 28 mppa (2017), 38 mppa (2027), and 55 mppa (2040).

Figure 38. AM Peak Period (7-10am) Trips Generated to Airport



Due to the potentially high patronage to Dublin Airport on MetroLink, in the short term, the relevant authorities should work jointly to ensure that the operational planning of the MetroLink service from an air passenger perspective meets the following criteria:

- Sufficient baggage storage space on the service;
- Step-free access (including lifts) at the airport station and other stations (where feasible);
- Provision of direct pedestrian connections (e.g. elevated walkways) between the Airport Metro station and the passenger terminals; and
- Operating hours of the service are aligned, as far as possible, with the working hours of airport staff.

7.5.3 Bus Connects Core Bus Corridors

As part of the Bus Connects plan, a twelve kilometre Core Bus Corridor (designated as CBC2) is to be developed between Dublin City Centre, the Airport, and Swords. It is one of sixteen corridors selected to facilitate more reliable and faster bus services along Dublin's busiest routes into and from the city. The CBC/ Bus Connects schemes include a range of additional improvements such as higher frequency services during the day time, integrated fares and ticketing, and bus shelters. In the public consultation information it is stated that individual CBCs will deliver an average journey time saving of 40% to 50%. Without the Swords CBC scheme the transport modelling indicates that bus journey times along the route around would increase to over 80 minutes in 2027. With the scheme, the journey time is expected to be around 40 minutes. Future bus services on the Swords CBC will serve a greater population catchment than is currently served by the City Centre to Dublin Airport Express services. This is because the CBC enables boarding/alighting along its full route and can interchange with other Bus Connects services and CBCs. This will be a marked improvement over the current situation in which the express services have a more limited city-centre oriented catchment.

Modelling of the future Bus Connects system indicates that the combination of integrated fares, increased frequency, and more opportunities for interchange could see up to 5,000 more passengers and employees during a typical day (over a twelve hour period) on the City Centre – Airport – Swords bus route. Providing this CBC and associated services can therefore enable the required continued growth in sustainable travel to Dublin Airport in advance of MetroLink.

SFTS Recommendation 25: The Swords/Airport CBC should be delivered as a priority to ensure public transport capacity can be increased in line with on-going growth in demand and to minimise the impact of future growth at Dublin Airport on the strategic road network. In the lead-in time required to realise this scheme, a modest expansion of car parking provision to meet immediate growth needs may be required.

In the very long term – when Dublin Airport reaches 55 million passengers per annum throughput – estimated public transport patronage at Dublin Airport could reach 11-13,000 during the peak hours. To meet this level of demand both the CBC2 bus services and MetroLink are required. Such long term estimates need to be interpreted with care, although they point

to the fact that restrictive parking policies will require significantly enhanced public transport provision.

SFTS Recommendation 26: In the longer term both MetroLink and Bus Connects CBC2 are likely to be required to serve a future demand of 55 mppa, particularly if it is assumed that growth in car based travel to the Airport is constrained by parking policy and/or road network capacity.

7.5.4 Road Network

National policy underlines the crucial function of the motorway network to the national economy. It is clear from the traffic data presented above in Section 6.2.2 External Road Network, that further passenger growth at Dublin Airport will result in an increased propensity for larger queues and delays to form on the critical westbound approach from the M1 to Dublin Airport. In terms of additional demand at this junction, the transport modelling undertaken should be considered as the minimum level of additional traffic expected to arise from on-going Dublin Airport growth, for the following reasons:

- The ERM forecasts for 38mppa and 55mppa estimate demand on 'typical' day, and as such these forecasts do not include for higher traffic levels that would be expected for example during the busier Christmas and Summer holiday periods; and
- The ERM forecasts assume no further increase in parking provision which means passengers and commuting forecasts on public transport alternatives are likely to be on the high-side.

Airport Roundabout

Given the highly time-sensitive nature of getting to the Airport, a number of additional sensitivity tests were run to examine the impact of higher than 'typical' traffic accessing the Airport and a lower public transport mode share (thus shifting the mode share of passenger demand from public transport to car). The sensitivity tests demonstrate that the main Airport roundabout does not have the capacity to cater for any additional traffic above the average/typical demand levels forecast in the modelling (as shown in Figure 38), with queues building up on the westbound approach. In one test a peak demand flow of 3,500 was assumed, westbound flow on the M1 Spur (just 16% above the maximum flow observed in 2017). In this scenario the modelling suggests negative impacts such as increased queues and delays not only on the westbound approach to the Airport Roundabout, but also on the M50 between the Ballymun/R108 and M1 interchanges.

