NTA
Údarás Náisiúnta Iompair
National Transport Authority

Jacobs SYSTRA

Greater Dublin Area Transport Strategy

2022 2042

Greater Dublin Area Transport Studies

West Wicklow / East Kildare

November 2021

Contents

Executive Summary

The National Transport Authority (NTA) commissioned Jacobs Engineering Ireland Limited (Jacobs), in collaboration with Systra, to complete a series of Area Based Studies for the Greater Dublin Area (GDA). This study will inform the NTA's review of the Transport Strategy for the Greater Dublin Area (2016-2035) which will consider the future development of the transport network in the Greater Dublin Area (GDA) for the period up to 2042.

This report details the findings for the West Wicklow and East Kildare study area, which is located around 30km to the south west of Dublin City Centre within the Wicklow County Council and Kildare County Council areas. It includes the towns of Blessington, Baltinglass and Dunlavin. The N81 national secondary road runs through the middle of the study area, leading north to Dublin City Centre and the M50, and south to Tullow.

The methodology for this study is based on the Area Based Transport Assessment (ABTA) process. The ABTA approach has been adapted for the purposes of this study and comprises the following key steps:

- Policy Context – understand the planning and transport policy context within which this study sits;
- Baseline Assessment – provide a clear understanding of the existing spatial characteristics, land uses, transport conditions and constraints in the study area;
- Establish Context – understand the future growth proposals for the study area as well as future travel patterns which proposed transport options need to serve;
- Demand assessment – utilise outputs from a Do Minimum run of the ERM model for a 2042 forecast year to calculate anticipated travel demand for key corridors to / from the study area;
- Options Development and Assessment – identify high-level transport options to serve demand in the study area and assess them via a multi-criteria analysis against the objectives of the study; and
- Final Recommendations – present the recommendations for the options to be taken forward and investigated further.

This paper assessed the baseline utilisation (2016) of the existing network against future growth to forecast year 2042 through the lens of population, employment, education as outlined in the Wicklow County Development Plan and Kildare County Development Plan.

The assessment of future travel demand in 2042 was based on the outputs from the NTA Eastern Regional Model (ERM), assessing a range of peak periods and mode classes. The model run represents a 'Do Minimum' scenario which includes proposed development, all existing transport provision, plus the changes to bus services and frequency service related to the New Dublin Area Bus Network.

While the bus network operates in line with the New Dublin Bus Network timetable, the model did not include any of the of the associated Bus Connects infrastructure proposals which would improve journey times. No other transport proposals were included in the model.

A number of possible options for future intervention within the study area were considered, including:

1. Improve cycle provision;
2. Increased frequency of local bus services;
3. Increased frequency of interurban bus routes;
4. Provision of new local bus route between Blessington and Naas; and
5. Improvement and promotion of park and ride facilities.

In order to confirm the suitability of the proposed options, demand for movements from the West Wicklow and East Kildare study area to Dublin City Centre via Tallaght, and also to Naas was assessed. Initial forecast trip numbers produced by the ERM alongside future bus capacity figures outlined that increased frequency of existing conventional bus services would be sufficient to serve the future demand for the study area.

The resulting recommended package of options for the West Wicklow and East Kildare study area includes:

- Walking and cycling enhancements within Blessington and Baltinglass, to accommodate local trips;
- Increased frequency of local bus services which will be over capacity in 2042;
- Promotion and possible expansion of park and ride at Cheeverstown (Luas Red Line) to intercept car trips before they reach Dublin City Centre;
- Provision of new bus service from Blessington to Naas;
- Continue to support, and possibly expand the Ring a Link service to cater for additional trips between the main towns and their rural surrounds.

1. Introduction

1.1 Background to the study

The National Transport Authority (NTA) commissioned Jacobs Engineering Ireland Limited (Jacobs) in collaboration with Systra to complete an Area Based Study for West Wicklow and East Kildare.

This study was commissioned in order to inform the NTA's review of the Transport Strategy for the Greater Dublin Area (2016 – 2035), which will consider the future development of the transport system in the Greater Dublin Area (GDA) for the period up to 2042. In this context, the purpose of this study is to:

- Provide a comprehensive assessment of future travel demand in the West Wicklow and East Kildare area;
- Identify realistic potential options to meet future travel demand to and from this area, and in particular to cater for demand into Dublin City Centre and other key destinations;
- Focus in particular on options for public transport and active modes provision, taking account of emerging proposals;
- Assess potential options using a multi-criteria assessment framework; and
- Recommend options which can be taken forward for further assessment as part of the development of the revised Transport Strategy.

1.2 Overview of the study area

The West Wicklow and East Kildare study area is located around 30km to the south west of Dublin City Centre within the Wicklow County Council and Kildare County Council areas. The study area as defined by the NTA is shown in Figure 1.1.

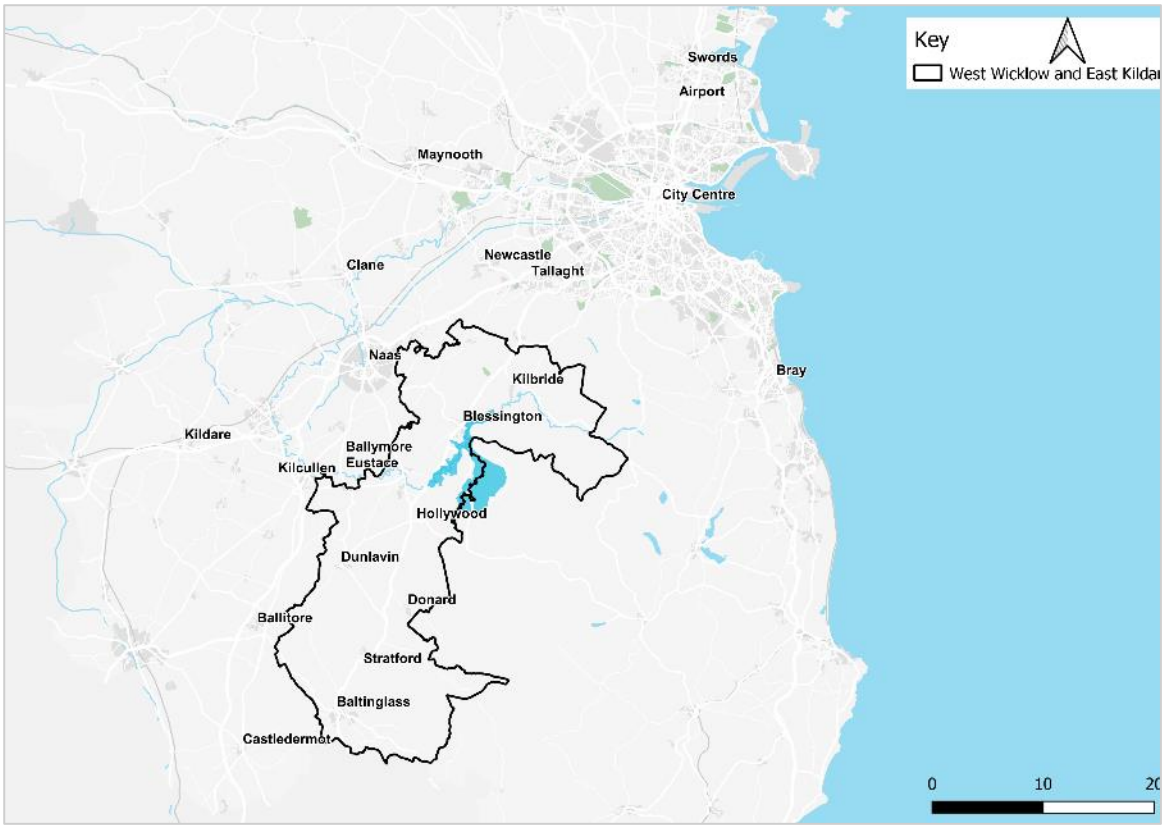


Figure 1.1: West Wicklow and East Kildare Study Area (Wider Context)

The area is predominantly rural with agricultural land use. There are three key agglomerations within the study area: Blessington and Ballymore to the North and Baltinglass to the South, as presented in Figure 1.2. The large commuter town of Naas is also located approximately 13km North West of the study area. The N81 national secondary road runs through the middle of the study area, leading north to Dublin City Centre and the M50, and south to Tullow.

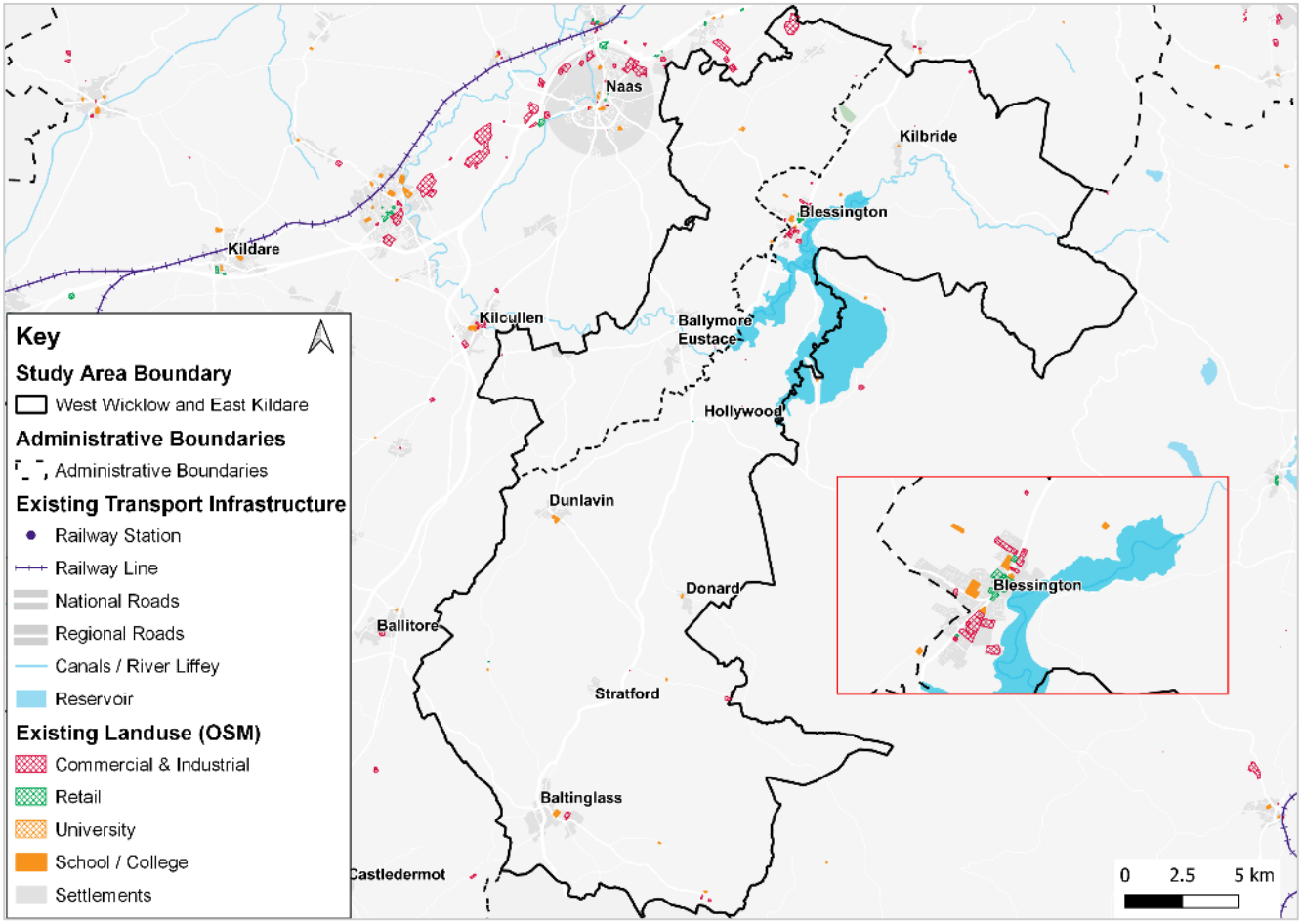


Figure 1.2: West Wicklow and East Kildare study area (Study Area Context)

1.3 Study methodology

The methodology for this study is based on the Area Based Transport Assessment (ABTA) process, which has been developed by both the NTA and Transport Infrastructure Ireland (TII). This approach ensures that movement and accessibility of all forms, across all modes of travel, is considered in the development of areas at a local level. The ABTA approach has been adapted for the purposes of this study and comprises the following key steps:

- Policy Context – understand the planning and transport policy context within which this study sits;
- Baseline Assessment – provide a clear understanding of the existing spatial characteristics, land uses, transport conditions and constraints in the study area;
- Establish Context – understand the future growth proposals for the study area as well as future travel patterns which proposed transport options need to serve;
- Options Development and Assessment – identify high-level transport options to serve demand in the study area and assess them via a multi-criteria analysis against the objectives of the study; and
- Final Summary – present the options to be taken forward and investigated further.

1.4 Report structure

This report is comprised of the following chapters:

- Chapter 2 – Policy context
- Chapter 3 – Baseline assessment;
- Chapter 4 – Future context;
- Chapter 5 – Options development; and
- Chapter 6 – Summary.

2. Policy Context

This section provides a comprehensive review of existing national, regional and local level legislation, policy, and guidance relevant to this study. It examines plans, policies and objectives at all levels in order to provide the broad context for this area study. It therefore frames the development of the study and provides a context for the identification of interventions which align with wider policy goals.

2.1 National policy

2.1.1 Project Ireland 2040 - National Planning Framework

Project Ireland 2040 was adopted by the Government in February 2018 and includes two elements:

- National Planning Framework (NPF) - shaping development in economic, environmental and social terms to 2040; and
- National Development Plan (NDP) - setting out the investment priorities that will underpin the NPF from 2018 to 2027.

Project Ireland 2040 provides the framework for future development and investment in Ireland and is the overall Plan from which other, more detailed plans will take their lead, including city and county development plans and regional strategies. The NPF is a tool to assist the achievement of more effective regional development.

The objectives of the NPF, in brief, are to:

- Guide the future development of Ireland, taking into account a projected 1 million in population and create 660,000 additional jobs and 550,000 more homes by 2040;
- Direct 25% of this growth to Dublin, 25% across Cork, Limerick, Galway and Waterford and the remaining 50% across key regional centres, towns and villages (as set out in the RSES); and
- Co-ordinate delivery of infrastructure and services in tandem with growth, helping to tackle congestion and quality of life issues.

The NPF represents the overarching national planning policy document and is underpinned by a series of core principles named National Strategic Outcomes (NSOs) which include:

- NSO 1 Compact Growth;
- NSO 2 Enhanced Regional Accessibility;
- NSO 4 Sustainable Mobility;
- NSO 7 Enhanced Amenity and Heritage; and
- NSO 8 Transition to a Low Carbon and Climate Resilient Society.

These principles are translated by supporting policies and actions at sectoral, regional and local levels.

In relation to Dublin, the NPF requires the preparation of the Dublin Metropolitan Area Strategic Plan (part of the RSES), and notes that the identification of infrastructure required to sustain growth is a key priority of this Plan. In relation to Dublin, the NPF itself sets a clear focus on:

- Supporting future growth by better managing growth and ensuring it can be accommodated within and close to the city. This includes a focus on underutilised land within the canals and M50 ring, and a more compact urban form.
- Enabling significant population and jobs growth in the Dublin metropolitan area, together with better management of the trend towards overspill into surrounding counties.

- There will be a requirement for significant greenfield development on sites which have good integration with the city and can be served by high capacity public transport. Some existing sites have already been designated as Strategic Development Zones (SDZs).
- Addressing infrastructural bottlenecks, improving quality of life and increasing housing supply in the right locations.

Key transport-related growth enablers for Dublin include:

- Delivering key rail projects set out in the Transport Strategy for the GDA including Metro Link, DART expansion and the Luas green line link to Metro Link;
- The development of an improved bus-based system, with better orbital connectivity and integration with other transport networks;
- Delivering the metropolitan cycle network set out in the GDA Cycle Network Plan, including key commuter routes and urban greenways; and
- Improving access to Dublin Airport, including public transport.

This policy sets the context for the development of transport interventions, including those considered through this study. It highlights that there will be significant growth to 2040 and that improvements to public transport and active mode provision are key to supporting the levels of planned development.

2.1.2 Project Ireland 2040 - National Development Plan

The NDP sets out the enabling investment to implement the strategy set out in the NPF, for the period 2018 to 2027. Under the NDP, investment in public transport infrastructure will be accelerated to support the development of an integrated and sustainable national public transport system consistent with the NPFs NSOs of Sustainable Mobility and Company Growth. Projects with allocated funding within the NDP include:

- Continued investment in bus and train fleets and infrastructure;
- The delivery of the Dublin BusConnects programme;
- The complete construction of MetroLink;
- Delivery of the priority elements of the DART+ Programme;
- A Park & Ride programme; and
- Cycling and walking networks in key urban areas.

These projects will deliver significant improvements. This study, and other work the NTA is doing to review the Transport Strategy for the Greater Dublin Area will consider other longer-term interventions required to support the NPF to 2040 and beyond.

2.1.3 Investing in Our Transport Future: Strategic Investment Framework for Land Transport (2014)

The Strategic Investment Framework for Land Transport (SIFLT) sets out the strategic framework to consider the role of transport in the future development of the Irish economy and estimate the appropriate level of investment required in the land transport system. The framework establishes:

- High-level priorities for future investment in land transport; and
- Key principals, reflective of those priorities, to which transport investment proposals will be required to adhere.

Priorities include:

- Achieve steady state maintenance – emphasising the importance of efficient maintenance and management;

- Addressing urban congestion – recognising that improvements to the efficiency and sustainability of urban transport systems are a key priority. The document specifically notes that this "must be guided by demand/capacity assessments and recognise the role of urban centres as key drivers of economic activity, nationally and regionally." It goes on to say that measures should include improve and expanded public transport capacity, walking and cycling infrastructure as well as Intelligent Transport Systems to improve efficiency and capacity; and
- Maximising the contribution of land transport networks to national development.

This framework highlights the need for this study to identify measures that address urban congestion and improve the provision of sustainable transport modes.

2.1.4 Project Ireland 2040 - National Investment Framework for Transport in Ireland (NIFTI)

NIFTI is the Department of Transports new high-level strategic framework for prioritising future investment in the land transport network. At the time of writing, the public consultation for NIFTI is currently underway and expected to conclude in May 2021. Once published, NIFTI will replace SIFLT as the framework for future land transport investment. NIFTI is intended to ensure that transport investment is aligned with and supports the NPF and its NSOs. NIFTI outlines key investment priorities that future transport projects must align with to be considered for funding.

Priorities include:

- Decarbonisation – Recognises the fact transport accounts for approximately one-fifth of Irish greenhouse gas emissions, therefore decarbonisation is an urgent priority in the context of climate change targets;
- Protection and renewal – many of the challenges faced by the network can be addressed, at least partially, through protection and renewal. Adequate maintenance is necessary to ensure safety, make sustainable modes an attractive option, deliver connectivity and accessibility and ensure the resilience of key pieces of infrastructure;
- Mobility of people and goods in urban areas – requires prioritisation in order to facilitate compact and sustainable growth in towns and cities. Support will be given to projects that reduce urban congestion, especially through the use of sustainable mobility measures; and
- Enhanced regional and rural connectivity – through addressing priority bottleneck and network constraints as well as ensuring all parts of the country are well-served with access to major ports and airports.

This framework highlights the need for this study to identify measures to address issues such as climate change and urban congestion through model shift and improved provision for sustainable modes.

2.1.5 Smarter Travel: A Sustainable Transport Future (2009 to 2020)

Smarter Travel: A Sustainable Transport Future presents an overall policy framework for sustainable transport in Ireland. The policy sets out a vision, goals and targets to be achieved and outlines 49 actions that form the basis of achieving a more sustainable transport future.

Smarter Travel acknowledges that continued growth and dependency on the private car is not sustainable and therefore sets on objective to promote a significant mode shift in favour of public transport, walking and cycling. A key target in this regard was to reduce the proportion of travel to work trips by car from 65% to 45%.

Key goals of Smarter Travel include:

- Improving quality of life and accessibility to transport for all;
- Improving economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks;

- Minimising the negative impacts of transport on the environment through reducing air pollution;
- Reducing overall travel demand and commuting distances in the private car; and
- Reducing reliance on fossil-fuel-based transport modes.

Please note, this policy is currently under review as part of the Sustainability Mobility Policy Review. Consultation on the review closed in early 2020. The consultation documents emphasised that the purpose of the review was to put in place a new policy which supports:

- A shift away from the private car to greater use of active travel and public transport;
- Travel by cleaner and greener transport; and
- Comfortable and affordable journeys to and from work, home, school, college, shops and leisure.

The new policy will align with the NPF and will replace the Smarter Travel policy, plus the National Cycle Network Policy Framework.

This policy highlights the need for this study to place key emphasis on identifying the interventions required to support mode shift.

2.1.6 National Cycle Policy Framework (2009 to 2020)

Ireland's first *National Cycle Policy Framework 2009-2020's* vision is that all cities, towns, villages and rural areas will be bicycle friendly. The overarching mission of the Framework is to create a strong national cycling culture to align with *Smarter Travel's* objective that 10% of all trips will be by bike by 2020.

The Framework sets out a comprehensive package of interventions – both 'hard' (planning and infrastructure) and 'soft' (communication and education) – to make cycling a convenient and safe option for everyone. The approach recommended is a hierarchy of measures, including:

- Reducing volumes of through-traffic, especially HGVs, in urban centres and in the vicinity of schools and colleges;
- Calming traffic/ enforcing low traffic speeds in urban areas; and
- Making junctions safe for cyclists and removing multi-lane one-way street systems.

A number of objectives relevant to this study include:

- Support the planning and design of urban centres to support cyclists and pedestrians;
- Improve integration between cycling and public transport to enable multi-modal travel;
- Provide secure parking for bikes; and
- Evaluate and monitor the implementation of measures.

Please note, this policy is currently under review as part of the Sustainability Mobility Policy Review (as detailed above).

This policy highlights the need for this study to proactively identify the cycle infrastructure required to support future growth.

2.1.7 Building on Recovery: Infrastructure and Capital Investment (2016 to 2020)

Building on Recovery: Infrastructure and Capital Investment 2016-2020, published by the Department of Public Expenditure and Reform in 2016, presents the Government's new €42 billion framework for infrastructure investment in Ireland over the period 2016 to 2021.

The Exchequer transport capital allocation is largely framed by the recommendations and priorities set out in the *Strategic Investment Framework for Land Transport* (superseded by the *Planning Land Use and Transport Outlook 2040* in 2018). These priorities are threefold:

- Maintain and renew the strategically important elements of existing land transport system;
- Address urban congestion; and
- Improve the efficiency and safety of existing transport networks.

