A COMPREHENSIVE MOBILITY PLAN
FOR COUNTY KILKENNY

"If our lives are dominated by a search for happiness, then perhaps few activities reveal as much about the dynamics of this quest – in all its ardour and paradoxes – than our travels."

The Art of Travel, Alain de Botton

alternatively…

**"Transport, motorways and tramlines
starting and then stopping
taking off and landing
the emptiest of feelings**

Disappointed People…"

Let Down, Radiohead

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1. Executive Summary

This Comprehensive Mobility Plan envisages the development of Kilkenny - City and County - as a progressive and vibrant region of inclusive and engaged communities, where guided by the principles of sustainability, its social, cultural environmental and economic assets are harnessed and aligned to achieve an improved quality of life for all. An Efficient and accessible mobility and transport system is a key enabler of this vision.

Achieving a mobility and transport system that can adapt and evolve to better serve local citizens remains an ambitious but attainable target. This system should be based on reliability, connectivity and accessibility and deliver a multi-modal system with seamless, integrated and accessible public transport at its core. Modal shift achieved through shared mobility as well as walking and cycling can also be achieved and with it a host of social, health, economic and environmental benefits.

Reflecting ambitions set out in UN Sustainable Development Goals and in the EU Pillar of Social Rights, the plan asserts as a right that each citizen in the County be assured of a minimum level of access and service provision in order to best meet their individual needs and wellbeing. Respecting and resourcing such a right goes to the heart of rural viability and the sustainability of essential services.

Globally, progressive regions driven by profound political, environmental, demographic, technological and cultural changes are redefining the transport and mobility landscape. They are utilising existing assets and resources to optimal effect and by innovating they are creating a vision for a socially diverse, economically vibrant and sustainable future. Moreover, they are staking out clear competitive positions to attract mobile global talent and investment. As has been proven so often in the past, Kilkenny can do all of this and more.

But Kilkenny has problem. It stands at a crossroads, literally; car dependent, socially and environmentally unsustainable. Change is inevitable but whether this change will be planned, managed and resourced remains unclear. How Kilkenny chooses to proceed in these matters will tell us much about its ambition and its capacity to demonstrate thought leadership and ambition in social, economic and environmental development. The Future is now, but it's a future that must be earned.

To this end, the Plan concludes with a series of recommendations on the development of the optimal structure to plan and manage mobility and transport planning; defining a representation and advocacy role for this structure; suggesting some ways in which provision, integration and connectivity could be enhanced; offering recommendations to facilitate modal shift; and finally suggesting some funding options by which these might be achieved.

2. Defining the Scope of a Mobility Plan

1.1 Introduction

A sustainable mobility plan provides the policy foundation for achieving a transportation system that balances the needs of all users. It takes a comprehensive and holistic view and addresses all modes and forms of transport including public and private, passenger and freight, motorised and non-motorised. Furthermore it considers all aspects of how, why and to where a society travels; their diverse needs, the means to reconcile these as well as consideration of the appropriate enabling dynamic or static infrastructure for all transit modes. It has as its objective the development of a transport system which:

- Is accessible and meets the basic mobility needs of all users by offering transport options that enable access to key destinations and services.

- Balances and responds to the diverse demands for mobility and transport services by citizens, businesses and industry.

- Guides a balanced development and better integration of the different transport modes.

- Meets the requirements of sustainability, balancing the need for economic viability, social equity, health and environmental quality.

- Improves the efficiency and cost-effectiveness of the transportation of people and goods.

- Makes better use of urban space and of existing transport infrastructure and services.

- Enhances to the attractiveness and quality of the environment and public realm for the benefits of citizens, the economy and society as a whole.

- Improves traffic safety and security.

- Reduces air and noise pollution, greenhouse gas emissions, and energy consumption.

- Contributes to a better overall performance of the trans-European transport network and the Europe's transport system as a whole.

1.2 Process & Policy

A sustainable mobility plan should be linked to an existing, long-term strategy for the future development of a given area and for its future development of transport and mobility infrastructure and services. In the context of this plan long term strategies will be those of national Government, State and semi state agencies, local authorities and other agencies

and stakeholders. The development and management of a mobility plan is a structured process that comprises analysis, vision building, objective and target setting, policy and measure selection, active communication, monitoring and evaluation – and the identification of lessons learnt. Building on existing practices and regulatory frameworks, its basic characteristics are:

- A long-term vision and a clear implementation plan.

- Participatory approach to achieve public acceptance & support.

- Balanced and integrated development of all transport modes.

- Horizontal and vertical integration for consistency & complementarity.

- Assessment of current and future performance.

- Regular monitoring, review and reporting.

- Consideration of external and wider societal costs for all transport modes.

1.3 Definition & Structure

Eltis – the main observatory on mobility and transport funded by the *European Union Directorate General for Mobility and Transport* – has developed and refined a working model for a sustainable mobility plan in its guidance document *'Developing and implementing a Sustainable Urban Mobility Plan'*. This presents a logic model and outlines the main steps in defining mobility policies in the context of a clear vision and measurable targets to address the long-term challenges of mobility and transportation *(See Appendix 1)*. This is a valuable template in considering how best mobility and transportation challenges might be addressed. However, a notable feature of the model is its urban focus and orientation. Notwithstanding the relevance of key principles and objectives, the development of a mobility plan for a rural region with a dispersed settlement pattern and a compact urban area at its core requires a substantially different approach. Furthermore, consideration must also be given to the substantially different policy context that exists at national and local level in Ireland where transport planning and investment is centralised and there is little autonomy in such matters at local level.

1.4 Plan Objectives

In such a context this plan is best seen as an initial building block in the planning and implementation of an effective county-wide mobility and transportation strategy. It has as its core objective the development of a sustainable countywide and near region transport system for County Kilkenny. The development of such a system will serve to:

- Improve regional and local connectivity and access.

- Promote social equity, inclusion and active citizenship.

- Address gaps and limitations in service provision.

- Enhance economic competitiveness, productivity and efficiency.

- Ensure the accessibility of jobs and services for all citizens.

- Increase the efficiency and cost-effectiveness of the transportation of persons and goods.

- Reduce pollution, greenhouse gas emissions (GHG) and energy consumption.

- Enhance the attractiveness and quality of the physical, natural and social environment.

- Improve citizen health, wellbeing, safety and security.

- Present future-oriented, sustainable and technology enabled mobility options

- Ensure greater value for money in the expenditure of public money.

1.4 The Project Brief

This plan considers a wide range of national, regional and local development strategies and policies linked to the broader development of the economic, social and natural environment in County Kilkenny. In doing so, it considers transport and mobility issues not merely as an end in itself but as critical enablers for and key elements in the development of a vibrant, progressive and inclusive region. This plan seeks to build upon and add value to the existing plans and strategies of a number of key stakeholders, whose support, active engagement and collaboration remains key to its successful implementation. It does so through:

- A comprehensive analysis of the countywide social and economic context.

- Consideration of urban/rural synergies and dependencies.

- An outline assessment of the global, national and local trends and drivers of change.

- A rationale for balanced regional development, improved economic vibrancy and quality of life.

- The reconciliation of diverse user needs for those living in, working in or visiting the county.

- A clear context for the competitive positioning of Kilkenny – City and County – as a progressive location where new models of sustainability are developed and where innovation and creativity are fostered.

- Strategic integration with relevant EU, national, regional and local development policies, plans and strategies and funding opportunities.

- Establishing clear economic, environmental and social objectives for the project.

- Establishing clear principles for sustainable, efficient, equitable and safe mobility.

- A comprehensive mapping, assessment and analysis of the current and potential transport provision by mode and by location in County Kilkenny and environs.

- Consideration of opportunities for modal shift

- A series of recommendations and proposed pilot actions that build progressively towards a Comprehensive Mobility Plan (CMP) for County Kilkenny.

- An analysis of the optimal co-ordination and network structures to plan and implement a CMP in County Kilkenny.

3. Context and Rationale

3.1 Introduction

The planning and implementation of a CMP for County Kilkenny needs to be placed in some context, taking account of the trends and critical drivers of change that will irrevocably alter the dynamics of transit and mobility. Furthermore, this process of change, substantially underway in regions and cities worldwide, is influenced by a heady combination of *political, environmental, demographic, cultural, economic* and *technological* factors; each potent and powerful in itself but with a collective impact which will likely bring about considerable societal and behavioural change in how we work, interact and recreate. If the precise timeframe within which these changes will occur is difficult to predict, the magnitude and reach of these changes is far more certain. Change is afoot and in a globalised, connected world, characterised by an intense competition between nations, regions and cities for resources and talent, mobility matters. This plan seeks to analyse this context, identify these drivers of change and consider the opportunities or challenges they will present to Kilkenny City and County.

3.2 Politics and Governance

An effective transit and mobility system underpins a vibrant society and functioning economy. Each nation must provide the means by which its citizens can travel for work or social purposes, the means by which public and private services can be accessed and the means by which its goods can transported within domestic markets. Connectivity matters too, given the importance of international trade and the need for people and goods to cross geographic borders. However, economic factors must be balanced with important societal needs such as active citizenship, health and well-being, social justice and equity, environmental quality and sustainability, amongst others. For the most part transit and mobility is shaped by decisions taken by Governments at supranational and/or national level and to a far, far lesser extent at regional or local level - where permitted by autonomous decision-making structures. These decisions will be manifest in legislation, binding obligations, regulations, policy instruments and support measures. These will be generally planned, implemented, resourced and monitored by Government Departments or State Agencies. An overview of the principal decision making and implementation authorities for transport and transit issues in an Irish context as well as their remit and key strategies is presented as follows in Table 1.

Table 1: Agencies, Remit and key strategies

Agency	Governance Level	Remit	Key Strategies
United Nations	Supranational	Financed by 193 member states, Its aims include the maintenance of international peace and security, human rights, fostering social and economic development, protecting the environment and providing humanitarian aid for famine, natural disaster and conflict.	Transforming Our World: The 2030 Agenda for Sustainable Development

European Commission (and its Directorates General)	Supranational	Responsible for proposing legislation, implementing decisions, upholding the EU treaties and managing the day-to-day business of the EU.	Europe 2020 – A European Strategy for Smart, Sustainable and Inclusive Growth
The Government of Ireland	National Governmental	Exercises executive authority of fifteen Government ministries. It enacts primary legislation and through the budgetary process resources capital and current expenditure.	National Planning Framework: Project Ireland 2040 (2018) Project Ireland 2040 National Development Plan 2018-2027
Department of Transport Tourism and Sport	National Governmental	Responsible for the planning and development of transport infrastructure and services. Its objective is the provision of a well-functioning, integrated public transport system, which enhances competitiveness, sustains economic progress, promotes balanced regional development and contributes to social cohesion; the provision of a defined standard of public transport, at reasonable cost to the customer and the taxpayer and the timely and cost effective delivery of the Public Transport investment programme The functions and activities of the National Transport Authority, Transport Infrastructure Ireland, Bus Eireann, Iarnrod Eireann and the Commission for Rail Regulation come under its auspices.	National Planning Framework: Project Ireland 2040 (2018) Project Ireland 2040 National Development Plan 2018-2027 Investing in our Transport Future: Strategic Investment Framework for Land Transport (2015). Smartertravel: A sustainable Transport Future: A New Transport Policy for Ireland 2009-2020 Statement of Strategy 2016-2019.
Department of Communications, Climate Action & Environment	National Governmental	Responsible for the delivery of policies and programmes in including communications, energy, climate change, air quality and environmental policy. It seeks to ensure that all of its policies are in line with EU and global obligations.	National Planning Framework: Project Ireland 2040 (2018) Project Ireland 2040 National Development Plan 2018-2027 National Adaptation Framework: Planning for a Climate Resilient Ireland (2018). Our Sustainable Future: A Framework for Sustainable Development in Ireland.
National Transport Authority	National Authority	A statutory non-commercial body operating under the aegis of the Department of Transport, Tourism and Sport, it is responsible for the development of an integrated and accessible public transport network; procurement and licensing of public transport services and the provision of bus infrastructure and fleet and cycling facilities and schemes.	National Planning Framework: Project Ireland 2040 (2018) Project Ireland 2040 National Development Plan 2018-2027 Statement of Strategy 2018-2022

| Transport Infrastructure Ireland | National Authority | A statutory non-commercial body operating under the aegis of the Department of Transport, Tourism and Sport, its primary function is to provide an integrated approach to the future development and operation of the national roads network and light rail infrastructure. It operates, maintains and improves the National Primary and National Secondary network. | National Planning Framework: Project Ireland 2040 (2018)

Project Ireland 2040 National Development Plan 2018-2027

Investing in our Transport Future: Strategic Investment Framework for Land Transport (2015). |
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| Sustainable Energy Authority of Ireland | National Authority | A statutory non-commercial body operating under the aegis of the Department of Communications, Climate Action & Environment, its primary function is to promote sustainable energy structures, technologies and practices. It seeks to promote energy efficiency and a low carbon future. | National Planning Framework: Project Ireland 2040 (2018)

Project Ireland 2040 National Development Plan 2018-2027

Strategic Plan 2010-2015 |
| Environmental Protection Agency | National Authority | An independent public body operating under the aegis of the Department of Communications, Climate Action & Environment, its functions include enforcement of environmental law; environmental planning, education and guidance; monitoring, analysing and reporting on the environment and regulating Ireland's greenhouse gas emissions. | National Planning Framework: Project Ireland 2040 (2018)

Project Ireland 2040 National Development Plan 2018-2027

EPA Strategic Plan 2016-2020 Our Environment, Our Wellbeing.

Ireland's Environment 2016 – An Assessment |
| The South Eastern Regional Assembly | Regional Nuts II | Incorporating the 11 southernmost counties including Kilkenny, it is tasked with the co-ordination, promotion and support of strategic planning and sustainable development of the region in support of the National Planning Framework; the promotion of effective local government and public services in the region and the preparation and oversight in the implementation of Regional Spatial & Economic Strategies (RSES). | Southern and Eastern Regional Operational Programme 2014-2020.

Regional Spatial and Economic Strategy (In preparation) |
| Kilkenny County Council | County Authority | One of 31 Local authorities responsible for delivering a broad range of services including roads, traffic, planning, housing, as well as economic and community development, environment, recreation and amenity services. Its elected council is the policy making forum with municipal district members acting as a decision-making sub-formation of the overall council in respect of their | National Planning Framework: Project Ireland 2040 (2018)

Project Ireland 2040 National Development Plan 2018-2027.

Kilkenny County Development Plan 2014-2020 |

		municipal district area. Elected councils (operating at local authority or municipal district level) exercise 'reserved functions' defined in law across a range of legislation.	Kilkenny city & Environs Development Plan 2014-2020

In 2015, The United Nations published *Transforming our World: the 2030 Agenda for Sustainable Development,* the result of several years of inclusive consultations and negotiations between 193 UN Member States, civil society and engaged citizens around the world. The final set of negotiations at the UN were co-facilitated by Ireland and yielded agreement on 17 Sustainable Development Goals (SDGs) and 169 targets; an accompanying Declaration; a section on the means, financial and otherwise, by which the Goals will be achieved; and a section on monitoring and reviewing progress. Generally speaking, transport and mobility issues relate to 12 of the 17 Sustainable Development Goals most particularly *No Poverty, Good Health and Wellbeing, Quality Education, Gender Equality, Affordable & Clean Energy, Decent Work & Economic Growth, Industry, Innovation & Infrastructure, Reduced Inequalities, Sustainable Cities & Communities, Responsible Production and Consumption, Climate Action* and *Life on Land.*

The Europe 2020 Strategy sets out the vision of a social market economy for Europe in the 21st century. It aims at transforming the EU into a smart, sustainable and inclusive economy with high levels of employment, productivity and social cohesion and at reinforcing the EU as an actor in global governance. It is based on two strands. Firstly, it identifies three priorities that come to clarify the nature of growth that the EU envisages: *smart growth;* developing an economy based on knowledge and innovation, *sustainable growth;* promoting a more efficient economy in terms of resource utilisation that is more ecological and more competitive and *inclusive growth;* fostering an economy with high employment levels and which ensures social and territorial cohesion. Secondly, there are five headline targets that serve as benchmarks for the EU in 2020 on employment, education, social inclusion, research and development, and climate and energy. Combining these two strands leads to a total of seven flagship initiatives that promote smart, sustainable and inclusive growth and guide policymaking in the EU and the member states. Policy measures and funding instruments for investment in infrastructure, innovation, new technologies and low carbon economies as well as for the development of skills and human capacity are aligned and configured to support the Europe 2020 Strategy.

Ireland 2040, the Government's National Planning Framework (NPF), sets out a framework for developing the infrastructure that will underpin the social and economic fabric of Ireland over the next quarter of a century. It represents the first coherent post-recessionary attempt to develop a long-term integrated plan to deliver the necessary spatial planning, infrastructure development and public services to support an increased Irish population of 5.8m. Transport, mobility and modal shift feature prominently within its goals and

commitments and it is expected that considerable political weight and resources will be committed to its objective of achieving balanced regional development. The NPF recognises that economic activity, infrastructure provision and population growth has been uneven across Ireland. It advocates for a more balanced approach with parity of future development across the regions. It aims to enhance regional accessibility and strengthen rural economies and communities, promoting sustainable resource management and a transition to a low carbon society. It envisages that 70% of population growth will occur outside Dublin with second tier cities such as Waterford growing by 50% and becoming a city of scale for its hinterland. Outside the main cities and their hinterlands, the plan is to develop towns with populations greater than 10,000 and to increase their growth in the order of 20-25% over the duration of the plan. It further seeks to limit urban and rural sprawl by concentrating development on underused spaces within current town and village boundaries. By contrast, growth in small towns and rural areas is targeted to an average of 15%. Overall this will result in increased urbanisation and suburbanisation, and a reduction in the rural population.

Following a calamitous economic collapse in 2008; the effects of which remain evident in many areas, it is recognised that most of Ireland's economic fundamentals are currently on a positive trend. In 2017, GDP growth was 7.8% and is expected to grow by a further 4.4% in 2018 and again by 3.9% in 2019. Employment trends are positive, with unemployment reducing to 4.8% in 2019, while export growth of 6.9% in 2017 is expected to increase by 4.9% and 4.2% in 2018 and 2019 *(Central Bank, 2018)*. As a consequence of Irelands economic and demographic growth demand for transport is increasing. Vehicle use is showing an upward trend with total annual vehicle kilometres for private cars increasing by 9.4% between 2011 and 2015. Irrespective of measures adopted and incentives offered to promote modal shift, the private car remains the dominant mode choice in Ireland with 74% of all journeys being taken by car. Not surprisingly, Ireland's dependence on the car is more pronounced outside Dublin (76% of all journeys outside Dublin) than in Dublin (54% of all journeys). This profile is largely in line with other similar European countries. Transport demand growth will occur with future demand scenarios based mainly on a conservative growth scenario of the national population reaching 5.2 million by 2040. As such there will be significant growth in peak demand as the economy grows and more people are at work. A 5.2 million population in 2041 and a projected unemployment rate of 7% are expected to result in work commuting trips increasing by 35% from current levels. If such demand increases were coupled with a continuing trend towards long distance commuting and increased car use, Ireland's transport system would be placed under severe pressure.

Improved economic circumstances and exchequer resources provide the basis – set out in the NPF – to radically rethink and invest in mobility and transport. Transport-related taxation represents a very significant revenue source for the Irish Exchequer, with excise, carbon tax and VAT on motor fuels, annual motor tax and vehicle registration tax which cumulatively remitted around €5.6 billion in 2008 and is currently remitting around €4.8

billion per annum. This compares to total Exchequer expenditure on transport, both capital and current, of around €1.32 billion at present. The International Transport Forum (ITF) produces detailed reports on the levels of land transport investment within OECD member countries. According to its data, Irish investment was comparable with developed countries' infrastructure investment. Irish infrastructure investment has tended to be pro-cyclical, with investment by government in surface transport infrastructure peaking during the boom years 2004-2008. Over the period 1995–2007, Irish investment was on average 1.12% compared to the average for developed countries of 1.23%. Developed western economies such as Switzerland, Finland, France and Austria consistently rank above Ireland in World Economic Forum (WEF) infrastructure rankings. These countries invest an average of 1.41%, compared to the average Irish investment over the same period.

The Irish Academy of Engineers *(Sustainable Transport Infrastructure 2035, 2016)* estimated that an investment of €2 billion per annum will be needed for the next 15 years on transport infrastructure and transport systems to provide the basic infrastructure necessary to meet the needs of Ireland's growing economy. Over €1 billion will need to be spent each year on new transport projects; with a similar amount to be spent on maintenance. This would mean a capital expenditure of approximately €15 billion on new transport infrastructure between now and 2030; of this amount €9.25 billion relates to public transport infrastructure. While this investment is primarily designed to provide the required level of mobility it would have the additional benefit of reducing transport related emissions and congestion, if directed to sustainable transport. The Academy considers that one third of the proposed investment in public transport should be deemed as necessary to meet our emission targets. This expenditure, though obviously very considerable, needs to be considered in the context of approximately €5 billion Government income each year in motor-related revenues and taxes. An annual investment of €2 billion would be in line with most OECD countries where typically 0.9% of GDP is spent on inland transport infrastructure. The Academy notes that as Ireland ranks as one of the lowest in the EU (after the UK) in terms of public transport subsidy/fares ratio that consideration should be given to increasing subsidies for public transport.

The Government's transport policy for the period 2009 – 2020, *Smarter Travel – A Sustainable Transport Future*, focusses on the development and promotion of sustainable means of transport – walking, cycling and public transport – through the provision of funding for infrastructure as well as funding for behavioural change programmes to encourage the use of more sustainable transport modes. The policy stipulated that Local Authorities prepare Local Transport Plans including targets for modal change to more sustainable means of travel and an accompanying programme of measures to achieve these targets. The programme was allocated €100m funding under the *Capital Plan Building on Recovery: Infrastructure and Capital Investment 2016-2021.* It is also the framework under which energy and emissions savings will be achieved in the transport sector. The plan set out 49 measures where, by 2020, thousands more people will be walking, cycling, using

public transport and reducing private car usage for commuting from 65% to 45%. Ambitious in scope the plan took an expansive view of the development needed to support an effective, sustainable and equitable transport system. However, its high level goal of concentrating population in urban areas will not be substantially achieved. Similarly, its targets for modal shift, for enhanced fuel efficiencies and for the adoption of new fuel technologies will go unrealised; victims of changed economic circumstances and political realities.