SFTS Recommendation 27: The Airport Roundabout (connecting the M1 Spur / Airport Access / R132) is near capacity and any future increase in traffic levels to the Airport will cause unacceptable reductions in reliability of access to Dublin Airport. An improved higher-capacity configuration should be developed taking cognisance of future plans to provide a Bus Connects CBC on the R132. Upgrading the junction to a grade separated configuration would appear to be the most beneficial long term solution.

SFTS Recommendation 28: An alternative access into Dublin Airport via the R108 and Collinstown Lane may be a practical solution to the issue of over-reliance on the M1 Airport Spur. A good standard of peripheral road network is desirable from an airport planning perspective. However given the competing demands for road network capacity with possible shuttle bus services serving airport parking expansion in the west and from the planned CBC2 scheme on the R132, there are concerns regarding the ability of this route to cater for general traffic capacity related to 40-55mppa levels of demand. It is recommended that these constraints are considered as part of a more detailed evaluation of the feasibility of this route as a robust secondary Dublin Airport access.

7.5.5 Alternative Access Routes

It is clear the M50 and M1 will come under increased pressure in future due to population growth in the Greater Dublin Area and at Dublin Airport. In its current form the road network does not have the capacity to provide efficient and reliable access to a much expanded facility in the 40-55mppa range. The options which are available to provide an additional access point(s) are:

- Via the Ballymun/R108 Interchange and onward to the main airport campus via Collinstown Lane and the R132.
- Via a new western access spur into Dublin Airport from the N2.

These options are discussed in further detail below.

Upgrading R108 / Collinstown Lane

An upgrade of the R108 Ballymun Road and Collinstown Lane from standard single lane roads to dual-carriageway offers the potential to divert some traffic away from the M1 and adjacent M50 motorway sections. However the exact nature of this route would depend on airport parking policy. If car parking was for example expanded significantly in the west, then this route would be required to facilitate quick and efficient shuttle bus transfers to the airport terminals. Furthermore there is a potential conflict between an upgrade of this route for traffic purposes and the future CBC on the R132.

Dublin Airport Western Access

An additional motorway connection from Dublin Airport is an objective of the 2006 Airport LAP and a strategic objective of the National Planning Framework 2040. In the 2006 LAP it was proposed in the context of developing an additional terminal in the west. However it is not currently clear if or when a third terminal would be required and where it would be located. As noted in the 'Review of Future Capacity Needs at Ireland's State Airport (Oxford Economics)':

"In the short term, incremental expansion of Terminals 1 and 2 is desirable, because a third terminal cannot be available in time to relieve the short-term capacity issues at the airport. Some material expansion of T1 and T2, certainly to 40 million passengers per annum (mppa), is very plausible, setting aside issues of surface access and choice for airlines. Surface access issues in the wider road network may make it overall a better solution for Ireland to pursue a third terminal in the western part of the airport, rather than allowing much further expansion in the eastern campus. Developing the wider road system to handle traffic generated by different terminal strategies might have substantially different costs, and thus might justify spending more on a terminal layout that reduces wider costs."

A 'Western Access' scheme between the existing N2 Cherryhound Interchange to the R122 between the north and south parallel airport roads was coded in the ERM to dual carriageway standard to test traffic redistribution from the east to the west. An alternative access point exists on the M2 nearer the M50 at Kilshane Cross, although a new junction would have to be constructed. The modelling assumes that car

based trips to Dublin Airport can enter and park at either the east or west, depending only on which offers the more convenient route, with both options offering equal advantages to the passenger. A more detailed evaluation of a western access into Dublin Airport would depend on specific policy level decisions around the location of future passenger processing facilities and/or type, function, and accessibility to terminals from the new parking.

A potential Western Access could serve a number of important functions:

- In the short term, it would provide improved access to long stay car parking and logistics facilities in the western part of the airport campus;
- It would serve as a contingency access route in case of partial or complete blockage of the M50 corridor/ main airport access;
- In the medium term, it would provide high quality road access to a possible western terminus of a potential east-west intra airport light/medium capacity link; and
- In the longer term, it could serve as the road access to a potential 3rd Terminal in the western part of the airport campus.

The last two of these would be dependent on specific policy-led decisions around the future development of the airport.

SFTS Recommendation 29: A Western Access from the M2 is recommended in the context of parking facility expansion in the west, contingency planning and potentially serving longer term airport expansion plans. In the short to medium term, the access road would serve existing car parks and logistics areas with connectivity to the Terminals provided via shuttle bus.