Under the Plan, €100 million is being committed to smarter travel and carbon reduction measures, including Greenways, to ensure that the transport sector makes a major contribution to climate change mitigation targets.

This policy highlights the need for this study to identify measures that contribute to climate change mitigation targets, whilst addressing the priorities outlined above.

2.1.8 Climate Action Plan (2019)

The *Climate Action Plan: To Tackle Climate Breakdown* was published by the Government in June 2019. The Plan identifies how Ireland will achieve its 2030 targets for reduction in carbon emissions and a pathway towards achieving a net zero emissions by 2050.

A central pillar of this plan is the role that transport can play in reducing our carbon footprint and improving air quality in our towns and cities. The plan acknowledges that the delivery of improved public transport will lead to a modal shift away from unsustainable transport choices and go a large way to the decarbonization challenge that lies ahead.

The *Climate Action Plan* sets a target reduction of 45-50% in Ireland's transport emissions by 2030. The projected increase in population and economic activity and the resulting increased travel demand from the movement of people and goods will further intensify Dublin's current decarbonisation challenge. In 2017, transport accounted for a significant proportion of Ireland's greenhouse gas emissions – approximately 20%.

Other targets in relation to transport include:

- Increasing the number of electric vehicles;
- Building the electric vehicle charging network at the rate required to meet demand;
- Require at least one recharging point in new non-residential buildings with more than 10 parking spaces;
- Raise the blend proportion of biofuels in road transport.

This plan highlights the need for this study to identify measures that contribute to reductions in transport related carbon emissions.

2.1.9 Road Safety Strategy (2013 to 2020)

The Road Safety Strategy set out targets to be achieved in terms of road safety in Ireland, with the primary target defined as follows:

'A reduction of road collision fatalities on Irish roads to 25 per million population or less by 2020 is required to close the gap between Ireland and the safest countries. This means reducing deaths from 162 in 2012 to 124 or fewer by 2020. A provisional target for the reduction of serious injuries by 30% from 472 (2011) to 330 or fewer by 2020 or 61 per million population has also been set.'

The Strategy goes on to state that 'the attractiveness of walking depends strongly on the safety of the infrastructure provided. Collisions involving pedestrians account for 1 in 5 fatalities annually.' It also notes that

'collisions involving cyclists account for 1 in 25 road deaths annually, and many collisions involving cyclists lead to serious head injuries.'

The Road Safety Authority (RSA) undertook a consultation on their new strategy 2021-2030, which closed in November 2020. The new strategy is proposed to have an end date of 2030 to align with the EU Road Safety Policy. The review document notes that while the long-term trend shows that roads in Ireland have become safer for road users overall, this has not been the case for all road user groups. It notes that the biggest decrease in fatalities was among pedestrians and that there were 68% fewer pedestrian causalities in 2019 compared to 2000, but that pedestrians are still the second largest fatality group, behind car occupants. The new strategy will look at how to further reduce fatalities and serious injuries and how to deal with new issues in road safety.

2.1.10 UN Convention for the Rights of People with Disabilities

In March 2019, Ireland ratified the *UN Convention on the Rights of People with Disabilities*. Article 9 of the 'UNCRPD' includes the right to transport and creating an accessible end to end journey, with the user focus central to this approach. Its focus is:

"To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:

Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces.

Information, communications and other services, including electronic services and emergency services."

Article 9 for the first time enshrines the right to transport within Irish legislation. The focus on Usability and Accessibility has implications and opportunities across transport planning and provision, including the National Planning Framework and the way that schemes are appraised to capture wider benefits associated with ensuring this Right.

2.1.11 Other national guidance

The following national guidance has also been considered:

- Area Based Transport Assessment Guidance (ABTA), NTA/TII, 2018;
- Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport, 2013 (updated 2019);
- National Physical Activity Plan, Healthy Ireland, 2019 (updated 2021);
- National Cycle Manual, National Transport Authority, 2011;
- Permeability: A Best Practice Guide, National Transport Authority, 2015;
- Achieving Effective Workplace Travel Plans; Guidance for Local Authorities, National Transport Authority[1].

[1] https://www.nationaltransport.ie/wp-content/uploads/2012/03/Achieving-Effective-Workplace-Travel-Plans-Guidance-for-Local-Authorities11.pdf

2.2 Regional policy

2.2.1 Regional Spatial and Economic Strategy for the Eastern and Midland Region (2019 to 2031)

The *Regional Spatial and Economic Strategy for the Eastern and Midland Region* (RSES) translates the objectives of the NPF at a regional level and provides a link between the NPF and local plans. Overall, it provides a framework for investment to better manage spatial planning and economic development throughout the Region to 2031, and beyond to 2040.

The RSES identifies 16 regional strategic outcomes (RSOs). Integrated transport and land use is one of these, aiming to promote best use of transport infrastructure and promote sustainable and active modes of travel. The key challenge facing the region is identified as the transition to a low carbon society. The RSES therefore identified a number of primary areas of transition – with sustainable transport systems being one of these.

2.2.2 Greater Dublin Area Transport Strategy (2016 to 2035)

The *Greater Dublin Area Transport Strategy 2016-2035* provides a framework for the planning and delivery of transport infrastructure and services in the GDA up to 2035. It provides a transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water and power, can align their investment priorities.

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

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

The Strategy set out high-level proposals for the walking, cycling, public transport and road networks, as well as parking management measures and other supporting measures for the entire GDA. This study looks to update work done as part of this strategy with a new forecast year of 2042.

2.2.3 Greater Dublin Area Transport Strategy Review

The NTA is required by legislation to review the Greater Dublin Area Transport Strategy every six years. The ongoing review will assess the implementation of the current plan and look to produce an updated strategy which will set out the framework for investment in transport infrastructure and services, through to 2042. The NTA aims to complete the review by the end of 2021, so that the new strategy can be approved by the Minister for Transport in early 2022.

The review process recognises that the following are particular challenges and considerations for the new strategy:

- Climate change and the environment – recognising the need for transport to lead the way towards a net zero emissions future;
- Growth and change – ensuring the public transport investment aligns with changes in the location of population, jobs and schools;
- Health and quality – recognising that transport can open up opportunities and have a positive impact on health and wellbeing;
- The economy – with effective public transport being a major driver of economic activity; and

This transport study will feed into the review process currently being undertaken by the NTA.

2.2.4 Greater Dublin Area Cycle Network Plan

The Greater Dublin Area Cycle Network Plan was developed and adopted by the NTA in early 2014 and is identified as a key future growth enabler for Dublin in the NPF.

The plan forms the strategy for the implementation of a high quality, integrated cycle network for the GDA. This involves the expansion of the urban cycle network from 500km to 2,480km, comprising a mix of cycle tracks and lanes, cycle ways and infrastructure-free cycle routes in low traffic environments. Within the urban network this will consist of a series of routes categorised as follows:

- **Primary** – main cycle arteries that cross the urban area and carry most cycle traffic – target quality of service (QoS) of two abreast plus overtaking width = 2.5m
- **Secondary** – link between principle cycle routes and local zones – target QoS of single file plus overtaking width = 1.75m
- **Feeder** – cycle routes within local zones and/or connection from zones to the network levels above.

Specific proposals relevant to the West Wicklow and East Kildare study area are detailed in Section 5

2.3 Local policy

A number of local policy documents are relevant to the West Wicklow and East Kildare study area. Local policy documents have been reviewed to inform growth locations and future transport developments. Relevant policies from the following documents have informed the future context set out in Chapter 4:

- Wicklow County Development Plan (2016 – 2022);
- Wicklow County Development Plan (2021-2027);
- Kildare County Development Plan (2017 – 2023);
- Kildare County Development Plan (2023 – 2029) Issues Paper;
- Baltinglass Town Plan (2016-2022);
- Blessington Local Area Plan (2013 – 2019); and
- Donard Settlement Plan (2016 – 2022).

3. Baseline Assessment

3.1 Description of the study area

3.1.1 General

The study area sits across two county council boundaries, County Wicklow and County Kildare and mainly consists of rural areas, and thus faces many challenges ranging from urban generated pressures in some areas to declining and ageing population in other areas, changes to economic structure, and lack of access to infrastructure and new technologies. The study area falls within the Wicklow County Development Plan and Kildare County Development Plan.

There are two notable settlements within the study area:

- **Blessington** is located on the Kildare/Wicklow border approximately 27km southwest of Dublin City Centre and 11km from Naas town in County Kildare. The N81 national secondary road passes through the town centre. The town is a strong and active town that acts as the service centre for a wide rural catchment. The town is served by a metropolitan area Dublin Bus service, an interurban Bus Eireann service and also a Demand Responsive Bus service.
- **Baltinglass** is located on the western fringes of the Wicklow Mountains, in west County Wicklow, near the Kildare and Carlow borders. The town is located in the Wicklow rural hinterland, approximately 30km south of Blessington, on the N81. It is also traversed by the R747, from Arklow to Kildare. The town is located on the River Slaney, a protected Natura 2000 site and is located just west of the Baltinglass Hills, a protected archaeological landscape. The town centre is located around the N81/R747 crossroads.

3.1.2 Transport network and services

Road network

The West Wicklow and East Kildare study area is served by a network of national and regional roads, these are presented in Figure 3 1.

The national road network provides the basis for Dublin's wider national-level and inter-regional connectivity. There is one National Primary Route within the study area, the N81, which begins in County Dublin at Junction 11 of the M50 and runs to the N80 south of Tullow in County Carlow, running for approximately 76km. The road is a dual carriageway between M50 motorway and west of Tallaght. The road network runs through the towns of Blessington and Baltinglass and is the key road within the study area.

The study area's regional road network comprises of mainly routes connecting to the national road network and wider environment.

The N81 has an Annual Average Daily Traffic (AADT) flow of 12,000 vehicles per day, and an HGV percentage around 5.9%[2]. The secondary road is relatively uncongested with the network predominantly operating at below 80% capacity. The N81 becomes congested when joining the M50 into Dublin City Centre operating at above 120% capacity and operates at 80-100% capacity near to Blessington the main agglomeration of the area. However, the N81 is the least congested of all of Dublin's radial roads.

Within Blessington, the two main areas of the town (Main Street and Market Square) are currently dominated by traffic due to the N81 passing through the town which has created an unsuitable environment for free-flowing vehicular movement creating congestion in the town.

[2] https://www.tii.ie/tii-library/strategic-planning/tii-road-network-indicators/TII-National-Roads-Network-Indicators-2019.pdf

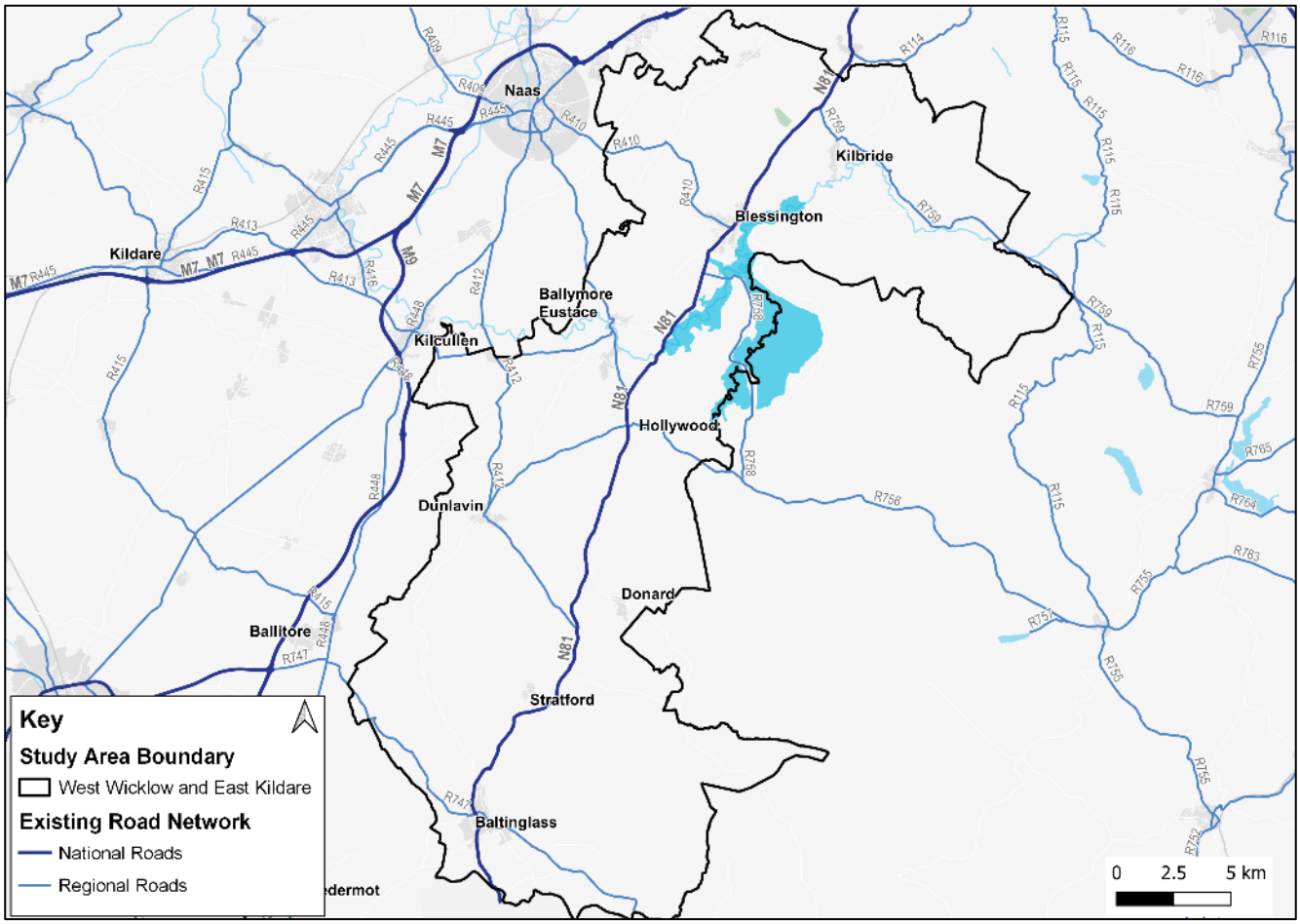


Figure 3.1: Study Area Road Network

Regional roads play a major role in the development of the study area, by linking the principal towns and villages to each other, serving local traffic and providing access to the national road network within the Counties. The study area's regional road network comprises mainly of radial routes connecting the rural hinterland and smaller settlements to larger settlements and/or the National road network, including:

- R759: running south-east to north-west through the Sally Gap in the Wicklow Mountains, from the R755 near Roundwood in East Wicklow to the N81 in West Wicklow.
- R758: The road connects the R756 to the N81 travelling through the village of Valleymount in West Wicklow crossing the Poulaphouca Reservoir via two bridges.
- R412: Runs north-south from the R448 in County Kildare to the N81 in County Wicklow passing through the town of Dunlavin.
- R756: Runs west-east from Dunlavin to Laragh. The road predominantly runs through County Wicklow crossing east-west through the Wicklow Gap.
- R747: The R747 runs through the town of Baltinglass, beginning at Junction 3 of the M9 heading east into County Wicklow onto a crossroad with the N81 at Baltinglass before ending further east in the town of Arklow.
- R410: Begins at the intersection of the N81 in Blessington, running through both County Wicklow and County Kildare into Naas serving as a commuter route between Blessington and Naas.

Rail network

There are no rail stations within the study area. The nearest rail station is located in Naas at Sallins/Naas rail station north of the town. This is located approximately 15km from the town of Blessington, the nearest major agglomeration within the study area. Newbridge station is located 20km from the study area.

The nearest light rail line to the study area is the Luas Red Line, which terminates in both Tallaght and Saggart, approximately 19km and 15km to the North West of the study area respectively.

Bus network

As part of the BusConnects programme, a redesign of the bus network in the GDA is proposed to provide greater capacity, enhance priority and a more coherently planned network. The implementation of the New Dublin Area Bus Network will be completed in phases commencing in 2021, as such the proposed network is set out here as part of the baseline. The new network features:

- **Spines** – frequent routes made up of bus services timetabled to work together along a radial corridor;
- **Orbitals** – providing connections between the suburbs, town centres and key transport interchanges without requiring travel into the city centre;
- **Other city-bound routes** – other routes which operate on their own timetables outside of spine routes;
- **Local routes** – routes providing connections within local areas;
- **Peak only** – services operating during peak periods to provide additional capacity on key corridors; and
- **Express** – direct services from outer suburbs to city centre at peak times.

The New Dublin Area Bus Network which serves the study area are included in Figure 3.2 and Table 3.1.

Figure 3.2: New Bus Network serving the West Wicklow and East Kildare study area (study area to south of map extract)

The following BusConnects services will cover the West Wicklow and East Kildare study area:

Table 3.1: BusConnects services

Route Type	Service	Route	Weekday Peak Headway (Mins)
Local routes	L44	Ballymore Eustace-Blessington-Tallaght	60 mins
Peak only / express route	P43	Ballyknockan-Blessington-Dublin City Centre	Twice daily
	P44	Ballymore Eustace - Blessington - City Centre	Twice Daily

Based on the service and headway information provided in Figure 3.2 and Table 3.1 gaps and opportunities for further improvement in the new network have been identified:

- Lack of bus service connecting the study area and nearby Naas and Sallins;
- Possible opportunities for additional park and ride along the Luas Red Line; and
- Ballyknockan served by low frequency services (twice daily).

Interurban Bus Eireann Service

Service 132 is an express, limited stop service which serves the study area five times a day. In order to provide competitive journey times, the service does not drop off and pick up in every location, as highlighted in the tables below.

Table 3.2: Service 132 timetable (towards Dublin)[3]

Route	Timetable				
Baltinglass	07:00	08:50	10:35	12:10	15:10
Blessington	D 07:30	D 09:20	D 11:05	D 12:40	D 15:40
Tallaght	D 07:45	D 09:35	D 11:30	D 12:55	D 15:55
Dublin	-	-	11:50	-	-

Table 3.3: Service 132 timetable (from Dublin)[4]

Route	Timetable			
Dublin	09:30	12:30	16:00	-
Tallaght	-	-	-	P 18:05
Blessington	P 10:15	P 13:15	P 16:45	P 18:20
Baltinglass	10:40	13:40	17:10	18:45

Ring a Link Service

The Ring a Link service is an affordable bus service serving the rural communities of Carlow, Kilkenny, Tipperary, and Wicklow. The majority of Ring a Link services operate within areas surrounding large towns. The services have a schedule, but no fixed route.

The Ring a Link service allows travel to or from local villages or towns for business, shopping, socialising, healthcare, or to connect with national bus or train services. The Ring a Link services differ to conventional buses as most of the services are demand responsive and door-to-door. The buses can collect anyone registered within the service area, the buses will then collect individuals from their homes alongside other passengers. The

[3] D = Drop off only
[4] P = Pick up only

frequency of services differs depending on demand, with the buses serving the West Wicklow and East Kildare area operating sporadically, from once a day to once a week.

Whilst existing bus services provide connectivity within the study area and to Dublin City Centre, there is a gap in services between Blessington to Naas, which is an established commuter route.

Cycling network

There is currently limited cycle network provision in the study area, which is all focussed within the main settlement of Blessington. There is currently no segregated cycle lane on routes leading into Blessington, or along the main street in the town. There are a few segregated paths on the outskirts of the town near newer residential development, but these are not connected to the wider network, making them redundant. Moreover, there is limited bicycle parking throughout the town.

In 2019, funding of €5 million was granted by the National and Regional Greenway Fund for the expansion of Blessington's Greenway. The Greenway will consist of 43 kilometres of a looped cycling and walking path that starts and ends in Blessington, around the shoreline of Poulaphouca Reservoir and incorporating the villages of Ballyknockan, Valleymount and Lacken.

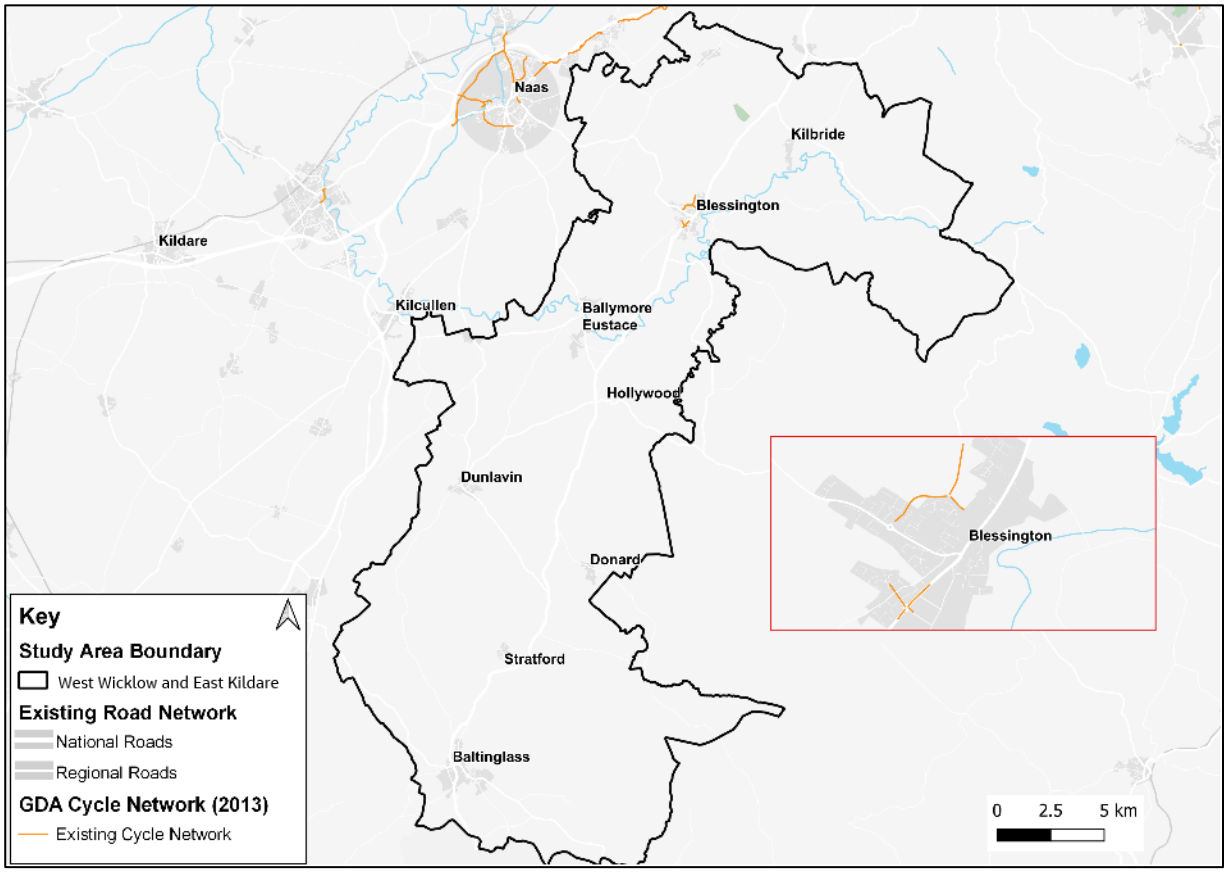


Figure 3.3: West Wicklow and East Kildare existing cycle network

Walking network

Due to the nature of the study area, the walking network throughout is based in settlements and tourist areas. Within Blessington, there is a Greenway Walk approximately 6.5km which links the town with Russborough House. The Greenway intersects with the N81 using a small footpath. The footpath also crosses the Valleymount Road (R758). There is currently no walking option between Blessington and Poulaphouca, located approximately 6km away. Within Blessington town centre, there are many car parking bays taking up significant space and

therefore the walking infrastructure in the town is sub-optimal. Furthermore, the town only has two signalled pedestrian crossing points.