Kilkenny County Council (KCC), through its planning and development functions, has a key role to play in regional development and in directly facilitating and supporting residential and commercial development. Local Authorities are obliged to set out its strategic priorities for economic, environmental and social development in a *Development Plan*, compiled at six yearly intervals. Though not having autonomy of functions in transport provision at local level, KCC supports sustainable mobility practices through delivery of national policy and through investment in and the management of the enabling infrastructure and public realm much of which is supported by objectives, policies and measures set out in Land Use and Transportation Studies (LUTS), Mobility Management Plan (MMP) and Traffic Impact Assessments (TIA). KCC also has an important function in promoting and supporting community development throughout the County. The Kilkenny Local Community Development Committee (LCDC) in its *Local Community Plan* (LCP) for the County has set as a high level objective the encouragement of an "*integrated transport systems through the use of existing and new infrastructure innovations, and increase the use of communications technologies through enhanced infrastructure and skilled communities*".

The Department of Transport, Tourism and Sport (DTTAS) *(Investing in our Transport Future – A Strategic Investment for Land Transport, 2015)* sets out the scale of transport and mobility challenges in Ireland as follows:

- Travel demand in the morning peak is projected by 2041, under conservative population growth assumptions, to be 35% greater than currently and to arise largely on corridors to and within our principal cities. This would imply, at a minimum, 650,000 additional daily trips to and from work.

- The major transport infrastructure facilitating access to services in rural areas is the national, regional and local roads network.

- For most rural dwellers, access to scheduled public transport services is limited. Given dispersed origins and destinations, the provision of public transport to meet any significant proportion of rural travel needs is, in general, prohibitively expensive and inefficient. The Rural Transport Programme (RTP)**,** which provides services to people whose travel needs are not met by existing bus or train services, aims to enhance and sustain nationwide accessibility, through community-based participation, particularly for those at risk of social exclusion, as well as people with

mobility, sensory and cognitive impairments. It can play an important role in combating rural isolation.

- Changing urban travel patterns, which would have the most potential for modal shift to public transport, though important would be unlikely to make a major impact on CO_2 targets. This is because most urban journeys are relatively short in distance. Similarly promoting modal switch to active travel modes will not yield significant CO_2 reductions; those transport journeys with most potential for modal switch to walking or cycling are by definition, short journeys, with relatively few benefits in terms of CO_2 reductions. The main benefit of behavioural change programmes or public transport investment is the resultant reduction in congestion, with emissions reduction and localised environmental improvements being co-benefits of modal shift.

- Transport policy has consistently had a stated aim of promoting modal shift away from the car. This policy direction has been based on attempting to limit urban congestion, the high cost of providing additional road capacity to deal with ever increasing demand and, in terms of accessing urban centres, recognising that road capacity increases are not always the best solution and are sometimes almost physically impossible. However, implementation of this mode shift policy has to date proved unsuccessful, as trends show an ever increasing dependency on car-based travel.

- The road network meets the overwhelming majority of travel need catering for cars, buses, commercial vehicles, cycling and walking. This will remain the case even if policies to limit growth in car use are successfully implemented.

- Current spatial patterns remain very unfavourable to efficient and sustainable transport provision.

- The historical level of transport capital formation in Ireland, the 50 year long-run average level of capital formation stands at 1.13% of GDP. The average transport investment levels for developed countries, for the period 1995-2007, was approximately 1.23% of GDP.

- Household expenditure on transport represents a very significant proportion of household spending – similar to expenditure on housing and food - with the average household spending €116 per week on transport-related expenditure. This equates to total national household expenditure of around €10 billion per annum. This existing burden of taxation and level of household expenditure must be borne in mind when considering any potential for additional revenue-raising mechanisms within the sector.

- Price-based demand management is likely to also be necessary although it must not increase the already high overall cost of transport, and will also require greatly enhanced provision of alternative modes.

3.3 Climate Change & the Environment

Global concerns about the effects of climate change and the need to mitigate its threats to social, economic & environmental sustainability is a key driver of policy, change and innovation in transportation. Transport emissions are inextricably linked to climate change and global warming. Observable climate change trends includes degraded habitats, diminished water resources, compromised agriculture and food production systems, migration and population shifts, extreme weather events and conflicts; all of which in turn account for significant adverse economic impacts and mitigation measures. In addition to global warming and climate change, traffic congestion, accidents and road fatalities and unsustainable urban sprawl also impact negatively on the natural, built and social environment. The transport sector also exerts considerable pressures and adverse impacts on the environment due to high levels of energy and petroleum consumption and the resulting air pollution (including nitrous oxides and particulates) and emissions of carbon dioxide. Human health impacts arising from particulate matter (PM) and nitrogen oxides (NOx) emissions include cardiovascular and respiratory disease. Among the predicted localised adverse impacts of climate change are sea level rise, more intense storms, increased likelihood and magnitude of river and coastal flooding, adverse impacts on water quality, decrease in rainfall in spring and summer, an increase in intensity of storms, and changes in distribution of plant and animal species *(EPA, 2015)*. The increased incidence of flooding in Ireland, particularly in 2009 and 2015, highlight the impact of climate change and changing weather patterns. In Ireland, six of the ten warmest years on record have occurred since 1990 *(EPA, 2014)*.

Recognising the critical importance of these issues and in order to mitigate their effects, the EU has committed to transforming Europe into a highly energy-efficient, low carbon economy. Accordingly it has objectives for reducing its GHG emissions progressively up to 2050, a target which in turn becomes a binding target for each of its member states such as Ireland. For 2020, the EU has committed to cutting its emissions to 20 % below 1990 levels and this commitment is one of the headline targets of the Europe 2020 growth strategy. One should also expect to see it fully reflected in the successor strategy post 2020, with policies, incentives and penalties to match. The EU internal 20 % target is also the basis for its international commitments under the Kyoto Protocol's second commitment period (2013–20). In addition, the EU has offered to increase its emissions reduction to 30 % by 2020 if other major emitters commit to undertake their fair share of a global emissions reduction effort. Beyond 2020, in its climate and energy policy framework for 2030, the EU sets itself a target of reducing emissions to 40 % below 1990 levels by 2030. Furthermore it

seeks at least a 27% share of energy from renewable sources as well as at least a 27% improvement in energy efficiency. For 2050, the EU has endorsed the objective of reducing Europe's GHG emissions by 80 % compared to 1990 levels as part of efforts by developed countries as a group to reduce their emissions by a similar degree. Accordingly, a reduction from at least 38 million tons of GHG in 2016 to less than six million tons in 2050 has become a national climate policy goal as is the obligation to deliver 10% of transport energy from renewable sources by 2020.

The Emission Trading System (ETS) is the EU's key tool for cutting GHG emissions. In 2016, the EU announced binding targets for reductions in GHG emissions in the ETS sector for all EU member states. The target set for Ireland was a reduction of 30% compared with 2005 but with the flexibility to reduce its 30% emission reduction target to 20.4% by transferring emission allowances, which would normally have been auctioned, from the ETS Sector to the Non-ETS Sector, and by credits from certain land use changes. Transport – along with agriculture – is a significant element in the non ETS sector in Ireland. Despite such obligations it is evident that transport emissions have increased in each year since 2012 as a consequence of renewed economic growth and are projected to further increase in the coming years. In 2015 Ireland's total GHG emissions totalled 60 million tonnes, of which transport accounted for 19% - the highest after agriculture at 33% and an increase of 7% since 2015. It is now generally recognised that Ireland will not achieve the target of a 20% reduction in emissions in the non-ETS sector by 2020. EPA projections estimate that by 2020 Ireland's non-ETS emissions will be between 6% and 11% below 2005 levels compared to the 20% reduction target. Such targets will require radical changes in transportation policy and use. It further highlighted that a modal shift away from road transport and a switch to alternative fuels are among the key future challenges to be overcome if Europe is to achieve its decarbonisation targets.

Ireland's emissions profile has changed considerably since 1990, with the contribution from transport increasing by 130% between 1990 and 2015. The transport sector has been the fastest growing source of GHG emissions over the period, representing 27.5% of Ireland's non-ETS emissions in 2015. The transport share of overall national GHG emissions has increased from 9% in 1990 to almost 20% in 2005 and remains now at that 20% level. During this period, there was a significant increase in both economic output and car ownership levels, from around 800,000 cars in 1990 to close to two million in 2015 (+149%). There is a strong correlation between Irish Gross National Product (GNP) and transport GHG emissions, particularly those emissions relating to the freight sector. In considering Ireland's capacity and scope to address its climate change obligations, consideration must be given to a number of notable features of transport in Ireland. These include:

- A high level of fossil fuel dependency, which results in significant emissions of GHG's and air pollutants contained in exhaust fumes.

- A contribution of 12% to all air pollutant emissions in 2015 and one of the largest contributors to particulate matter pollution in urban areas, exacerbated by high levels of diesel car ownership.

- An extremely high transport fuel use per capita linked to geographic and population factors including low urban densities, a dispersed rural population and high levels of car dependency.

- Private car as the dominant mode of transport in Ireland, accounting, on average, for 74% of all journeys and 79% of all journeys outside Dublin.

- Limited availability and modest use of public transport.

- Almost all transport GHG emissions emanate from road transport.

- The total number of licensed vehicles in Ireland now exceeds 2.5m – of which 1.9m are private cars. This represents an increase of 250% since 1990.

- Motor fuel consumption is increasing despite greater fuel efficiency in vehicles.

- Increased levels of urban congestion.

- Ireland's transport CO_2 emissions have increased every year since 2012 and in 2015 stood at 11.8 million tonnes.

- Considerable infrastructural deficits and the lag time for planning and development.

Notwithstanding the particular characteristics of transport in Ireland, the Irish Academy of Engineering *(Ireland's 2030 Greenhouse Gas Emissions Target: An Assessment of Feasibility and Costs, 2016)* offers an interesting comparison between Ireland and the United Kingdom and the respective strategic approaches adopted to meet their respective climate change obligations. It notes that in the United Kingdom transport GHG emissions declined by over 8% between 1999 and 2013, at a time when UK economy expanded by 27%; its population increased by 9.2% to 64.1 million and the number of licensed cars increased from 25.2 million to 31.1 million, an increase of 23.4%. This decline in emissions is attributed to a considerable increase in public transport utilisation, particularly on its existing rail network and increased investment in bus and cycleway capacity, particularly in London, accompanied by measures to restrict city private car use. Based on the Academy's analysis, Ireland's transport emissions will increase in line with real economic growth as indicated in the period to 2030 by 8%, from 2015 levels if the economy expands at 2% p.a. (by 24% if the economy expands at 3% per annum. Tackling emissions in the transport sector needs to be given the highest priority. Greater use of public transport needs to be promoted and incentives also put in place to encourage changes in mode of travel. Capital expenditure on

new public transport infrastructure projects of €0.65 billion a year will be required for the next 15 years. Conversion of public transport and goods vehicles to CNG, and ultimately to biogas should also be prioritised.

In 2016 The Irish Academy of Engineering examined various measures to mitigate transport emissions including transport infrastructure upgrades, incentives to promote greater fleet and mode efficiency. Even with these measures, the Academy estimates that transport emissions will increase from 11.8 million tonnes in 2015 to 13.4 million tonnes in 2030, based on its model which incorporates technological developments and economic growth. The first and most important step in reducing transport GHGs is to reduce usage and increase efficiency – through fewer journeys, driving shorter distances, more fuel-efficient vehicles and through shared mobility initiatives such as carpooling and ride-sharing. Sustainable modes of transport like walking, cycling and greater use of public transport need to be promoted and facilitated by further investment. In Ireland, there is an urgent need for better urban and spatial planning, as well as a major investment programme to encourage much more fuel-efficient transport, a switch to cleaner and alternative fuels, a rapid increase in the electrification of our car stock and a very significant shift from private car to public transport.

In 2014, the Irish Government adopted the *National Policy Position on Climate Action and Low Carbon Development.* This establishes the fundamental national objective of achieving transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. It sets out the context for the objective, clarifies the level of GHG mitigation ambition envisaged and establishes the process to pursue and achieve the overall objective. Specifically, the *National Policy Position* envisages that policy development will be guided by a long-term vision based on:

- An aggregate reduction in carbon dioxide (CO_2) emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation, built environment and transport sectors.
- An approach to carbon neutrality in the agriculture and land-use sector.

In January 2018 the Climate Change Advisory Council warned that Ireland's growing economy and rising emissions had not been decoupled, that the failure to introduce major new policies and measures will make the 2030 targets more difficult and more costly to achieve and that the actions outlined in the Government's National Mitigation Plan (NMP) to reduce carbon emissions do not put Ireland on a pathway to achieve the 2020 targets or the long-term objective to decarbonise the economy by 2050. The scale of Ireland 's task in meeting its climate change obligations is further amplified by its ranking in 49th place (from 56) of selected global economies in the Climate Change index. Significantly, and of some concern, it is ranked as the worst performing country in Europe for action on climate change *(Climate Change Index; Germanwatch/New Climate Institute, 2018)*. It notes that Ireland is one of the

few EU countries to miss its 2020 emission reduction targets under the EU effort-sharing decision. The report claims Ireland produces the highest volume of emissions per person in Europe and the eighth largest in the world *(See Appendix 2)*.

Ireland's probable failure to meet its binding obligations will likely come at a significant financial cost through fines levied for non-compliance. While the precise level of these fines is as yet unknown, in 2016 the EPA modelled the following scenarios to demonstrate that financial penalties could easily range from a minimum of €429m to over €2bn:

Table 2: Envisaged scenarios and projected fines

Envisaged Scenario	Projected Fine (based on €65m per % shortfall)	Projected Fine (based on €97.5m per % shortfall)	Projected Fine (based on €130m per % shortfall)
EPA's projected scenario (11% below 2005) is met	€715m	€1,072.5m	€1,430m
EPA's projected scenario is out by a further 20% (13.2% below 2005)	€858m	€1,287m	€1,716m
EPA's projected scenario is exceeded by 20% (8.8% below 2005)	€572m	€858m	€1,144m
EPA's projected scenario is out by a further 40% (15.4% below 2005)	€1001m	€1,501.5m	€2,002m
EPA's projected scenario is exceeded by 40% (6.6% below 2005)	€429m	€643.5m	€858m

(Source: EPA, 2016)

If Ireland remains on its current course, a best-case scenario looks like a fine in the region of €715m, but this could potentially be closer to €1.4 billion, the equivalent of 14 times the resources committed to the Smarter Travel programme in Ireland for the period 2009-2020

The European Commission's July 2016 *European Strategy for Low-Emission Mobility* reiterates the ambition that '*by mid-century, GHG emissions from transport will need to be at least 60% lower than in 1990 and be firmly on the path towards zero. Emissions from air pollutants from transport that harm our health need to be drastically reduced without delay.*' The main elements of the strategy include:

- Increasing the efficiency of the transport system by making the most of digital technologies, smart pricing and further encouraging the shift to lower emission transport modes.

- Speeding up the deployment of low-emission alternative energy for transport, such as advanced biofuels, renewable electricity and renewable synthetic fuels and removing obstacles to the electrification of transport.

- Moving towards zero-emission vehicles. While further improvements to the internal combustion engine will be needed, Europe needs to accelerate the transition towards ultra-low- and zero-emission vehicles.

To address the challenge of transitioning from conventionally fuelled vehicles to alternative fuels and technologies and achieving the decarbonisation of the national passenger car fleet by 2050 and the increase the use of alternative fuels in the freight sector, the *National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland: 2017- 2030* sets an ambitious target that from 2030 all new cars and vans sold in Ireland will be zero emission (or zero emission-capable) and that other technologies, perhaps still unknown, will be fuelling larger vehicles, so that by 2050, the nation's car fleet, along with much of our public transport buses and rail lines, will be low/near zero emissions. In the meantime, Ireland is seeking greater diversification of fuels in the freight haulage sector to include a mix of natural gas, biogas, electricity (light vans) and renewable diesel or other biofuels.

Since 2011, the SEAI has been providing grants of up to €5,000 to incentivise consumers to purchase a battery electric vehicle (BEV) or a plug-in hybrid electric vehicle (PHEV). By the 31st December 2016, 1,705 electric vehicles were SEAI grant aided. In addition to the grant scheme, such vehicles qualify for VRT relief of between €2,500 and €5,000 depending on the type of low emission technology being used. This provides a maximum combined subsidy (grant plus VRT relief) of €10,000 in the case of a BEV and €7,500 for a PHEV. In Budget 2017, it was announced that VRT relief on BEVs will continue until end 2021 with relief until end 2018 for PHEVs. Increasing range performances, decreasing purchase prices and the availability of an extensive nationwide charging network are providing a supportive environment for a widespread transition to electro-mobility.

In 2009, Ireland's *Smarter Travel* policy set a target for 10% of all vehicles on Irish roads to be powered by electricity by 2020, representing approximately 230,000 vehicles. To this end, the plan included the nationwide roll-out of charging infrastructure with 2,000 domestic charge points; 1,500 public access city and town charge points and 30 inter urban fast charging points spaced 60km apart. According to SEAI (2016), new electric vehicle registrations need to grow from less than 1% of new car sales to 20% within the next 5 years, i.e. annual sales of EVs need to reach 50,000 by 2020 in order to contribute to meeting binding EU energy targets. At present, electric cars account for only 1.3% of new car sales in the EU, but this figure rises to 12% in the Netherlands and to 8% in Denmark *(European Environment Agency, 2016)*.

In 2017, the Citizens Assembly, met to discuss and make recommendations on how the State can make Ireland a leader in tackling climate change. Over the course of their deliberations, the Citizens Assembly heard eleven presentations and considered over 1,200 submissions. They overwhelmingly endorsed recommendations that climate change be at the centre of policy making (98%); that the State should take a leadership role in addressing climate change through mitigation measures (100%); the Introduction of a range of

additional incentives, particularly aimed at rural communities, to encourage motorists towards electric vehicle ownership in the short term. Such measures should include, but not be limited to, targeted help to-buy schemes, reductions in motor tax for electric vehicles and lower or free motorway tolls (96%); greater investment in an priority to bus and cycle lanes and park and ride facilities (93%); and the expansion of public transport spending over new road infrastructure spending at a ratio of no less than 2-to-1 to facilitate the broader availability and uptake of public transport options with attention to rural areas (92%)

Countries, regions and cities throughout the globe have adopted some progressive policy actions and mitigation measures to address the effects of climate change, deteriorating environmental quality and citizen wellbeing. Often driven by local autonomy in decision-making and progressive mayoral-led initiatives these can be radical and punitive in nature but will generally have accessible and effective public transport systems in place as a backstop. In addition to environmental and quality of life factors, they also have as a prime objective the opportunity to promote modal shift and changes in transit custom and behaviour. Some notable examples include:

- Over half of Copenhagen's population bikes to work every day, thanks to the city's effort to introduce pedestrian-only zones starting in the 1960s. The Danish capital now boasts more than 200 miles of bike lanes and has one of the lowest percentages of car ownership in Europe. It is currently constructing a superhighway for bikes that will stretch to surrounding suburbs. The first of 28 planned routes opened in 2014, and 11 more will be completed by the end of 2018. The city has also pledged to become completely carbon-neutral by 2025.

- Brussels has the second largest car-free zone in Europe, behind Copenhagen. In 2002, it launched its first *Mobility Week* to encourage public transportation over private transport. For one day every September, all cars are banned from the entire city centre. The city is looking at a proposal would turn a popular city centre four-lane boulevard into a pedestrian-only area. In January 2018, Brussels started banning diesel cars made prior to 1998. And this summer the city will make public transport free to users on high-air-pollution days.

- Mitigation measures in Paris have resulted in city centre driving in Paris declining by 45% since 1990. In this time, the share of cyclists has increased tenfold and public transport mode share has risen by 30 percent. Paris banned cars with even-numbered plates for a day in 2014 with pollution dropping by 30% as a result. The city intends to discourage cars from driving in the city centre completely. As of 2016 drivers with cars made before 1997 are not permitted to drive in the city centre on weekdays and risk fines if they do so. Paris also plans to double its bike lanes and limit select streets to electric cars by 2020. France is to ban diesel and petrol cars by 2040.

- Norway, where in 2017 almost 40% of new vehicle sales were hybrid, electric, or hydrogen, has agreed to end sales of petrol and diesel cars by 2025.

- In 2017 the Scottish Government announced that it would phase out petrol and diesel cars by 2032.

- In 2018 London will commence the full pedestrianisation of Oxford Street, one of its premier shopping thoroughfares. The street – already car-free suffers - from chronic pollution largely a consequence of diesel-engine buses. London, which already levies congestion charges in the city, will ban diesel cars completely by 2020.

- Oslo intends to permanently ban all cars from its city centre by 2019 — six years before Norway's country-wide ban goes into effect. The city will invest heavily in public transportation and replace 35 miles of roads previously dominated by cars and car parking with bike lanes.

- Madrid plans to ban cars from 500 acres of its city centre by 2020, with urban planners redesigning 24 of the city's busiest streets for walking rather than driving. The initiative is part of the city's sustainable mobility plan, which aims to reduce daily car usage from 29% to 23%. Drivers who ignore the new regulations will pay a fine of at least €100 and the most polluting cars will pay more to park.

- In 2018, Germany's highest administrative court ruled in favour of upholding bans that were introduced by lower courts in the cities of Stuttgart and Düsseldorf, two of the most polluted German cities, after appeals were lodged by the states of Baden-Württemberg and North Rhine-Westphalia. As a consequence millions of heavily polluting vehicles could eventually disappear from roads across Germany. This potentially affects an estimated 12m vehicles and has delivered a heavy blow to Europe's largest car market, while being celebrated by environmental campaigners.

- In 2008, Berlin created a low-emission zone banning all gas and diesel vehicles that fail to meet national emission standards. The area covers about 34 square miles in the city centre and affects approximately one-third of Berlin's residents, Berlin also announced March 2017 that it planned to build a dozen bike super-highways, which will each stretch at least 13 feet wide and be fully segregated from road traffic.