The Swords Western Relief Road (SWRR)

The alignment for this road as assumed in the present study is consistent with that assumed in the 2012 AECOM South Fingal Transport Study. The SWRR is assumed to extend through the largely rural areas between the R132 north of Swords in an overall south-westerly direction to connect to the existing road network in the north western side of the Airport campus. The transport modelling indicates that the SWRR improves journey times between the western side of Dublin Airport and Swords, although there is already a high car mode share for the nearly 2,000 Dublin Airport workers residing in Swords.

SFTS Recommendation 30: The SWRR has been shown in the modelling to reduce traffic volumes on the M1/M50 and improve journey times from Swords for car, however it would discourage mode shift towards public transport for Dublin Airport workers particularly from Swords. In the longer term, with growth towards 55mppa, there may be a case for developing the SWRR.

The East West Link Road (EWLR)

The SFTS has examined the effects of the EWLR in sections, such as from Clongriffin at Malahide Road (just north of Clarehall Junction) to Stockhole Lane, and Stockhole Lane to the R132 and Collinstown Lane (Parallel Road) just south of the Airport.

The modelling indicates that the full EWLR, as originally envisaged, has limited beneficial effect on motorway operation or Dublin Airport surface access in the 38mppa scenario. However, the section recommended by this study offers quicker access from the Fingal/ Dublin Fringe area (Clongriffin / Baldoyle etc.) to Dublin Airport and can provide a route for a reliable and direct bus service between Fingal/Dublin Fringe, Dublin Airport, and Swords. Only the section between the Malahide Road and Stockhole Lane is required to realise these benefits. The section between Stockhole Lane and the R132 has downsides such as conflicting with the future CBC and inducing traffic onto the M50 at Ballymun, and is therefore not recommended.

SFTS Recommendation 31: The East-West Link Road between the R107 Malahide Road and Stockhole Lane should be progressed in order to improve access to Dublin Airport from Fingal/ Dublin Fringe areas.

Developing the EWLR along the lines recommended above, while a significant improvement over the existing situation, would however still require a detour back to Dublin Airport from where Stockhole Lane meets the R132. As such, a more direct link should be investigated catering for public transport, walking and cycling only, and avoiding any conflict with the operation of the future CBC2.

SFTS Recommendation 32: A direct bus and active mode access link between the future EWLR, Stockhole Lane and the Airport should be considered. Such a link would require a detailed engineering feasibility assessment.

7.6 Key Dublin Airport Surface Access Recommendations

A summary of the key SFTS Dublin Airport surface access recommendations is outlined below. Effectively addressing these issues will require operational co-ordination between multiple parties – the DAA, Dublin Airport employers, air passenger representative bodies, the NTA, TII, public transport operators and the commercial tenants.

7.6.1 Road Recommendations

- The Airport Roundabout (connecting the M1 Spur and the R132) is near capacity and any future increase in traffic levels to the Airport will cause unacceptable reductions in reliability of access at peak times to Dublin Airport. An improved higher-capacity configuration should be developed taking cognisance of future plans to provide a Bus Connects CBC on the R132. Upgrading the junction to a grade separated configuration would appear to be the most beneficial long term solution.
- The Collinstown Lane section between the R108/M50 Ballymun Interchange and the R132 should be considered for alternative general access to Dublin Airport. However, the need to provide significant levels of bus priority from western car parks along this full route, and the need to cater for higher frequency CBC2 bus services on the R132 section, require careful consideration in any future scheme proposals.
- In the longer term, a western access route to Dublin Airport would cater for 38mppa+ levels of demand and offer a separate route into Dublin Airport independent of the eastern spur access. A new link from the M2 is recommended in the context of airport terminal and/or parking facility expansion in the west. In the context of future parking expansion at Dublin Airport, the Western Access would provide access to the car parks only, with the final leg of the trip completed by shuttle bus to the terminals.

7.6.2 Public Transport Recommendations

- Increase bus service provision to maintain a constant bus mode share during a period where passenger growth is averaging around 4% per annum.
- Prioritise the **Swords Road CBC** in order to deliver higher frequency, reliable bus service to Dublin Airport, thereby growing overall bus use to Dublin Airport and improving non-car modes shares for

both passengers and Dublin Airport employees.

- Enhance bus service frequencies and extended service operating hours, aligning the hours of operation between bus services to Dublin Airport with airport worker shift patterns.
- Consider larger capacity buses, at least in peak times.
- Improved car park shuttle bus access routes from parallel road, with upgrades to relevant junctions.