Within Baltinglass, most walking routes within the town have footpaths, with some of these footpaths needing enhancement to their width and overall quality. A number of peripheral locations do not have complete footpath routes to the town centre. Many of the town's roads are dedicated to the needs of motorists, in terms of width dedicated to the road carriageway or parking, there is also poor pedestrian connectivity between the east and the west of the town. Additionally, the nearby town of Ballymore Eustace located in County Kildare is home to a few nature trails and river walks with similar uses in Donard on the edge of the Wicklow mountains with the town being used for hiking trails in the mountains.

Parking provision

Within the town of Blessington, car parking is predominantly on-street with a relatively high turnover of occupancy of car parking spaces. Off-street car parking is limited and is located in Blessington town centre in the form of a surface car park and multi-storey car park, with a small public car park adjoining a local health centre a mile from the town centre. Throughout the town itself, parking is free with bay parking spaces which stretches the entire length of Main Street and Market Square with no time-limits imposed on users. On street parking in Blessington town centre accounts for 59% of all parking in the town. A significant proportion of the on-street parking spaces are used by people working in nearby stores, and by commuters to Dublin who either car-share or take the bus. Moreover, the local Aldi located a short distance from the town centre has the second highest number of car parking in the area. However, this is for customers only.

Within the town of Baltinglass, there are no current parking controls within the town centre. It is considered that this has resulted in haphazard and uncontrolled parking, which exacerbates congestion and detracts from the streetscape value and character of the town. Moreover, in Ballymore there is also no official parking provision.

Road safety

The road safety of the West Wicklow and East Kildare study area is generally good, with low collision rates compared to the rest of the wider Dublin area. The average number of collisions per year is 25 with only five fatal incidents in a five-year period. The largest concentration of collisions within the area is along the N81 secondary road, the N81 connects Dublin to the wider context area so it is therefore unsurprising that this road would have the largest number of collisions along it. The largest number of collisions in the study area is around urban agglomerations such as Blessington. Overall, the safety of the study area is not of concern.

3.2 Existing Travel Patterns

3.2.1 Key trip attractors

Whilst there are a number of key trip attractors within the study area, as the study area is predominantly rural and comprised of existing residential land uses, many of the key trip attractors lie outside of the study area.

Many of the facilities in the study area are situated in Blessington and Baltinglass. Baltinglass has two primary schools, a secondary school, hospital and outdoor activity centre. Blessington has several primary schools and one secondary school with one primary care centre and outdoor activity centre. In addition to local facilities, there are a number of tourist attractions within the study area.

Key trip attractors within the study area:

- Blessington Town Centre
- Baltinglass Town Centre
- Wicklow Mountains
- Poulaphouca Reservoir
- Russborough House
- Baltinglass Hills
- Blessington Greenway Trail
- Baltinglass Abbey
- Tulfarris Holiday Park

Key trip attractors outside of the study area:

- Dublin City Centre
- Tallaght Town Centre
- Citywest Business Campus
- University College Dublin (UCD)
- Naas

3.2.2 Car Ownership

Table 3.44 displays car ownership data. The proportion of houses with at least one car within the study area (94%) is higher than across the GDA (78%). Within the study area the proportion of houses with at least one car is highest in Blessington (93%). The proportion of houses with at least two cars within the study area (59%) is also higher than across the GDA (37%).

Table 3.4: West Wicklow and East Kildare Car Ownership Data (2016 Census)

Area	Total Households	Cars per household					
		0	1	2	3	4+	Not stated
Greater Dublin Area	666,724	18%	41%	31%	5%	2%	4%
Study area	**7,414**	**6%**	**35%**	**43%**	**10%**	**4%**	**2%**
Blessington	1,809	7%	41%	44%	5%	1%	1%
Baltinglass	762	13%	48%	29%	6%	2%	3%

3.2.3 Travel data

Travel to Work / School / College by Mode

As shown in 5, the proportion of people who travel to work by active modes within the study area (6%) is lower than that for the GDA (15%). Overall, the proportion of people who travel to work by bus, minibus or coach within the study area (3%) is also lower than the GDA as a whole (10%). Bus use is far below the GDA figure in every settlement and the study area on the whole.

Car use is high in Blessington (79%) and Baltinglass (73%), but below study area in general (82%), all of which are significantly higher than for the GDA as a whole (55%). These mode shares are high, however, given the nature of the study area this is expected.

Table 3.5: West Wicklow and East Kildare Travel to Work Data (2016 Census)

Area	Total work	On foot	Bicycle	Bus, minibus or coach	Train, DART or Luas	Motorcycle or scooter	Car / van driver	Car passenger	Other/Not Stated
Greater Dublin Area	835,694	10%	5%	10%	7%	1%	55%	3%	9%
Study Area	**8,659**	**5%**	**>1%**	**3%**	**>1%**	**>1%**	**82%**	**4%**	**5%**
Blessington	2,387	7%	1%	4%	2%	1%	79%	3%	2%
Baltinglass	777	11%	1%	3%	>1%	>1%	73%	4%	5%

Table 3.6 displays travel to school / college data by mode. The proportion of people who travel to school / college on foot within the study area (21%) is lower than the proportion for the GDA (31%).

The proportion of people who travel to school / college by bicycle within the study area (1%) is lower than the that for the GDA (4%). Car passengers within the study area (47%) is much higher than the GDA (35%) however there are large differences within the settlements. Lower proportions of car passenger trips take place from / within Baltinglass (25%) whilst the proportions from Blessington (44%) are higher which could be attributed to its more rural setting. Bus is more prevalent in those travelling to school/college than it is for those travelling to work, with the Study Area overall (22%) being above the GDA share (18%).

Table 3.6: West Wicklow and East Kildare Travel to School / College Data (2016 Census)

Area	Total school / college	On foot	Bicycle	Bus, minibus or coach	Train, DART or Luas	Motorcycle or scooter	Car / van driver	Car passenger	Other/Not Stated
Greater Dublin Area	427,946	31%	4%	18%	4%	0%	4%	35%	5%
Study Area	**5,400**	**21%**	**1%**	**22%**	**1%**	**>1%**	**6%**	**47%**	**3%**
Blessington	1,488	33%	2%	14%	1%	0%	4%	44%	2%
Baltinglass	550	60%	>1%	5%	>1%	0%	5%	25%	4%

Journey time to Work / School / College

Table 3.7 displays travel times to work / school / college. In line with the figures for the GDA, the majority of trips to work / school / college in the study area have a journey time under 30 minutes.

Table 3.7: West Wicklow and East Kildare Journey Time to Work / School / College Data (2016 Census)

Area	Total	Under 15 mins	1/4 hour - under 1/2 hour	1/2 hour - under 3/4 hour	3/4 hour - under 1 hour	1 hour - under 1 1/2 hours	1 1/2 hours and over	Not stated
Greater Dublin Area	1,237,858	24%	29%	21%	8%	8%	2%	8%
Study Area	**14,059**	**32%**	**20%**	**18%**	**9%**	**12%**	**4%**	**6%**
Blessington	3,816	34%	18%	20%	9%	10%	4%	4%
Baltinglass	1,306	45%	12%	11%	7%	13%	5%	8%

Table 3.8 displays time leaving home to travel to work / school / college data. In line with the pattern for the GDA, the majority of trips in the study area take place between 8:00 and 9:00.

Table 3.8: West Wicklow and East Kildare Time Leaving Home to Travel to Work / School / College Data (2016 Census)

Area	Total	Before 06:30	06:30 - 07:00	07:01 - 07:30	07:31 - 08:00	08:01 - 08:30	08:31 - 09:00	09:01 - 09:30	After 09:30	Not stated
Greater Dublin Area	1,237,858	6%	8%	11%	16%	22%	19%	5%	8%	6%
Study Area	**13,582**	**8%**	**11%**	**11%**	**15%**	**17%**	**25%**	**6%**	**6%**	**3%**
Blessington	3,816	8%	12%	11%	12%	16%	29%	3%	6%	2%
Baltinglass	1,306	11%	10%	6%	13%	10%	33%	7%	5%	5%

3.3 Environmental conditions

The West Wicklow study area has a range of archaeological sites including Baltinglass Abbey, Castleruddery Motte and Lemonstown Motte. Within the study area there are three Special Areas of Conservation (SAC), which form part of the European Natura 2000 network. The three SAC areas are Holdenstown Bog to the south of the study area, Wicklow Mountains to the East and Red Bog to the North. The study area also has one Special Protected Area (SPA) at Poulaphouca Reservoir, also a Natura 2000 site.

There is currently no designated Natural Heritage Areas (NHAs) within or surrounding the study area. However, there are a number of proposed NHAs (PNHAs). These sites are of significance for wildlife and habitats and they are also subject to protection.

The PNHAs in the study area include:

- Poulaphouca Reservoir near the town of Blessington.
- Newtown Marshes to the south of Blessington.
- Hollywood Glen inbetween Blessington and Baltinglass
- Liffey Valley Meander Belt in the town of Ballymore Eustace

The study area has a number of rivers running through it, most notably the River Liffey which flows East to West through Ballymore Eustace, Poulaphouca Reservoir and Blessington. Approximately 60% of the Rivers flow is utilised as drinking water and to supply industry. At Poulaphouca Reservoir, the River Liffey flows into the reservoir and is used by the ESB hydroelectric power station to generate electricity.

The Environmental Protection Agency (EPA)'s Air Quality in Ireland 2014 identifies that, overall, air quality in Ireland compares favourably with other EU Member States and continues to be of good quality relative to other EU countries. There are no air quality monitoring sites within the study area but those in neighbouring areas such as Naas and Kilcullen demonstrate that air quality is generally good to moderate at peak times.

3.4 Summary of baseline assessment

Following the examination of the existing transport infrastructure and services, and travel demand patterns in the West Wicklow and East Kildare study area, a number of key trends have been identified:

- Car ownership within the study area, particularly Blessington, is higher than across the GDA. Within the study area, 94% of households own at least one car compared with the 79% across the GDA;
- There is a high car usage within the study area with 82% of trips to work taking place by car / van driver compared with 55% within the GDA;
- The rate of travel to work and school/college by active modes is lower in West Wicklow and East Kildare than across the GDA;

- In West Wicklow and East Kildare, trips to work / school / college commence primarily between 8:00 and 9:00 and take under 30 minutes in line with trips across the GDA.

Several additional key observations can be formulated from the examination of the existing transport networks surrounding or integral to the West Wicklow and East Kildare area. These are as follows:

- The study area is directly served by the existing N81 corridor, a high-capacity National Road;
- The study area is not currently served by a heavy rail line;
- Almost half of trips are internal to the study area;
- There is a high dependence on private car, with low use of public transport, cycling and walking.

4. Context

This section sets out the context of the transport demand and transport supply in the forecast year of 2040. It builds on the baseline (2016) assessment to consider proposed growth and predicted future travel patterns and anticipated travel demand across the study area. This data forms the basis of the assessment of the future year issues and opportunities, and the basis for identifying potential options for intervention.

4.1 Future Land Use

4.1.1 Overview

The future land use scenario presented here is based on a Planning Sheet for 2040 provided by the NTA in discussion with relevant local authorities. It reflects the 2016 and 2040 population, employment, and education places across the study area in line with regional and local planning aspirations. It is aligned with the overall objectives of the NPF and the RSES.

Table 4.1 presents the population, employment and education statistics for the West Wicklow and East Kildare study area and the entire GDA, as well as Baltinglass and Blessington (the two largest settlements in the study area). The data demonstrates that population growth in the main settlements is forecast to be higher than the GDA rate of growth but for the study area as a whole, the rate is lower. The rates for employment and education vary.

Table 4.1: NTA Planning Sheet population, employment and education statistics

Area	2016	2040	Growth	
			Absolute	Percentage
Population				
Baltinglass	4,606	5,997	1,391	30%
Blessington	2,369	3,010	641	27%
West Wicklow and East Kildare	**21,960**	**24,595**	**2,635**	**12%**
GDA	4,761,865	5,790,237	1,028,372	22%
Employment				
Baltinglass	885	1,190	305	34%
Blessington	723	889	166	23%
West Wicklow and East Kildare	**3,480**	**4,363**	**883**	**25%**
GDA	1,468,093	1,996,002	527,909	36%
Education				
Baltinglass	1,160	1,493	333	29%
Blessington	898	1,092	194	22%
West Wicklow and East Kildare	**4,223**	**4,807**	**584**	**14%**
GDA	982,185	1,186,472	204,287	21%

4.1.2 Population

Figure 4.1 presents the 2016 population, 2040 population, and projected population growth for the West Wicklow and East Kildare study area from 2016 to 2040.

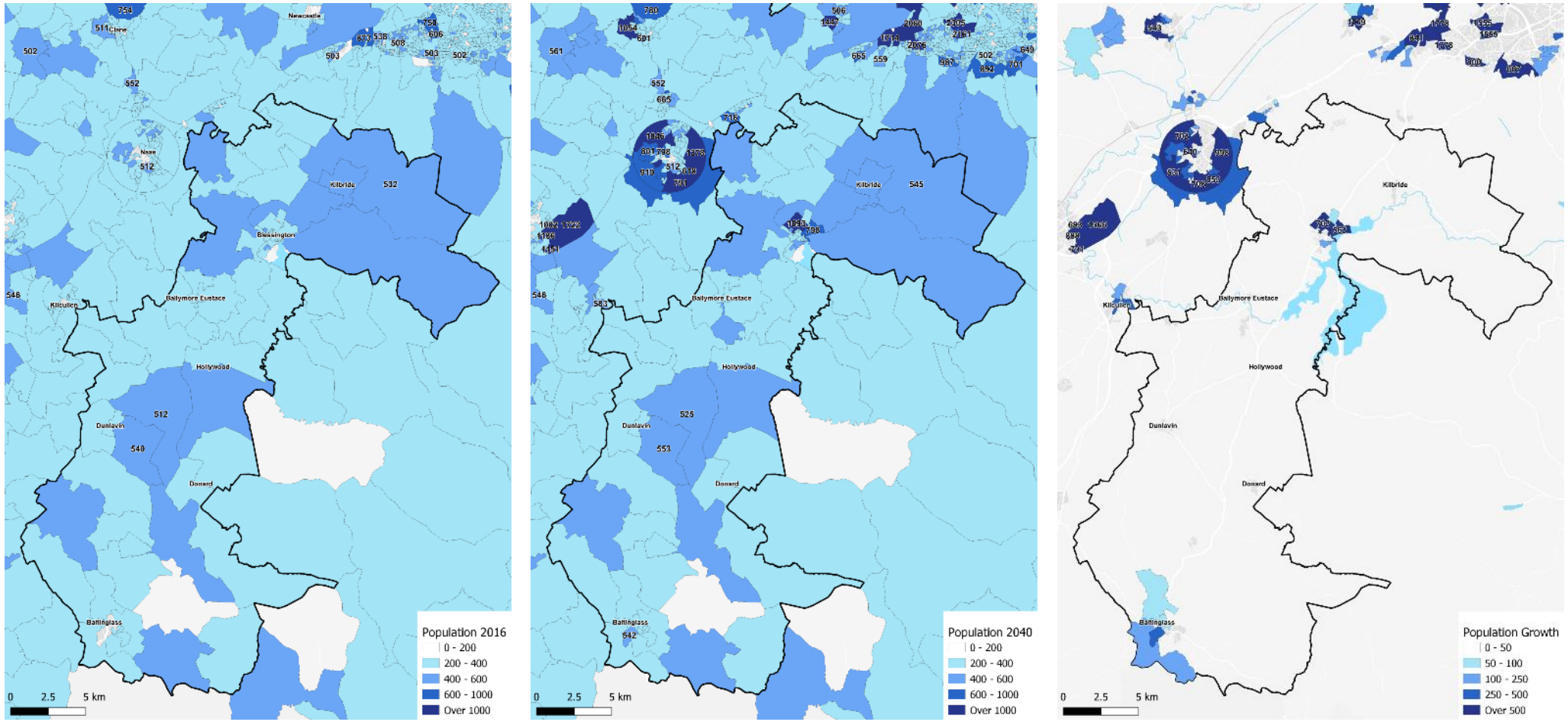


Figure 4.1: Projected population change in the West Wicklow and East Kildare study area (2016 to 2040)

Population in the study area is concentrated within towns and villages. Growth in the region is expected to follow this trend with only Blessington and Baltinglass forecasting notable growth in population between 2016 and 2040. It should be noted that Naas is also forecasting a relatively large growth in population, and while this is not within West Wicklow and East Kildare study area it will undoubtedly have an impact on the study area and trips undertaken.

However, while the population growth is significant in the context of the town's current sizes, for example Baltinglass is expected to see a 30% growth in population in the period, these are still relatively small increases in terms of raw figures with this equating to just 1,391 more people in the town. This is notable, but would not have the same impact on the network as it might in an already heavily-populated area or one where the transport network is at capacity (which will be shown to not entirely be the case in this study area in general).

These areas of growth are in line with what was forecast in the Wicklow County Development Plan 2016-2022, which sets out the overall strategy for the planning and sustainable development of County Wicklow for the plan period and beyond. The town of Blessington within the study area has been identified as a settlement within the Core region to have undergone rapid commuter-focused residential expansion over the last decade, without equivalent increases in jobs and services. As highlighted in the RSES section on population growth, growing commuter towns shall be at a rate that seeks to achieve a balancing effect and shall be focused on consolidation and inclusion of policies in relation to improvements in services and employment provision, to be set out in the core strategies of county development plans. Blessington is one of the towns recording the highest growth rates in the country over the last ten years (>38%), which has lower levels of employment provision.

4.1.3 Employment

Figure 4.2 presents the 2016 employment, 2040 employment, and projected employment growth for the West Wicklow and East Kildare study area from 2016 to 2040.

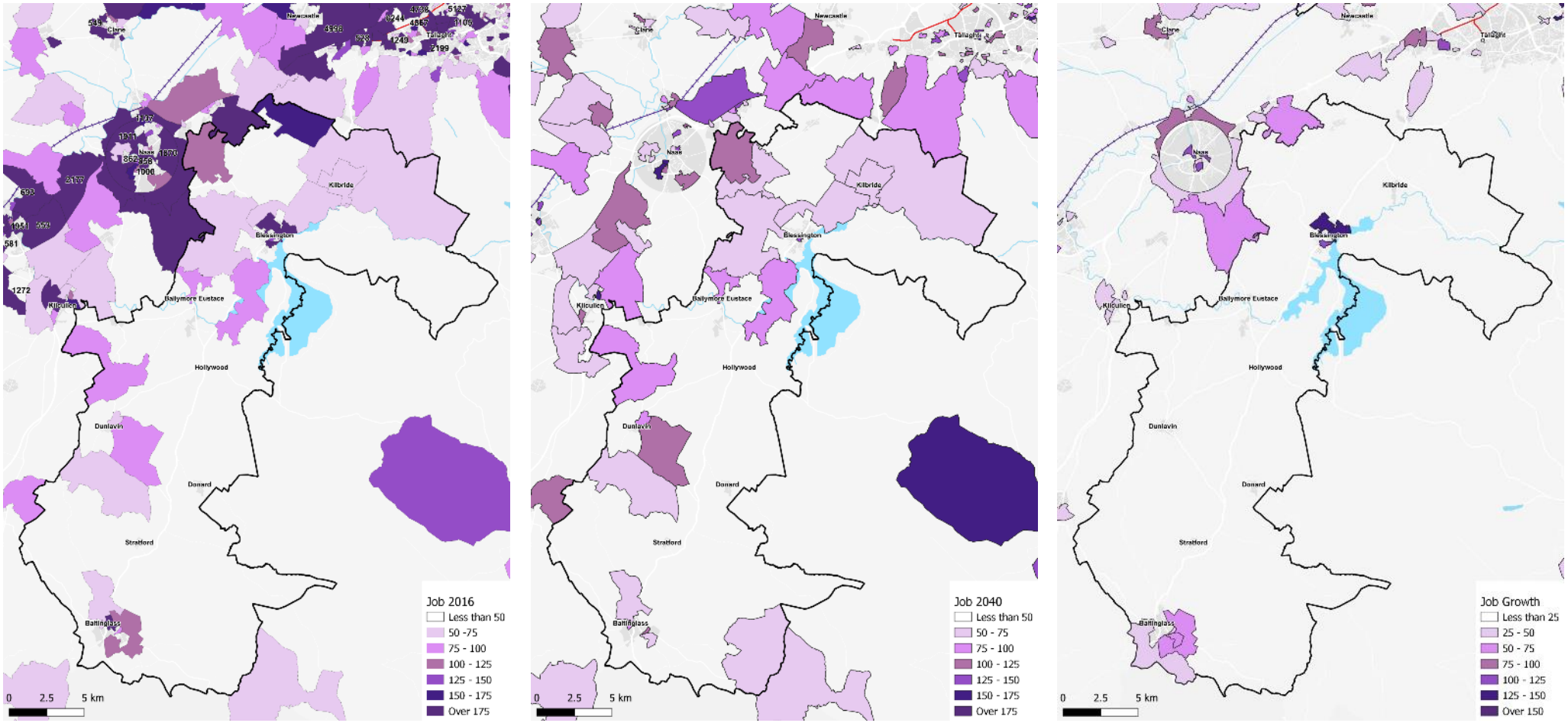


Figure 4.2: Employment growth in the West Wicklow and East Kildare study area (2016 to 2040)

Growth in employment is broadly in line with growth in population, with Blessington and Baltinglass seeing the bulk of job growth from 2016-2040. There is also a cluster of employment to the North East of the study area in Naas and the surrounding areas of Johnstown, Kill, and Sallins. In terms of growth, the trends are again broadly similar to those of population growth, the highest zone of growth is in Blessington with significant growth also occurring in Baltinglass, however growth in Baltinglass overall is larger than that in Blessington but the growth in Blessington is more concentrated into zones. Overall, Baltinglass is projected to see an increase of 34% when compared to 2016. As with population, this is significant, but not hugely concerning from a transport perspective.