- Hamburg plans to make walking and biking its dominant mode of transport. Within the next two decades, Hamburg will reduce the number of cars by only allowing pedestrians and cyclists to enter certain areas of the city. The project calls for a *gruenes netz*, or a "green network," of connected spaces that people can access without cars. By 2035, the network will cover 40% of Hamburg and will include parks, playgrounds, sports fields, and cemeteries.

- In Bogotá, Colombia, over 75 miles of roads close to vehicles one day every week in an event that began in 1974, called Ciclovia, a weekly, city-wide, car free day that

puts 76 miles of roads, including La Septima – the city's main commercial centre – off-limits to cars. The city now has over 200 miles of bike-only lanes.

- A new residential area in Chengdu in China will make it easier to walk than drive as streets are designed for pedestrians to walk anywhere within 15 minutes.

- London is building 12 cycle superhighways—extra-wide lanes dedicated to bicycles. New York expects to have 1,800 miles of bike lanes by 2030. Paris has a bike-sharing network that includes the suburbs and is integrated into the public-transit payment system; São Paolo is doing the same. Delhi is considering proposals to set up separate bike lanes and is providing bike parking near transit stops. Moscow is expanding bike sharing and adding dedicated bike lanes. San Francisco is expanding its network of bicycle lanes; the city's goal is to increase the percentage of all trips taken by bike from 3.4 to 10 percent by 2018. It has also announced its plan to ban cars and add bike lanes on 2.2 miles of Market Street, one of the city's busiest boulevards. Throughout the city, there are 125m of bike lanes in total.

- China, the world's largest auto market intends that 20% of all car sales will be from electric vehicles and plug-in hybrids by 2025.

- By 2030 India will require that all new cars sold will be fully electric.

- Cities across the globe increasingly see electric buses as a way to reduce local air pollution, and municipalities such as Paris and Amsterdam have set goals to switch to zero-emission buses in the coming years.

- As of December 2016, over 1000 cities throughout the world have developed bike sharing schemes.

3.4 Urbanisation and Demographics

Urbanisation is integrally connected to the three pillars of sustainable development: *economic development, social development* and *environmental protection*. In 2007, for the first time in history, the global urban population exceeded the global rural population, and the world population has remained predominantly urban thereafter. The world's urban population is now close to 3.9 billion and is expected to reach 6.3 billion in 2050 having increased from 54% of the global population in 2014 to an expected 70% by 2050. The World is urbanising and this process is irrevocable, being simply a factor in the formation of developed societies and economies. Cities are important drivers of development as they are where concentrations of the national economic activity, government, commerce and transportation are located. They are the economic engines for national economies; driving governance and public policy, facilitating economic agglomeration critical mass and scale; fostering and support innovation; attracting and accommodating talent skills and diversity.

As indicated within the NPF demographic change and in particular greater urbanisation will fundamentally alter the way in which Irish citizens live, work, consume and recreate with

particular challenges for mobility, infrastructure and the development of transit services. Such changes merely reflect considerable changes already underway elsewhere. The State is increasingly urbanising with a higher proportion of people locating in towns and cities as defined by the CSO. In 2015, 62% of the population lived in '*aggregate town areas*' i.e. those greater than 1500 population; a rise of 2.2% since 2006. Indeed such changes need to be seen in a global context. By 2050 there will be 9.7 billion people in the world, 70 percent of whom will live in cities. Over the same period, the global economy is expected to triple in size leading to more than a doubling in road and rail travel and more than a three-fold increase in the amount of road and rail freight. It is estimated that the share of private cars will continue to increase strongly in developing regions and fall only slightly in developed economies. As a result, vehicle-miles travelled (VMT), i.e. the amount people drive, will likely grow at a slower pace than years prior in developed countries, while per-capita VMT may stagnate or slightly fall. Freight VMT will also continue to rise as urban populations grow along with demand for goods and services. Population and economic growth alongside continued urbanisation are the root causes of transport congestion. The speed of change and technological trends means that any city or region has the opportunity – and most likely the necessity - to radically remodel its mobility and transport landscape over the next five to ten years. However, the continuing concentration of development – residential, employment, services, education, healthcare, recreation - in urban cores will further precipitate rural decline and disadvantage rural dwellers. Careful consideration, future-oriented and progressive policy interventions will be required to mitigate the likely future impacts of urbanisation and to ensure that the co-dependencies and synergies of urban and rural populations remain intact; most particularly in relation to access to employment and services.

In economic terms, transport demand is essentially a derived demand and is largely dependent on the level of activity within an economy. Population growth, labour force participation rates, settlement patterns and changes in the affordability of transport have an impact on transport demand. The spatial relationship between where a person lives, works, goes to school, shops and socialises forms the basis for this demand. Settlement patterns, in particular, play a fundamental role in influencing how people travel, both the distances undertaken and the choice of mode. The provision of sustainable transport options is only economically viable when development patterns locate populations close to employment centres and complementary services such as education, retail and leisure. Economic reality, if not social justice and equity demands that infrastructure investment must provide maximum "bang for the buck" in terms of social and economic benefits. Scale and critical mass are fundamental and thus where there's competition for limited or scarce resources investment will likely follow the numbers. But public transport investment and provision in particular should not be judged on profitability alone. It generates and is an enabler of economic growth; of balanced regional development and rural vitality; it promotes healthier lifestyles; facilitates social cohesion and enables shared - if not equal

access - to opportunities and services; it provides mobility for those who would otherwise have no way of participating fully in society. It achieves all of these things while minimising the negative externalities of transportation like emissions and pollution. Its benefits are evident and numerous as are its costs.

Although Ireland's population is young in comparison to other European countries, it is still ageing and is particularly marked amongst those aged over 85. There were 69,000 people aged 85 or over in 2017 and this is expected to grow to some 159,000 by 2037 – a 130% increase. Furthermore, the old age dependency ratio (the ratio of those aged 65 years and over to those aged 15-64) was 21.1 in 2017, and it is projected to rise to 33.9 by 2037. Since 2008, the population has increased by 6.9 per cent to a figure of 4.8 million with the most significant growth seen in the older population *(Department of Health; 2017).* While there were approximately 639,000 people aged 65 and over in 2017, there will be 1,115,000 by 2037 - a 74% increase. Ireland's rate of ageing continues to be considerably higher than the average for EU countries *(Department of Health, 2017)*. So while Ireland's population is living longer, and enjoying a more active and healthy period of retirement, this trend will increase the demand for travel by this cohort of the population. In tandem it will increase the demand for specialised healthcare facilities and an increase in the demand for travel for healthcare purposes.

3.5 Technology

Information and communication technologies have become fundamental to how societies and modern economies function. We understand and accept how technology has changed work models, practices and consumer habits. Home working, telecommuting, distributed workforces, portfolio working, on-demand services, digital payments, on-line shopping, e-government and automated services have become norms. The pace of change and the disruptive innovation brought about by digital transformation has been little short of revolutionary. How we live, work, communicate and recreate has changed immeasurably in a comparatively short space of time. As we might reflect, *"The past is a different country; they do things differently there."* The development and adoption of new technologies and digital transformation brought about by mobile technology, enhanced connectivity, encryption, digitisation, materials science, cloud storage, automation, big data, sensor technology, artificial intelligence, robotics, predictive and prescriptive analytics has changed - and will continue to change - everything about how products and services are designed, manufactured, financed, sold, delivered, and serviced. We can expect the nature and pace of this change to be influenced by a range of factors and dynamics including:

- Greater deployment of broadband infrastructure, mobile phones and wireless connectivity. The World Bank estimates that a 10% increase in high-speed Internet connections worldwide will drive economic growth by 1.3% and lead to the

democratization of innovation. Similarly, the WEF predicts that global GDP can be increased by $1 trillion by connecting another 327 million people globally.

- Faster connectivity and mobile networks such as Fifth Generation (5G) claiming speeds of 40–60 times faster than current mobile technology has been trialled and has commenced roll out. Deployment in Ireland is expected from 2020 and it is claimed that this will address broadband and communication deficits in rural Ireland. 5G will also enable low-cost, low-power sensors to be embedded in building, appliances and vehicles.

- Enhanced connectivity will be a key enabler of the Internet of Things (IOT) - the network of connected smart devices that communicate seamlessly over the Internet – and allow interaction with analytics systems, using machine learning to turn real-time data into new insights and instant responses. Transport and traffic flow management will be informed by real-time data and analytics of congestion, weather, and other variables.

Figure 1: Visualising the Connected City
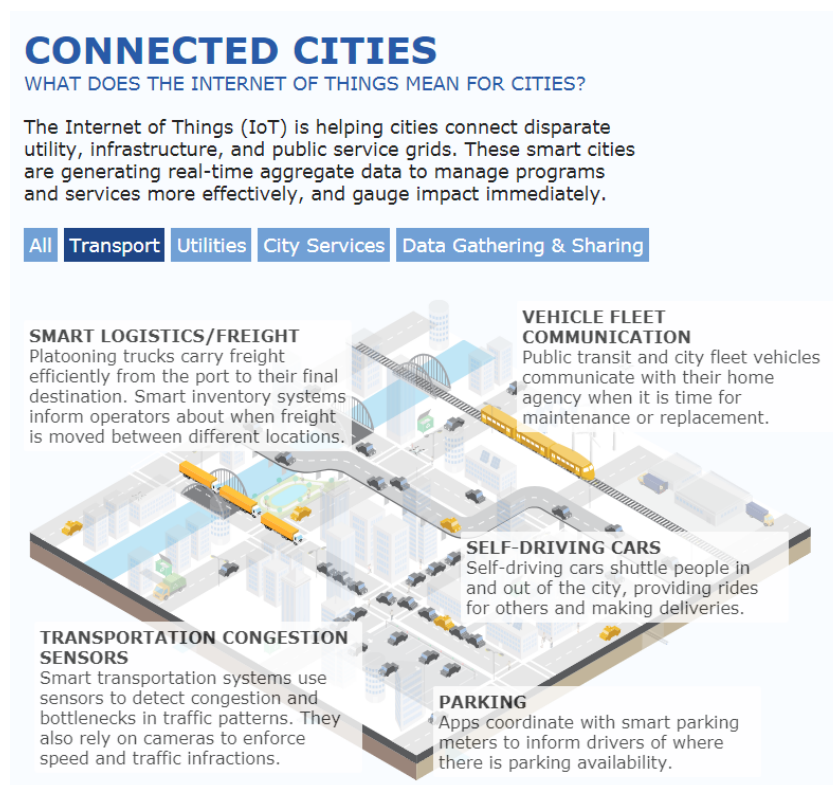
(Source: The National League of Cities, 2018)

- The use of *Big Data* and data-driven decision-making will allow information from multiple parts of the transport system to be analysed and used to inform choices on investment, planning, management and operations. *Big data's* use of all data rather than sampling for calculation purposes will reduce sampling error enabling artificial

intelligence to develop self-learning algorithms to perform precise predictive and prescriptive analytics. Artificial Intelligence and big data are radically transforming service delivery in *Smart Cities* like Hong Kong, Shanghai, Sydney and New York in areas like smart parking, monitoring air quality, and increasing the energy efficiency in buildings.

- Greater collaboration between the public and private sector in developing ICT solutions, data sharing and open data standards.

- Technology platforms, accessed with a mobile app, integrating real-time transit information and the processing of payments and issuing of tickets.

- Coverage, efficiency and cost gains through the use of on-demand vehicles operated by private mobility services which integrate and connect with other forms of public transport.

- Enhanced data security and cyber resilience through improvements in biometrics, digital ID, facial recognition technology and secure digital payments. The use of blockchain, an algorithm and distributed data structure, will enable decentralized verification of any transaction.

A convergence of technological and social trends, driven by mobile technology and connectivity enabled by the *Smartphone* will profoundly change in the way people and goods are transported. Technology envisages and can enable a future in which a transportation system ensures that all its elements—cars, trains, buses and soft modes — are systemic and integrated. Smart infrastructure will connect individual modes in a way that all work seamlessly to serve the mobility needs of citizens. All vehicles—cars, buses, trains, freight vehicles - will communicate with a smart infrastructure that includes roads, tracks, parking and traffic lights, using sensors. Data obtained in this way will help maintain the flow of and direct traffic intelligently, reduce congestion, and adapt the infrastructure to meet acute requirements. Smart traffic management systems are likely to make transportation more reliable, flexible, predictable, and safer. Crucially, it will facilitate intermodal travel, using different means of transportation in combination to address *first mile, last mile* connectivity issues. Evidence-based transport and mobility planning will become widespread offering the potential for seamless mobility, enhanced coverage and higher levels of usage. The emergence of a new ecosystem of mobility should offer faster, cheaper, cleaner, safer, more efficient, and more customised travel. Deloitte *(The Future of Mobility, 2017)* suggests that these changes could occur more quickly and at greater scale than many are prepared for, especially in densely populated areas. If shared and autonomous vehicles are adopted as quickly as other technologies in the past, Deloitte predicts that significant change will begin by 2025 and thereafter that the market for personal mobility could transform dramatically by 2040.

It is widely predicted that that [shared mobility](#), electric vehicles, assistive technologies, in-vehicle connectivity as well as autonomous driving will disrupt transport and mobility and their manufacturing, service and support industries. While there is uncertainty about the speed of transition, a fundamental shift may be occurring with a move away from personally owned, driver-driven vehicles and towards shared mobility. Already a feature in many other countries, if not in Ireland, the concept of shared mobility is likely to be transformative. The term refers to the shared used of a vehicle, bicycle, or other transportation mode and is a transportation strategy that allows users to access transportation services on an as-needed basis. It encompasses a variety of transportation modes including car sharing, carpooling, ride hailing, bike-sharing, on–demand services, micro-transit, and other modes. It is a subgroup of the larger sharing economy a term that encompasses a wide variety of services, usually involving the online transactions of goods or services as part of a peer-to-peer marketplace. Innovations in social networking, location-based services and Internet technologies have enabled shared mobility to develop and expand rapidly. By improving efficiency, providing cost savings, and monetising underused assets and resources, shared mobility services have become widely used in many cities around the world. Prominent examples include Uber a peer-to-peer ridesharing, food delivery and transportation network company headquartered in San Francisco with operations in 633 cities worldwide; Lyft, an on-demand transportation company in 300 North American cities; Car2go, a subsidiary of Daimler which provides car sharing services in urban areas in Europe, North America, and China and FlixBus a German company which uses an online platform to connect more than 100,000 travellers a day with 300 bus operators serving intercity connections in 27 European countries. Shared mobility can yield a variety of environmental, social, and transportation system benefits including enhanced transportation accessibility as well as reduced driving and decreased personal vehicle ownership. Moreover, shared mobility networks also retain the potential to expand the reach of public transportation by addressing gaps in existing public transportation systems by offering *first mile, last mile* solutions. The rise of smartphone applications and location data has increased the feasibility of shared transportation services and technological advances have enabled the development of car sharing companies and ride sourcing services. In a similar vein micro-transit is a for-profit bus service using sophisticated algorithms to plan fixed routes, based on demand. It primarily caters to commuters willing to pay more for a journey perceived to be more direct and comfortable than those offered by existing public transportation. Common factors that contribute to successful shared mobility initiatives include the availability of good public transportation, walkability, high density, and mixed-use neighbourhoods, limited availability and cost of parking, congestion and constraints on traffic movement. Thus, dynamic ride-sharing models, the core enabling concept of ride hailing, work well in cities with high population density, where lead (or wait) times can more easily be reduced for both drivers and passengers. As commercial ride-hailing services have expanded, they have initially targeted major, metropolitan cities around the globe. Currently, China and the United States are the two largest markets for shared mobility, at

$24 billion and $23 billion, respectively. Both markets are dominated by e-hailing players, which hold market shares that exceed 80 percent in each country. Europe's market, on the other hand, is much smaller, at just under $6 billion, and leans toward car sharing with a more fragmented landscape *(McKinsey, 2017)*.

The global growth of electric vehicles is being driven by the confluence of falling prices and improved performance of batteries, consumer demand, and especially regulatory demand. Policy initiatives and regulations will likely drive initial adoption which in turn will provide the scale that the industry needs in order to become a viable economic concern. In 2016, over 750,000 electric vehicles were sold with 10 Countries globally accounting for 95% of sales. In 2016, China the World's largest auto market, recorded for the first time a stock of electric vehicles greater than the United States; having accounted for 40% of all global sales. Sweden has just opened the world's first electric road between Stockholm and Arlanda airport at a cost of $1m per kilometre; the road charges vehicles as they travel upon it.

China is also the global leader in bus electrification with 99 percent of the 385,000 electric buses on the roads worldwide in 2017 to be found there. This accounts for 17% of the country's entire fleet. Bloomberg New Energy Finance estimates that every five weeks, Chinese cities add 9,500 of the zero-emissions transporters—the equivalent of London's entire working fleet. Moreover, it notes that for every 1000 electric buses on the road 500 barrels of diesel a day are displaced. Paris, London, Mexico City and Los Angeles are among 13 cities that have committed to zero emissions transport by 2025.

The transport industry and in particular automotive manufacturers have been responding rapidly to changed realities. Technological change is well underway in the motor manufacturing industry which is poised to bring extended range, affordable electric vehicles to the mass market in the coming years. Volvo – now Chinese owned - has announced that from 2019, all its new models will have an electric motor. General Motors (GM) has mapped out a zero emissions future as it recently announced plans to release a range of 20 new electric vehicles by 2023. VW has earmarked €70bn to produce battery-powered versions of all models by 2030. Ford, now placing great store in its climate change strategy, intends to add 13 electric models to its range in the near future. Toyota recently announced its intention to phase out diesel car production in 2018. Tesla, whose move towards the mass market, currently has global orders for nearly half a million orders – and numerous production difficulties - for its long awaited mass market Model 3. Dyson, the domestic appliance company, has announced its intention to produce an electric car by 2021; an example how technology firms and motor industry incumbents are actively staking out competitive positions. All told, Bloomberg New Energy Finance expects over 120 models of electric vehicle to be on the market by 2020 and accounting for 54% of new car sales by 2040. The International Energy Agency predicts there could be between 40 million and 70 million electric cars on the roads by 2025; its ten member countries having recently

launched the EV30@30 campaign, setting a collective goal of a 30% market share for electric vehicles by 2030.

Ford, GM and others are developing advanced, additive manufacturing (3D printing) techniques to support the engineering and manufacture of customised vehicles. Nearly every major car manufacturer and a variety of technology companies are actively investing in autonomous drive technology. Autonomous or self-driving vehicles are being trialled with some countries already having relaxed rules to facilitate their development. Over time it is expected consumer acceptance of autonomous vehicles will be influenced by cost, reliability factors, risks, and safety. However as trials prove the technology's viability, regulations will likely facilitate their adoption and use most particularly for shared mobility services. If fully autonomous cars are likely to remain a small-volume market for some time, assistive technologies on the other hand will not. As drivers come to rely on technology that will guide and support their driving decisions and incremental technological improvements will likely address driver aids, safety, fuel efficiency and emissions, the industry will shift its focus from a hardware-driven product to a software-driven product with estimates that software will account for 30 percent of total vehicle content by 2030; up from about 10 percent today *(McKinsey, 2017)*. Currently Tesla collects terabytes of data from its vehicles and uses machine learning to improve predictive maintenance, self-driving capabilities and the driving experience of its cars significantly and continuously. The business-to-business (B2B) market for assistive and autonomous technologies, which includes software, hardware and services promises to be attractive, with estimates that the global market will be in the range of $22 to $26 million annually by 2025, with yearly growth between 12% and 14% (*Bain, 2017*). Most of the volume in the market will be advanced driver assistance systems, with autonomous driving comprising no more than 10% by 2025. Significant disruption and transformation of existing business models in the motor industry can be expected with its likely evolution from a fixed capital production, product-sale business into one as end-to-end mobility services providers [(Maas)](#), offering a range of transit and passenger experiences to meet widely varied needs at differentiated price points. The freight industry and the movement of goods won't be immune from significant change either; Tesla having announced it's to start production of electric trucks in 2019. More dramatically, automated platooning software will allow multiple trucks to autonomously follow each other in convoy. Currently under trial it is expected that this will start to make its way into commercial long-haul haulage in the short term. A technology company, Peloton, is planning a full launch scheduled for 2018 and several truck manufacturers, including Volvo, have plans to introduce platooning technologies to their models in the near future.

3.6 Cultural Factors

Assessments of mobility and transportation and predictions of radical change and dramatic modal shift can often ignore one critical factor: people's own habits and preferences. The issue of behavioural change is particularly important, as the transition to low-carbon mobility relies in large part on commuters' willingness to leave their cars at home and turn to greener modes such as public transit, cycling, or walking. As is evident from Ireland's experience this is difficult to achieve and is influenced by a range of cultural and historical factors, Ireland's dispersed settlement pattern and its legacy of poor transport infrastructure development and provision. However the pace of change and the combination of policy, environmental, demographic, economic and technological factors will fundamentally affect transit behaviour and consumer patterns in Ireland. As these changes materialise, new options and practices emerge citizen behaviour, values and motivations can readily adapt where visible and quantifiable benefits can be seen to quality of life and wellbeing. Where we live, work and recreate as well as what we value – time, relationships, security and safety - will determine our need to travel and influence the modes chosen. Urbanisation, the development of mega-regions, greater urban densities, global migration and global competition for the available skills and talent will see some cities develop strongly. But the nature of work – what we do, the means by which we do it and the location from which we work - is changing and with it are some opportunities to reduce the need to travel. New work models enabled by mobile technology, cloud storage and the sharing economy already facilitate flexible and remote working and with it a reduction in the need to commute, in traffic volumes and congestion. Artificial intelligence, automation and additive manufacturing will reshape the nature of work. A Universal Basic Income (UBI) – already being trialled - may facilitate those who desire a better work-life balance and increased leisure time.