7.6.3 Walking and Cycling Recommendations

- The R132 Swords Road is the most direct route from Swords to Dublin Airport, but few trips are made by bicycle. The recommended prioritisation of the CBC along this route should also include segregated cycle lanes to help improve the mode share for cycling and enhance the opportunities for sustainable travel from Swords and the Dublin area to Dublin Airport.
- A more direct means of accessing Dublin Airport from the Fingal/Dublin Fringe area by public transport, walking and cycling is recommended.

7.6.4 Mobility Management in Dublin Airport

Mobility Management Plans are a well-accepted means of encouraging and enabling sustainable travel choices. They encourage those users who have access to high quality public transport networks, those who can feasibly access and utilise car share schemes, or those who can use active modes to change their travel patterns and behaviours. On-going implementation and monitoring of mobility management is a crucial component of future surface access provision at Dublin Airport.

DAA update their Mobility Management Plan every two years with the last update being in 2017. There have been some notable successes over the past few years, specifically:

- Overall reduction in the share of air passengers travelling to Dublin Airport by private car from 49% in 2006 to 38% in 2017; and
- Only 1 in 3 air passengers travel to the airport by private car, which is a higher sustainable mode share compared to most other international airports.

Progress in terms of sustainable travel by airport employees has been less clear cut, with public transport mode shares remaining mostly constant over the past few years. Moving forward, a multi-faceted approach is required building upon earlier air passenger sustainability successes and bolstering sustainable choices for airport employees. Specific measures would include:

- New car parking provision for both air passengers and airport staff should only be made where absolutely essential, thereby incentivising sustainable travel choices;
- All employers in Dublin Airport campus should be required to prepare travel plans for their employees and update these on a regular basis with new employers setting ambitious targets such that sustainable choices become ingrained in their workforce;
- All stakeholders participating in the operation of Dublin Airport should attend a Mobility Management stakeholders forum comprising executive-level representation to meet and discuss issues pertaining to sustainable access and identify opportunities for joint working (e.g. an airport employee car-share scheme) on a regular basis;
- Improvement of physical infrastructure for walking and cycling while simultaneously building on earlier behavioural change campaigns to raise awareness and incentivise these travel options; and
- Advance in-airport planning for the Metrolink to ensure that its significant potential sustainability benefits are fully realised upon opening.

7.6.5 Dublin Airport Central

The quantum of commercial property development envisaged at Dublin Airport in Zone 1 Phase 1 will generate significant additional vehicular demand on the transport network that needs to share road space with trips generated by air passengers and Dublin Airport staff at peak times. Such additional transport demand will also have implications for the public transport network and services. Bus and future Metro services will need to cater for this demand, in addition to their existing customer base.

If further development is planned in advance of future surface access capacity upgrades, it is recommended that a comprehensive Mobility Management Plan is put in place in combination with a near zero level of additional parking provision.

7.6.6 Car Parking Recommendations

SYSTRA has undertaken a benchmarking exercise to compare the level of car parking provision at Dublin Airport with that at other European airports. Although detailed car parking occupancy data is not available, it is understood that the air passenger car parks are operating close to capacity during the peak summer period.

The benchmarking has found Dublin Airport is at the top of the range with respect to parking provision, particularly in the context of its relatively high public transport mode share. Such comparisons should be interpreted with caution, however, they do suggest that Dublin Airport is already relatively well served in terms of car parking provision. It is acknowledged that some limited expansion of car parking may be necessary to enable continued growth at the Airport in advance of delivery of the CBC2 Swords upgrade and MetroLink. Such expansion of Dublin Airport's car parking provision beyond the currently permitted limits would need to be strongly justified in the context of the existing quantum of parking and the potential impacts on the road network.

8 | Conclusion & Recommendations

8.1 Conclusion

8.1.1 Overview

The South Fingal Transport Study (SFTS) builds on the broad transport related objectives contained within the Fingal Development Plan (FDP). These objectives are linked to national and regional policy such as those outlined in the NTA Transport Strategy for the Greater Dublin Area 2016-2035.

Fingal County is strategically positioned to benefit from the delivery of Bus Connects and MetroLink, two of the key elements of the NTA Strategy. These two schemes represent the largest public transport infrastructure investments ever to be made by the State, both of which have commenced preliminary design and public consultation phases during the development of the SFTS. South Fingal's key urban areas will be transformed in terms of sustainable transport accessibility following the anticipated delivery of these important schemes by 2027.