4.1.4 Education

Figure 4.3 presents the 2016 education levels, 2040 education levels, and projected education growth for the West Wicklow and East Kildare study area from 2016 to 2040.

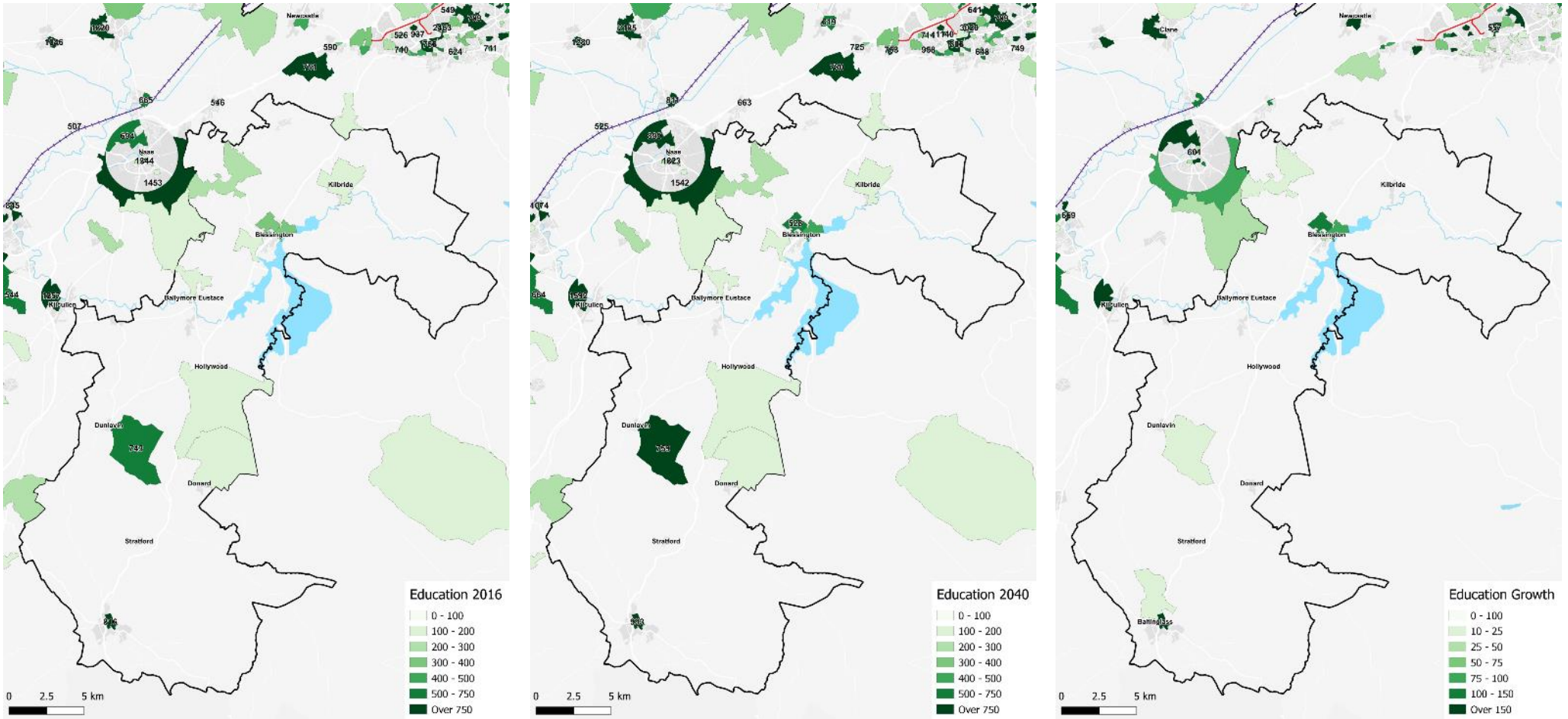


Figure 4.3: Education growth in the West Wicklow and East Kildare study area (2016 to 2040)

As with population and employment, education places are mostly concentrated within Blessington and Baltinglass, however there are also schools in Dunlavin, Donard, Ballymore Eustace, and Kilbride. Also, as with the previous two sections there are areas with high numbers of education places around and within Naas. Again, the areas of highest growth within the study area are Blessington and Baltinglass, as well as some growth in Dunlavin. The three areas of growth (Blessington, Baltinglass, and Dunlavin) can all be attributed to the three secondary schools within the study area, these being: Blessington Community College, Heywood Community College (Baltinglass), and St. Kevin's Community College (Dunlavin). Naas also sees significant growth between 2016-2040. As with the previous two sectors also, the growth is significant but not a serious concern for the transport network, Baltinglass sees a growth of 29% but this equates to approximately 300 people.

4.2 Proposals for future transport interventions

4.2.1 Overview

A range of proposals for future transport interventions have been highlighted in previous policies, strategies and plans. This section provides a brief summary of those schemes which will be considered when identifying options to serve demand in 2042.

4.2.2 Roads

The Wicklow County Development Plan (2016-2022) outlines road network improvements proposed for the study area. The N81 is a strategic secondary road running through the middle of the study area. It is outlined in the plan that the N81 has previously been somewhat overlooked in terms of investment. TII National Road Design Office characterise the N81 as having poor horizontal and vertical alignment. The route consists of a single lane carriageway without a hard strip or hard shoulder along sections of the roadway. In 2008, the National Roads Design Office began the process of assessing the possibility of upgrading this road network between Tallaght and Hollywood Cross incorporating a bypass of the town of Blessington. There are, therefore, future objectives for the N81 outlined below:

- Tallaght to Hollywood Cross upgrade;
- Upgrades at Deering's and Hangman's bends; and
- Local alignment and width improvements south of Hollywood Cross.

Moreover, there are also Regional Road objectives within the study area. These include;

- Improvement to the R747 (Arklow-Aughrim-Tinahely-Baltinglass), including re-alignment or bypassing of existing sections where necessary;
- To improve regional road links between Wicklow and other counties, in particular the Blessington to Naas route and routes from Dunlavin and Baltinglass to the M9/N9;
- To continue to improve regional roads to the appropriate standards consistent with predicted traffic flow and in accordance with Government policy and the Roads Programme adopted by the Council. New and existing road space will be allocated to provide for bus, cycle and pedestrian facilities;
- To improve the regional road links between the national road network and the growth centres of County Wicklow in order to cater for anticipated additional traffic flows and to facilitate the economic development of these settlement.

4.2.3 Public Transport Network

As shown in Figure 4.4, the Luas Network terminates closest to the study area in Tallaght and Saggart (approximately 14km from Blessington).

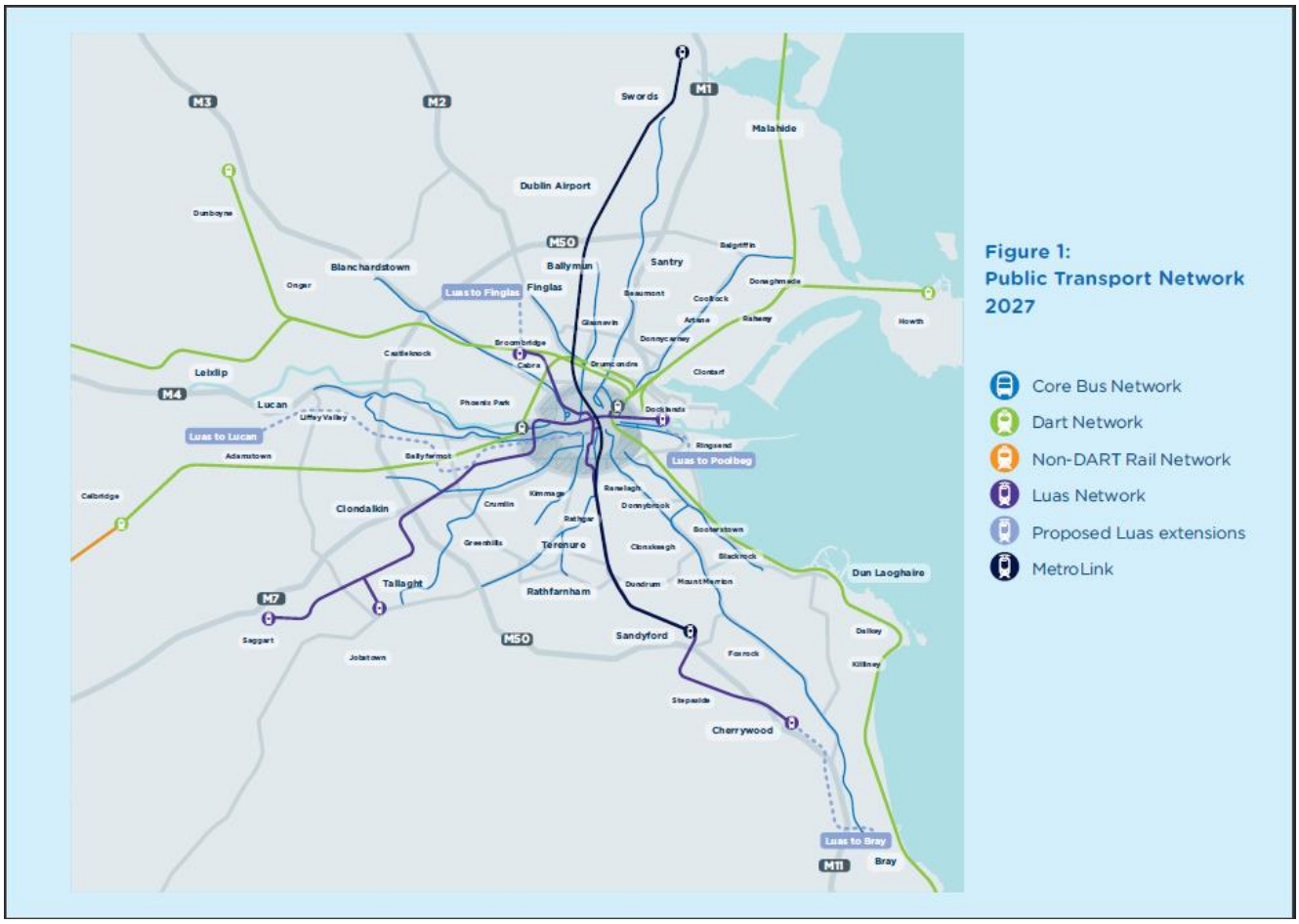


Figure 4.4: Proposed Public Transport Network 2027. Core Bus Corridors Project, Report, June 2018

As outlined in Section 2.2.4, the New Dublin Bus Network will impact the study area, with an hourly service proposed between Ballymore and Tallaght via Blessington and peak hour services direct to Dublin City.

Table 4.2: Local BusConnects services in the West Wicklow and East Kildare study area

Route Type	Service	Route	Weekday Peak Headway (Mins)
Local routes	L44	Ballymore Eustace-Blessington-Tallaght	60 mins
Peak only / express route	P43	Ballyknockan-Blessington-Dublin City Centre	Twice daily
	P44	Ballymore Eustace - Blessington - City Centre	Twice Daily

It is assumed that the interurban Bus Eireann service 132 will continue to operate in the study area, as will the Ring a Link service which is a flexible service connecting the main towns to their surrounds.

The Wicklow County Development Plan 2016-2022 recognises the progress made in the national public transport network over the past number of years, while acknowledging that deficiencies still exist within County Wicklow. Over the lifetime of the previous two development plan periods (2004 – 2016), the delivery of public transport failed to keep pace with the population growth of the County, reinforcing the already well-established car-based commuting pattern towards Dublin. As new employment opportunities develop in the County, the challenge will also be to make these towns more accessible.

The public transport objectives of the plan predominantly focus on the east of Wicklow. As the study area is home to clusters of rural towns, the Wicklow Rural Transport Initiative is pertinent to the study area. This initiative was launched in 2003 to enable people living in rural area to have access to a responsive travel system,

contributing towards more sustainable rural communities. The main objective is to support and facilitate the existing service provided and encourage the further development of the Wicklow Rural Transport Initiative.

4.2.4 Cycling

The GDA Cycle Network Plan forms the strategy for the implementation of a high quality, integrated cycle network for the GDA. In addition, the Wicklow County Development Plan (2016-2022) includes following cycling and walking objectives to be implemented in the study area to promote sustainable and healthy forms of transportation.

- TR9 To improve existing or provide new foot and cycleways on existing public roads, as funding allows.
- TR10 To require all new regional and local roads to include foot and cycleways, except in cases where shared road space is provided.
- TR11 To facilitate the development of foot and cycleways off road (e.g. through open spaces, along established rights-of-way etc), in order to achieve the most direct route to the principal destination (be that town centre, schools, community facilities or transport nodes), while ensuring that personal safety, particularly at night time, is of the utmost priority.
- TR12 To encourage the provision of secure covered bicycle-parking facilities at strategic locations such as town centres, neighbourhood centres, community facilities and transport nodes.
- TR13 To facilitate the development of a cycling and walking amenity routes throughout the County.

The ambitious proposal to overhaul the cycling network within the study area is presented in Figure 4.5. However, due to the scale of the study area, inter-urban cycling may still not be appropriate between all settlements. While the proposals would make cycling more attractive to an extent it may still not be a viable transport option between Baltinglass and Blessington for example as the route would be around 30km.

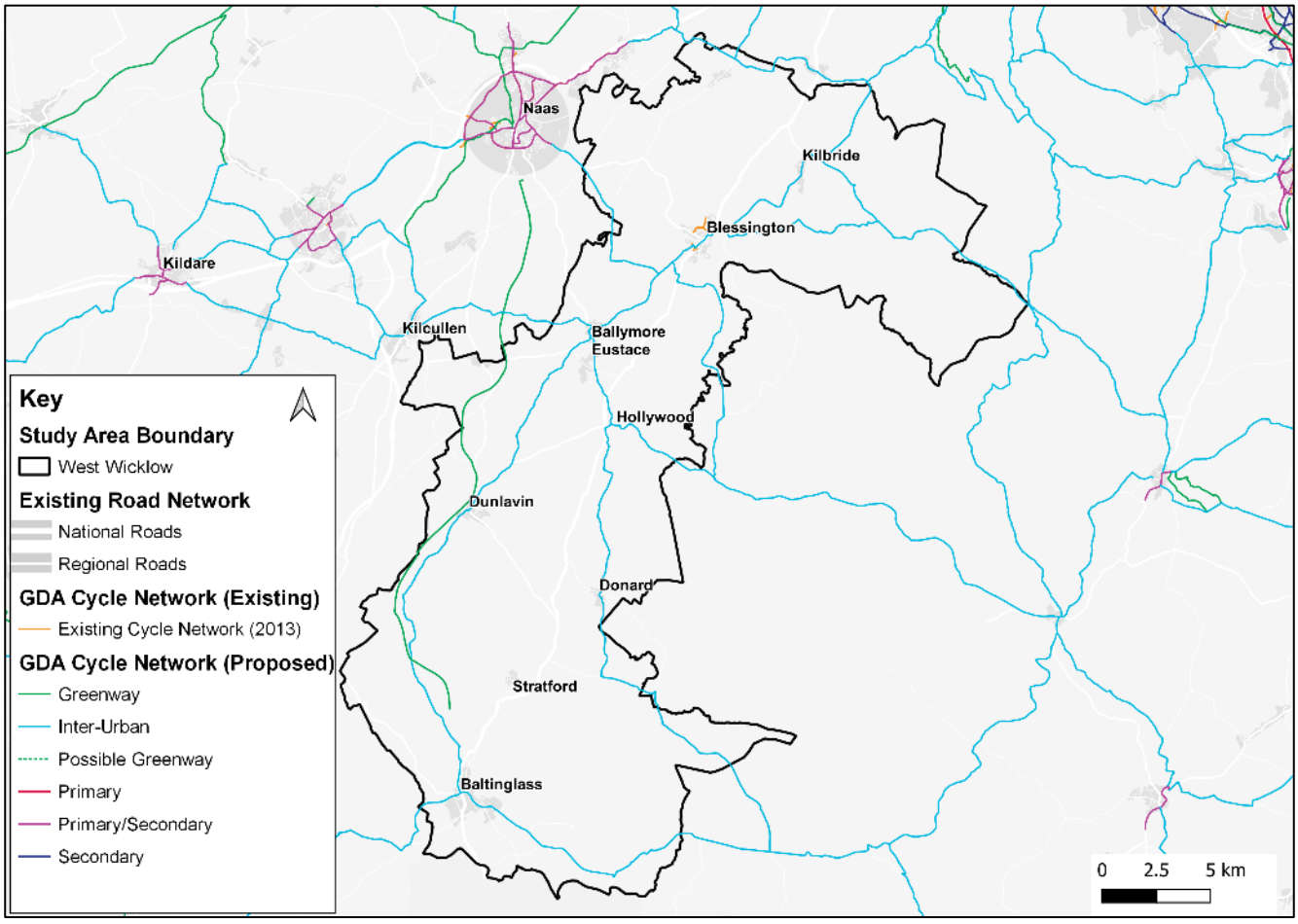


Figure 4.5: West Wicklow and East Kildare proposed cycle network

4.3 Future travel patterns

4.3.1 Model definition

The assessment of future travel demand is based on the outputs from the NTA Eastern Regional Model (ERM).

The ERM represents a 2042 scenario including:

Five time periods:
- AM 07:00 to 10:00
- Lunch time 10:00 to 13:00
- School run 13:00 to 16:00
- PM 16:00 to 19:00; and
- Off peak 19:00 to 07:00.

Three mode classes;
- Public transport (bus, Luas, rail and light rail);
- Road (cars, LGV, HGV and taxi); and
- Active modes (walk and cycle).

Five trip purposes:
- Employers Business;
- Education;
- Commute;
- Other; and
- Retired.

Do Minimum

The model run represents a 'Do Minimum' scenario which includes proposed development, all existing transport provision, plus a number of changes to the transport network. Details of the transport schemes included are provided in Appendix A.

The model trips are assigned to a constrained network, meaning route choice of each trip is affected by capacities and journey times (e.g. impacts from queuing) in the model in relation to all the other trips. This means there is a likelihood that due to the volume of trips in the model, some journeys use routes through local roads, instead of using the key strategic movements which are the focus of this study.

The ERM has been used to understand some of the key transport patterns in 2042 such as mode share, trip lengths, origins and destinations, route capacity and volume to capacity. These are described in the subsequent paragraphs in this section, and this information will be used to support the option development process.

4.3.2 Origins and destinations

Spatial analysis has been undertaken on trips that have an origin and/or destination within the study area, using the demand outputs from the model.

Trips from the West Wicklow and East Kildare study area

Figure 4.6 presents the origins and destinations of trips which originate within the study are in the AM peak. For trips which originate in the study area in the AM peak, the main destinations are:

- Naas;
- Tallaght;
- Citywest; and
- The area around Newbridge to the west of the study area.

The trip demand analysis shows that the majority of trips either flow west through the study area towards Naas and around Newbridge, or north on the N81 towards Tallaght, Citywest and Dublin City Centre. This is broadly to be expected and indicates that most people are commuting from the small towns and villages in the study area towards areas of employment and attractions in the more urbanised areas of Tallaght, Citywest, and Dublin City Centre and the larger town of Naas. The map also shows that the biggest trip generators are Blessington and

Baltinglass, again expected due to the rural, low population nature of the rest of the study area when compared to these two more populous towns.

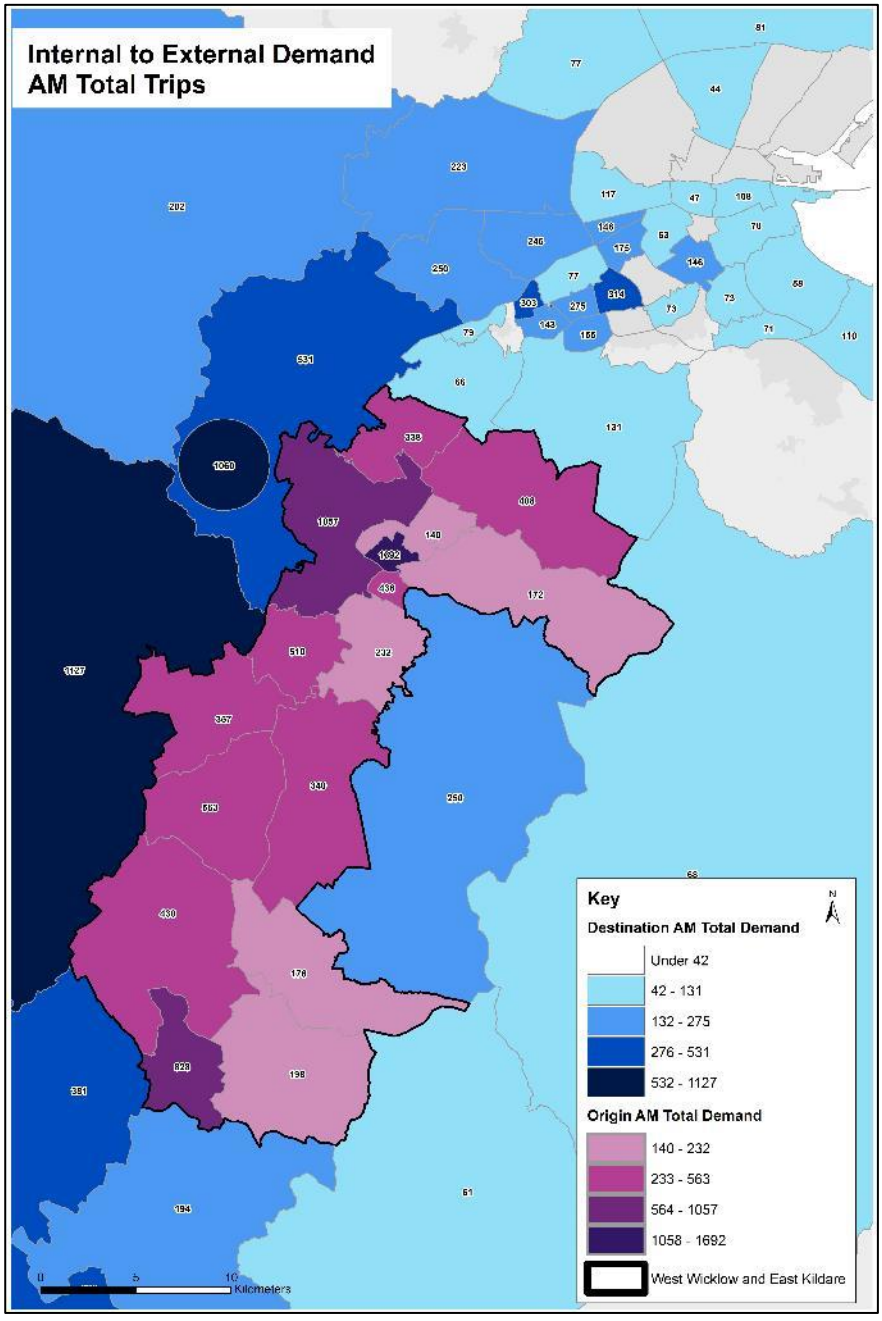


Figure 4.6: Total trips by all modes from the study area (AM peak)

Trips to the West Wicklow and East Kildare study area

Figure 4.7 presents the origins and destination of trips which have destinations within the study area in the AM peak. The figure shows that the main movements into the study area in the AM peak originate from:

- Naas;
- The area around Newbridge to the west of the study area; and
- The area around Tullow to the south of the study area.