Shared mobility reflects a significant shift away from vehicles as a *product* to vehicles as a *mobility service* and it is expected to bring about significant changes in consumer behaviour in the choices we make, how we use our disposable income and the means by which we travel. It is also expected to impact on the consumer's need or desire for private car ownership with its disruptive nature impacting heavily on traditional transportation modes like private car use and altering conventional modes like buses, trains, aviation, taxis, and rental cars. The MaaS ecosystem will breed a competitive environment full of dynamic transportation marketplaces, public private partnerships, and aggregators moderating and managing supply and demand according to government policies and frameworks. Technology aspects of MaaS include driverless vehicles and shuttles, open platforms, multimodal transportation and information services and single account billing. By providing aggregated, single account, multimodal transportation services in a seamless and convenient way, it is also likely to allow people use travel and wait time more productively. It is also expected that MaaS will result in more environmentally friendly transportation through the deployment of fleet-based, alternative powertrain vehicles and reduced

congestion through improved utilisation rates, thus appealing to more ethically minded and environmentally conscious consumers. The autonomous operation of shared mobility modes is also expected to eliminate the need for paid drivers and reduce insurance costs. While its future success will depend on open, competitive platforms and market places global MaaS revenues are forecast to exceed $1 trillion by 2030 *(ABI Research, 2016)*.

4. A Socio-economic profile of Kilkenny

4.1 Demographics

The population of Kilkenny city and county was recorded as 99,232 in the 2016 census. This represents a 23% increase since 2002, marginally higher than the national average of 21%. Of the total population increase of 3,813 in the period from 2011 to 2016, 81.5% was recorded in urban areas. To a significant degree increases in population were recorded in the peri-urban areas of Kilkenny and Waterford cities; in settlements adjacent to the inter-urban motorway network and to the N76 and N24 National Secondary routes. Electoral Divisions (EDs) experiencing significant percentage population growth, deemed as being in excess of 50%, over the period include Coolaghmore (+52), Callan Rural (+58), Bramblestown (+68), Tiscoffin (+92) Paulstown (+104), Jerpoint West (+138) and Kilculiheen (+144).

The population of Kilkenny city is 26,512, making it the 11th largest urban settlement in the state. Its population increased by 8.6% in the period from 2011, double the county and national average. Areas where the population remained static or decreased over this period predominated to the North and West of Kilkenny city and more randomly in the south of the county. Of the 13 EDs experiencing population decline Ballyconra (-10), Tullaroan (-11) and Baunmore (-12) were the only EDs which lost over 10% of their population over this period.

Figure 2: County Population
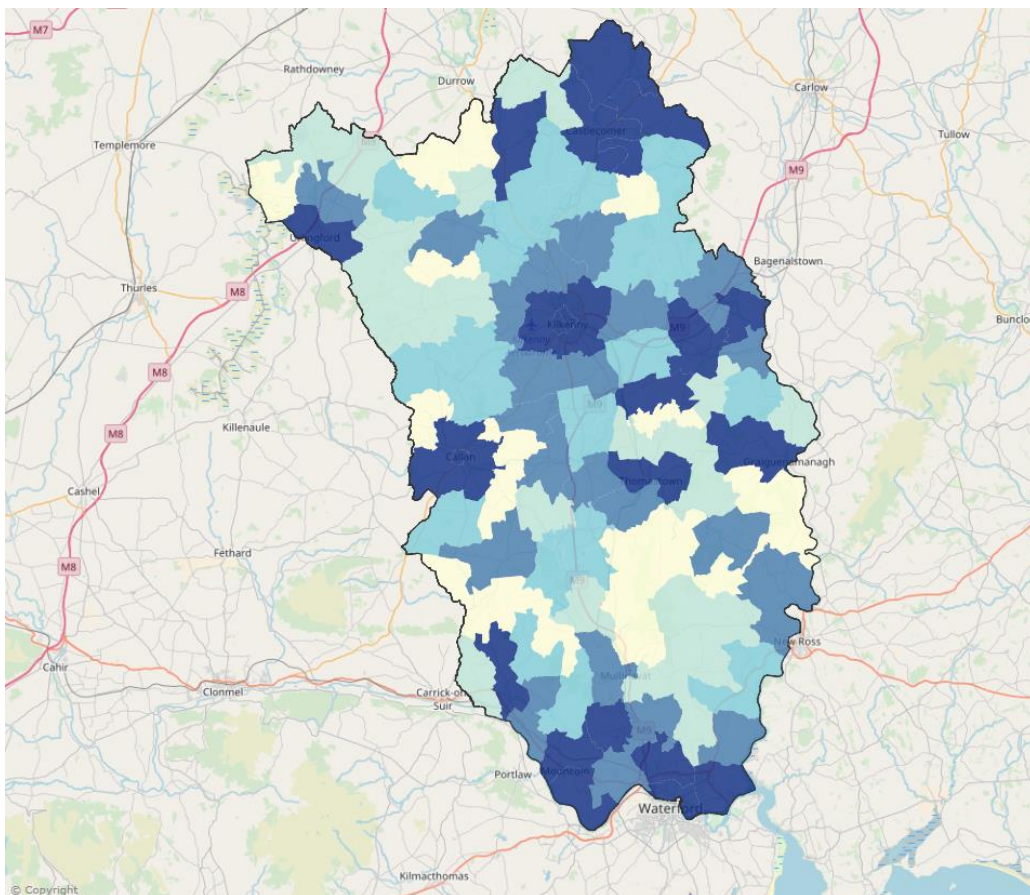
(Source: CSO Population, 2016)

Kilkenny city and county comprises an area of 2050sq km and 113 EDs. It has an average population density of 48.4 persons per sq. km; less than the national average of 70 persons per sq. km. The EDs of Kilkenny No. 1 Urban (3,187) and Kilkenny No.2 Urban (2,252) exceed the national average urban population density of 2008 per sq. km. However 59 rural EDs have a population density below the national rural average population density of 27 persons per sq. km. Notable clusters of these are to be found in the north west of the County and in an area triangulated by Callan, Graiguenamanagh and New Ross.

While permanent private dwellings have increased by 36% in the period 2002 to 2016, the average household size in the County has remained relatively consistent with an average of 2.85 persons residing in each permanent private dwelling in 2016. This shows a continuing trend towards the formation of smaller households.

Table 3: Household formation

Census year	No. of Households	Population	Average household Size
2002	25,603	75,965	3.03
2006	29,651	84,973	2.88
2011	33,619	94,342	2.80
2016	34,855	97,536	2.79

Figure 3: Population Change
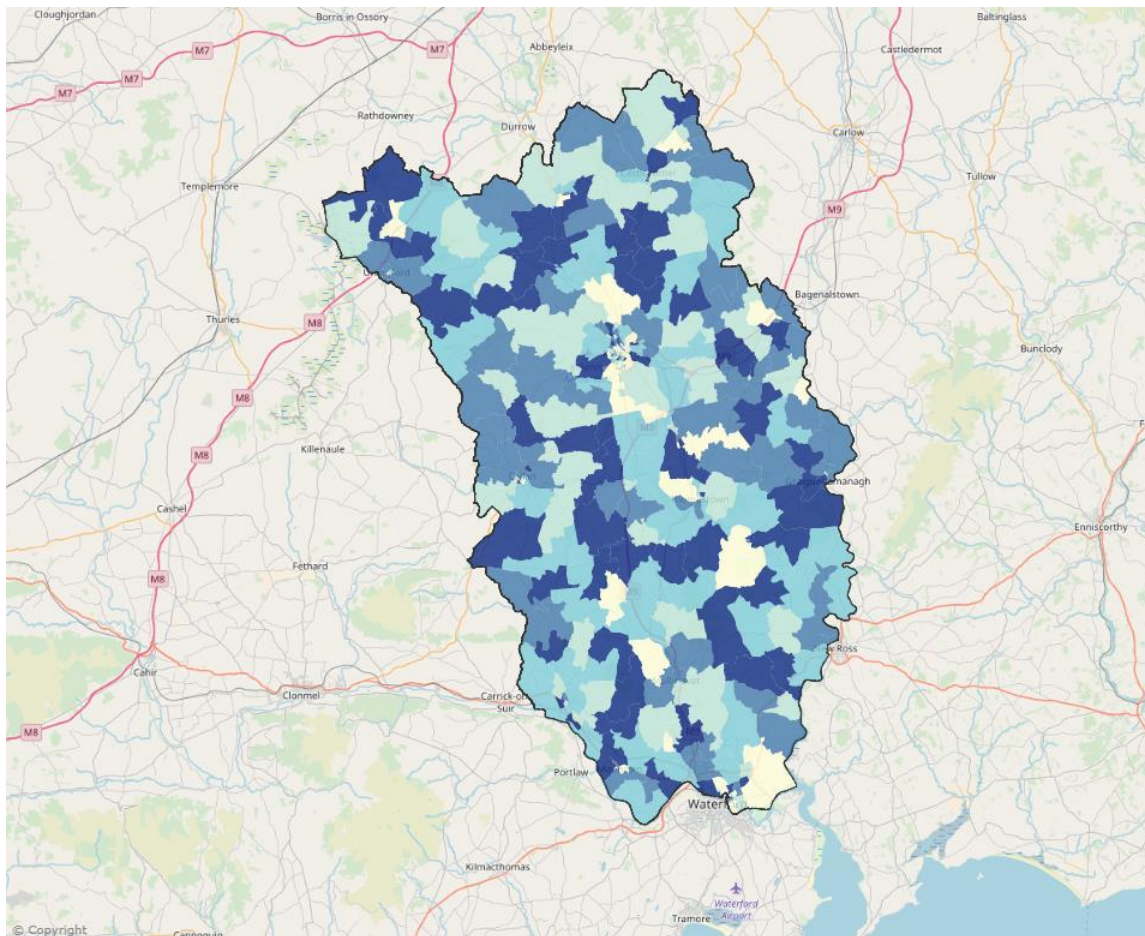
(Source; CSO 2011-2016 % Population Change, 2016)

In 2016 the total dependency ratio was 56%, of which the child dependency ratio was 34.3% and the aged dependency ratio was 22.2%. This is notably higher than the national average total dependency ratio of 52.7% and higher than the national average aged dependency ratio of 20.4%. The difference in average age between rural and urban areas increased between 2011 and 2016. In 2016 the average age of the population living in rural areas was 2.2 years older than the population in urban areas, compared to a difference of 1.4 years in 2011.

The *Pobal HP Deprivation Index* combines data on population change, age dependency, single parent ratio, educational attainment, unemployment and Local Authority rented housing thus providing a measure of relative affluence or disadvantage. In the period from 2006 to 2016 County Kilkenny has maintained a rating of *marginally below average.*

4.2 Predicted Population Change

The recently published NPF is the Government's high level strategic plan for shaping future growth and development. It anticipates that Ireland's population will grow by almost 1m people in the period to 2040. This is based upon on a demographic and econometric model developed by the Economic and Social Research Institute (ESRI) and factors in econometric data, including employment, jobs and house prices and modelled the spatial distribution of the projected population.

The NPF considers County Kilkenny as part of the Southern region, within which a population increase of up to 380,000 is planned which would bring the total population of the Southern region to 2m people by 2040. This will be anchored by the urban centres of Cork, Limerick and Waterford, with the latter's urban area and environs expected to reach a population of up to 85,000 people, almost double its current level. The NPF is not specific on the question or magnitude of population growth in the County.

In the County Development Plan 2014-2020 KCC sought to predict population growth in the County and within its principal settlements in the period to 2022. Derived from the South East Regional Planning Guidelines (RPG's) and applying the annual average increase predicted by the RPG's to the period between 2016 and 2020, this anticipated a county population growth over the plan's duration by 10% or a population increase of 10,021.

Table 4: Projected Population Increase

	2011	**2012**	**2014**	**2016**	**2020**	**2022**
Kilkenny County	95,419	96,873	99,781	105,598	109,802	111,903
Kilkenny City	24,423	24,682	25,200	25,800	27,400	28,200
Ferrybank/Belview	4,787	4,953	5,287	5,412	6,412	6,500

(Source: Kilkenny County Development Plan 2014-2020)

It is evident that while the recorded County population from Census 2016 has fallen short of profile projections for urban areas accord with or exceed initial estimates.

4.3 Settlement Patterns & Hierarchy

The South Eastern Regional Planning Guidelines 2010-2022 has determined that there is "a distinctive settlement pattern in the South–East Region which distinguishes the region from other regions where one Gateway City may be particularly dominant. Waterford, as the Gateway, is the largest city in the region but the region possesses a strong urban structure unlike other regions. There is a network of sizable urban settlements in the region, including Hubs and County towns, each with its own hinterland and sphere of influence, and extensive services, including the presence of third and fourth-level education institutes".

It further states that "*a characteristic of the spatial structure of the South-East is the strong urban structure with a network of medium to large – sized towns across the region which act as service centres for surrounding rural areas. There is also an extensive network of villages throughout the region that has developed with the support of a traditionally prosperous agricultural base. The traditional stability and prosperity of both the villages and their associated rural areas can be ensured through initiatives such as rural economic development and enterprise supported by local infrastructure servicing programmes, the acquisition of key sites that unlock potential for backland development and complementary policies to encourage people to live in villages. Many of the more rural areas of the South-East have the capacity to augment their established agricultural strength through initiatives such as the development of specialist tourism attractions and other off-farm income generation enterprises. This process of adding additional types of economic activity in rural areas will be based on the region's extensive and attractive coastline, river valleys and uplands*"

In the Kilkenny County Development Plan 2014 - 2020 and having regard to population size and morphology, KCC has determined the settlement hierarchy of its principal towns and villages to be:

Table 5: Settlement Hierarchy

Type of Urban Centre	Location
Gateway	Waterford city (of which Ferrybank and Belview are situated in Co. Kilkenny)
Hub	Kilkenny City
Large Town	New Ross (environs of in Co.Kilkenny
District Town	Callan, Castlecomer, Graiguenamanagh and Thomastown
Smaller Towns and Villages	Ballyhale, Ballyragget, Bennettsbridge, Clogh-Moneenroe, Dungarvan, Fiddown, Freshford, Glenmore, Goresbridge, Gowran, Inistioge, Johnstown, Kells, Kilmacow, Kilmanagh, Kilmoganny, Knocktopher, Mooncoin, Mullinavat, Paulstown, Piltown, Slieverue, Stoneyford and Urlingford.

(Source: Kilkenny County Development Plan 2014-2020)

Recognising distinct differences in settlement patterns and in order to best support its core strategy, the Kilkenny County Development plan 2014-2020 divides the County into three

broad categories as follows:

1. Areas under Urban Influence

2. Stronger Rural Areas

3. Peripheral Areas of Population decline

Figure 4: Settlement Typology
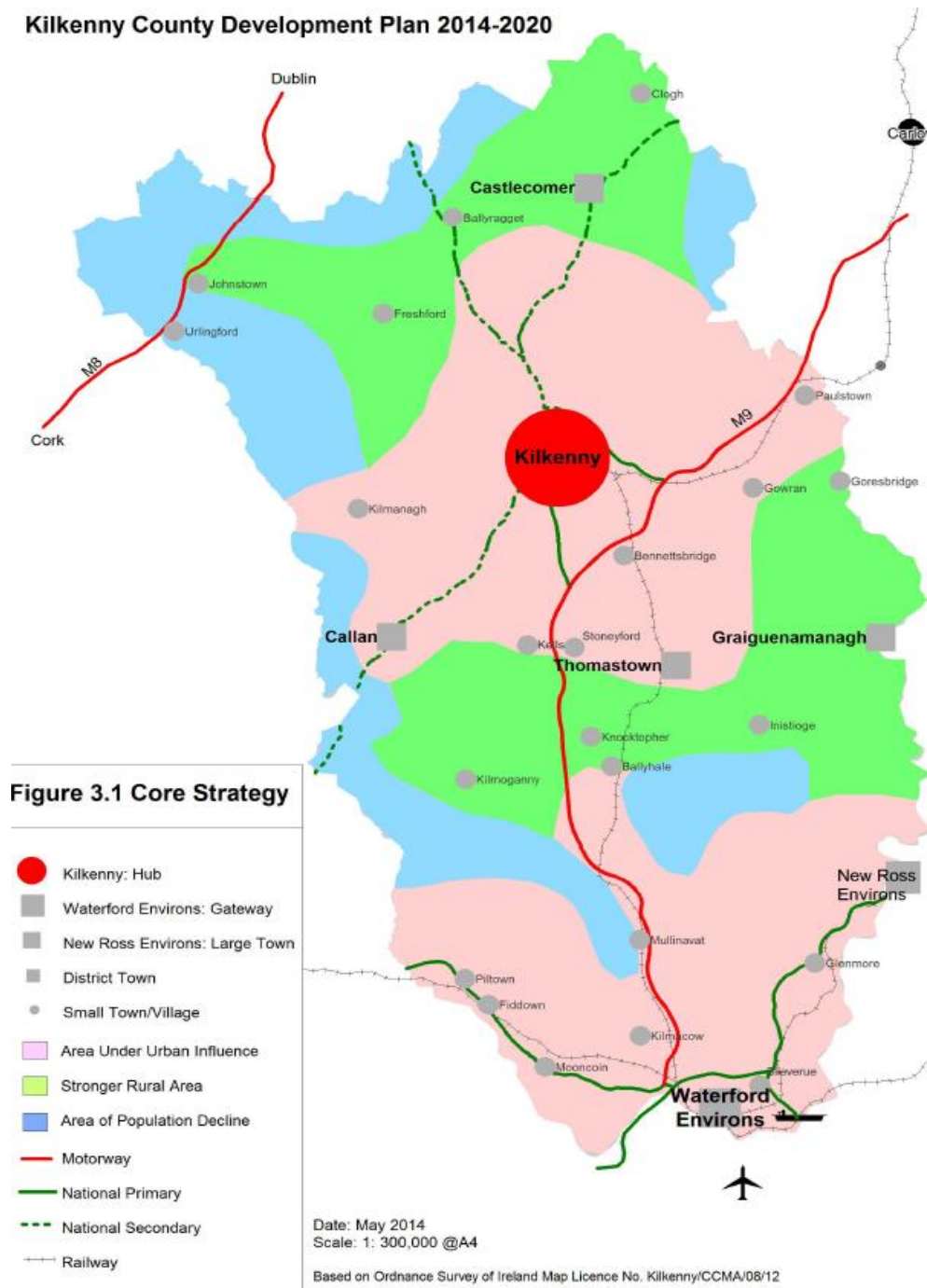
(Source: Kilkenny County Development Plan 2014-2020)

Eurostat defines rural areas as all areas outside urban clusters; these being clusters of contiguous grid cells of 1 km² with a density of at least 300 inhabitants per km² and a minimum population of 5,000. Apart from Kilkenny city and Kilculiheen, adjacent to Waterford city, the County has no urban settlement that accords with this definition. In 2016, the total combined population of these settlements confirmed an urban population of 32%, thus the County as a whole meets the Eurostat definition of *'Predominantly rural'*. The CSO defines a rural area as a settlement of fewer than 1500 people and the population residing in individual houses in rural areas. By this measure, in 2016 the urban population of the county is as high as 46.6%, having increased from 37% in 2002. While still according with the *'Predominantly rural'* nomenclature, this illustrates an increased urbanisation within the county. Consistent patterns of demographic change recorded in inter-censal periods and most particularly the demographic decline as observed in the 2016 census suggests that proximity to urban scale combined with ready access to the transit network is a key driver for positive demographic change.

 As the principal urban centre within the County Kilkenny City is an important the driver of growth for the County at a sub-regional level and along with surrounding urban centres will perform a subordinate but complementary role to Waterford City as a regional capital. In this regard the NPF states that the network of larger towns, such as Kilkenny City in the South East *"located between Cork and Dublin…have capacity for improved growth, but have not had a focus sufficient in scale to drive the sustained development of the region as a whole"*. Regional opportunities to leverage growth include national and international connectivity, especially via ports proximate to continental Europe, such as Belview and Rosslare-Europort, strengthening Higher Education Institutes and further balanced employment and housing development in key settlements and county towns, based on infrastructure and quality of life. Previously identified as a Hub under the National Spatial Strategy 2002 – 2020, the City is an important residential and commercial centre and will continue to be the main focus for public and private sector investment by KCC over the period of the County Development Plan 2014-2020. Kilkenny City and Waterford City are 50km apart – with a drive-time of 36 minutes - linked via the main arterial route – the M9 motorway.

Within the County, district towns are identified as containing a population of between 1,500 and 5,000. The towns of Callan, Castlecomer, Graiguenamanagh and Thomastown each host populations of less than 2,500 demonstrating the compact nature of many urban settlements within the County and further demonstrating the important roles fulfilled by Kilkenny and Waterford Cities (as well as by adjacent and connected larger towns such as Carlow, Clonmel and New Ross) for commercial, trade and service activities. District towns, all of which have existing Local Area Plans are generally regarded as having relatively well developed services and community facilities. Moreover, each has the capacity to accommodate additional population growth as anticipated in the NPF. KCC has a stated objective to ensure that these settlements will be self-sufficient and will facilitate

employment activities, sufficient retail services and social and community facilities. Their strengths lie in their capacity to accommodate employment, residential and other functions on the basis of their comparative advantage in terms of lower costs and good quality of life factors. As such, the four towns perform an important role in driving indigenous industry and SME development in the County. The compact nature of the County is such that each of the district towns, with the exception of Graiguenamanagh, is within 21 minutes' drive time of Kilkenny City centre. Towns and villages of significantly greater distance from Kilkenny City, tend to have good access to the inter-urban motorway network, thus improving drive - time and efficiency. These towns and villages, with the exception of Urlingford, tend to be located in the environs of Waterford City and may well regard it as their principal service centre for employment, education, services, retail and connectivity.

Distances between the principal towns and villages and Kilkenny City and Waterford City centres are as follows:

Table 6: Proximity to Kilkenny and Waterford Cities

Settlement	Distance and Drive-time to Kilkenny	Distance and Drive-time to Waterford
Bennettsbridge	9km – 11 minutes	44km - 29 minutes
Gowran	14km – 15 minutes	64km – 39 minutes
Paulstown	17km – 16 minutes	60km – 35 minutes
Ballyragget	18km – 19 minutes	73km - 49 minutes
Thomastown	18km – 21 minutes	38km – 27 minutes
Castlecomer	20km – 21 minutes	75km – 51 minutes
Goresbridge	20km – 22 minutes	65km – 43 minutes
Callan	23km – 21 minutes	40km - 35 mins
Knocktopher	24km – 20 minutes	30km – 19 minutes
Ballyhale	26km – 23 minutes	26km – 21 minutes
Inistioge	26km – 30 minutes	32km – 32 minutes
Johnstown	29km – 30 minutes	77km – 64 minutes
Graiguenamanagh	30km – 31 minutes	45km – 41 minutes
Urlingford	30km – 32 minutes	75km – 64 minutes
Mullinavat	36km - 26 minutes	13km – 12 minutes
Piltown	40km – 35 minutes	20km – 19 minutes
Kilmacow	46km – 36 minutes	8km – 9 minutes
Mooncoin	54Km – 38 minutes	11km – 11 minutes
Glenmore	61km – 42 minutes	17km – 13 minutes

(Source: Google Maps, 2018)

Smaller towns, villages and settlements proliferate throughout the county and are regarded as making an important contribution to balanced regional development.