In the meantime, Fingal is likely to remain one of faster growing counties with respect to levels of population and employment. Moreover, passenger growth at Dublin Airport continues to place increased pressure on the strategic road network that serves its customers, employees, and many other crucial economic activities throughout the county and region. The focus of the SFTS, therefore, has been to identify the key measures that should be implemented within the next 10 years to both resolve existing issues on the transport network and to cater for the county's anticipated high growth. A longer term view has also been taken to ensure the measures proposed now lay the groundwork for the longer term development of the county.

8.1.2 Road Infrastructure

In advance of the major transport schemes, much can be achieved with selective road building and provision of high quality cycle facilities. The brief for the SFTS set out a wide range of road proposals that have been included in several iterations of the FDP, in particular the R107 Malahide Road upgrade and East-West Distributor road. This study has examined both proposals in great detail and concluded that elements of each have merit in the short term.

With the progressively increasing need to develop a less car dependant and sustainable future, scheme appraisal has to place sustainability to the fore. As such, a key overarching issue is how to balance infrastructure investment to deliver a transport network which provides viable sustainable travel choices for all journeys. The parts of the former R107 Malahide Road Bypass and East West Road which are recommended by the SFTS have a clear function not just for the private vehicle but also for bus users, pedestrians, and cyclists.



8.1.3 Swords

In Swords, the SFTS has assessed travel from its main residential areas based on Census 2016 data and has identified a large number of existing active mode trips (walking or cycling) and car trips that stay within Swords, which due its size are under approximately 4km in length. The network in Swords, however, does not at present sufficiently cater for those who may prefer to cycle rather than to drive. The present alignments and design of key routes to Main Street and other commercial areas on the R132 do not offer safe, consistent, and direct routes for cycling. Cycling is therefore relatively suppressed in Swords compared with the rest of Dublin. To address this deficiency the SFTS has identified three key priority routes that are part of the NTA Greater Dublin Area Cycle Network Plan that would greatly enhance the appeal and safety of cycling in Swords and help reduce traffic into and within the town centre.

The delivery of Bus Connects in Swords entails development of a high quality Core Bus Corridor to the southern part of the R132. The bus services that will use it, however, will pass through Main Street at higher frequencies than today. With the additional future delivery of MetroLink, Swords town centre will become a hub for many to access essential bus and metro services to Dublin Airport, the City Centre, and to other interchange opportunities provided by a highly integrated future transport network. The town centre will therefore have to rebalance the provision of road space and enable more access to the area by sustainable transport modes. The SFTS has

proposed an outline traffic management plan to divert through-traffic from Main Street, whilst maintaining access for local trips. This plan will need careful further development to ensure a high quality future public realm is achieved for the benefit of all Swords' population and those accessing its future transport services.

Key SFTS recommendations for this area include:

- Develop a network of safe, high quality cycle routes and bus priority in Swords to cater for movement from its highly populated western residential areas to its centre and to the future CBC and MetroLink.
- Develop the Swords Western Distributor Road, with connection to the future MetroLink Park and Ride for walking and cycling trips.
- Reduce traffic passing through Main Street Swords to enable bus priority, high quality cycle network, and improvements to the quality of the public realm. It is critical to provide enhanced support to bus travel from Swords in the years leading to MetroLink and Bus Connects.
- Ensure permeability through the development of suitable links for all road users through the future Barrysparks and Fosterstown development areas.



8.1.4 Fingal/Dublin Fringe

In Fingal/Dublin Fringe, the SFTS has recognised the interdependencies that exist with Dublin City within this expansive area of new housing and retail. Key proposals take cognisance of the need to provide more pedestrian and cycling friendly junction layout at Clarehall Junction potentially as part of the CBC/Bus Connects scheme.

The SFTS has also considered access to the north of the city and Dublin Airport from this area, recognising the constraint of its current dependence on the M1/M50 junction. This study has proposed potential ways to improve this, particularly enabling more direct access via bus, walking and cycling to Dublin Airport from Fingal/Dublin Fringe.

Key SFTS recommendations for this area include:

- Create a small scale bypass of the Clarehall Junction by continuing the outline Dublin City Clarehall Junction scheme to the Malahide Road. This will remove some traffic from key approaches on the Clarehall junction and hence improve the balance of road space provision for all users.
- Longer term, consider developing a new link between the Clarehall Junction relief road and Stockhole lane in order to improve access options for all modes to and from the overall Fingal/Dublin Fringe area. This link would potentially cater for an orbital bus service linking the employment zoned lands north of the R139 with Dublin Airport and Swords. It would also cater for high quality walking and cycling trips via a more direct and safe route to Dublin Airport and for interchange with the future Swords CBC.