This analysis demonstrates that the majority of trips into the study area are either from the largest town in the immediate surrounding (Naas) or from areas with small towns and villages to the west and south of the study area. The largest trip attractors in the area are the towns of Blessington and Baltinglass. Most likely these trips are travelling to work, school or college within these towns. There is a Community College in the heart of Blessington and Baltinglass has two schools; Scoil Chonglais and Scoil Naomh Iosaf. These would all be AM peak trip attractors to those living in areas immediately surrounding the study area.

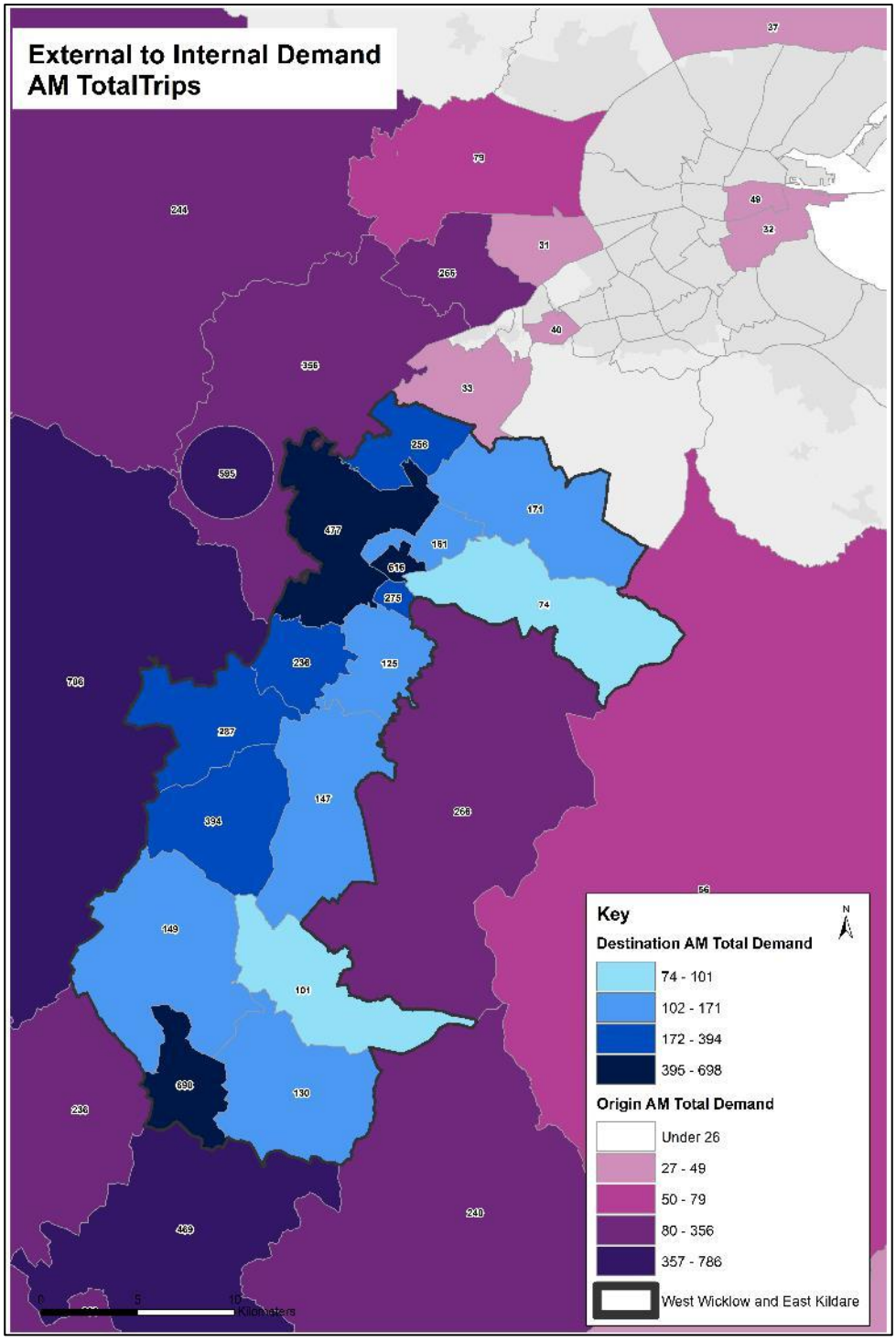


Figure 4.7: Total trips by all modes to the study area (AM peak)

Trips within the West Wicklow and East Kildare study area

Figure 4.8 shows the internal movements in the West Wicklow and East Kildare study area for all modes in the AM peak where the number of trips between any two zones is greater than 10.

The internal movements predominantly move radially and the majority of trips are relatively short in distance, although there are some longer internal trips made between:

- Baltinglass and Blessington;
- Baltinglass and Dunlavin;
- Blessington and Donard; and
- Blessington and Dunlavin.

Internal movements with the highest level of demand are between:

- Surrounding small towns and Blessington;
- Surrounding small towns and Baltinglass;
- Surrounding small towns and Dunlavin; and
- Blessington and Ballymore Eustace.

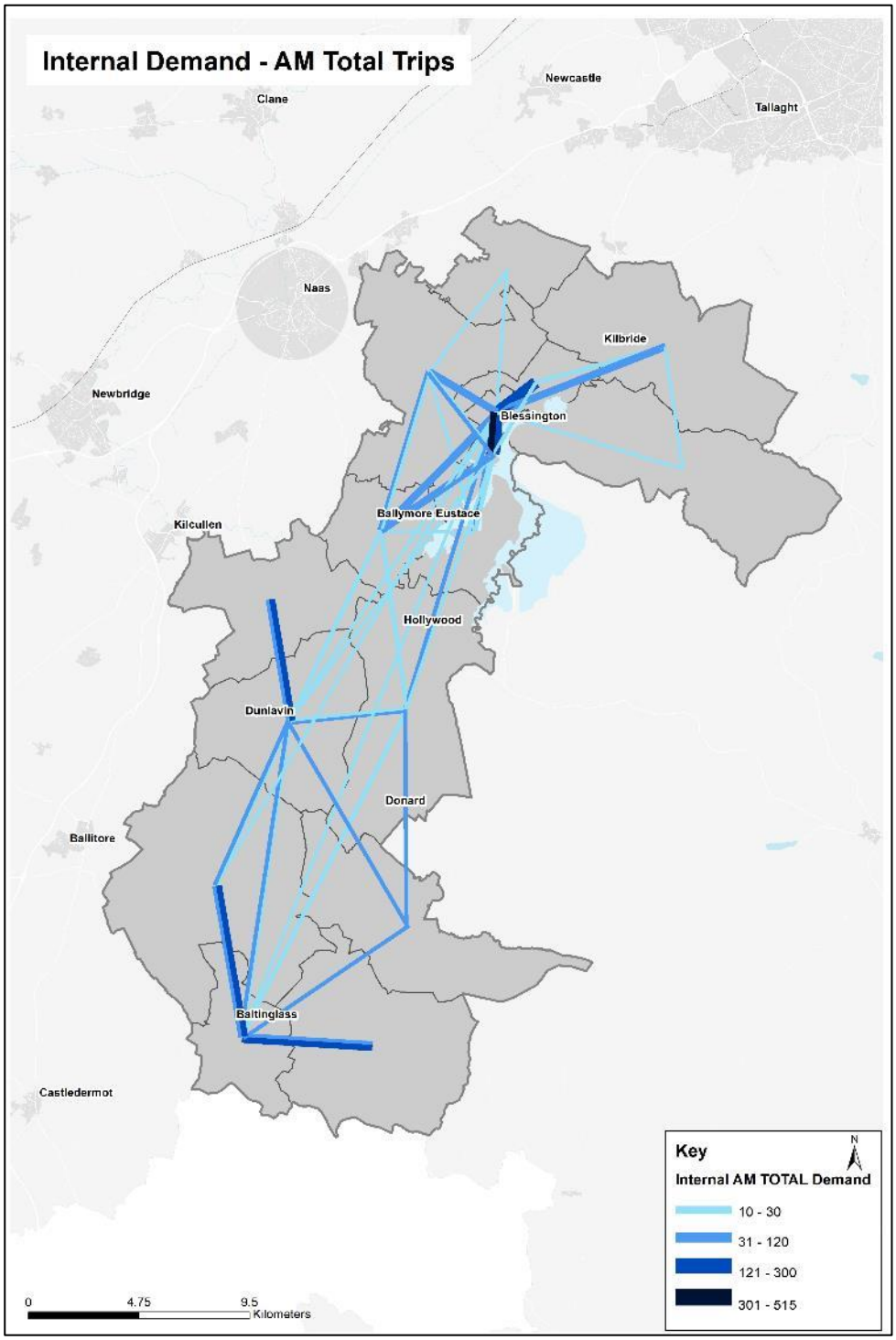


Figure 4.8: Total internal trips within the study area (AM peak)

Trip patterns have been disaggregated by mode where either the origin or destination is within the West Wicklow and East Kildare study area and the other origin or destination is outside the study area. Trips have been categorised as car, public transport and active mode trips. Maps are provided in Figure 4.10 for the AM peak.

Overall, these three sets of maps show the dominance of private car usage for trips within the study area as well as to and from the study area. There are notable active travel levels within Blessington itself as well as notable levels of public transport trips going out of the study area from Blessington. However, car usage is the most prevalent form of transport within the study area by a considerable margin.

4.3.3 Mode Share

Mode share data has been extracted from the model for trips originating in the West Wicklow and East Kildare study area for car, public transport, cycling and walking trips. This has been spatially analysed for the AM peak and 24-hour periods. Overall, this data shows:

- Car mode share is significant and covers the vast majority of trips across the region, with the majority of the area seeing car mode share over 80%;
- Public transport mode share is low in the majority of the area (below 10%), with some peaks in the more urbanised towns;
- Walking makes up less than 10% of trips in the majority of the study area, except for in and around Dunlavin where it is between 12-19%; and
- Cycling makes up an extremely small number of trips in the study area, never going above 3.2% in the AM and below 2% in the 24-hour period.

Figure 4.9 shows the mode share of car, public transport, walk, and cycle for the AM period.

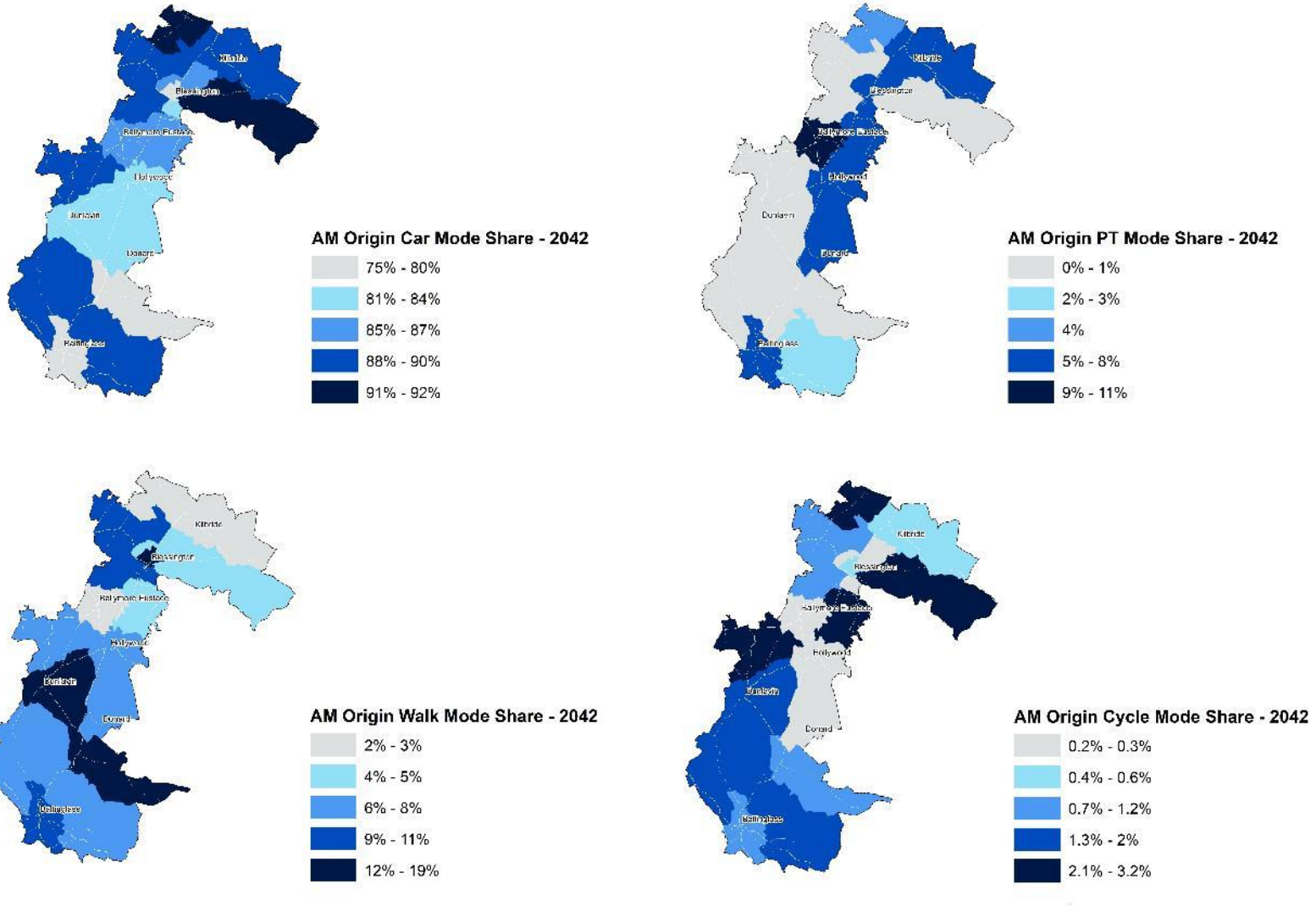


Figure 4.9: AM origin mode share, 2042

4.3.4 Capacity by mode

Road

Figure 4.10 identifies junctions within the West Wicklow and East Kildare study area that experience a volume over capacity ratio higher in 60% in the forecast year.

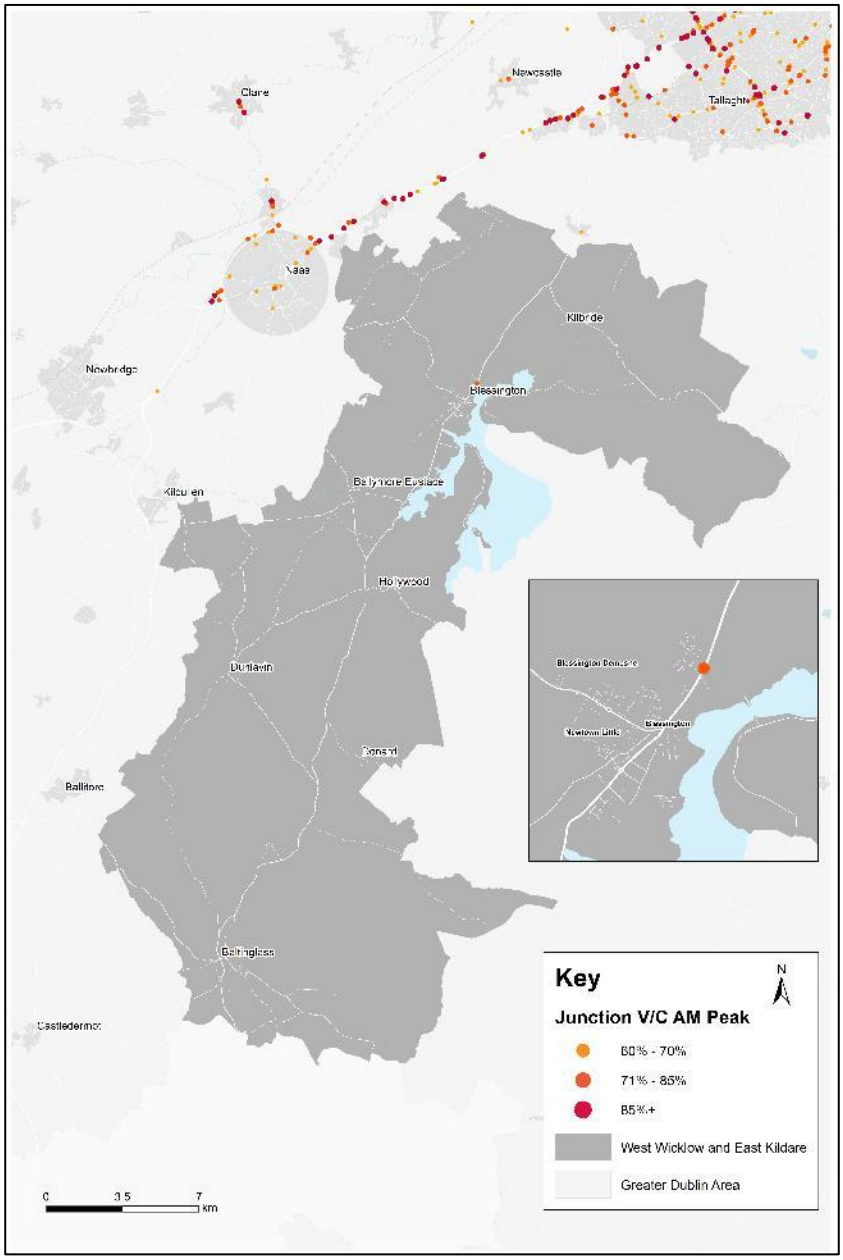


Figure 4.10: AM peak junction capacity, 2042

As can be seen above, with the exception of 1 junction to the north of Blessington, the N81 and the entire road network in West Wicklow and East Kildare operate within capacity and thus offer some options that can be implemented without putting the network over capacity. The area around Naas as well as the N7 operate far closer to capacity. Then, as would be expected, the junctions get busier the closer to Central Dublin you are travelling with Tallaght seeing far more congestion. This shows that in the interest of allowing people to avoid congestion, it may be worth intercepting trips along the N81 from area before they can go past Tallaght and into the most congested areas.

Bus

Metropolitan bus services are found to be operating over capacity in 2042 as they approach Tallaght and the city centre (from Blessington, north). In addition, the interurban Bus Eireann service (132) is found to be operating over capacity before it reaches the study area and along the length of the N81. This service currently operates only five times a day and does not drop off and pick up at every stop on route.

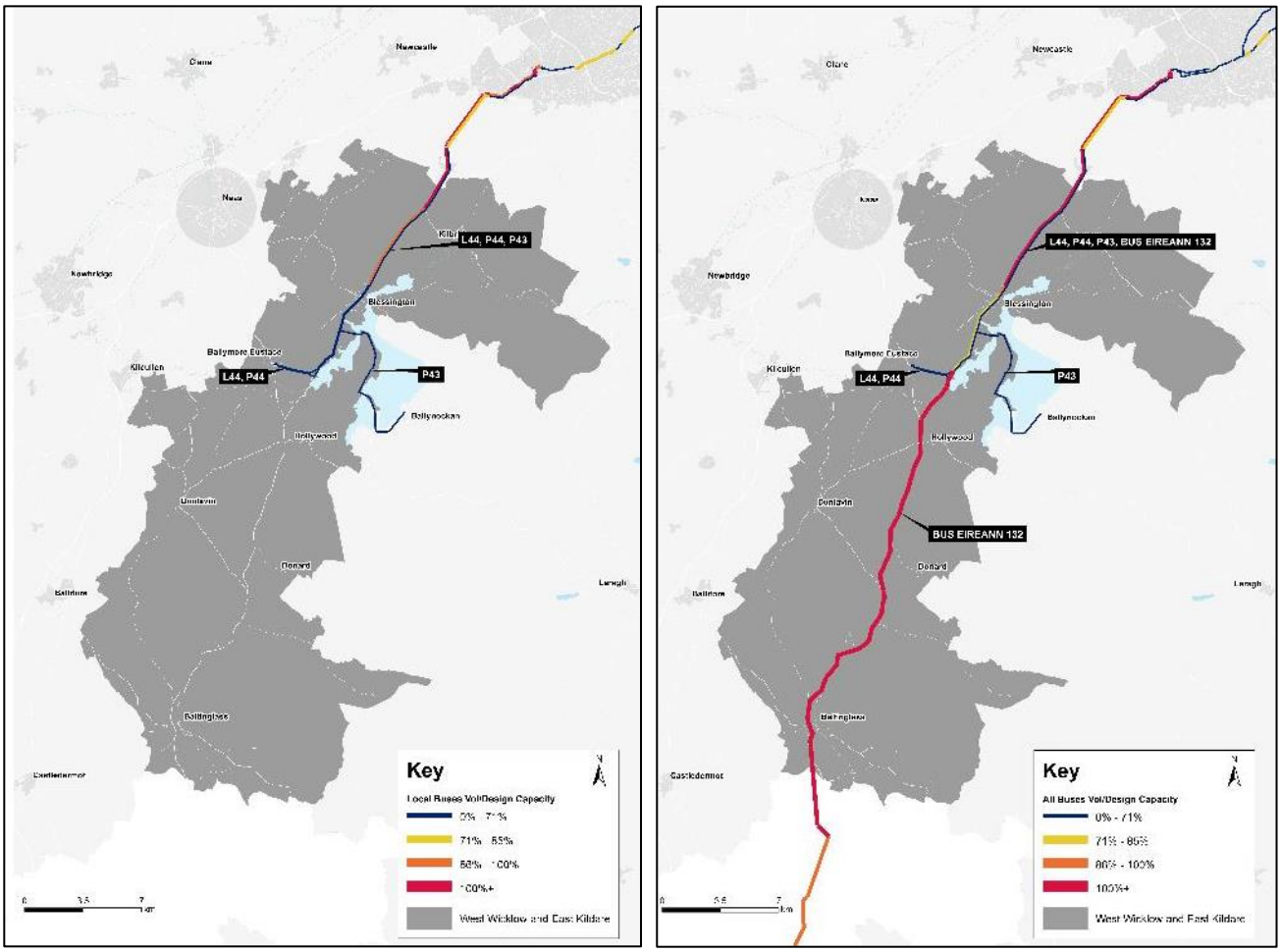


Figure 4.11: Capacity of Bus Routes (2042)

4.3.5 Trip Lengths

Data on the distribution of trip lengths for the West Wicklow and East Kildare study area has also been extracted from the model. The data covers the years 2016 and 2042, and is split into car, public transport, cycling and walking trip modes.