4.4 The National Planning Framework

The NPF, if implemented, will have a profound effect on how urban and rural areas in the County will develop over the medium term. In line with its objective for balanced development and compact growth the plan has a major new policy emphasis on renewing and developing existing settlements, rather than continual expansion and sprawl of cities, at the expense of district towns and rural settlements. The plan sets a target for at least 40% of all new housing to be delivered within the existing urban areas or on infill and/or brownfield sites, an inevitable consequence of which will be the concentration of population growth within urban settlements.

Of particular relevance to the socio-economic development of County Kilkenny are the NPF's stated objectives to:

- Target a level of growth in the Southern Region, to at least match that projected in the East and Midland Region.

- Improve access from/to Dublin and the east to Cork and Waterford to the south.

- Improve inter-urban access between Cork, Limerick, Galway and Waterford.

- Enable, through the Regional Spatial and Economic Strategy process for each Regional Assembly area, regional centres of population and employment growth.

- Support growth targets to enable Waterford to grow by at least 50% to 2040 and to enhance its potential to become a city of scale.

- Enable Waterford to be a regional driver and to lead in partnership with other cities and as partners in regional/inter-regional networks as viable alternatives to Dublin.

- Focus investment to improve the collective 'offer' within Waterford i.e. infrastructure, quality of life and choice in terms of housing, employment and amenities.

- Reverse rural decline, by encouraging new roles and functions for buildings, streets and sites.

- Support the sustainable growth of rural communities, to include development in rural areas.

- Implement a properly planned local authority-led approach to identifying, meeting and managing the real housing needs arising in countryside areas.

- Improve local connectivity to principal communication (broadband), energy, transport and water networks.

- Promote new economic opportunities arising from digital connectivity and indigenous innovation and enterprise as well as more traditional natural and resource assets (e.g. food, energy, tourism), underpinned by the quality of life offering.

- Target a greater proportion (40%) of future housing development to be within and close to the existing 'footprint' of built-up areas.

- Improve use of under-utilised land and buildings, including 'infill', 'brownfield' and publicly owned sites and vacant and under-occupied buildings, with higher housing and jobs densities, better serviced by existing facilities and public transport.

- Support urban regeneration and rural rejuvenation through a €3 Billion Regeneration and Development Fund.

Thus stated, it appears that the continued socio-economic development of Kilkenny City and County will become inextricably linked with Waterford City's development. This undoubtedly will present opportunities for Kilkenny but one should be mindful that a renewed focus on Waterford's development as a regional capital and all that that entails is likely to intensify competition for national and regional resources. In any event it is clear that Waterford's development over the medium term will exert a considerable influence over how much of South Kilkenny might develop. Kilkenny County Council's vision for the environs of Waterford in County Kilkenny is summarised as follows: "*To ensure that the people of the Waterford City Environs in County Kilkenny enjoy a good quality of life with a high standard of education, excellent employment prospects and easy access to a full range of social, economic and cultural services. This will be achieved through integrated planning and cooperation with Waterford City and County Council, all the other authorities in the region and other agencies, ensuring that Waterford and its Environs can compete internationally and maximise its potential as a gateway city serving the entire South East Region*".

Formerly designated as a Gateway under the National Spatial Strategy 2002 -2020, Waterford is the principal city in the South-East Region and is now prioritised by the NPF as one of the four principal urban drivers for balanced regional development. It is deemed unique in having a network of large and strong regional urban centres in close proximity within each of the surrounding counties that both complement the role of Waterford and perform strong regional and local economic and developmental roles for their own areas. Given the unique urban composition of the south east and the objective to enable Waterford City to become a regional city of scale, an agreed development strategy is

required to build Waterford's population and employment base substantially while enabling surrounding urban centres to perform complementary roles. It should be noted that the NPF provides for a Metropolitan Area Strategic Plan (MASP) for the Waterford Metropolitan area through the Regional Spatial and Economic Strategy process. This acknowledges a key role for Waterford city as the principal urban centre in the south east and it establishes the goal and an accompanying development strategy in order to build a regional city of scale.

From a national perspective, the NPF anticipates that a stronger Waterford City would lead the development of the wider south-east region, one which has experienced slower economic recovery than the national average in recent years. The key challenge for Waterford's future growth critical mass and scale achieved through enhanced urban quality and employment-led growth. The City's existing employment base includes pharma, med-tech and engineering/ advanced manufacturing sectors, as well as emerging indigenous enterprises. There is capacity to build on all of these strengths while enhancing Waterford's small-city attractiveness and quality of life. This includes capitalising on good and improved connectivity to Dublin and Cork in particular. The City is well-served by motorway and rail links to Dublin, but requires improved road links to other major urban areas, particularly Cork and Limerick, and also within the region to towns that are not served by motorway. Waterford and the wider south-east region are also served by ports at Belview in County Kilkenny and Rosslare-Europoort, both critical transport links to EU trading partners.

Of some significance to its development and that of its hinterland, is the Waterford Planning Land Use and Transportation Strategy (PLUTS) adopted by Waterford and Kilkenny County Councils in 2004. This seeks to provide a vision and strategy for the development of Waterford City and Environs up to the year 2020; its core provisions being:

 Provision of a population increase of 30,000 in Waterford City and environs

- Creation of 12,800 new jobs.

- Construction of 11,500 new dwellings transitioning predominantly north of the river Suir.

- Significant retail expansion within the city centre.

- A downstream river crossing to facilitate the extension of the outer ring road to the N25.

- A new public transport interchange at the North Quays.

- Development of a high quality bus based public transport system supported by park and ride facilities located north and south of the river Suir.

A notable driver of growth is expected to be the development of the North Quays in the city, adjacent to the Kilkenny County boundary. The redevelopment of the North Quays provides an opportunity to dramatically alter circumstances and to provide a unique transport interchange facility incorporating a fully enclosed facility for walkers, cyclists and train, bus and car users. The combination of pedestrian bridge, green route, train and bus services will be unique in Irish circumstances and as near optimal as can be achieved anywhere in Ireland given the nature of our city centres.

Figure 5: Waterford Integrated Transport Hub
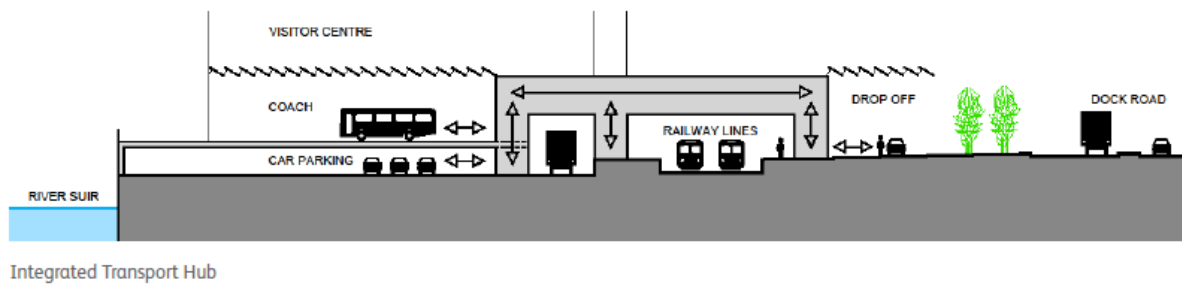
(Source: Indecon; 2017)

In a 2017 cost benefit analysis, Indecon International Economic Consultants determined that the transportation infrastructure component (of an overall €5bn development cost) will cost €78.9m, of which €56.4m will comprise public funds.

4.5 Economic & Employment Profile

Census 2016 records a working population in the County of 41,363, a marginal decline from the 2011 figure. Commerce, trade, public administration and professional services account for 53% of all employment. Agriculture, forestry and fishing (+2%); Building & construction (+15%); Manufacturing industries (+10%); Transport and Communications (+8%) and Professional Services (+ 13%) all show an increase in employment on the 2011 figures, while Commerce and Trade (-6%) and Public Administration (-4%) show a decline. For the most part employment in County Kilkenny correlates to the national employment in all categories with the notable exception of Agriculture, forestry and fishing which is marginally higher than the Southern Planning region level and *Transport and Communications* which is marginally lower*.*

Table 7: Industry Profile & Classification

Industry	Total Employed	%
Agriculture, Forestry and Fishing	3,488	8.4
Building & Construction	2,496	6.0

Manufacturing Industries	4,969	12.0
Commerce and Trade	9,348	22.5
Transport & Communications	1,991	4.8
Public Administration	2,150	5.2
Professional Services	10,446	25.4
Other	6,475	15.6
Total	**41,363**	**100**

(Source: CSO, 2016)

The Labour Force Participation (LFP) rate in the County declined from 62.3% in 2011 to 61.2% in 2016. In tandem with the improved economic conditions, unemployment in the County - as measured by principal economic status - has steadily reduced in the same period from 19.4% (8,992 persons) in 2011 to (12.7%) 6,044 persons in 2016. Countywide LFP and unemployment rates mirror national trends in the same period. The County has one unemployment blackspot – defined by the CSO as any electoral district whose labour force exceeded 200 persons and where the unemployment rate (on a Principal Economic Status basis) exceeded 27 per cent – down from three (two urban, one rural) in 2011.

The scale of Kilkenny City's function as an employment node and service centre is reflected in its day time working population of 13,738; the eighth largest in the state after Dublin City and suburbs (512,449), Cork City and suburbs (102,139), Limerick City and suburbs (44,624), Galway City and suburbs (44,376), Waterford City and suburbs (24,375), Swords (15,338) and Dundalk (14,164) *(CSO, 2016)*.

Employment intensity in Electoral Divisions throughout the County as measured by commuting flows – inward commuters less outward - is illustrated in table 8:

Table 8: Employment Intensity and Net Commuter Flow

Location	Commute Outward	Commute Inward	Net Flow
Kilkenny Rural	3,898	5,994	2,096
Kilkenny No.1 Urban	1,267	3,322	2,055
Aglish	232	755	523
Ballyconra	59	286	227
Callan	388	538	150
Goresbridge	126	219	93
Rosbercon Rural	155	195	40
Urlingford	218	239	21
Stoneyford	180	195	15
Pilltown	379	392	13
Mallardstown	44	48	4
Johnstown	148	151	3

(Source: CSO, 2016)

County Kilkenny has a strong market presence and notable employers in the agri-food, bio-economy services, financial services, creative industries, ICT, light manufacturing, tourism and hospitality sectors; each of which has significant internationally traded dimensions. Significant private sector employers include Taxback International, Glanbia, Carne, Immedis, CF Pharma, Consort Case Co (Ireland), Dunreidy Engineering Ltd, Gaeltec Utilities, Duggan

Steel, Callan Bacon, Cartoon Saloon and Connolly's Red Mills. State Street International Ireland Ltd and Mercury Filmworks represent significant successes as Foreign Direct Investments (FDI) secured for the County by the Industrial Development Authority. The City also has a developing ICT sector industry supported by the 2012 development of the Kilkenny Research and Innovation Centre, a joint initiative between Waterford Institute of Technology (WIT), Institute of Technology Carlow (ITC) and the Kilkenny Local Authorities' Invest Kilkenny campaign and whose objective is to create a hub for ICT expertise and for next-generation internet development for companies in the finance, banking and insurance sectors. https://www.investkilkenny.ie/ hosted by the Local Enterprise Office provides a useful summary and distillation of Kilkenny as a business location. Mindful of the County's resource base, enterprise incumbency and global commercial trends and opportunities, Kilkenny County Council has identified five specific sectoral development initiatives to drive economic development in the County. These are:

- Third and Fourth Level Education and Research Development
- Agri-Food
- Services Development
- Tourism, Arts and Leisure
- Life Sciences (including Pharma with specific focus on Belview)

There are 4663 commercial address points in the County, accounting for 2.2% of all locations nationwide. In 2017, County Kilkenny had a commercial vacancy rate of 12.2% - a slight deterioration on 2016 – while the commercial vacancy rate in the city was 14.5%; itself higher than the national average of 13.3%. 71% of all commercial vacancies throughout the County were for 3 or more years, again higher than the national average of 67.8% *(Geoview, 2018)*. 3,995 active commercial addresses throughout the County have been assigned a NACE code, allowing a broad classification of industry sector. The relative weightings of each industry category for the County, Kilkenny City and Callan as well as the national average for each classification are represented in Table 12 as follows:

Table 9: NACE Industry Classification

	County	Kilkenny City	Callan	National
Service	46.10%	45.30%	49.50%	47.60%
Distribution	25.00%	29.00%	20.00%	24.20%
Health	7.90%	9.70%	12.60%	9.10%
Construction	6.50%	2.30%	3.20%	5.40%
Industry	6.30%	5.10%	3.20%	4.90%
Education	4.60%	4.20%	5.30%	4.60%
Financial	1.40%	2.20%	3.20%	2.40%
Public Admin	2.10%	2.30%	3.20%	1.90%

(Source: Geoview, 2018)

The NPF seeks to achieve a greater spatial distribution of enterprise activity to the regions. To this end, the Industrial Development Authority (IDA) which promotes Ireland a location

for inward investment has been tasked with achieving an increase of 30% - 40% over the 34 investments secured in the South east in the period 2010-2014. The Kilkenny Business and Technology Park, a 19ha site located on the N10 Kilkenny to Waterford route and Belview Port, located in South Kilkenny and adjacent to Waterford City, comprising 53ha of fully serviced land suitable for large scale utility heavy industry are each managed and promoted by the IDA and are well placed to accommodate future inward investment to the County.

Agriculture when considered in its broadest sense – farming, food and beverage manufacturing, bio-economy, equine & equestrian, feed and milling, veterinary, livestock and bloodstock sales, advisory and training, 12 co-op branches, support services, agricultural shows and associated sporting events - has a considerable economic footprint and distributive effect throughout and across the county; accounting for significant movements of people, animals and goods. The Census of Agriculture 2010 confirms that the county has 3,737 farms and records a higher than average farm size (44.1 AAU); the third largest in the State. Its average standard output of €50,567 is the fourth highest in the state. 82% of all farms are engaged in livestock with dairying taking place on 963 farms (26%); 766 (or 80%) of which are regarded as *specialist.* Glanbia a global concern and the 39th largest company in Ireland by turnover is headquartered in Kilkenny city and maintains significant manufacturing plants at Ballyragget and Belview; combined these facilities process 1.8bn litres of milk – a third of national output – from 4,800 suppliers and export to over 50 countries.

4.6 Tourism

County Kilkenny has a sophisticated tourism and hospitality product. This is characterised by an enviable heritage product, attractive public realm, a burgeoning reputation for food tourism, innovative festivals and events as well as a prominent activities and rural recreation product. Kilkenny, most notably the City, is regarded as one of Irish tourism's hotspots and is a key destination within Failte Ireland's *Ireland's Ancient East brand* offering. Failte Ireland has determined that the key market segment for the brand proposition is the *Culturally Curious,* defined as being couples or independent travellers who choose their destinations carefully, looking to visit new places and expand their experiences by exploring landscape, history and culture. Tourism is growing, both in absolute numbers of overseas and domestic visitors and the sector's contribution to the national economy. The characteristics of tourists are also changing, with an increase in the proportion of independent tourists who often visit more than one location during their stay, and have a higher propensity to use public transport while travelling internally in Ireland. In 2013 - the most recent year for which county tourism statistics are disaggregated – 207,000 overseas visitors (72% from mainland European and North American markets) generated €30m in revenue. Domestic tourism accounts for similar volume and revenue. It is noteworthy that 2016 saw Kilkenny Castle becoming the third most popular OPW heritage site in Ireland with 385,000 visitors and the 14th most visited fee paying attraction in the country. In addition,

the Nicholas Mosse Pottery in Bennettsbridge was the 20th most visited non-fee paying attraction in the country and one of the most visited tourism attractions in the south east. Other key visitor attractions in County Kilkenny include St. Canice's Cathedral, Rothe House, Medieval Mile Museum, National Craft Gallery in the city, Castlecomer Discovery Park, Dunmore Caves, Jenkinstown Wood Jerpoint Abbey to the North of the city and southwards Kells Friary, Woodstock Gardens and Arboretum, Duiske Abbey. Currently Ireland's Ancient East (excluding Cork) receives only 23% of overseas visitors and 11% of spend. The region is also heavily reliant on the domestic holidaymaker who spends only €230 per capita significantly lower than the €550 per capita spent by the overseas visitor. Ireland's Ancient East's objective is to turn the area from a transit region into a touring region and to grow the value of tourism to the region by 28% in the next 4 years resulting in €204 million more tourism revenue for local businesses and communities by 2020.

Figure 6: Ireland's Tourism Hotspots
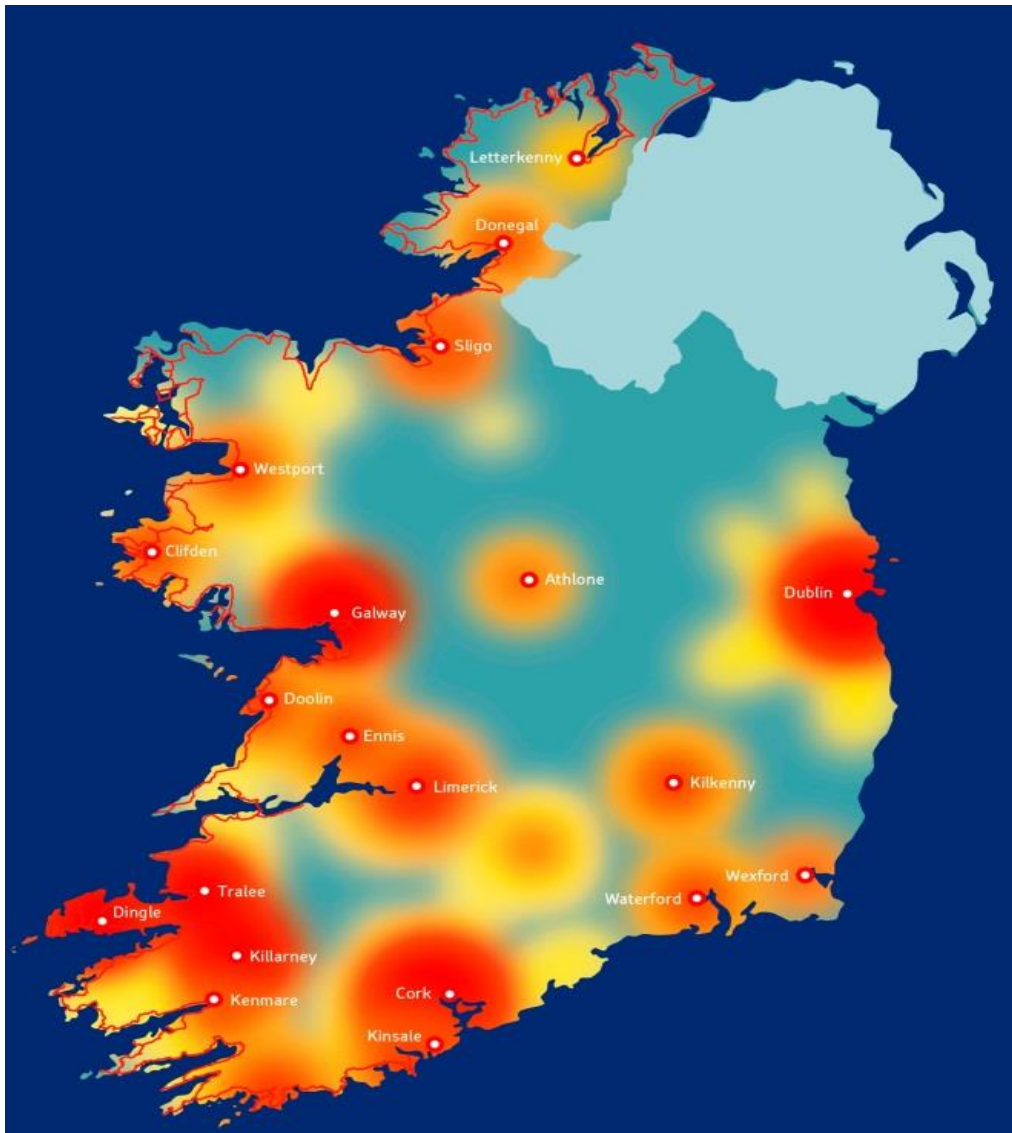
(Source: Failte Ireland, 2017)

Kilkenny is well placed to benefit from expected tourism growth from mainland European, North American and long haul markets. This is driven by a strong value proposition and alignment to the Failte Ireland brand proposition, buoyant. Domestic demand, driven by short breaks and events is also expected to improve in line with economic conditions.