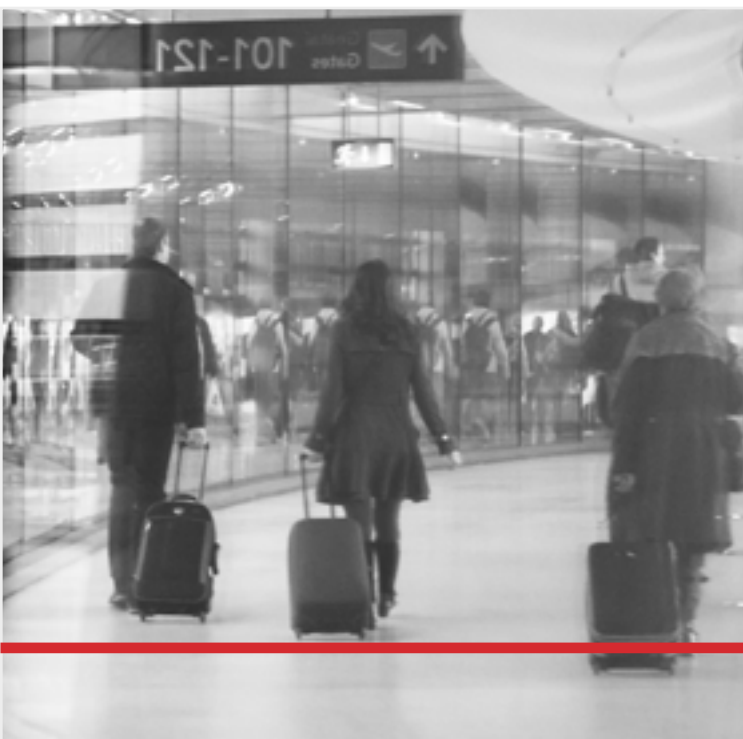
8.1.5 Dublin Airport

At Dublin Airport, currently almost all surface access is focussed on the M1 / M50 corridor, as a result of the way Dublin Airport has developed historically. The M1 / M50 corridor is one of the busiest road corridors in the whole of Ireland, regularly experiencing congestion during commuter peak hours. As Dublin Airport continues to grow, it is expected that capacity constraints on this corridor will impact on Dublin Airport accessibility. These surface access constraints will need to be factored into the wider Dublin Airport expansion plans, in particular, the location of any additional terminal processing capacity.

From a surface access perspective, there is a solid argument for locating a possible third terminal in the western part of the current Dublin Airport zone and providing access via a new spur from the M2 / N2 corridor. The SFTS has examined this route and it would enable a significant rebalancing of trips away from the currently over-relied upon M1. However, the viability of such an access point would heavily depend on Dublin Airport policy with regard to future parking locations, parking or drop-off charges, and the quality and frequency of Dublin Airport car park to terminal shuttle services.

Key SFTS recommendations for this area include:

- From now until the opening of MetroLink, it is recommended that existing landside capacity pinch points are addressed such as at the main R132/M1 Spur Roundabout.
- During this time a modest expansion of car parking provision to meet immediate needs is may be required.
- Expansion of bus services to accommodate demand growth is essential.
- At Dublin Airport Central, the quantum of commercial property development envisaged will generate significant additional demand on the transport network. As far as possible, users of Dublin Airport Central development should be encouraged to use public transport rather than private cars to access the site. Transport demand generated by Dublin Airport Central development will need to considered together with that from air passengers and Dublin Airport staff for the purposes of transport capacity planning in terms of both the road and cycle network and public transport services, and of Mobility Management.



8.2 SFTS Summary Recommendations List

The recommendations as set out in the main sections of this report are listed below for ease of reference.