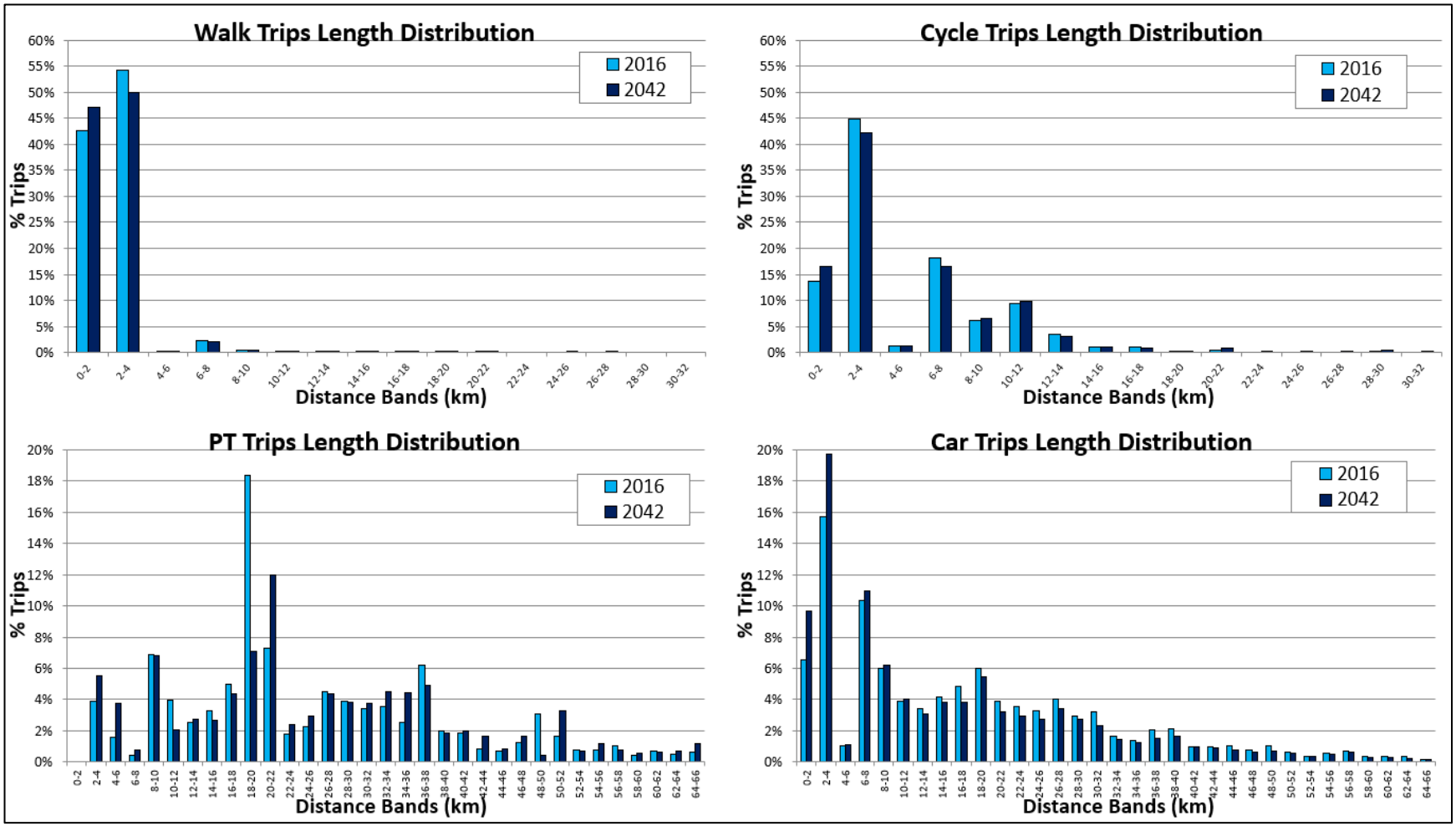


Figure 4.12: Trip length distribution by mode *(car and PT trips over 66km have been excluded from the graphs as trip numbers are negligible)*

Data on the distribution of trip lengths for the West Wicklow and East Kildare study area has been extracted from the model for the 2016 and 2042 forecast year. It is split by mode and is presented in Figure 4.12.

Overall, the data shows:

- Car – increase in short distance car trips between 2016 and 2042. Over 30% increase for trips less than 4km;
- Walking and cycling – similar proportion of trip lengths generally, with a relatively small increase in shorter trips (0-2 km) and a decrease in some longer trips (2-4 km);
- Public transport– significant decrease in trips between 18 and 20km, largely offset by an increase in public transport trips between 2 and 4km and 20 and 22km.
- A large proportion of car trips from the study area are under eight kilometres in length, which provides opportunity for a large shift to public transport or active modes if improved facilities are made available.

4.3.6 Journey time by mode

According to Bus Éireann timetables, buses from Baltinglass to Tallaght take 55 minutes to complete the journey, this is compared to 40-45 minutes by car. However, while it could be argued that this trip time difference is manageable, it is made more unrealistic by the fact that buses from Baltinglass are between 2 and 3 hours apart from each other and the service has a limited stopping pattern. The low frequency of the buses makes this an unviable mode of travel for many people due to the waiting times that this could incur. The same is true for the journey from Blessington (also served by service 132) to Tallaght and the City Centre.

Due to the size of the study area and its distance from Tallaght and Dublin City Centre, cycling and walking are most viable for local trips within settlements and for leisure activities.

4.3.7 Bus speeds

Figure 4.13 presents the model output 2042 bus speeds for the AM peak. The figure shows that within the study area, the network for buses is flowing smoothly apart from one section in the centre of Blessington where traffic slows to between 5-15mph briefly. However, what this figure does show is the congestion and slow-moving traffic as you approach Dublin City Centre in Tallaght and Saggart. The figure also shows the amount of congestion and slow-moving buses within Naas.

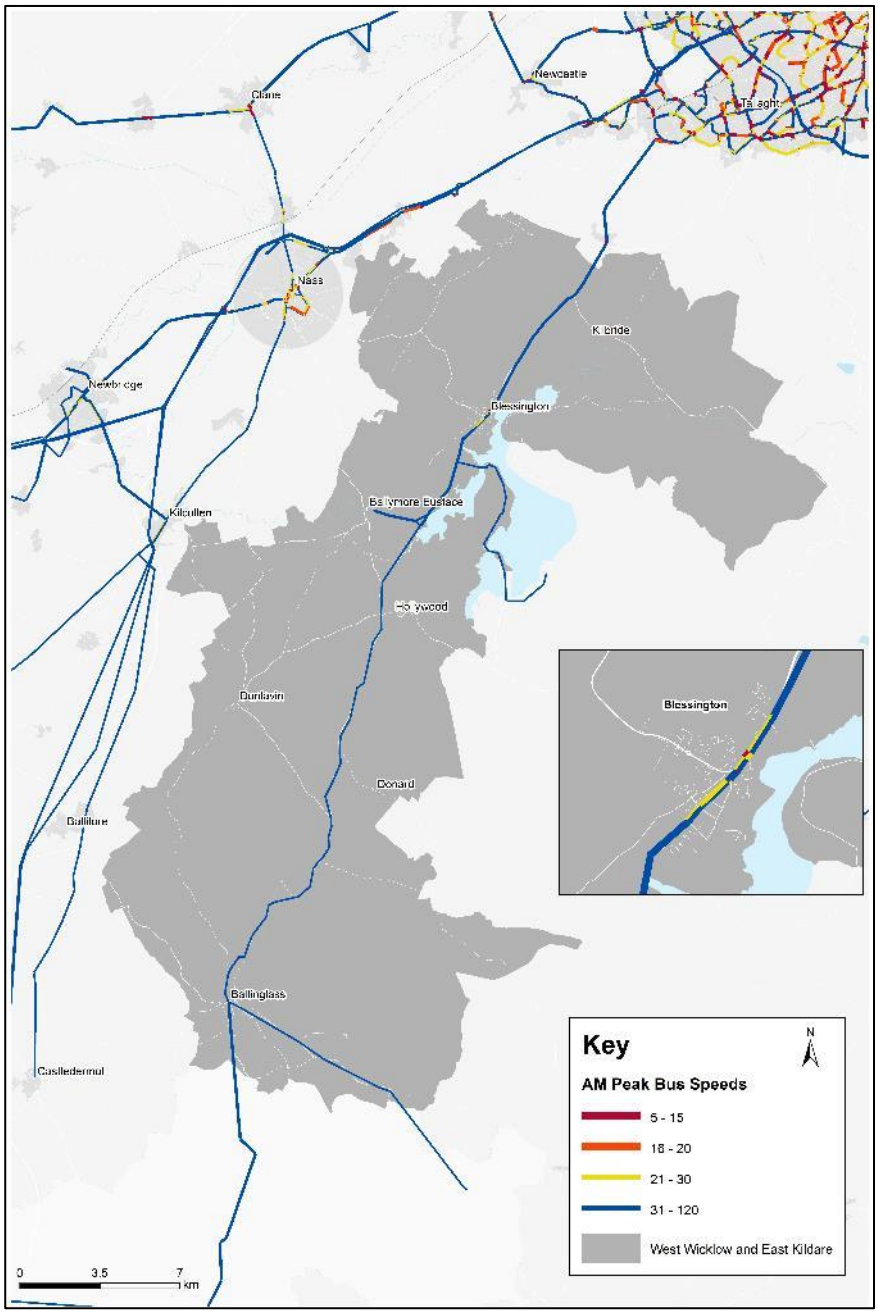


Figure 4.13: West Wicklow and East Kildare Bus Speeds

4.4 Mode shift analysis

The previous section has considered the estimated travel demand and pressures on transport provision in 2042. As well as the public transport network needing to accommodate public transport demand in 2042, there is also an ambition to cater for a mode shift from private car to sustainable modes such as walking, cycling and public transport. This section considers different levels of mode shift for key movement corridors through the study area.

4.4.1 Methodology

A process has been developed to simulate how a change in mode shift could increase the demand for public transport trips. The potential number of public transport trips from the shift can then be used to indicate the

level of public transport improvements which would be needed to accommodate a mode shift. A summary of the methodology is included in Appendix C.

This process has been undertaken for key movement corridors from and within the West Wicklow and East Kildare study area. The corridors were selected by identifying key origins and destinations using the data discussed in Section 4.3, alongside analysis of the network capacity utilisation, also presented in Section 4.3. As the study area is approximately 30 km from Dublin City Centre, and a number of trips are internal (within and between) local towns (Blessington and Baltinglass in particular), information is also presented for these movements. The key movement corridors are:

- Study area (Blessington) to Naas;
- Study area (in particular Baltinglass and Blessington) to Tallaght and Dublin City Centre; and
- Internal to the study area (Baltinglass to Blessington).

For the study area to Dublin City Centre, model zones have been grouped into sectors and districts. The district boundaries form the screenlines for further analysis. Therefore, sectors are grouped into districts in accordance with where the screenlines are required. The screenlines were selected to disaggregate key movements originating and ending in the main towns in the study area; Blessington and Baltinglass, due to the large size of the study area. The 2042 model demand outputs provide a baseline number of trips between each pair of sectors for car, public transport, cycle and walk. For a specified percentage car mode shift, the process estimates how many of the car trips become walk, cycle or public transport trips.

The distance between each pair of sectors has been estimated by calculating the crow flies distance between the centroids of each sector. This allows the mode shift to be based on distance, as shorter trips are more likely to become walking trips and longer trips are more likely to become public transport trips. The distances have been divided into three bands based on the trip length distribution information in Section 4.3.5. Each sector to sector movement is then allocated one distance band.

4.4.2 Results

The information in this section outlines high-level, indicative results to inform option development, by providing order of magnitude changes in demand resulting from an assumed mode shift. Further analysis of mode shift and associated changes in demand for public transport has been undertaken in the strategic analysis for the GDA as a whole as part of the wider strategy development process.

Study area to south west Dublin and City Centre

To identify demand for public transport on the radial corridor, study area model zones have been grouped into districts as shown in Figure 4.14. Districts include:

- Dublin City Centre;
- Tallaght / south west Dublin;
- Blessington and wider area; and
- Baltinglass and wider area.

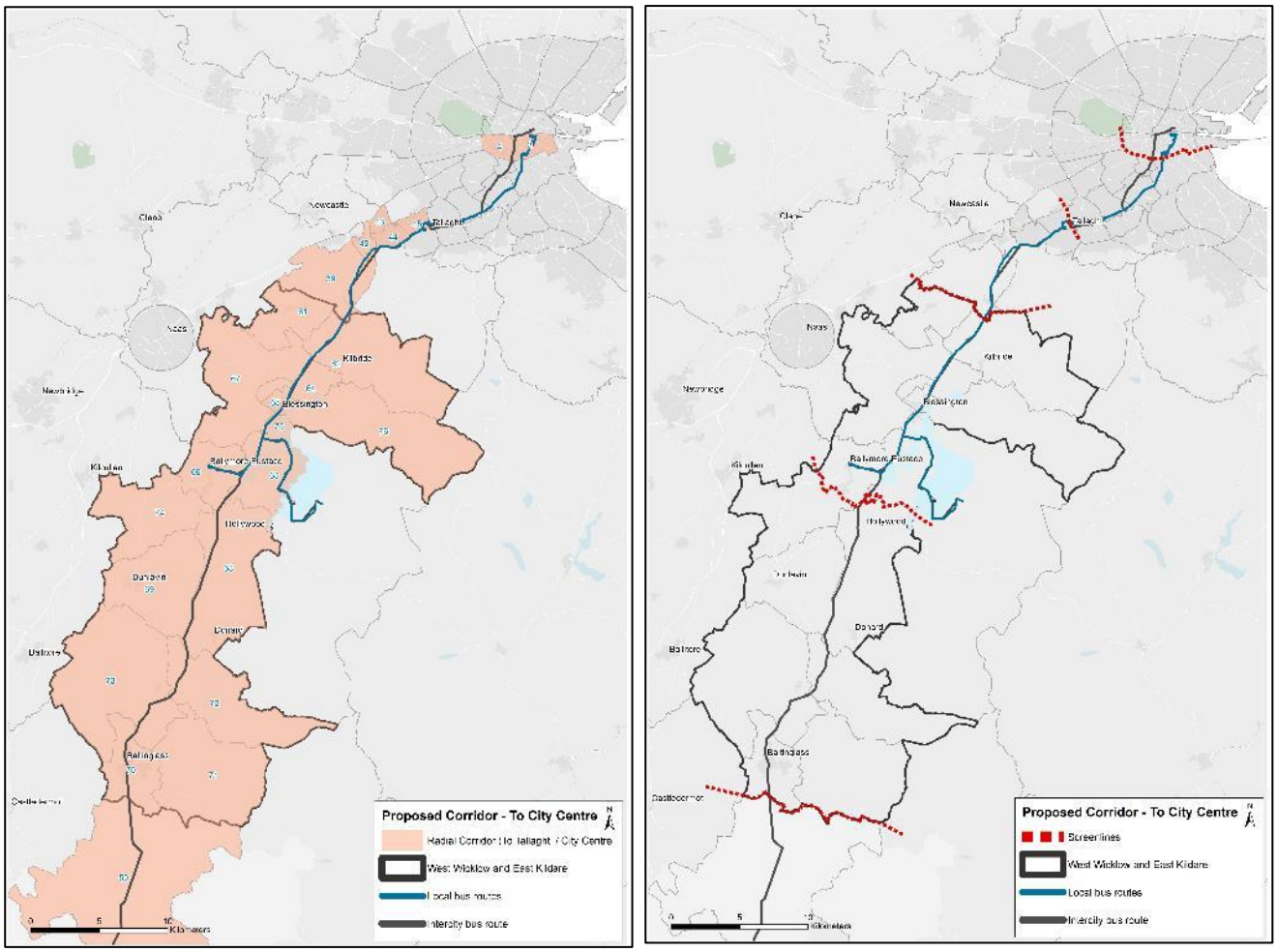


Figure 4.14: City Centre corridor and screenlines

In line with the methodology outlined above, distance bands for trips between these sectors were then calculated to identify which proportion of shifted car trips shift to public transport. The results are outlined in Table 4.3Table 4.3.

Table 4.3: Mode splits by distance band for the corridor (AM peak)

Distance band (km)	Walk	Cycle	Public transport
0-3.5	72%	7%	21%
3.5-7.8	24%	25%	50%
7.8+	0%	4%	96%

Thereafter, the number of public transport trips for different levels of mode shift have been calculated for all the districts in the corridor and summarised in Table 4.4.

Table 4.4: Car mode shift for the study area to Dublin south west and Dublin City Centre (AM peak)[5]

Car mode shift	Existing car demand	Existing public transport demand	Shifted public transport demand	Total public transport demand after mode shift
0%	750	200	0	200
25%	750	200	200	400
50%	750	200	350	600

According to the outputs from the model run, the car mode share in 2042 for trips between the study area and Dublin (City Centre and south west area) is almost 80%.

It should be noted that this mode share has been calculated for the corridor using the demand data output from the model run and is therefore underpinned by the same assumptions. It is anticipated that in order for a lower mode share to be achieved by the entire GDA, other study areas that are in closer proximity to Dublin City Centre and have good transport links, will need to achieve a significantly lower car mode share. This is to account for more rural areas in the GDA, including the West Wicklow and East Kildare study area where mode shift away from car is likely to be more difficult to achieve.

To consider public transport capacity on existing services, movements across screenlines have been analysed in more detail. A screenline is an imaginary line which enables movements which cross the line to be captured. The four screenlines shown in Figure 4.14, have been chosen to capture key movements along the corridor.

Movements between districts that cross each of the screenlines have been extracted for the analysis for the whole area, with the results provided in Table 4.5Table 4.5.

[5] Figures in this table have been rounded to the nearest 50

Table 4.5: Car mode shift by screenline (AM peak)[6]

Screenline	Car mode shift	Existing public transport demand		Shifted public transport demand		Total public transport demand after mode shift	
		NB	SB	NB	SB	NB	SB
City Centre	0%	n/a	100	n/a	0	n/a	100
	25%	n/a	100	n/a	100	n/a	200
	50%	n/a	100	n/a	200	n/a	300
Tallaght	0%	n/a	0	n/a	0	n/a	0
	25%	n/a	0	n/a	0	n/a	0
	50%	n/a	0	n/a	0	n/a	0
Blessington	0%	200	0	0	0	200	0
	25%	200	0	100	0	300	0
	50%	200	0	300	100	500	100
Baltinglass	0%	100	0	0	0	100	0
	25%	100	0	100	0	200	100
	50%	100	0	200	100	300	100

To achieve a car mode shift of 50%, provision for 500 trips would be required to cater for northbound demand from Blessington (to Tallaght area and the city centre), which is the highest level of demand across all of the screenlines.

Study area to Naas

Screenline analysis was not undertaken for trips between the study area and Naas, as trip numbers are low, and the origin of trips is predominantly Blessington.

[6] Figures in this table have been rounded to the nearest 100.

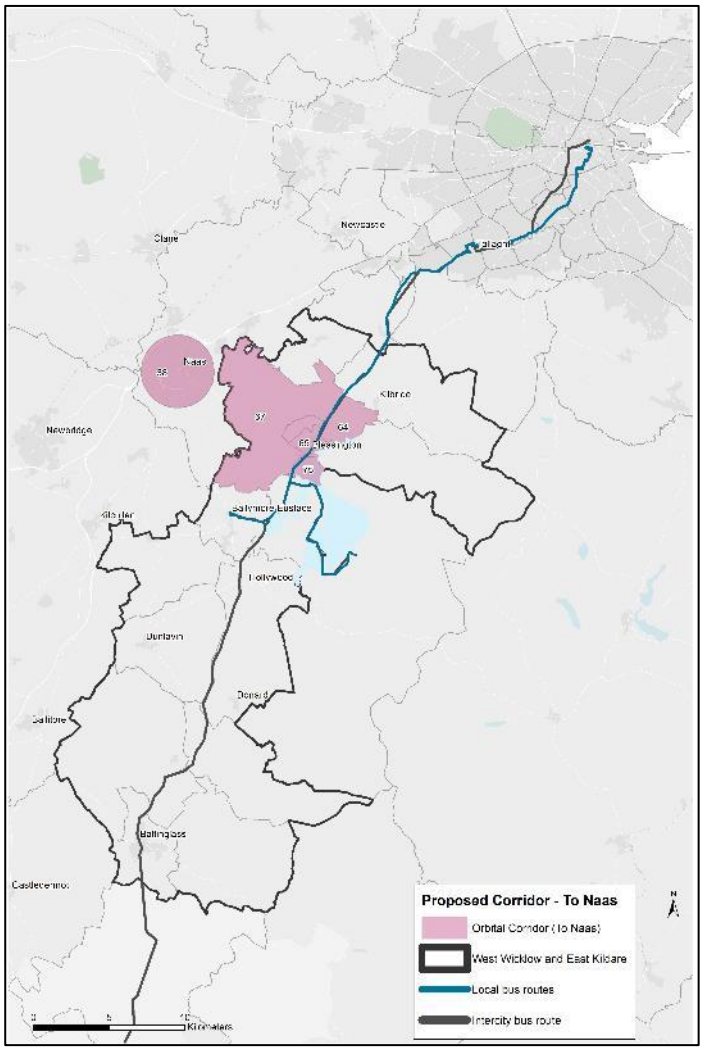


Figure 4.15: Naas demand corridor

The number of public transport trips for different levels of mode shift have been calculated between Blessington and Naas, in order to determine whether a new conventional bus service may be appropriate, and results are summarised in Tables 4.6 and 4.7. Note that there is no baseline public transport demand between the towns of Blessington and Naas as there is currently no direct service.