4.7 Public Sector

Private sector employment in agriculture, manufacturing, retail and services in County Kilkenny is further augmented by a number of public, state and semi-state organisations, involved in public administration and local government. These organisations account for significant local employment and are principally headquartered or located in or adjacent to Kilkenny City. They include:

Table 10: Public Sector Employment

Public Administration	Nature	Location
Dept. of Agriculture, Food & Forestry	Regional Veterinary Laboratory	Kilkenny city
Dept. of Enterprise, Trade & Innovation	The Patents Office	Kilkenny city
Revenue Commissioners	Taxation & customs	Kilkenny city
The Office of Public Works	Regional depot	Kilkenny city
Ordnance Survey	Mapping & data	Kilkenny city
Environmental Protection Agency	Regional Inspectorate	Kilkenny city
Kilkenny County Council	Local Government, Development & Advisory	Kilkenny city
Design & Craft Council of Ireland	Advisory & development	Kilkenny city
Teagasc	Farm advisory	Kilkenny city
Teagasc	Kildalton Agricultural College	Kildalton
Teagasc	Local advisory office	Mullinavat
Coillte	Panel products smartply	Belview
VHI	Insurance	Kilkenny city
The Heritage Council	Heritage management and advisory	Kilkenny city
Kilkenny Local Enterprise Office	Enterprise supports	Kilkenny city
Kilkenny Research and Innovation Centre	Research & innovation	Kilkenny city
Three Counties Energy Agency	Project management , energy advisory and management	Kilkenny city

5. Transport Infrastructure & Metrics in Kilkenny

5.1 Vehicle Numbers, Type & Licensing

The CSO (*Transport Omnibus; 2016*) confirms that there were 58,133 mechanically propelled vehicles in County Kilkenny. This is comprised of 42,559 private cars, 847 motorcycles, 8071 goods vehicles, 3513 tractors, 543 public service vehicles and 2,600 exempt/other classes. New vehicles licensed annually in the County have steadily increased from a recessionary lull of 1,417 in 2009 to 3,495 in 2016. In 2016, there were 118 licensed hauliers in Kilkenny, a representing a reduction in each year from 2009 in which 159 were recorded. There are 59, 929 driving licenses issued in Kilkenny of which 5,559 are learner permits. 38% of all learner permit licenses are held by persons aged 30 or over. A classification of the 54,370 permit licenses held by different age cohorts is as follows:

Table 11: Driving license by Age Cohort

Age Band	17-20	21-24	25-29	30-39	40-49	50-59	60-69	70-79	>80
Number	891	2,373	4,342	11,364	11,668	10,168	7,766	4,382	1,416

(Source: CSO: National Travel Omnibus, 2016)

In the period 2012-2016 waiting times to sit the driving test have increased from 9 to 15 weeks in Kilkenny. In 2016 there were 16,960 penalty point offences in Kilkenny, a 1.4% reduction on 2015 and 28,712 NCT's were conducted in Kilkenny with an overall pass rate of 97%. A total of 166 persons were injured in road traffic accidents in 2015, up from 137 in 2014. 2.2% of the vehicles under licence in the county were involved in a collision in 2015. In 2016 there were 6 fatalities on Kilkenny roads accounting for 3.2% of the national figures - an increase from 3 fatalities in 2012 and 2014. In 2017 fatalities were reduced to 4, 2.5% of the national average *(RSA, 2018).*

The use of fossil fuels, particularly petrol and diesel, is firmly embedded in Ireland. These fuels are also the predominant choice for freight and public transport services. Of the total vehicle fleet, 45.6% of vehicles use petrol while 53.6% operate on diesel. Notwithstanding policy efforts to incentivise electric vehicles and promote alternative fuel sources the shift to fully electric vehicles has been minimal with 29 cars registered in the county since 2007. In 2015, the high watermark for registrations nationally (.5% of all registrations) accounted for the registration of 9 vehicles (.4% of all registrations) in the County. Currently the County accounts for 1.4% of the national electric vehicle fleet. In the period 2007-2017 nationally 2003 vehicles were registered. However despite a 42% increase in registrations nationally from 2015-2017, registrations in the county have been stagnant; likely accounted for by range anxiety in rural areas, limited model range and availability and cost. In the first three months of 2018, national registration figures for electric vehicles have declined by 5.37% from 2017.

Nationally there are 1200 electric vehicle car charge points. Within the County facilities are located in Urlingford *(Fast AC (type -2) 43kW* and Knocktopher *(Fast AC (type -2) 43kW)*. *Type-2 <23kW* car points are located in Callan and Thomastown as well as at five locations within the city – Fair Green Car Park; County Hall Car Park; John's Green Car Park and MacDonagh Station. Tesla operates its own supercharger network on the interurban motorways at Ballacolla, Co. Laois (M8), Birdhill, Co. Limerick (M7) and Castlebellingham, Co Louth (M1). In contrast to other tourism hotspots nationwide, charging facilities do not appear to be provided by commercial outlets such as hotels, tourist facilities, etc within the County.

5.2 Road Infrastructure

Kilkenny's national route road network totals 197km and is comprised of motorway (68km), dual carriageway (17km) and single carriageway (112km); representing 7.4%, 5.8% and 2.7% respectively of the national route road network. Households, firms, public and private transport service providers (passenger and freight), emergency services etc. all share road space to undertake commercial and social activities and to meet their mobility needs. The principal routes in the County are the M8 (Dublin – Cork) and M9 (Dublin –Waterford) inter-urban motorways; each of which serves as an important route for commercial, commuting, recreational and social purposes. They are also of critical importance for connectivity and transit to ports (Belview and Dublin), airports (Dublin & Cork) and to healthcare and third level educational institutions in other urban areas. Transport Infrastructure Ireland (TII) regards the investment in the inter-urban motorway development in the counties of Galway, Clare, Limerick, Tipperary, Kilkenny and Waterford as having delivered significant economic and social impacts; improving accessibility by 14% or more. It also estimates that such road improvements over the period 2006–2010 have contributed an annual benefit in GDP terms of €525m. In present value terms, over a period of 30 years, this is an aggregate benefit of some €9.5bn. While Ireland has an extensive total length of road given her area and would be in the upper third of EU states by this measure, the density of motorway is low by European standards (Ireland would rank in the lower 50% of states by this measure) and it tends to be correlated with population density. Road connectivity linking the M9 via Kilkenny city to the M8 at Urlingford is poor.

The backbone for intra-regional transit within the County are the N10 (Kilkenny to M9), N76 (Kilkenny to Clonmel), N77 (Kilkenny to Portlaoise) and N78 (Kilkenny to Athy) national secondary routes. A number of national secondary routes in the vicinity of Waterford traverse the county. These include the N9 (linking the M9 and N24 &N25 routes), N24 (Limerick to Waterford), N25 (Cork to Rosslare) and N29 (Waterford to Belview port). An extensive network of regional roads links settlements within the County. Their variable, often poor quality, however makes access to and travel time within the region a challenge; a fact compounded by the notable north/south trajectory of the national primary and secondary routes.

TII monitors traffic volumes at 12 locations throughout County Kilkenny. It uses the Annual Average Daily Traffic (AADT) measure to estimate the mean daily traffic volume over the course of a year. An exact computation of AADT involves dividing the total traffic volume in the year by the number of days in the year. The AADT is a measure of the total traffic at a given location but does not take account of seasonal, monthly, daily and hourly variations in traffic flow. Summary information for each of the 10 locations is represented in table xx. Detailed data is available for each location at https://www.nratrafficdata.ie

Table 12: Annual Average Daily Traffic

Location	2017		2016	
	AADT	%HGV	AADT	% HGV
M8 JN 03 Rathdowney and JN 04 Urlingford - Glashare	11,904	10.8%	11,783	10.7%
M9 JN07 and JN08 - Jordanstown	15,141	7.1%	14,329	7.0%
M9 JN08 Kilkenny and JN09 Kilkenny South	9,051	8.7%	8,459	8.5%
M9 JN09 Kilkenny South and JN10 Knocktopher - Danesfort	12,928	7.4%	12289	7.4%
M9 JN10 Knocktopher and JN 11 Mullinavat	11,744	8.2%	11,189	8.0%
M9 JN11 Mullinavat and JN 12 M9,N24,N25 - Grannagh	11,231	8.5%	10,716	8.1%
N10 Kilkenny City and M9 JN09 Kilkenny South - Grevine	8,627	3.1%	8,320	3.1%
N76 Callan to Kilbride	5,577	6.9%	5,612	6.8%
N24 Carrick on Suir to Waterford - Pilltown	7,130	7.8%	7,.046	7.5%
N25 Waterford City and New Ross - Glenmore	12,214	8.5%	11,808	8.2%
N77 North of Ring Road – Kilkenny City	11,234	4.6%	10,836	4.5%
R712 Kilkenny to Paulstown - Brickana	3,964	4.4%	3,995	4.5%

(Source: TII, 2018)

Traffic growth on the national route network in the South east region for all vehicles was 5.7% in 2016, higher than any other region in the Country. HGV traffic growth of 5.6% in 2016 was lower than the national average of 6.2%.

5.3 Congestion

INRIX operates the most robust driver network in the world that includes 300 million connected cars and devices, covering more than 5 million miles of roads, ramps and interchanges in more than 40 countries. Its breakthrough technologies enable it to intelligently gather and analyse complex data streams containing nearly 2m data points per day to create automotive-grade traffic services. Its methodology combines anonymous, real-time GPS probe data with traditional real-time traffic flow information and hundreds of market-specific criteria that affect traffic – such as construction and road closures, real-time incidents, sporting and entertainment events, weather forecasts and school schedules – to provide the most accurate picture of current traffic flows. A key component of INRIX Real-Time Traffic Data is the proprietary INRIX Vehicle Tracking Algorithm, which classifies each

second of a single vehicle trip as congested or free flow. Congestion is defined as a speed below 65 percent of the free-flow speed, which is not an arbitrary or unachievable overnight speed, but the typical uncongested speed on that road segment. The INRIX 2017 Traffic Scorecard is the largest and most detailed study of congestion to date. The INRIX 2017 Traffic Scorecard is the largest and most detailed study of congestion to date. It includes data on 1,360 cities in 38 countries covering more than 100,000 square miles (250,000 square kilometres) of road and focuses on congestion across all times of the day and week. The report combines seven specific variables (peak periods on motorways in and out of the city; peak periods within a city; Day time travel on motorways in and out of a city; day time travel within a city; late night on motorways in and out of a city; late night within a city and weekend travel on all roads) to determine three metrics:

- Average congestion rate: The simple (i.e. unweighted) average of the seven congestion rates above, which therefore estimates the percentage of total drive time the average driver spent in congestion averaged across all periods of the day and all sections of the road network. This is regarded as a metric to measure the impact on the typical driver.

- INRIX Congestion Index: The seven congestion rates are weighted by relative volumes to provide a more realistic average congestion rate that reflects typical driving patterns, which is then weighted by the Median Travel Time. This, in effect, adjusts the congestion rate by the city's size and associated average journey times. This is regarded as metric appropriate for transport planners.

- Peak Hours Spent in Congestion: Applying the average peak period congestion rate to travel times allows a derivation of daily time spent in peak period congestion. Assuming 240 working days a year, the average number of hours spent in congestion during peak hours is estimated for every city. This is regarded as a metric to assess the impact for the typical car commuter.

The research has determined that drivers in Kilkenny city spend on average 8% of their driving time in congestion accounting for up to 17 hours per annum; the latter being to equivalent to Naples, Alicante and Liege whose City and Metropolitan populations are 967,069 & 3,115,320, 330,525 & 757,085 and 197,013 & 750,000 respectively. Despite being the eleventh largest urban settlement in the country, Kilkenny is the fifth most congested urban area in Ireland behind Galway, Dublin, Cork and Sligo. It is deemed the 323rd most congested city in Europe and the 568th most congested city globally surveyed.

The main economic, social and environmental problems and consequences associated with increasing high volumes of urban traffic and congestion are set out in Appendix 3 of this document.

Figure 7: Traffic Congestion in Ireland

CITY	2017 ALL CITIES RANK (2016)	2017 INRIX TRAFFIC SCORECARD RANK (2016)	HOURS SPENT IN CONGESTION	ICI	PEAK	DAYTIME	OVERALL
Galway	70 (61)	–	^ 44	8.3	26%	18%	17%
Dublin	175 (151)	73 (73)	⌄ 31	5.3	16%	9%	10%
Cork	291 (253)	–	^ 25	4.4	15%	8%	9%
Sligo	447 (380)	–	^ 20	4.2	13%	11%	9%
Kilkenny	568 (–)	–	^ 17	3.7	8%	9%	8%
Limerick	599 (461)	–	⌄ 16	3.3	9%	8%	8%
Wexford	608 (554)	–	^ 15	2.7	9%	7%	6%
Waterford	635 (493)	–	⌄ 15	3.3	9%	9%	8%
Carlow	1131 (886)	–	⌄ 7	1.6	4%	5%	4%
Mullingar	1220 (995)	–	^ 6	1.5	4%	5%	4%
Dundalk	1229 (946)	–	⌄ 6	1.2	4%	3%	3%

(Source: Inrix congestion scoreboard, 2018)

Figure 8: Kilkenny Congestion Scorecard
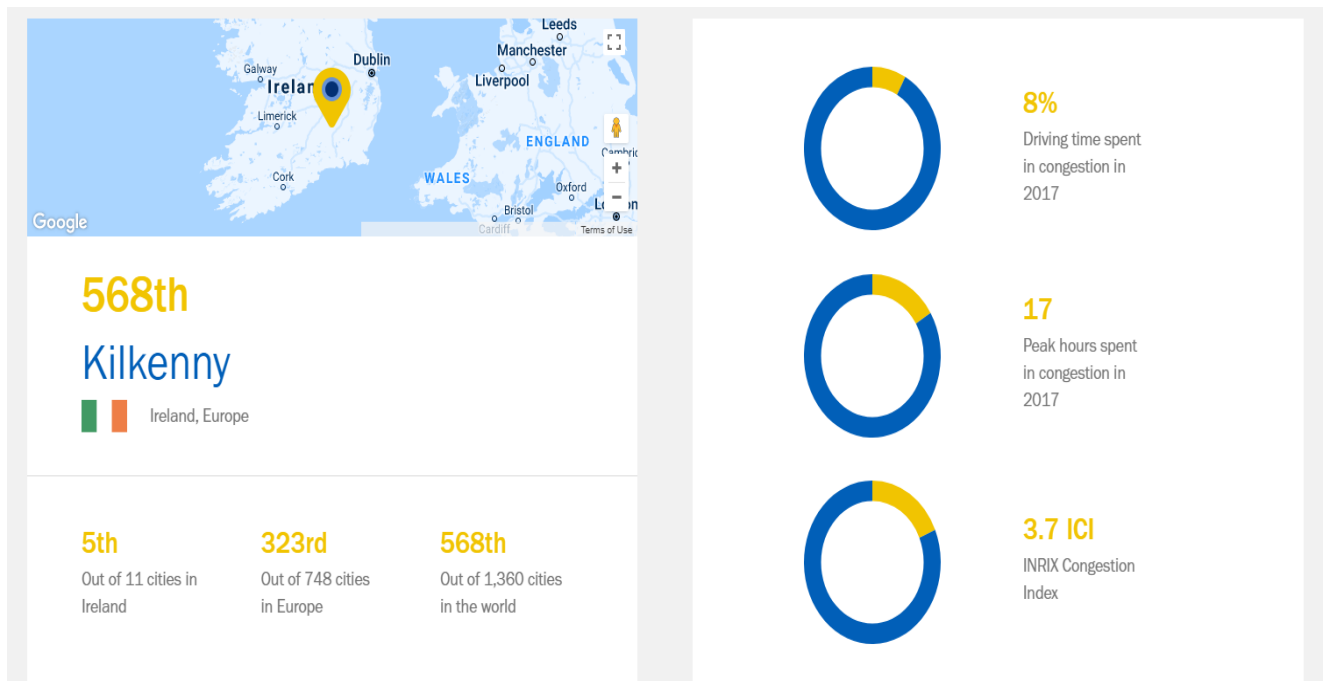
(Source: Inrix congestion scoreboard, 2018)

The *Level of Service* (LOS) on the motorway network as it traverses County Kilkenny is currently classified as Free Flow with the motorway network in the County regarded as operating at below 80% capacity. However the N24 national primary route, west of Waterford City and N25 eastwards from the City to New Ross currently operates at between 80 and 100% capacity**.** The volume to capacity ratio on the national secondary routes in the county is excessive with the N76 and N77 operating in many parts at substantially in excess of 100% capacity. This is particularly notable, though not exclusive, to the City environs.

5.4 Infrastructure Investments & priorities

Works are currently underway on the N25 New Ross bypass which will commence at Glenmore where an interchange will access and new river crossing and connect the N25 and N30 national secondary routes.

The National Development Plan 2018-2027 (NDP), which prioritises investment to support the implementation of the National Planning Framework (NPF), identifies upgrades to the N24 (Waterford to Cahir) route and the N25 (Waterford to Glenmore) route in order to enhance inter-urban connectivity. These routes are to be progressed in 2018 through pre-appraisal and early planning and subsequently to implementation. While the NDP does not explicitly mention other road infrastructure enhancements in County Kilkenny, the South Eastern Regional Planning Guidelines (RPG) 2010-2022 also identified regional roads in County Kilkenny which provide critical linkages; improvements to which will enhance connectivity between the larger urban areas and neighbouring regions. These include the

- Completion of the Kilkenny Ring Road
- Upgrade of the R693 Kilkenny to Urlingford road to National Secondary status
- Upgrading of the R700 Kilkenny to New Ross to National Secondary status
- Development of a downstream river crossing in Waterford City
- Thomastown relief road.

5.5 Car Parking

Kilkenny City is well served by more than 4,500 public parking spaces, most of which are located to provide ease of access to the commercial and retail core in the city centre and at MacDonagh Junction. KCC has control and responsibility for 2,100 spaces including 930 on-street and 1,170 off-street at thirteen locations. It also provides 49 disabled parking spaces at 21 locations throughout the city in addition to 10 *Age Friendly* parking spaces located at St. Mary's (4 spaces), Black Abbey (2 spaces) and St. Canice's (4 spaces). KCC operates a *Pay & Display* parking system between the hours of 8am and 7pm. Short stay parking at an hourly charge of €1.50 can be found at John St, High St, Parliament St, Friary St, Patrick St, The Parade, Bateman Quay and John's Green. Medium stay facilities with a two hourly charge of €1.50 can be found at Ballybough St, Castlecomer Road, Gas House Lane, High Terrace, Barrack St, Wolfe Tone St, Greensbridge St, Michael St, Maudlin St, Dublin road,

John's Quay, Castle Road, Fr. Hayden Road, Jacob St, Ormonde Road, New St, Gaol Road, Walkin St, St. Rioch's St, Haughney Gardens, Parnell St, Pennyfeather Lane, William St, Kickham St, James St, Dominic St, Green St, Dean St, Vicar St, Horse Barrack Lane, Blackmill St and Abbey Square. Off-street car parking is provided at Market Yard (420 spaces), Friary St (42 spaces), Cathedral Square (104 spaces), St Canice's (88 spaces), Market Cross (500 spaces), Fair Green (67 spaces), Wolfe Tone St (127 spaces), Watergate St (14 spaces), Library and Dean St (28 spaces). All day car parks with a €2.00 charge are located at Abbey St, St. Canice's, Wolfe Tone St, Dean St and Maudlin St. There are currently up to 110 long stay, low tariff (€1.00 per day/per visit) parking spaces in designated zones outside the city core. ParkMagic, operates a *Pay by Phone/App Parking Payment* service at Jacob St (5 spaces); New St (4 spaces); Walkin St (8 spaces); Gaol Road (12 spaces); Dominic St (8 spaces); Blackmill St (8 spaces); Greensbridge St (3 spaces); Vicar St (12 spaces); Wolfe Tone St (14 spaces); Ballybough St (20 spaces); Dublin Road (4 spaces). ParkMagic also facilitates discounted advance reservations at Ormonde Street where the private operator QPARK provides 760 spaces between 7am and 11pm. An hourly charge of €1.50 generally applies. Park Rite operates 939 spaces at Mac Donagh Junction shopping spaces at a charge of €2.00 for two hours. Apcoa Parking Ltd operates 100 spaces at MacDonagh Train Station. A charge of €4.50 for two hours applies. Numerous free car parking spaces are also provided at retail, office and commercial facilities outside the City centre; all of which are easily accessed from the ring road. The central location of the principal car parking facilities within the City centre, which combined accommodate nearly 2000 vehicles, likely accounts for a significant amount of the traffic volume and movements in the City centre and is a contributor to traffic congestion at a number of critical junctions and intersections in the centre.

5.6 Cycle Infrastructure

The development of a cycling infrastructure and network in Kilkenny City has its origins in a *Pedestrian and Cycle Network Study* published in 2002. This was further enhanced by the 2009 *Mobility Management Plan* and a *Smarter Travel Group* established in 2010 comprising representatives of the local authorities, the HSE, the Sports Partnership and Waterford Institute of Technology. A notable outcome of these initiatives was the concept of mobility centred on the principle of Kilkenny being a ten-minute city – local facilities and services could be accessed within 10 minutes via cycling or walking. Infrastructural improvements and new road developments allow the city cycle network to encompass the main radial routes and an orbital route on the semi- completed ring road, linked by minor routes to the city core. The Kilkenny City and Environs Development Plan 2014-2020 envisages a completed network of more than 50km of cycleway lanes throughout the City environs.

Figure 9: Kilkenny City Cycling Infrastructure
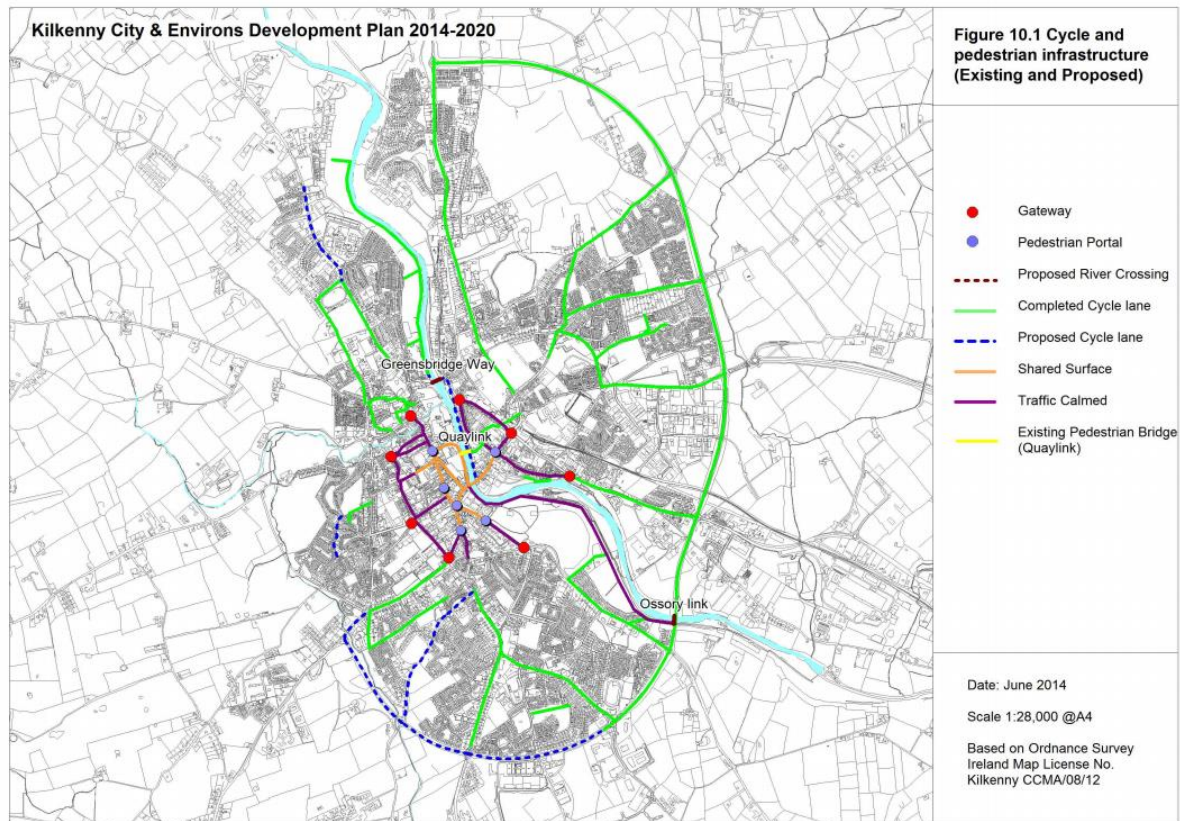
(Source: Kilkenny City and Environs Development Plan 2014-2020)

There is a 35km dedicated on road cycle route between Carlow and Kilkenny on the old N9/N10 road.