Swords Recommendations

- **SFTS Recommendation 1:** Increasing the number of traffic lanes on Balheary Road is not required in the short term. However, providing bus lanes to enable a high frequency service to run reliably and maintain bus priority through junctions is required to encourage bus use and to limit car use near to present day levels.
- **SFTS Recommendation 2:** In addition or complementary to the services outlined in the Bus Connects consultation document, a feeder service should be provided to Oldtown and Mooretown through the developments and onward to Swords via the Glenn Ellan Road.
- **SFTS Recommendation 3:** Rathbeale and Brackenstown Roads should be prioritised to support the advancement of the GDA Cycle Network Plan in Swords. As primary cycle routes in Swords, they should be developed to the highest of standards in accordance with the National Cycle Manual.
- **SFTS Recommendation 4:** Additional capacity is required to relieve Brackenstown Road/Church Road, which is over capacity in the forecast scenarios. A realignment and widening of the existing narrow Church Road on the western side of Main Street, and creation of a junction with Brackenstown Road, could achieve the desired impact without building an additional river crossing. Alternatively, a new route such as that proposed as the Inner Ward River Crossing would have a similar mitigating effect. Route option development should take cognisance DMURS, the future function of Main Street and associated traffic calming in the area.
- **SFTS Recommendation 5:** It is crucial to provide continuous high quality bus and cycle priority along Ardcan Park to Castlevue Ext./Glen Ellan Rd/ Balheary Road route, and the sections of Forest Road and Rathbeale Road that are subject to congestion, in order to provide the necessary priority to attract a sufficient share of trips by bus.
- **SFTS Recommendation 6:** The Swords Western Distributor Road will form a crucial link from north west Swords to the future Estuary MetroLink station and Park and Ride. From Oldtown-Mooretown to Estuary the road alignment should consider similar design principles as set out in the LAP/Masterplans. Its southern extension to Brackenstown Road/Ward River Valley should be considered as a pedestrian and cycling only route.
- **SFTS Recommendation 7:** The Fosterstown Link Road is required as a priority to relieve existing pressures on the approach to Swords on Forest Road.
- **SFTS Recommendation 8:** The primary cycle route on Forrest Road should be prioritised in delivering the GDA Cycle Network Plan in Swords. As a primary cycle route in Swords, it should be developed to the highest of standards in accordance with the National Cycle Manual.
- **SFTS Recommendation 9:** As part of achieving reduced traffic levels required on Main Street, it may be necessary to reduce levels of parking and/or provide parallel parking instead of the current arrangements. Such a reconfiguration would allow more space for the required GDA Cycle Network route in addition to the required bus priority, traffic lanes, and footpaths.
- **SFTS Recommendation 10:** Bus priority and associated cycleway facilities should be implemented on Main Street, Rathbeale Road, Glenn Ellan Road and Forest road. Immediate improvements would be realised for travel from Swords to the city centre through the increases in bus frequency, reliability and accessibility. Access by local traffic to on and off street car parking should be maintained while reducing through trips. The overall level of parking provision should be regularly reviewed to align with the mode share of those accessing Swords Main Street.
- **SFTS Recommendation 11:** Improve connectivity for pedestrians and cyclists travelling across the R132 Swords Road from existing and proposed development lands to the town centre. This will be achieved by replacing the existing roundabouts with signalised junctions and incorporating controlled Toucan crossings. This will replace or supplement the existing footbridges.

- **SFTS Recommendation 12:** Creation of a more active frontage along the R132 Swords Road by providing footpaths, segregated cycle facilities and encouraging new developments to face onto the street.
- **SFTS Recommendation 13:** Encourage higher density mixed use developments adjacent to the MetroLink stations with improved connectivity for pedestrians and cyclists and provide a controlled level of access to future developments along the R132 Swords Road.
- **SFTS Recommendation 14:** Safeguard the vehicular capacity of the road by retaining the number of trafficked lanes, while implementing measures to reduce the speed and dominance of traffic.
- **SFTS Recommendation 15:** Junctions on R132 Swords Road should be improved from a pedestrian and cyclist point of view. The Council should engage with the NTA and TII on preliminary designs with a view to developing a complementary scheme that achieves the required improvements and prepares for the Metro alignment.
- **SFTS Recommendation 16:** The Brackenstown Road and Forest Road cycle schemes should ultimately continue uninterrupted around the Swords Pavilions to the MetroLink.
- **SFTS Recommendation 17:** The Barrysparks Link Road (also referred to as the Airside-Feltrim Link Road) should be completed to facilitate the development of the Barrysparks-Crowscaste Masterplan area. The new link should include high quality facilities for pedestrians and cyclists on and across its alignment and where it connects to existing junctions.
- **SFTS Recommendation 18:** The Barrysparks Masterplan should ensure pedestrian and cycling permeability is maximised between the residential areas around the Feltrim Hall area and MetroLink in the design of its street network. The network should be designed to provide an uninterrupted direct link to the proposed Brackenstown cycle scheme.
- **SFTS Recommendation 19:** It is recommended that the Green Link is considered as part of a future overall strategy to improve cycle facilities in Swords, and particularly to improve the connectivity between the extensive neighbourhoods north and south of the Ward River.
- **SFTS Recommendation 20:** The SWRR is not required to enable the growth of Swords in the short to medium term, however in the longer term it should be evaluated as part of the overall roads strategy/policy in the Greater Dublin Area. This would include assessment against the criteria set out in Section 5.8.3 of the NTA Transport Strategy for the GDA, as per Objective MT41 of the FDP as part of a pre-feasibility assessment, followed by more detailed multi-criteria analysis, route options assessment and full economic cost-benefit appraisal.