Table 4.6: Car mode shift for the corridor – Blessington to Naas only (AM peak)[7]

Car mode shift	Existing car demand	Existing public transport demand	Shifted public transport demand	Total public transport demand after mode shift
0%	600	0	0	0
25%	600	0	50	50
50%	600	0	100	100

[7] Figures in Tables 4.6 to 4.8 have been rounded to the nearest 50

Table 4.7: Car mode shift for the corridor – Naas to Blessington only (AM peak)

Car mode shift	Existing car demand	Existing public transport demand	Shifted public transport demand	Total public transport demand after mode shift
0%	350	0	0	0
25%	350	0	50	50
50%	350	0	50	50

Trips internal to the study area

As the study area is approximately 30km from Dublin City Centre, a high proportion of trips are internal; between and within the main towns, predominantly Blessington and Baltinglass. To identify internal demand for public transport, study area model zones have been grouped into sectors and districts as shown in Figure 4.16. Districts include:

- Blessington and surrounds; and
- Baltinglass and surrounds.

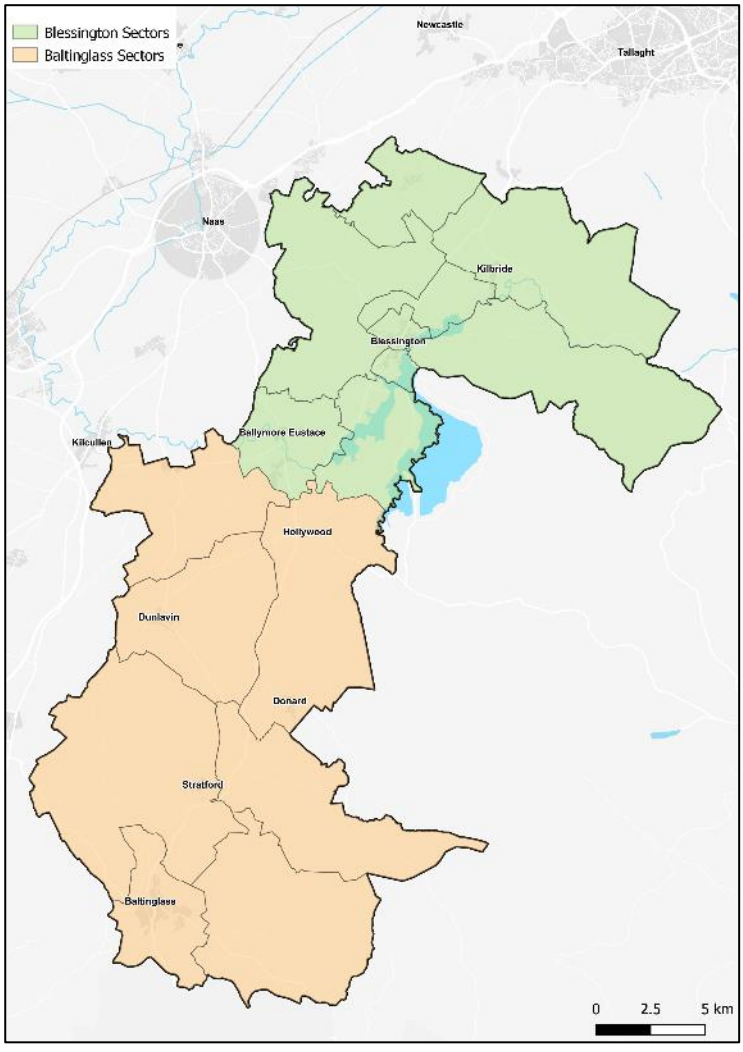


Figure 4.16: Baltinglass and Blessington areas

In line with the methodology outlined above, distance bands for trips between these sectors were then calculated to identify which proportion of shifted car trips shift to public transport. The results are outlined in Tables 4.8 to 4.10.

Table 4.8: Car mode shift for the corridor – Blessington area only (AM peak)[8]

Car mode shift	Existing car demand	Existing public transport demand	Shifted public transport demand	Total public transport demand after mode shift
0%	3,500	100	0	100
25%	3,500	100	250	350
50%	3,500	100	500	650

Table 4.9: Car mode shift for the corridor – Baltinglass area only (AM peak)

Car mode shift	Existing car demand	Existing public transport demand	Shifted public transport demand	Total public transport demand after mode shift
0%	3,200	100	0	100
25%	3,200	100	300	350
50%	3,200	100	600	650

Table 4.10: Car mode shift for the corridor – Baltinglass area to Blessington area (AM peak)

Car mode shift	Existing car demand	Existing public transport demand	Shifted public transport demand	Total public transport demand after mode shift
0%	300	0	0	0
25%	300	0	50	100
50%	300	0	150	150

The above tables demonstrate that a large proportion of trips are internal to the study area and take place within the local area. There are however currently very low numbers of public transport trips being undertaken, in particular between Baltinglass and the surrounding area, and Blessington and the surrounding area.

4.5 Summary

4.5.1 Issues

In the context of the GDA study area, limited growth is expected in the West Wicklow and East Kildare study area up to 2040 and beyond, concentrated within the main towns, particularly Blessington.

Currently within the study area there is a high car mode share. This is likely due to the rural nature of the study area and a lack of frequent public transport provision. Many of the public transport services provide uncompetitive journey times. There is also a low cycle mode share throughout the area, which is again most likely due to the rural nature of the area and the distance between key towns.

[8] Figures in Tables 4.9 to 4.11 have been rounded to the nearest 50

Analysis also shows that the public transport services are approaching or over capacity in the AM Peak, including routes into Dublin City Centre and the interurban bus route, this may further encourage people to make journeys by car instead of public transport.

4.5.2 Constraints

The main constraint to public transport and active mode provision in the study area is its rural nature and geographical spread. Due to the distances between key towns, public transport journey times for the main trip movements are as follows:

- Baltinglass to Blessington – in vehicle time 30 minutes;
- Blessington to Tallaght - in vehicle time 35 minutes (BusConnects service frequency will be every 60 minutes in the peak); and
- Blessington to Dublin City Centre – in vehicle time over an hour (BusConnects service frequency will be every 60 minutes in the peak).

Due to the distance between towns, walking and cycling is not an appropriate alternative for many journeys.

4.5.3 Opportunities

The opportunities for the West Wicklow and East Kildare study area lie in providing access to increased frequency public transport to encourage people to use these modes, as well as enhanced cycling provision to encourage people to use active modes for shorter journeys. There may be opportunities to encourage park and ride at Tallaght, before car drivers enter the more constrained Dublin City Centre area.

Improving cycle infrastructure and facilities, particularly within the towns of Baltinglass and Blessington will help to increase cycle mode share and therefore help to decrease the number of short trips made via car. Whilst providing interchange facilities at key transport hubs will facilitate modal shift away from car to active modes and public transport for longer length trips.

Modelled demand from the two key towns has been extracted and is presented below, in order to further refine and confirm the appropriateness of identified options. Key data which has been used to identify options include:

- The majority of trips are internal to the main towns Baltinglass and Blessington the majority of these trips are undertaken by car. There is an opportunity to encourage modal shift from car to bus or cycle for these movements.
- There are around 600 car trips from the Blessington area to the Naas area in the AM peak, but there is currently no bus service.
- There are 750 AM car trips from the study area to Dublin City Centre and the Tallaght/Citywest areas. There is an opportunity to encourage modal shift from car to bus along this corridor.

5. Options Development

5.1 Strategy objectives

To guide the identification of options for the West Wicklow and East Kildare study area, the NTA have outlined a set of overarching themes, outcomes and objectives for the GDA Transport Strategy; these are outlined in Table 5.1.

Table 5.1: GDA Transport Strategy theme, outcomes and objectives

Strategy theme	Strategy outcome	Strategy objective
Environment	An enhanced natural and built environment	To meet our environmental obligations by transitioning to a clean, low emission transport system through reducing car dependency and increasing walking, cycling and public transport use.
Community	Connected communities and better quality of life	To improve health and quality of life of our society by improving connectivity between people and places, delivering safe and integrated transport options, and increasing opportunities for walking and cycling.
Economy	A strong sustainable economy	Supporting economic activity and growth by improving the opportunity for people to travel for work or business where and when they need to and facilitating the efficient movement of goods.
Accessibility	An inclusive transport system	To deliver a high quality, equitable and accessible transport system, which caters for the needs of all members of society.

5.2 Options development

To identify options to serve travel demand in the study area in 2042, the following steps have been completed:

- A review of relevant planning and transport policies and strategies has provided the overall context for options, and identified current thinking in relation to the future transport network;
- A baseline analysis of the existing transport network identified existing network issues and opportunities;
- An analysis of planning and travel data from the 2040 Planning Sheet and a DM run of the ERM for 2042 provided insights into future travel demand and network capacity constraints; and
- A review of the GDA strategy objectives against which all options should be aligned.

The flow diagram outlined in Figure 5.1 summarises this option generation process. Two main categories of options were considered: those to enhance existing infrastructure and services and/or improve access to existing infrastructure and services; and new sustainable transport (public transport and active mode) infrastructure and services which could supplement the existing network to deliver a more holistic sustainable transport offering in the West Wicklow and East Kildare area.

Where enhancements and interventions have been identified for existing infrastructure and services, options previously proposed within existing local and regional strategies have been considered. Additionally, new options have been proposed for existing infrastructure where further enhancements could be beneficial to the wider accessibility of the study area, particularly due to the level of change proposed.

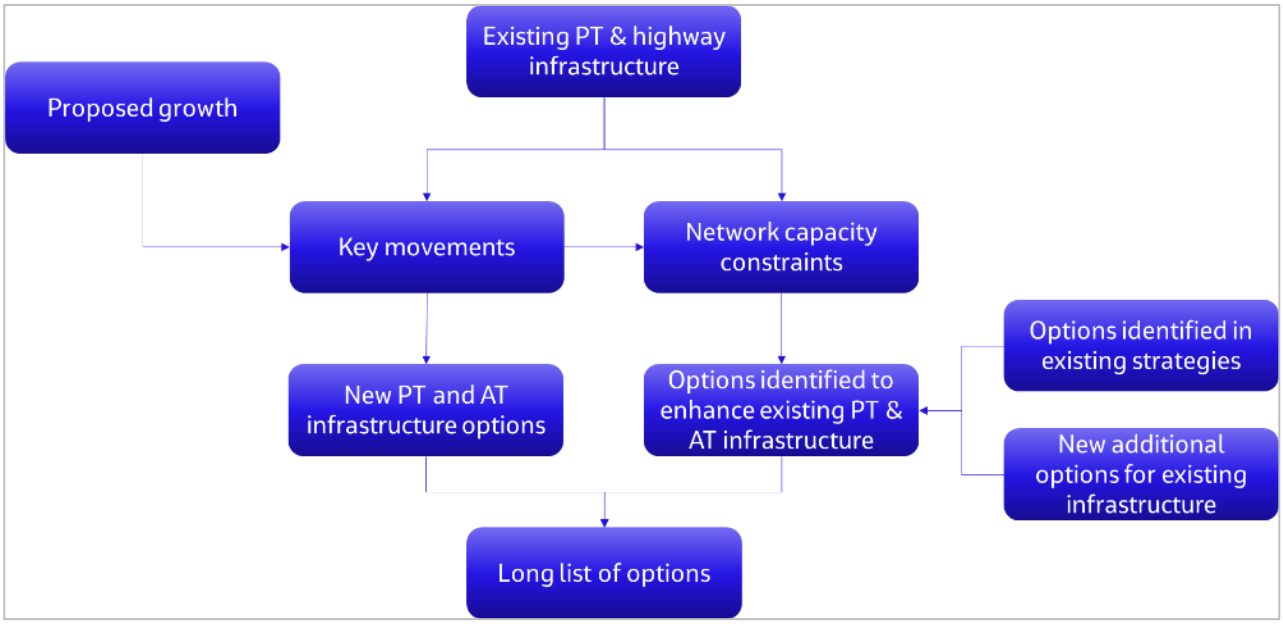


Figure 5.1: Option generation process flow diagram

The above steps resulted in the preparation of an options long-list for key transport patterns, as well as supplementary options to provide a more holistic sustainable transport network within the study area, as detailed in Table 5.2. The options long list is discussed in more detail below.

Table 5.2: Long list of options

Option	Type of option	Description	Purpose
1	Active	Provision of a Primary and Secondary network, similar to that which is planned for Naas	Improved sustainable provision for journeys within the main towns
2	Bus	Increase frequency of local bus service L44 via provision of an additional bus in the peak period	Increase capacity on service, encourage modal shift
3	Bus	Increase frequency of local bus service P43 via an additional bus in the peak period	Increase capacity on service, encourage modal shift
5	Bus	Increase frequency of interurban bus route 132 and ensure stops provided in Blessington and Baltinglass	Increase capacity on service, encourage modal shift
6	Bus	Provision of new local bus service between Blessington and Naas	Links two town centres, encourages modal shift
7	Bus	Enhancement of Ring a Link service to provide connections at additional times	Links rural surrounds with key towns
8	Bus	Bus priority in Blessington	Increase bus speeds within the town
9	Park and ride	Provide additional parking at Sallins and Naas rail station (currently 260 spaces[9])	Intercept car trips into Dublin
10	Park and ride	Provision of additional parking at Tallaght P&R site (currently 450 parking spaces[10])	Intercept car trips into Dublin
11	Park and ride	Provision of additional parking at Cheeverstown P&R site (currently 312 parking spaces[11])	Intercept car trips into Dublin
12	Car	Provision of car club vehicles	Reduce overall car use

[9] https://www.apcoaconnect.ie/locationDetail/?id=1473
[10] https://luas.ie/tallaght-p-and-r.html
[11] https://luas.ie/cheeverstown-p-and-r.html

5.3 Justification of options

The options above have been identified on the basis of the current demand levels indicating that there are significant linkages of trips in the origin-destination data. It is acknowledged that the area is predominantly rural in nature, with the associated challenges this brings including high car ownership and high car dependence (81% across the study area). Options which have been suggested would cater for a level of modal split to cycle and public transport over and above that which is currently reported in the study area. This is thought to be feasible when wider measures, such as demand management within the Dublin City area are considered.

Improvements to existing conventional bus services is the only public transport option to have been considered, as trip numbers are low (see Table 4.5) with an additional 300 trips northbound from Baltinglass and 500 trips northbound from Blessington if 50% mode shift from car achieved. Bus priority within the study area is not felt to be necessary due to congestion being low and hence bus speeds being acceptable.

Light rail, heavy rail and metro have been discounted as options as the capacity range is considered too high for the study area (see Table 5.3).

Table 5.3: Public transport modes: capacity range - passengers / direction / hour

Mode		Min	Max
1	Conventional Bus	0	2,500
2	Bus with priority infrastructure	2,400	4,000
3	Light rail	3,600	7,000
4	Heavy Rail	5,000	50,000
5	Metro	7,500	25,000

5.3.1 Cycle network improvements

Although cycle mode share is currently low (1% across the study area as presented in Figure 5.2), almost a quarter of car journeys undertaken in the study area are currently under 4km. If all car journeys between 0 and 6 kilometres switched to walk and cycle, the share of these modes would be 37%.

Internal trips within the study area are presented in Figure 4.8 and there are a number of shorter distance trips, in particular around the towns of Dunlavin, Blessington, Ballymore Eustace and Baltinglass, which could transfer from car to cycle.

5.3.2 Increase frequency of local bus services

As part of BusConnects[12], there will be a local route between Ballymore, Blessington and Tallaght and two peak time routes to the City Centre; one from Ballymore Eustace and one from Ballyknockan. Figure 4.11 presents the future capacity of bus services and shows local services to be over capacity on the approach to Tallaght and the City Centre.

Table 4.5 presents the public transport demand which could arise if up to 50% of car journeys along the main corridor (study area to City Centre via Tallaght area) switch to public transport. With 50% mode shift from car, there are an additional 300 trips from Blessington, 200 from Baltinglass and another 200 from Tullow (just south of the study area) in the AM peak period.

[12] https://busconnects.ie/media/1767/big-picture-map-a0-241019-fa-web.pdf

Increasing the frequency of local services will ensure that this additional demand is catered for, and also encourage the modal shift to be realised. (although it is acknowledged that competing with the car in a rural area is more difficult and achieving 50% modal shift in this study area would be incredibly challenging).

5.3.3 Increase frequency of interurban bus routes and support ring a link

The existing Bus Eireann 132 service is shown to be over capacity in 2042 (Figure 4.11). It currently operates five times a day with a limited stopping pattern in the study area between 07:00 and 15:00 (only one service operating in AM peak hour).

The existing Ring a Link is a demand responsive bus service which provides for rural journeys within the study area not able to be undertaken by car. This service could allow those residents from more rural areas to interchange with regular local or interurban bus services.

5.3.4 Other options

It is acknowledged that in a predominantly rural area, the car will be the only practical and convenient transport option for some trips. In car-dependent rural communities such as those in West Wicklow and East Kildare, car clubs can provide an alternative to car ownership, recognising the need for access to a car whilst reducing overall car use.

A new bus service to Naas has been considered as this is one of the main trip attractors from the study area, and is currently not served by public transport. Tables 4.6 and 4.7 indicate that there could be 100 trips between Blessington and Naas in the AM peak if there was 50% mode shift from car (again, it is acknowledged that this would be incredibly challenging). In addition, there are 400 existing public transport trips in and around Naas which further justifies provision of a new service.

The N81 corridor has been shown to be free of congestion in the future scenario, but congestion increases significantly towards the central area of Dublin. Journey times by bus to the Tallaght and Citywest area are also not competative with car. Promotion of the existing park and ride services is therefore suggested, and it is acknowledged that there may be a need for additional car parking depending on future capacity. Figure 5.3 shows the study area in relation to possible park and ride provision at Naas, Tallaght and Cheeverstown.

Promotion of Park and ride at Naas has been discounted, as this would not offer a direct journey for residents within the study area wishing to travel towards the City Centre. Park and ride at Tallaght has also been discounted as it is understood that the car park is run by a private operator rather than being purpose built like other locations along the Luas Line. Spaces are not limited to Luas passengers only, and it would be more difficult for improvements to be made or expansion to be undertaken in this location.

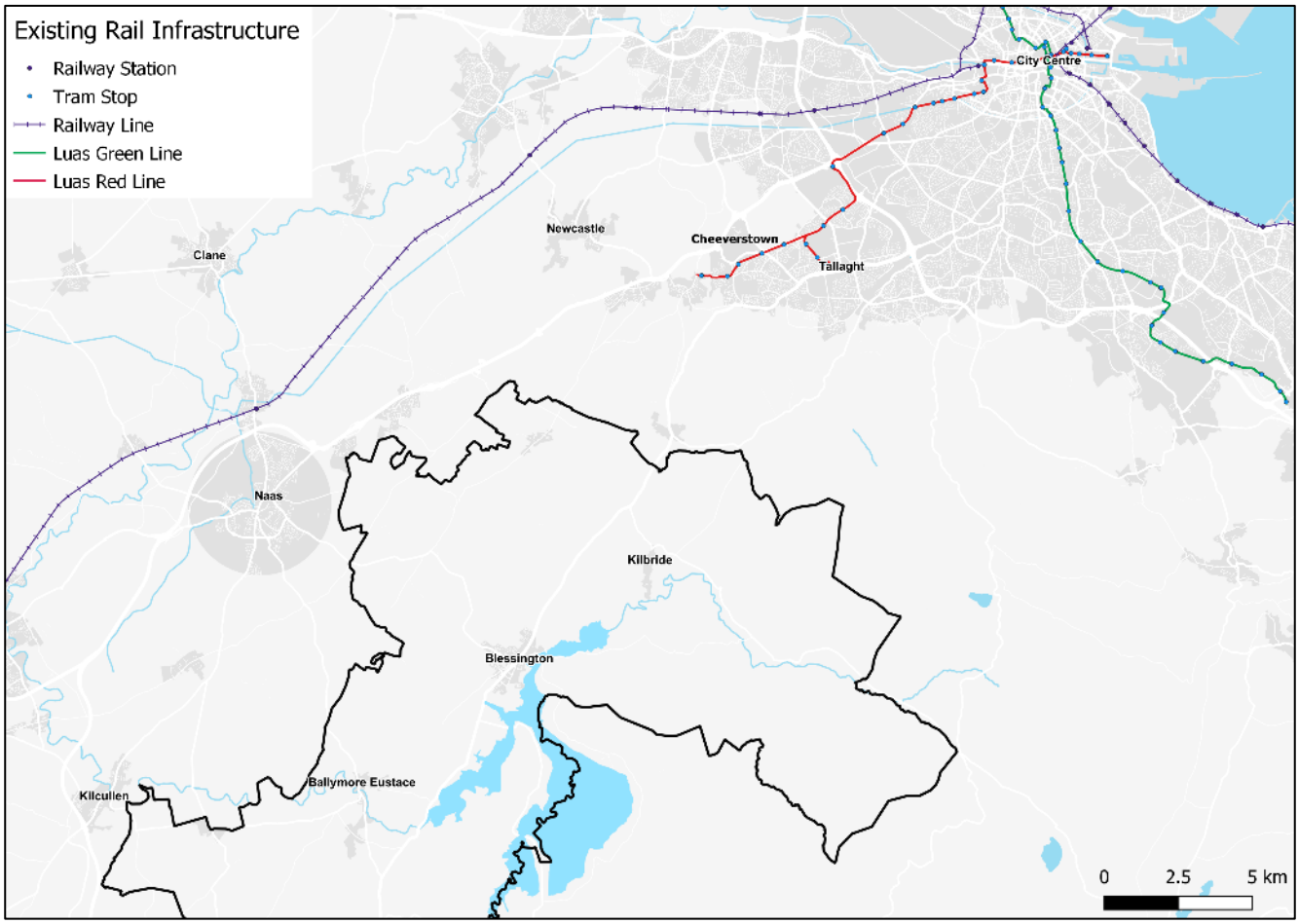


Figure 5.3: Existing public transport services in the wider area

6. Summary of findings

In summary this report has outlined the approach and results from the area-based study of the West Wicklow and East Kildare area. The area is predominantly rural with a small number of conventional bus services operating between the main towns and Dublin City Centre, and a high reliance on private car.

6.1 Key options for further consideration

The recommended package of options for the West Wicklow and East Kildare study area is presented in Figure 6.1 and includes:

- Walking and cycling enhancements within Blessington and Baltinglass, to accommodate local trips;
- Increased frequency of local bus services which will be over capacity in 2042;
- Promotion, and possible expansion of park and ride at Cheeverstown (Luas Red Line) to intercept car trips before they reach Dublin City Centre;
- Provision of a new local bus service from Blessington to Naas;
- Support, and possibly expand the Ring a Link service to continue to cater for additional trips between the main towns and their rural surrounds.