5.7 Rail Infrastructure

Intra-urban rail, as a high capacity transport mode, delivers significant business agglomeration benefits by reducing travel times and/or the cost of travel, thereby reducing the effective distances between firms, as well as between firms and labour markets and raising overall productivity. The national rail network also plays a central role in sustaining and growing tourism demand with approximately 11% of domestic tourists and 5% of out-of-state tourists using the intercity rail network. Rail also provides high capacity transport links for high volume tourism and leisure demand created by festivals and special events; numerous in Kilkenny City. Rail supports social inclusion and social mobility by providing access to services, communities and jobs for those vulnerable to social exclusion including older people and people with disabilities. High levels of accessibility across the rail network facilitate and support universal access. Furthermore, each year more than 780,000 people benefit from rail travel through the Free Travel Scheme. The International Union of Railways (UIC) reports that travelling by rail is 3-10 times less CO_2 intensive compared to road or air transport. During 2010, the average rail passenger km in Ireland created just 60g of

greenhouse gases, vs. 210g for road vehicles. If all rail journeys in Ireland were made by car it would increase GHG emissions by around 240,000 tonnes, equivalent to 30,000 households. However, the transport sector as a whole is set to miss the 2020 targets, and more stringent targets of a 40% reduction are required by the EU by 2030, as part of a road map to reduce emissions by over 80% by 2050. In addition, the United Nations Climate Agreement (COP21) binds all governments to work to limit global temperature increase, with the role of transport highlighted.

Rail in County Kilkenny is principally serviced by the Waterford-Dublin intercity route with stops at Kilkenny McDonagh Junction and Thomastown (approximately 11 mins distant from Kilkenny city). There are seven passenger trains daily on the route in each direction with a span of service of approximately 12 hours. In 2015 the intercity service accounted for 1.189m passenger journeys, of which 9.2% represents an end to end service. Kilkenny to Dublin by is approximately 90 minutes to Dublin and 35 minutes to Waterford. Services depart from Dublin Heuston at 07.25am arriving in Kilkenny MacDonagh junction at 09.00am departing at 09.05 for arrival in Waterford at 09.39; the last service arrives in Kilkenny at 20.07; departing for arrival in Waterford at 20.46. The first service daily from Kilkenny McDonagh junction to Dublin Heuston departs at 06.37, arriving at Dublin Heuston at 08.07am; the last at 19.02 arriving at Dublin Heuston at 20.38. A reduced service operates on Sundays. In 2015, the Iarnrod Eireann National Rail Census recorded daily passenger boarding and alighting at Kilkenny and Thomastown as follows:

Table 13: Rail Passenger Boarding & Alighting

Boarding	Kilkenny	Thomastown
Heuston - North Bound	287	50
Waterford – South Bound	75	3
2013 Total	**362**	**53**
2012 Total	**328**	**36**
Alighting		
Heuston - North Bound	95	4
Waterford – South Bound	294	51
2013 Total	**389**	**55**
2012 Total	**263**	**36**

(Source: Iarnrod Eireann, National Rail Census, 2015)

The 2015 rail census reveals further salient information:

- Passenger volumes across the inter-city network were at their lowest levels post-recession and that in 2015 volumes on the service had 2.3%.

- Thomastown accounted for 88 passenger movements, one of the lowest on the entire rail network.

- There is an extremely low level of commuting demand into Waterford city with the majority of commuters originating from dispersed development in rural areas.

- Surplus capacity issues on the road network, the small scale of the city and the dispersed low-density pattern of development limits any potential for commuter rail.

- Improvements to the inter-urban motorway network have shortened journey times and increased the attractiveness and competitiveness of car and bus travel.

Dublin Heuston offers direct scheduled connectivity (and indirect via Dublin Connolly) to all principal cities and urban locations as well as to Dublin city and environs via Dublin Bus, Luas and DART. The Waterford-Limerick Junction route operates twice daily (excluding Sundays) and offers alternative connectivity to Cork, Limerick and Dublin. However it has one of the lowest levels of service and use in the National network. Daily patronage on sections of this route is small relative to other parts of the rail network, largely due to lower population catchments and dispersed rural populations. Along the Waterford-Dublin rail corridor there are extremely low levels of commuting demand into Waterford City; similarly along the Waterford-Limerick line. The use of rail for travel to work into Waterford is negligible and is likely to remain so given that the population in adjacent settlements as well as the dispersed low-density pattern limits demand. Carlow, rather than Kilkenny is considered by Iarnród Éireann to be the outermost embarkation point for commuting to Dublin on the Waterford route.

The ongoing investment in the inter-urban motorway network has resulted in modal competition between rail, bus and car. In recent years there has also been a dramatic reduction of approximately 40% in journey times by road between Dublin and the other core cities (Belfast, Cork, Limerick, Waterford) as a result of road investment programmes and the completion of the major inter-urban motorways. This has increased the attractiveness of travel by car and bus for intercity journeys. National roads between Dublin and Cork, Galway, Limerick, Waterford and Belfast have all been significantly improved and all directly compete with the Inter-City rail routes. When estimated end-to-end journeys are considered car is more competitive than rail on all routes particularly from Dublin to Waterford and to Belfast - the location of the rail stations relative to the city centres contributes to this. Given the additional flexibility provided with car travel and the fact that car can provide door to door accessibility this is likely to make car travel particularly attractive against rail for these routes.

Bus journey times appear to be significantly more competitive than rail on the Dublin to Waterford and Dublin to Belfast routes while rail can still achieve lower journey times to Cork and Limerick and to some extent to Galway. The attractiveness of bus for such trips has been further bolstered by the development of the private bus market which has increased choice for consumers with a number of operators offering intercity travel options. Service improvements, for example in the provision of free on-board Wi-Fi, competitive fares, the frequency of services across the day and week, and the range of destinations served also increase the attractiveness of travel by bus. Given the dispersed and low density nature of

the rural population and the relatively short distances for inter-regional travel, it is difficult for rail transport to be commercially viable. The investment costs required by rail (track, vehicles and signalling) are very large and just a single carrier uses the railways.

Accessibility to rail transport is measured by the All-Island Research Observatory (AIRO) in the Census Mapping Module (2013). This reveals that significant swathes of the County in the north, north-west and south-east are 20-30 minutes distant from a railway station at Kilkenny or Thomastown in the County or to Waterford, Carrick on Suir and Bagenalstown in adjacent counties. As the county average is 10 -15 minutes distant; itself lower than the national and regional averages of 15 – 20 minutes, this suggests that such areas are not densely populated.

Figure 10: Accessibility – Transport – Railway Stations
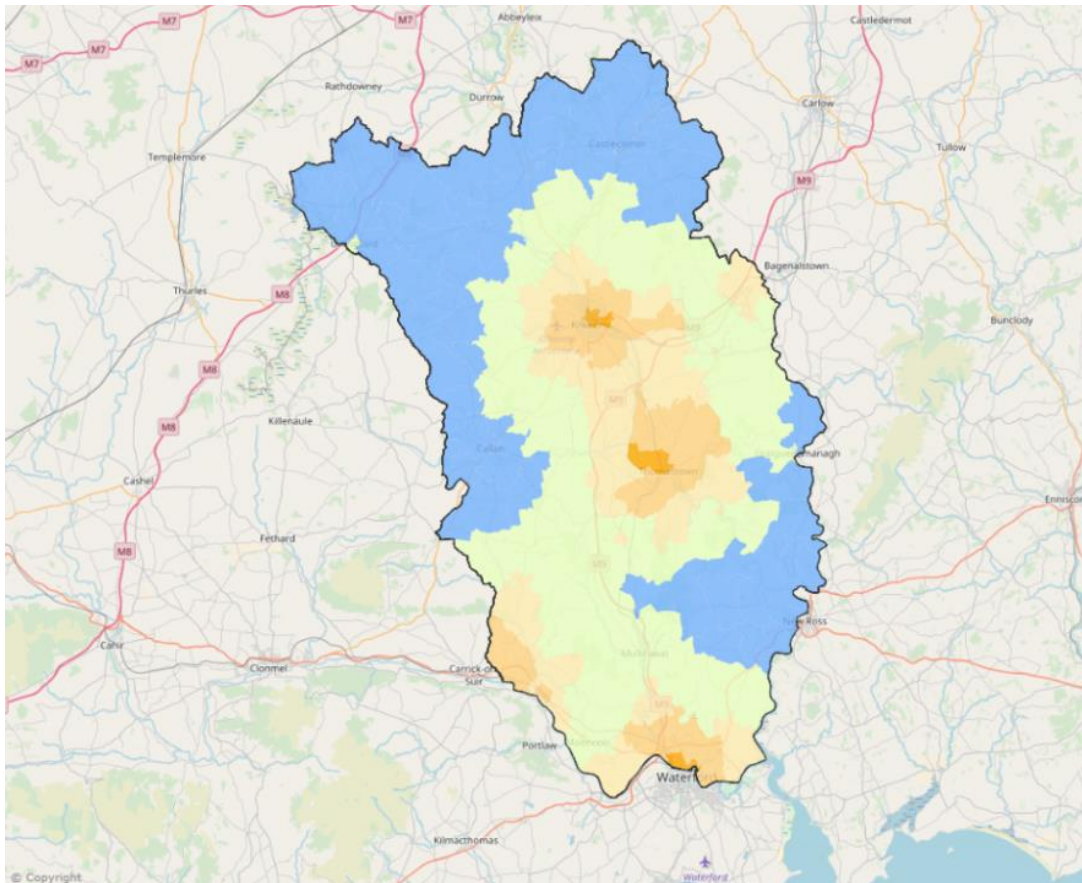
(Source: AIRO, 2013)

In addition to the movement of passengers, rail offers a unique ability to move freight traffic in larger volumes and relatively higher speeds particularly using existing lines and assets that specifically have direct connectivity between Ports and inland distribution hubs. Following many years of decline in freight movements on the rail network Iarnród Éireann is pursuing new rail freight business opportunities including the drinks, healthcare, building materials, bio-mass, waste and dairy industries. Between 2012 and 2013 rail freight traffic increased, with *tonnes lifted* up by 9% to 589,000 tonnes and *tonnes moved* up by 4% to

98.8m tonne km. In 2016, a total of 101.5 million tonne kilometres of freight were moved by rail, while the number of freight trains operated was up by 6%. Iarnród Éireann further seeks to increase traffic from its current level of 1.1% to a 4% share of the total domestic road and rail freight market by 2020. Based on the current road freight market (9,138 million tonne km) and rail freight market (99 million tonne km), a 4% share would represent around 369 million tonne km moved by rail; a 372% increase over current rail freight traffic. Iarnród Éireann operates an intermodal rail freight terminal at Waterford which facilitates handling the interchange of traffic between road and rail modes. Belview Port has 4 rail sidings adjacent to the port quay, allowing containers to be loaded directly to/from ships or road transport. There is a twice weekly rail service chartered by DFDS and operated by Iarnród Éireann connecting Ballina to the Port of Waterford. Principally used for container traffic (DFDS) and pulpwood (Coillte), this service avoids Kilkenny City by using the Lavistown loop. This line is cleared to carry 9'6" high cube containers on standard floor wagons, thus allowing a dramatic increase in possible payloads on trains increasing both the flexibility and the viability of using rail and now makes it possible to save nearly 9,000 road journeys per year. The scheduled rail service is aligned with vessel sailing and arrival schedules and links to Continental Europe via Rotterdam.

5.8 Port Infrastructure

Belview Port is located in South Kilkenny 8km downstream of Waterford City in the River Suir estuary. It is a strategic national, regional and county asset with good connectivity via road and rail. Developed in 1992, the Port strategic zone consists of 265ha of development land zoned for port related development and is identified in the PLUTS strategy as one of four key locations for future employment location for Waterford City. It is Ireland's closest multi-modal port to Continental Europe and operates bulk, container and general cargo handling. In 2016, cargo activity at Belview accounted for over 1m tonnes of bulk cargo, over 100,000 tonnes of break bulk and over 42,000 Container Twenty-foot Equivalent Units (TEU), making the port the fourth busiest in the state. It is particularly significant for direct access to Europe with 75% of its tonnage, accounting for 6% of the national figure, transported between Belview and continental European ports. Ancillary operations include storage, office and commercial premises. In 2015 Glanbia, the County's largest employer opened a new nutritional ingredients plant at Belview. One of the biggest facilities of its kind in Europe, it remains the largest infrastructural investment by an Irish Company since the development of the Ardnacrusha Hydro-electric power station in 1929. In February 2018, Glanbia announced that the facility would expand following a further €125m investment. The port also accommodates cruise liners, an important growth market in Irish tourism.

5.9 Air Infrastructure

Airport infrastructure in the County is limited to Kilkenny Aerodrome. This is used for leisure purposes only and given its potential for expansion, KCC states that it will support the

development of additional facilities at this location. Waterford Airport no longer operates passenger services. The County does however have good connectivity to Dublin Airport with direct buses from Waterford and Kilkenny operated by JJ Kavanagh, Dublin Coach and the Bus Eireann Expressway service from Waterford (via Mullinavat, Ballyhale, Thomastown and Gowran).

5.10 Recreational Infrastructure

Smarter Travel: A Sustainable Transport Future and Ireland's first *National Cycling Policy Framework* were adopted in 2009 and sought to develop a culture of walking and cycling such that these modes are seen as viable alternatives to car travel for shorter journeys.

County Kilkenny has an extensive network of themed activity trails developed and promoted under the banner of [Trail Kilkenny](). This is comprised of national waymarked ways, scenic walks, river walks and cycling trails. The most significant walk is the 104km South Leinster Way running south-westwards from County Carlow, through south east and south Kilkenny (via Graiguenamanagh, Inistioge, Glenpipe, Mullinavat and Templeorum finishing in Carrick-on-Suir in County Tipperary. The route is part of the European E8 walking route which links Dublin with Dursey Island off the West Cork coast. The 34km Nore Valley Way is currently under development. When the Bennettsbridge to Thomastown section is completed, the route will comprise a national waymarked trail from Kilkenny City to Inistioge. The 100km Barrow Way, from Robertstown in Co. Kildare to St Mullins in Co. Carlow, passes through Goresbridge and Graiguenamanagh. Scenic walks and looped trails can be found at Graiguenamanagh (18km); Castlecomer (10km); Aghaviler (7km); Gathabawn (18km); Tullahought (6km); Piltown (4km); Bennettsbridge (4km) and Freshford (8km).

The development of a national network of both rural and urban cycle routes remains a specific, although as yet unfulfilled, objective of the National Cycling Policy Framework. This identifies the need to deliver high quality cycle routes on a nationwide basis so as to encourage cycling for transport, leisure, recreation and tourism to ensure the development of a culture of cycling in Ireland. Among its recommendations is the development of a National Cycling Network to connect all urban centres with populations greater than 10,000. Specifically in County Kilkenny this would link Carlow and Clonmel via Kilkenny City on the proposed 213km Naas to Mallow route and onwards to all other inter-urban cycle routes. As yet undeveloped, the on-road cycling infrastructure in the County is limited to the 64km East Kilkenny cycle route links Gowran, Graiguenamanagh, Thomastown and Bennettsbridge, where it intersects with the 41km South Kilkenny cycle loop connecting onwards to Stoneyford, Kells and Kilkenny city. The 27km North Kilkenny cycle loop connects with the 82km North Kilkenny cycle route at Jenkinstown, connecting onwards to Castlecomer, Ballyragget, Freshford and Ballymanagh.

Disused and abandoned rail lines in the County provide further opportunities for the development of off-road walking and cycling routes and are of particular strategic

importance and value in connecting to regional and national route networks. Similarly the *Three Sisters* – the Nore, Suir and Barrow rivers complement and intersect with many of the themed trails and each offers additional development potential for recreational and tourism development.

5.11 Communications Infrastructure

Eir claims 96% 4G mobile phone coverage nationwide and 99% population coverage, although it is evident that upland areas in West and South Kilkenny are not covered there is no requirement for mobile operators to provide 3G and 4G to remote, less populated areas.

Countywide, ED and Small Area data on broadband access and internet use can be accessed at http://irelandsdg.geohive.ie/datasets/sdg-17.6.2-fixed-internet-broadband-subscriptions-per-100%C2%A0inhabitants-by-speed-electoral-divisions-2016-ireland-cso-amp-osi

In 2016, the proportion of individuals using the internet in each ED in the county varied considerably from highs in excess of 75% in Kilcolumb (84%), Grange (83%), Kiltorcan (83%), Ennisnag (82%), Danesfort (81%), Brownsford (80%), Dunmore (80%), St Canice (79%), Jerpoint West (78%), Tubbridbrittain (78%), Rathbeagh (76%) Pleberstown (76%), Rathcoole (76%), Castlegannon (76%), Bramblestown (75%) and Outrath (75%). EDs with a lower proportion of individuals using the internet (below 60%) are Kilkenny No.1 Urban (60%), Johnstown (59%), Ballyconra (59%), Killamery (59%), Callan Urban (58%), Ballyragget (58%), Moneenroe (58%), Castlecomer (57%), Clogh (57%), Goresbridge (54%) and Urlingford (52%).

In 2016, the percentage of fixed line broadband subscribers in each ED in the county varied considerably from highs in excess of 75% in Grange (83%), Kilculiheen (79%), Kilkenny rural (78%) and Dunmore (77%) to below 40% in Muckalee (40%), Clogharinka (39% and Ballycallan (38%).

The National Broadband Plan (NBP) is a Government wide initiative to deliver high speed broadband services to all businesses and households in Ireland, irrespective of location. The NBP defines high speed broadband as a minimum speed of 30Mbps download and 6Mbps upload. The plan will be achieved through a combination of commercial investment by the telecommunications sector and a state intervention in the many areas where commercial providers acting alone will not provide the service. Much delayed – and altered - since its launch in 2012, by December 2017 69% of the 2.3 million premises around the country had secured access to high speed broadband. By the end of 2018 it is expected that 77% will have access to high speed broadband, climbing to a figure of 90% in 2020. Following the withdrawal of SIRO and Eir from the NBP, progress on the plan remains at the procurement stage.

The broadband coverage map for County Kilkenny as of December 2017 is as illustrated in Figure 11:

Figure 11: Broadband Coverage Map
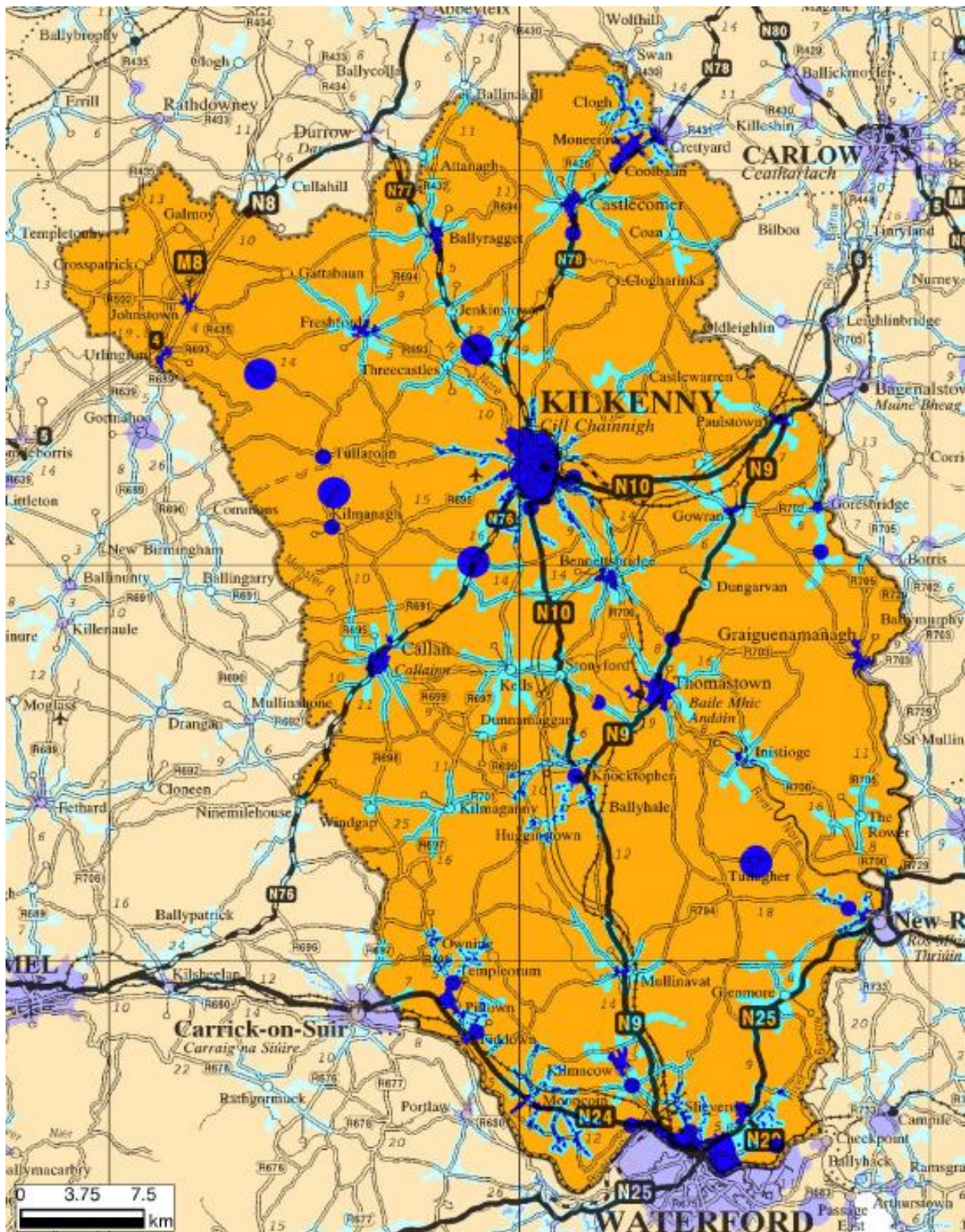
(Source: Department of Communications, Climate Action and Environment, 2018)

6. Travel Dynamics, Mode and Metrics

6.1 Introduction

There are numerous reasons why people seek to or need to travel - work, education, adventure, self-fulfilment, knowledge or relaxation. In a local context, rurality, the dispersed nature of settlement, distance and the agglomeration of services and employment in the urban core simply make it a necessity for many. But necessity apart it matters and is relevant for many other reasons. These include:

- To improve wellbeing and quality of life.