Fingal / Dublin Fringe Recommendations

- **SFTS Recommendation 21:** Additional means of traffic distribution within and around the areas adjacent to Clarehall Junction, particularly to its north is recommended through construction of a small-scale bypass in the context of the need to reconfigure the existing Clarehall junction to rebalance capacity towards public transport and/or pedestrians and cyclists. It is recommended that future junctions be limited in scale as far as possible to avoid creating a car dominated environment, instead designing in favour of pedestrians and cyclists.
- **SFTS Recommendation 22:** The R107/Balgriffin Road junction should be upgraded to include additional left turning capacity for the southbound movement (e.g. adding a left turn flare), while also providing a safe and attractive environment for pedestrians and cyclists.
- **SFTS Recommendation 23:** Developing a new link between the Clarehall Junction Relief Road and Stockhole lane to improve options for vehicular traffic entering/leaving the overall Fingal/Dublin Fringe area is recommended. This link would potentially cater for an orbital bus service linking the employment zoned lands north of the R139 with Dublin Airport and Swords. In the longer term this link would also cater for high quality walking and cycling trips via a more direct and safe route to Dublin Airport and for interchange with the future Swords CBC.
- **SFTS Recommendation 24:** To further consider the feasibility of a Fingal/Dublin Fringe – Dublin Airport – Swords Bus Route when Bus Connects and MetroLink are more advanced. The current phases of planning for these projects must give priority to those services already identified in the NTA GDA Strategy 2016-2035. However, a review of the NTA GDA Strategy is due to be undertaken by the end of 2022, at which point it would be timely to assess the potential inclusion of the proposed orbital bus service for delivery post 2027.

Dublin Airport Recommendations

- **SFTS Recommendation 25:** The Swords/Airport CBC should be delivered as a priority to ensure public transport capacity can be increased in line with on-going growth in demand and to minimise the impact of future growth at Dublin Airport on the strategic road network. In the lead-in time required to realise this scheme, a modest expansion of car parking provision to meet immediate growth needs may be required.
- **SFTS Recommendation 26:** In the longer term both MetroLink and Bus Connects CBC2 are likely to be required to serve a future demand of 55 mppa, particularly if it is assumed that growth in car based travel to the Airport is constrained by parking policy and/or road network capacity.
- **SFTS Recommendation 27:** The Airport Roundabout (connecting the M1 Spur / Airport Access / R132) is near capacity and any future increase in traffic levels to the Airport will cause unacceptable reductions in reliability of access to Dublin Airport. An improved higher-capacity configuration should be developed taking cognisance of future plans to provide a Bus Connects CBC on the R132. Upgrading the junction to a grade separated configuration would appear to be the most beneficial long term solution.
- **SFTS Recommendation 28:** An alternative access into Dublin Airport via the R108 and Collinstown Lane may be a practical solution to the issue of over-reliance on the M1 Airport Spur. A good standard of peripheral road network is desirable from an airport planning perspective. However given the competing demands for road network capacity with possible shuttle bus services serving airport parking expansion in the west and from the planned CBC2 scheme on the R132, there are concerns regarding the ability of this route to cater for general traffic capacity related to 40-55mppa levels of demand. It is recommended that these constraints are considered as part of a more detailed evaluation of the feasibility of this route as a robust secondary Dublin Airport access.
- **SFTS Recommendation 29:** A Western Access from the M2 is recommended in the context of parking facility expansion in the west, contingency planning and potentially serving longer term airport expansion plans. In the short to medium term, the access road would serve existing car parks and logistics areas with connectivity to the Terminals provided via shuttle bus.
- **SFTS Recommendation 30:** The SWRR has been shown in the modelling to reduce traffic volumes on the M1/M50 and improve journey times from Swords for car, however it would discourage mode shift towards public transport for Dublin Airport workers particularly from Swords. In the longer term, with growth towards 55mppa, there may be a case for developing the SWRR.
- **SFTS Recommendation 31:** The East-West Link Road between the R107 Malahide Road and Stockhole Lane should be progressed in order to improve access to Dublin Airport from Fingal/Dublin Fringe areas.
- **SFTS Recommendation 32:** A direct bus and active mode access link between the future EWLR, Stockhole Lane and the Airport should be considered. Such a link would require a detailed engineering feasibility assessment.

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