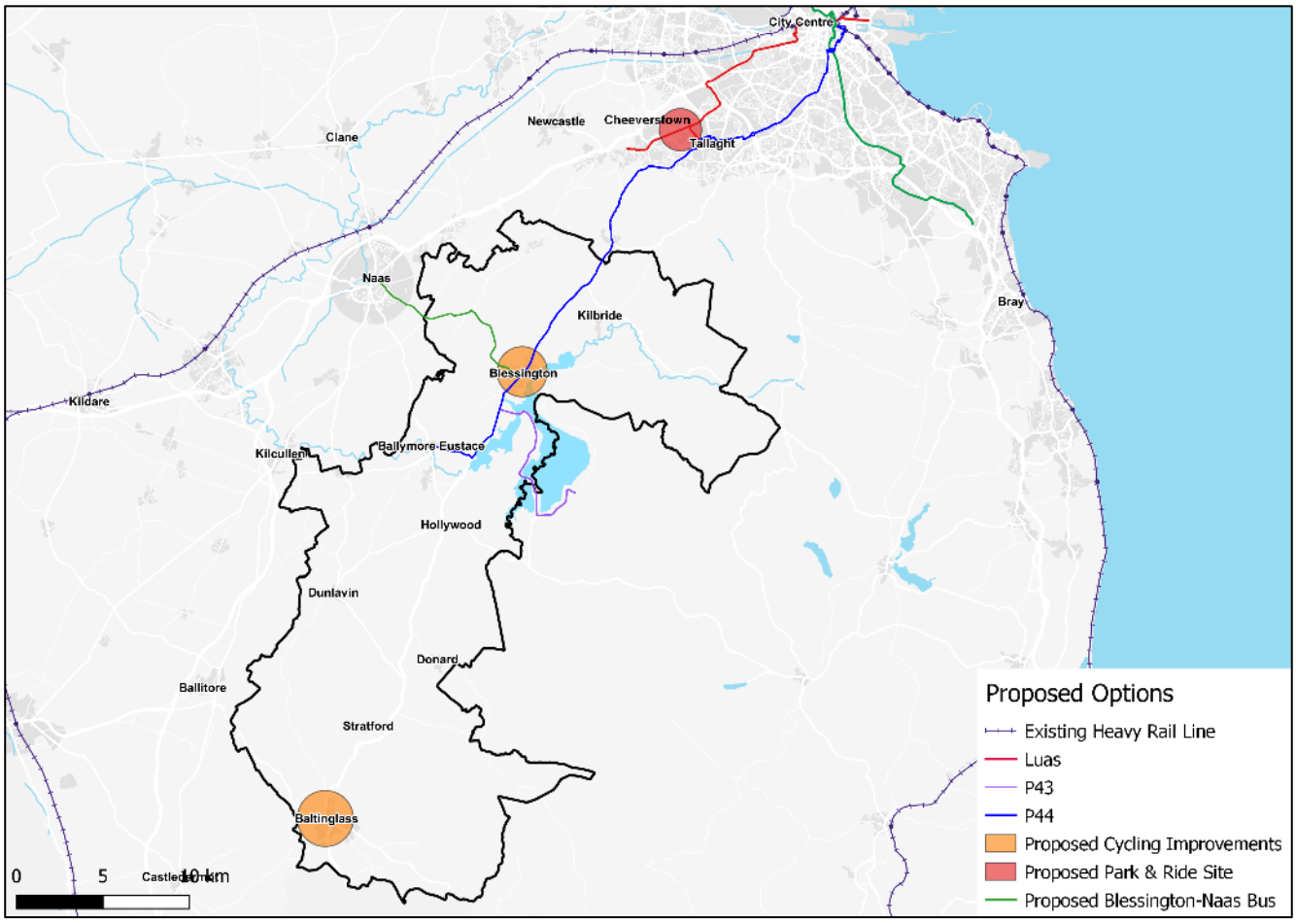


Figure 6.1 Proposed options for further consideration

Appendix A. Transport Schemes within 'Do Minimum' model run

Road Schemes

The Do Minimum model run contains the following road schemes:

- N3 Castaheany Interchange Upgrade;
- N3-N4 Barnhill to Leixlip Interchange;
- North-South Road – west of Adamstown SDZ linking the N7 to N4 and on to Fingal;
- Glenamuck District Distributor Road;
- Leopardstown Link Road Phase 2;
- Porterstown Distributor Link Road;
- R126 Donabate Relief Road: R132 to Portrane Demesne;
- Oldtown-Mooretown Western Distributor Link Road;
- Swords relief Road at Lord Mayors;
- Poolbeg development roads;
- Cherrywood development roads;
- Widening of the M7 between Junction 9 (Naas Norther) and Junction 11 (M7/M9) to provide an additional lane in each direction; and
- Capacity enhancement and reconfiguration of the M11/N11 from Junction 4 (M50) to Junction 14 (Ashford) inclusive of ancillary and associated road schemes, to provide additional lanes and upgraded junctions, plus service roads and linkages to cater for local traffic movements.

Bus schemes

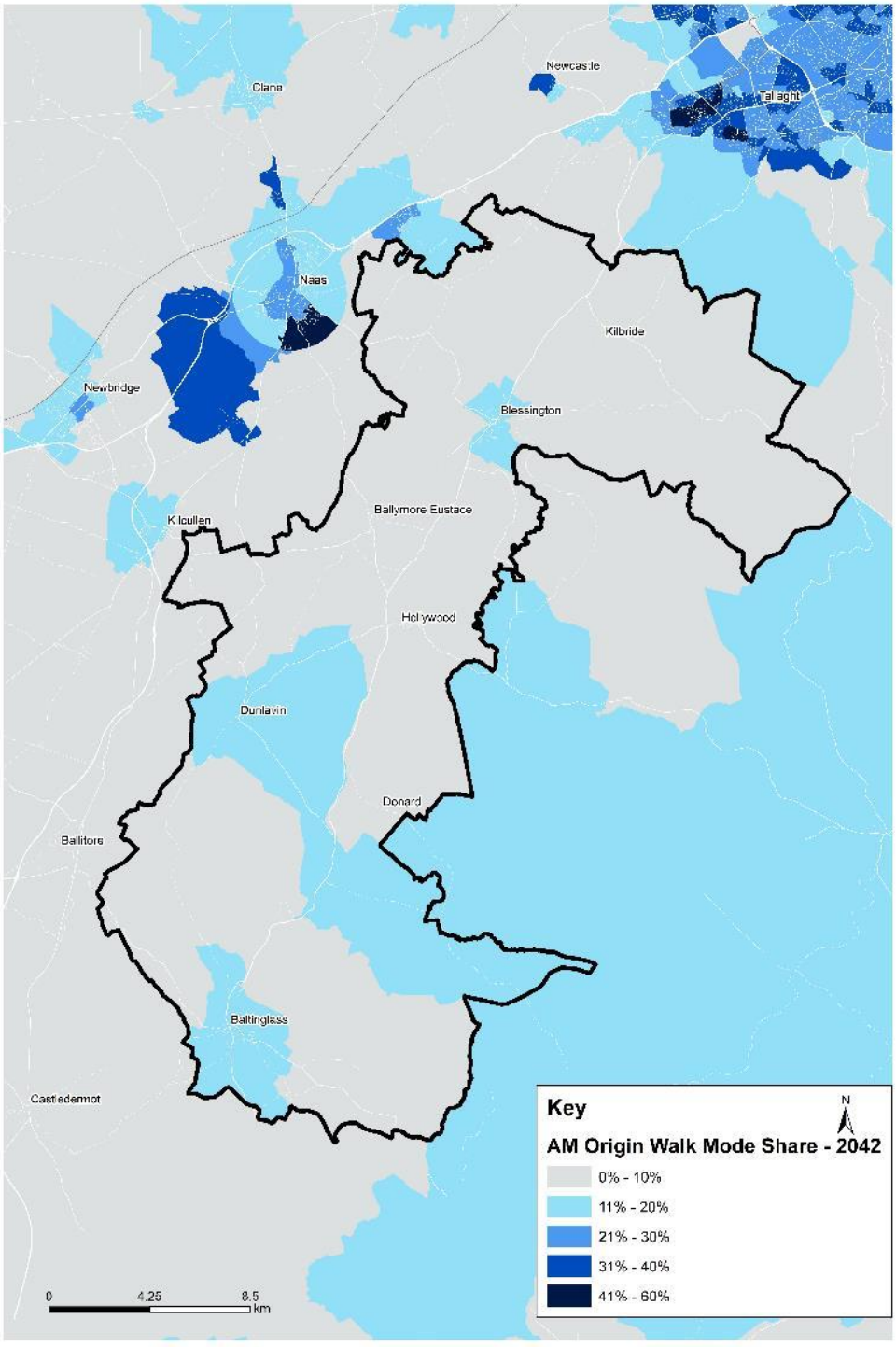
The Do Minimum model runs contains the bus services and frequencies related to the New Dublin Area Bus Network. The model does not include any of the of the associated BusConnects bus priority infrastructure proposals which would improve journey times.

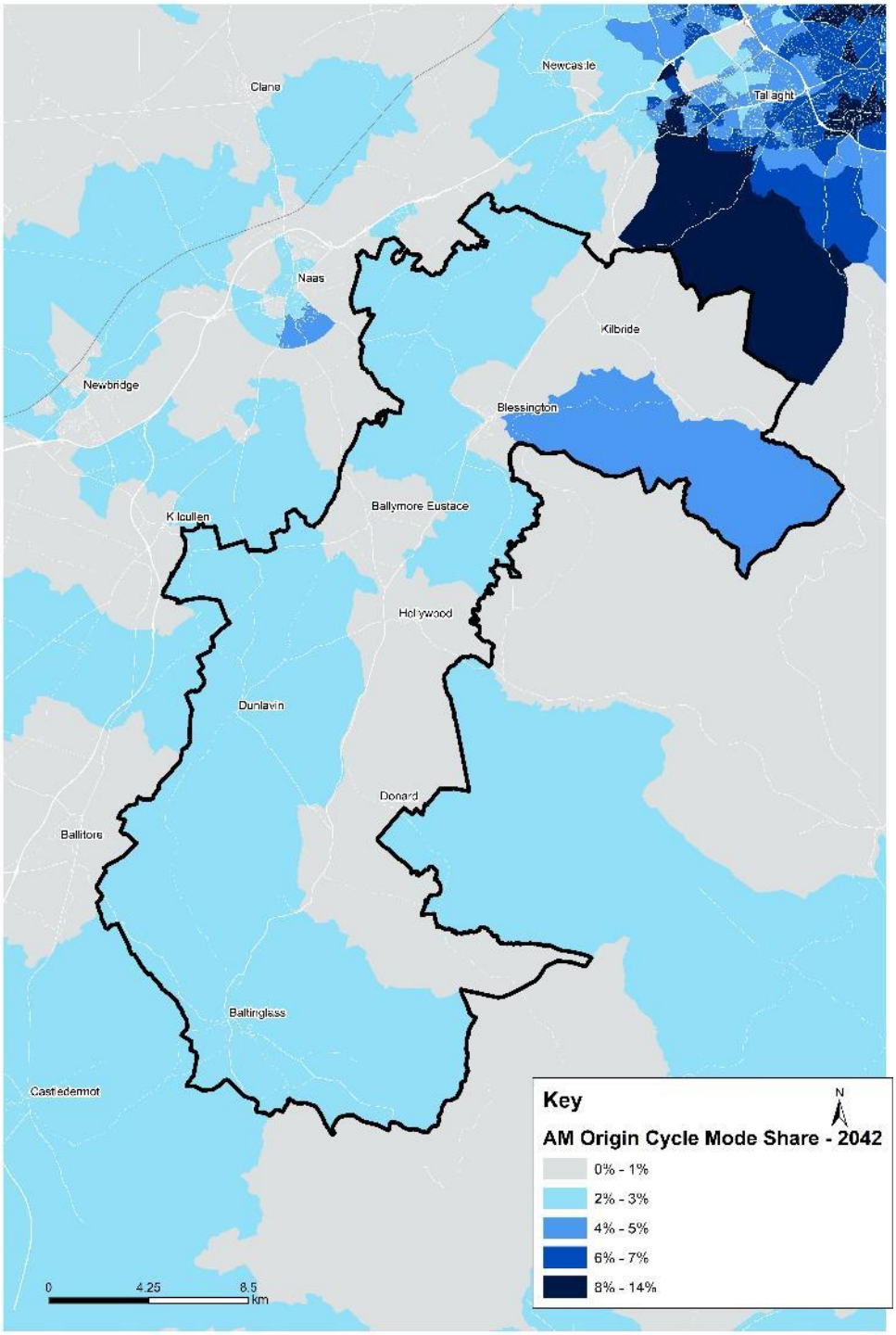
Rail schemes

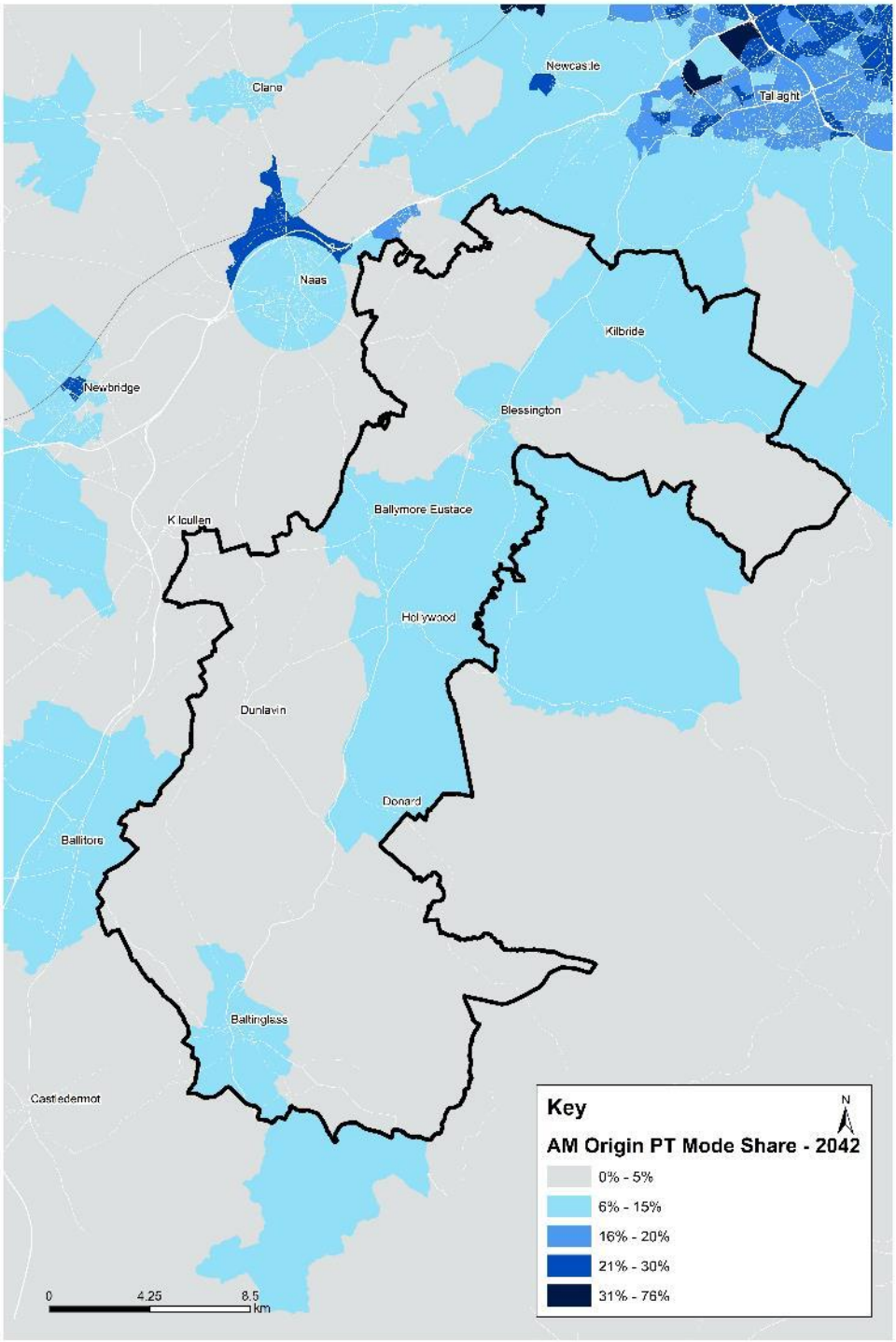
The Do Minimum model runs contains the following rail schemes:

- Revised Irish Rail timetable;
- Interim DART Expansion Programme (non-tunnel elements) including additional stations at Kishogue and Pelletstown; and
- Luas Cross City incorporating LUAS Green Line Capacity Enhancement - Phase 1.

Appendix B. Trip Patterns by Mode




Clane
Newcastle
Tallaght
Naas
Kilbride
Newbridge
Blessington
Ballymore Eustace
Kilcullen
Hollywood
Dunlavin
Donard
Ballitore
Baltinglass
Castledermot
Key
N
AM Origin Cycle Mode Share - 2042
0% - 1%
2% - 3%
4% - 5%
6% - 7%
8% - 14%
0
4.25
8.5
km

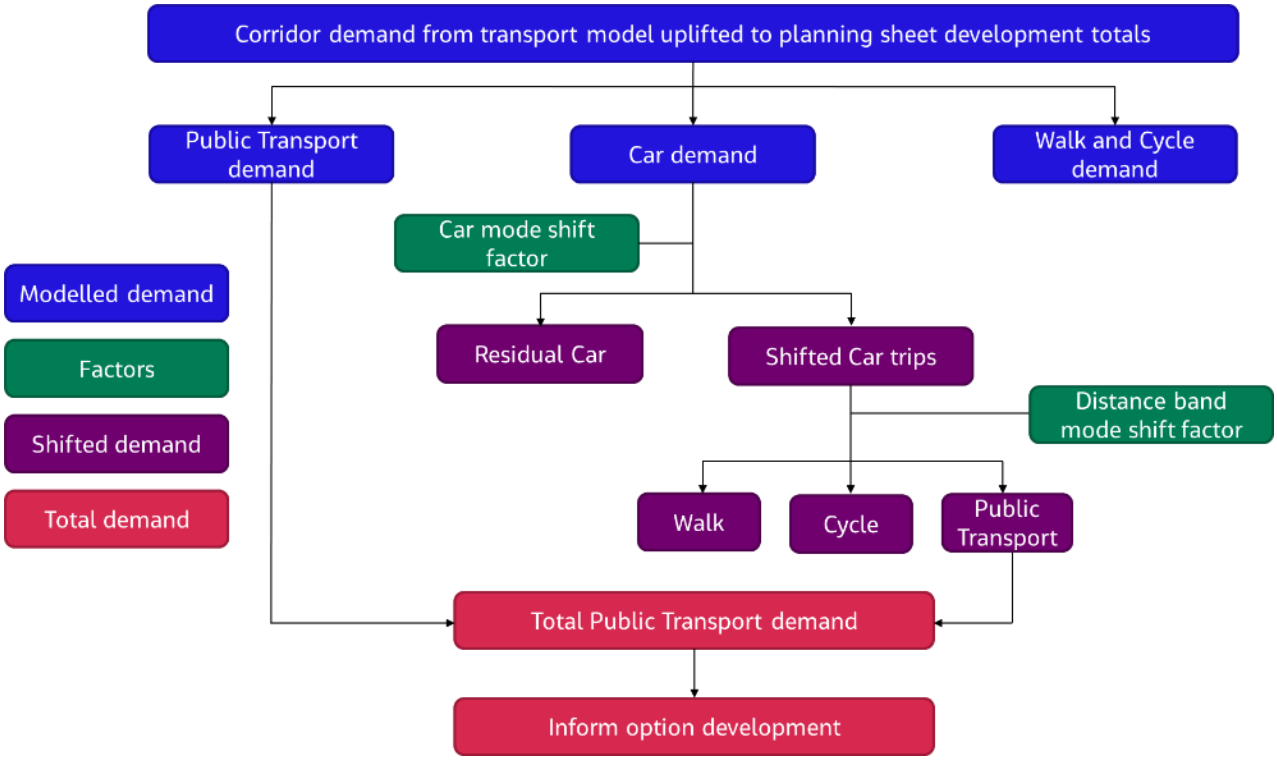

Clane
Newcastle
Tallaght
Naas
Kilbride
Newbridge
Blessington
Ballymore Eustace
Kilcullen
Hollywood
Dunlavin
Donard
Ballitore
Baltinglass
Castledermot
Key
N
AM Origin PT Mode Share - 2042
0% - 5%
6% - 15%
16% - 20%
21% - 30%
31% - 76%
0
4.25
8.5
km

Appendix C. Mode shift analysis methodology

This technical note explains the mode shift calculation used to inform the option development process for each area being considered as part of the Greater Dublin Area Transport Studies. The mode shift calculation is based on the Eastern Regional Model (ERM) and the planning sheets provided by the NTA with the results providing an indicative number of additional public transport trips which need to be catered for if a mode shift away from car is achieved.

This method produces an indicative set of results which provides the order of magnitude of changes in demand which is considered sufficient to inform option development at this early stage. It is noted that the results are affected by the underlying assumptions of the planning sheet and ERM i.e. demand is assigned to a constrained network and that no model run has been undertaken to identify mode shift.

This exercise has been undertaken for the AM period only when there is the largest car demand in the ERM. The flow chart below shows the overall process underpinning the mode shift calculation.



First a corridor is identified (e.g. outside the M50 into the city centre) and the transport demand using the corridor is obtained from the ERM, disaggregated by mode – public transport, car and walk and cycle.

A factor is then applied to the car demand to create the mode shift away from car to one of the other modes. Two factors for mode shift have been applied in this study: 25% of car trips shift and 50% of car trips shift. This aims to provide a broad order of magnitude of demand to inform option development and assessment.

The shifted car trips are then allocated to become either a new walking, cycling or public transport trip. This decision is based on the trip lengths of the shifted car trips as it is assumed that shorter trips are more likely to become walking trips and longer trips are more likely to become public transport trips. The trip length distributions for each mode are obtained from the ERM.

Three bands were defined:

- A lower band bounded a distance which 75% of walking trips in the ERM are shorter than or equal to,
- A middle band bounded by a distance which 75% of cycling trips in the ERM are shorter than or equal to and;
- An upper band for any trips with a longer distance.

For the West Wicklow / East Kildare study area, the following bands and mode shares by distance are obtained from the ERM:

Distance band (km)	Walk	Cycle	Public transport
0-3.5	72%	7%	21%
3.5-7.8	24%	25%	50%
7.8+	0%	4%	96%

In the lower band of trips less than 3.5km, 72% of the trips are walking trips, but there are still 7% of trips which are cycle trips and 21% of trips which are public transport trips.

The proportion of trips in each band made by walk, cycle and public transport were derived from the ERM, and applied to the shifted car trips. This gives a number for the shifted public transport trips which can be added to the public transport trips from the ERM to provide a total public transport demand for the corridor. This number can then be used to inform the development of options to support the estimated demand along the corridor.