- To be and remain independent.

- To address one's personal social and economic needs.

- To engage in social & leisure pursuits.

- To play an active role in society and community.

Developing an understanding why people travel helps to develop a deeper knowledge of where they need to go, when, how regularly and by what mode(s). Some principal reasons include:

- Employment and to attend a designated place of work and/or to attend branch offices, sites, other work locations or to provide or facilitate outreach services.

- Visit to clients, suppliers and buyers,

- Provide professional, regulatory or compliance services.

- Logistics and movement of goods.

- Education to include preschool, primary, secondary, third level education.

- Training and upskilling.

- Avail of professional services (legal, accountancy, medical, regulatory, etc)

- Avail of public administration services (Garda, Post Office, Local Authority, etc).

- Avail of social services and supports (youth, elderly, wellbeing, social inclusion, etc)

- Healthcare (primary, emergency, rehab, surgery, etc).

- Retail & shopping.

- Tourism, sightseeing & hobbies.

- Social (pubs, cafes, restaurants, etc).

- Visit to family & friends.

- Entertainment & events (cinema, theatre, festivals, etc)

- Sport, recreation & exercise.

- Cultural events & leisure (theatre, exhibitions, library, heritage sites, antiquities, etc.)

- Onwards connectivity for work, education, leisure, etc

- Religion, faith & pilgrimage.

- Discovery & self.

- Companionship & wellbeing.

6.2 Mode Choice

Irrespective of the principal reasons why people travel, it is clear that travel is dynamic and the mode chosen will depend on a variety of variables such as:

- The requirement for single purpose trips (work, school, college, hospital, airport, etc.)

- The need or desire to combine multiple purposes within a single journey.

- The distance to travel.

- The number of travellers/passengers.

- Convenience and reliability.

- Speed and predictability.

- The requirement that modes and services are integrated and connected.

- The requirement for flexibility and freedom or a desire for spontaneity -is it there as and when I need it?

- Comparative cost and perceptions of value.

- The requirement for safety, security and peace of mind particularly in relation to dependents or vulnerable individuals.

- The flexibility required for more fluid and less standard work times, locations, and practices (shift work, night working, both partners working, work from home, etc).

- Congestion, constraints in infrastructure or friction in movement or passage.

- Whether viable alternatives exist in public transport, soft modes or ride sharing.

6.3 The National Travel Survey

The National Travel Survey (NTS) 2016 offers insights into travel behaviour in the state. Designed by the Central Statistics Office in consultation with the DTTAS and the National Transport Authority (NTA), this is a household survey on the travel behaviour of respondents aged 18 or over. It was conducted as a module of the Quarterly National Household Survey (QNHS) in the fourth quarter (October – December) of 2016. Its results are used to compile statistical indicators for journey purpose and modes of travel, which help monitor the implementation of existing transport policy and inform future transport initiatives. Interestingly, in any given year in which the survey has been compiled nearly a third of respondents did not travel at all or had no requirement or desire to travel on the days surveyed.

Nationally, the survey reveals the primary purpose for travel to be as follows:

Table 14: primary travel purpose

Purpose	% 2013	% 2014	% 2016
Work	24.8	25.0	29.3
Education	4.6	4.6	4.0
Shopping	22.7	24.0	21.9
To eat/drink	1.9	1.8	2.4
Visit Family& Friends	10.2	10.8	8.6
Entertainment/Leisure & Sport	9.8	9.9	9.2
Personal Business	6.4	5.2	5.7
Companion/Escort Journey	15.2	13.8	15.2
Other	4.2	5.1	3.8
All Purposes	**100**	**100**	**100**

(Source: CSO QNHS; 2017)

The survey reveals notable differences between Dublin and rural areas (non-Dublin) for the travel mode chosen and journey purpose. 29.2 % of journeys by car – either as driver or passenger – for Dubliners were for the work purposes an increase of nearly seven

percentage points on 2014 and an amount higher (28.6%) for those persons living outside of Dublin. Nearly 45% of journeys by public transport for persons living in Dublin were work related compared with 28% of journeys for those residing outside Dublin. Nearly 28% of all walking or cycling journeys by Dubliners were for the purpose of work compared to 15% in rural areas while over one fifth of walking/cycling journeys undertaken by Dubliners were for shopping purposes, compared to 26% in rural areas. The use of public transport nationally has increased for travel to work and for education purposes. The 2016 NTS also reveals that:

- Travellers in rural areas (i.e. excluding Dublin) travelled 17.1km on average, for 23 minutes duration at an average of 41.7km/hour. Statistics for the South east region reveal that in the period 2014-2016 people are travelling longer distances, for great durations but at lower speeds.

- Almost half of all journeys (46.2%) in 2016 took place between the hours of 13:00 and 18:59. Just over one fifth of all journeys (22.2%) were made between 13:00 and 15:59 while close to one quarter (24.0%) took place between 16:00 and 18:59.

- The vast majority of journeys (82.1%) took 30 minutes or less to complete. Over half of all journeys (52.9%) took 15 minutes or less to complete. Just 17.9% of journeys took longer than 30 minutes while just over 4% of journeys were longer than one hour in duration; a pattern consistent with 2013 and 2014.

- Just over four out of every ten journeys (43.3%) involved distances of eight kilometres or more. Over one quarter of journeys (25.5%) were less than two kilometres.

- Females were more likely than males to travel by car as driver - 71.2% of journeys were taken by females compared with 67.4% of journeys by males. This was different from 2013 and 2014 when males and females were equally likely to travel by car as driver. Females were nearly four times more likely to travel as a passenger in a private car than males at 7.5% and 2.0% respectively. On the other hand, males were substantially more likely to travel by lorry, motorcycle or other modes (6.4%) compared with just 0.2% of females. Slightly more males than females chose to walk - 14.9% of males compared with 14.3% of females. Travel by public transport (including bus, rail, DART and Luas) was largely similar for both males and females.

- Nearly two thirds of journeys (65%) taken by persons residing in densely populated areas were by car, driving to their chosen destination. This was lower than for intermediate density (71.5%) and thinly populated areas, where over three quarters of journeys (75.9%) were by car as driver. Journeys by public transport (bus, rail,

DART or Luas) taken by residents of densely populated areas were nearly three times greater than in thinly populated areas. Nearly 17% of persons living in densely populated areas walk to their chosen destination. In thinly populated areas, just over one in ten journeys involved walking as a mode of travel.

- Persons living in Dublin were significantly less likely to drive than those in the rest of the country. In 2016, over half of all journeys by Dubliners (54.4%) were by car as driver compared with over three quarters of journeys taken by those living in the rest of the country (76.2%). Nearly three quarters and above of journeys for all regions outside of Dublin were by car as driver.

- Journeys by public transport for persons living in Dublin (13.1%) were nearly seven times greater than in the rest of the country (2%). Over one quarter of journeys made by Dubliners (25.5%) were by walking or cycling - over twice the corresponding figure for persons living outside of Dublin (12.2%). Persons residing in Dublin were significantly more likely to walk as a mode of travel - nearly twice as likely compared with the rest of the country. Over one fifth of Dubliners (21.4%) walked as a mode of travel.

- More journeys were likely to be by car as driver for journeys of 15 minutes or less (73.5%). Public transport (bus, rail, DART or LUAS) was more likely to be used for journeys with a longer duration - 14.8% of journeys of duration 31-45 minutes and 16.4% of journeys of 46-60 minutes duration were by public transport. Only a small proportion of journeys (1.6%) were by public transport for journeys with duration of 15 minutes or less. Nearly one in ten journeys (9.5%) in excess of 60 minutes duration were by walking or cycling while this travel mode was used for nearly 18% of journeys of a quarter of an hour or less.

- Walking or cycling was the mode used for nearly 45% of all journeys under two kilometres. There was a positive relationship between car usage and distance. For short journeys (less than two kilometres), over half of journeys were by car (52.6%), either as driver or passenger, whereas for longer journeys of eight kilometres or more, nearly nine out of ten (87.1%) were by car, either as driver or passenger.

- Nearly two thirds (64.4%) of all journeys were solo journeys while over one in five (21.5%) were two person journeys. Just over 14% were in groups of three persons or more. Less than 2% of all journeys were in groups of five or more persons. This pattern was largely similar for 2013 and 2014.

- Seven in every ten solo journeys (69.2%) were by private car. Where two or more persons are travelling together, travel by private car is the most common mode of

travel - nearly 82% of journeys involving two persons and 87% of journeys of three persons or more were by car. Just over 8% of journeys where the mode of travel was walking or cycling were done in groups of three persons or more. This follows the same pattern as for 2013 and 2014.

- Four out of every ten solo journeys (42.3%) were for the purpose of work, an increase of over five percentage points on 2014. Over one fifth (20.9%) of solo journeys were to go shopping. The preference for journeys for the purpose of visiting family or friends or for entertainment, leisure or sports was that they tended to be done in the company of another person. Nearly 23% of all two person journeys and close to one quarter of journeys involving three persons or more were for this purpose.

- Over one third of journeys made by males in 2016 were work related journeys (35.4%), an increase of nearly five percentage points on 2014. This compares with nearly one quarter (23.9%) of all journeys made by females for the purpose of work. This follows the same pattern as in 2013 and 2014. A further one quarter (24.4%) of all journeys made by females was for the purpose of shopping, compared with nearly one fifth of journeys made by males (19.1%). Females were nearly twice as likely as males to make a journey for the purpose of accompanying another person - 19.6% of females compared with 10.1% of males. Close to one in ten journeys by females were for the purpose of visiting family or friends. Nearly 11% of journeys made by males were for entertainment, leisure or sports purposes.

- Over 17% of journeys of less than two kilometres were work related, an increase of over two percentage points on 2014. Nearly three in every ten journeys (29.2%) of less than two kilometres were for the purpose of shopping. Close to one fifth (18.5%) were companion/escort journeys and over 6% were for the purpose of education. Over 38% of journeys of eight kilometres or more were for the purpose of work. Nearly 11% of journeys of eight kilometres or more were to visit family or friends.

- Over one quarter (26.2%) of journeys that took 15 minutes or less to complete were for the purpose of shopping, a slight decrease on 2014. Just over one fifth (20.1%) were companion or escort journeys. Over one fifth (22%) of journeys of less than two kilometres were for the purpose of work while 35% of journeys of more than one hour duration were work related, an increase of nearly seven percentage points on 2014. Nearly one fifth of journeys (19.4%) of over an hour in duration were for the purpose of entertainment, leisure or sports and nearly 16% were visiting family or friends.

- The proportion of journeys which were undertaken for work related reasons was highest amongst 18-34 year olds (35.7%), an increase of nearly five percentage points on 2014. Journeys made for the purpose of education showed a similar pattern with nearly 10% of all journeys made by 18-34 year olds for this purpose. Companion or escort journeys by the 35-54 age group were nearly twice those taken by persons aged between 18 and 34 years. Over one fifth of all journeys (21.4%) made by 35-54 year olds were companion or escort journeys. Over 22% of all journeys undertaken by persons aged 55 years and over were for the purpose of visiting family or friends or for entertainment, leisure or sports purposes.

- The overall percentage of total journeys made between midnight and 06:59 was relatively low, with males twice as likely as females to travel during this time. Females were most likely to travel between 13:00 and 18:59 with almost half of their total journeys (46.9%) made during this time. Nearly one fifth of all journeys (18.8%) were made between 10:00 and 12:59, while close to one quarter of all journeys taken were between 16:00 and 18:59.

- The greatest proportion of journeys by 18-34 year olds was between 16:00 and 18:59 (25.7%). Over 14% of journeys by this age group were made between 19:00 and midnight. Over one quarter (25.1%) of journeys by persons in the 35-54 years age group took place between 16:00 and 18:59. Just over 22% of persons aged between 18 and 54 years took a journey between 07:00 and 09:59. Over half of all journeys (54.2%) made by persons aged 55 years and over were made earlier in the day between 10:00 and 15:59.

- People living outside Dublin were more likely to travel longer distances. Nearly half of all journeys (49.8%) made by those living outside of Dublin in 2016 were eight kilometres or more, in comparison with those residing in Dublin where just 28.9% were of a similar distance. Nearly one third of all journeys of Dubliners were less than two kilometres, compared with 23% of all journeys taken by persons living outside of Dublin.

- Over three quarters of journeys (77.4%) of fifteen minutes or less were by car (as driver or passenger) compared with over 71% of journeys over one hour in duration. For short journeys of a quarter of an hour or less, nearly 17% were by walking. One fifth of journeys greater than three quarters of an hour in duration were by bus.

- Over one third (35%) of all journeys of one hour or more were for the purpose of work, an increase of nearly seven percentage points on 2014. Nearly one fifth (19.4%) were for the purpose of entertainment, leisure or sports. Over 26% of

journeys of a quarter of an hour or less were to go shopping, while over one fifth (20.1%) were companion/escort journeys.

- By far the most common reason why people did not travel on the travel reference day was that they had no wish or need to travel or were fully occupied with home duties - nearly two thirds of persons (62.8%) gave this as their main reason for not taking a journey. Nearly 18% cited illness as the reason for not making a journey - 10.5% were suffering from a short term illness while 7% were suffering from a long term illness or mobility impairment. Nearly 4% chose not to travel due to weather conditions, while a further 3.6% had no access to transport.

- The Transport Omnibus 2016 (CSO) reveals that there were a total of 2,624,958 vehicles under current licence in 2016, of which 2,026,977 (77.2%) were private cars. Of the 2,026,977 private cars under licence, 141,931 were new cars licensed for the first time in 2016. Almost two thirds (65.3%) of new private cars licensed for the first time in 2016 had an engine capacity of between 1401 and 2000cc, while 96.2% were in either the A or B CO_2 emission bands.

- A total of 2,820,528 Irish driving licences were held at the end of 2016, of which almost a quarter of one million (249,657) were learner permit licences.

- Almost 1.5 million (1,465,710) cars underwent the National Car Test (NCT) in 2016. Over half (52.8%) failed the initial test, but 94.2% of cars passed after one or more tests.

- A total of 198,844 penalty point endorsement notices were issued, a decrease of 20.3% on the previous year. Seven out of every ten (71.9%) of the penalty point endorsement notices issued in 2016 were for speeding. Males incurred more penalty point endorsement notices than females in 2016. Of the 167,843 endorsement notices where gender was recorded, males incurred 105,382 (62.8%) penalty point endorsement notices while females incurred 62,461 (37.2%) notices. In 2016, women were more likely to incur more penalty point endorsement notices for speeding than men (79.1% vs 69.0%) whereas men were more likely to incur more notices for holding a mobile phone while driving than women (13.2% vs 10.1%).

- 186 people were killed on Irish roads. This represents an increase of 24 fatalities (14.8%) when compared with 2015.

- In 2016, Irish licensed vehicles travelled a total of 48.5 billion kilometres. Each vehicle travelled, on average, 18,441 kilometres in 2016. Private cars accounted for

77.5% of the total number of licensed vehicles and 75.6% of the total distance travelled in 2016. On average, each private car travelled 18,000 kilometres in 2016.

- Irish registered goods vehicles made 12.1 million laden journeys and transported a total of 141.7 million tonnes of freight. The overall amount of road freight activity was 11.6 billion tonne-kilometres in 2016, an increase of 17.5% compared with 2015. The largest commodity group transported by Irish registered goods vehicles in terms of tonnes carried in 2016 was *quarry products, metal ores & peat* (24.7%).The greatest share of total freight activity in terms of tonne-kilometres related to the carriage of *foodstuffs* (25.2%). There were 3,796 licensed hauliers in the State, a slight increase of 0.9% compared with 2015.

- A total of 205.6 million passengers were carried on scheduled bus services and 42.8 million passengers travelled by rail in 2016. Iarnród Éireann carried 581,000 tonnes of freight in 2016. The principal commodity carried was *mineral ores.*

- There were 19,452 annual subscribers to the Dublin Bike scheme. This was augmented by 17,798 short term subscribers which combined accounted for over 4.3m journeys made - the largest number of journeys by users being in September when 409,077 journeys were made. Cork with 9,549 annual subscribers in addition to 1158 short term, Galway 2,143 annual subscribers in addition to 889 short term and Limerick with 2,840 annual subscribers in addition to 249 short term subscribers accounted for 291,000, 13,574, 32,892 journeys respectively. For Cork and Galway, the month of October had the most bicycle journeys when 32,652 and 1,425 journeys were made respectively. May was the month when most journeys occurred in Limerick (3,387).

- There were 20,804 small public service vehicles licensed to operate. More than half (51.6%) of these were based in Dublin. Wheelchair accessible taxis and hackneys represented 6.0% (1,254) of the total small public service vehicles - an increase of 22.9% on the number of those same vehicles in 2015. More than one fifth (22.3%) of all small public service vehicles were 10 years and older while 6.6% were less than two years old.

Census 2016 confirms that 1,875,773 workers commute to work, up 11% since census 2011. Of this amount 1,229,996 commuted by car (+8%), 175,080 walked (+3%), 174,569 commuted by public transport (+21%) while 56,837 commuted by bicycle (+43%). Dublin accounted for 512,449 commuters, Cork 102,139, Limerick 44,624, Galway 44,376 and Waterford 24,375. The average travel time of commuting workers was 28.2 minutes, up from 26.6 minutes in 2011. Primary students commuted by car (60%), bus (10%) and

walking (24%). Secondary students commuted by car (43%), bus (28%) and walking (21%). Third level students commuted by car (34%), bus (24%) and walking (26%).

6.4 Census 2016

In contrast to the NTS, Census 2016 offers particular localised insights for County Kilkenny. By some distance the car is the mode most frequently used in travel to work, school or college in the County. Census 2016 records 65% of people either travel as a driver or passenger; higher than the national average of 58%. This figure represents an increase on those recorded in the census 2006 (61.9%) and census 2011 (64.5%). When *work only* travel is considered, travel by car rises to 69%. Vehicular traffic is overwhelmingly the most popular mode used. Public transport usage at about 8% at most is significantly lower than the national average of 13%. Soft modes account for 12%: notably lower than the national average of 17%.

Table 15: Mode Share

Means of travel	Work	%	School or College	%	Total	%
On Foot	3,238	8	3,999	18	7,237	11
Bicycle	580	<1	234	4	814	1
Bus or minibus	363	<1	4,651	21	5,014	8
Train	184	<1	123	<1	307	<1
Motorcycle	103	<1	13	<1	116	<1
Car Driver	26,642	65	1,236	5	27,878	44
Car Passenger	1,666	4	11,688	52	13,354	21
Van	3,130	8	51	<1	3,181	5
Other (incl Lorry)	314	<1	4	<1	318	<1
Work from Home	3,220	8	22	<1	3,242	5
Not stated	1,314	3	651	3	1,965	5
Total	**40,754**	**-**	**22,672**	**-**	**63,426**	**-**

(Source; CSO Population aged 5 years and over by means of travel to work, school, or college, 2016)

61.3% of those travelling to work, school or college depart from home between 07.31 and 09.00 in the morning compared to 57.5% nationally.

Table 16: Morning Departure Time

Time Leaving Home	Persons-Kilkenny	Percentage-Kilkenny	Percentage - National
Before 6.30	3,216	5.3%	5.7%
06.30 – 07.00	3,678	6.1%	7.1%
07.01 – 07.30	4,897	8.1%	9.1%
07.31 – 08.00	9,600	16.0%	14.9%
08.01 – 08.30	13,984	23.2%	20.8%
08.31 – 09.00	13,306	22.1%	21.8%
09.01 – 09.30	5,799	9.6%	8.0%
After 09.30	3,455	5.6%	7.3%
Not Stated	2,249	4.0%	5.3%
Total	60,184	100.0%	100.0%

(Source: CSO Population aged 5 years and over by time leaving home to travel to work, school or college, 2016)

68% of those travelling to work, school or college can complete their journey within 30 minutes compared to 61.1%

Table 17: Journey Times

Journey Time	Persons-Kilkenny	Percentage-Kilkenny	Percentage - National
Under 15 mins	22,020	36.6%	32.3%
¼ hr – under ½ hr	18,927	31.4%	28.8%
½ hr – under ¾ hr	9,528	15.8%	17.2%
¾ hr – under 1 hr	2,374	3.9%	5.9%
1 hr – under 1 ½ hr	2,076	3.4%	6.1%
1 ½ hr and over	1,698	3.1%	2.2%
Not stated	3,561	5.8%	7.5%
Total	60,184	100.0 %	100.0 %

(Source; CSO Population aged 5 years and over by journey time to work, school or college, 2016)

7. Provision of and Access to Key Services

7.1 Introduction

Public transport serves various roles in an efficient and equitable countywide transportation system. In an urban area it provides a space-efficient mass mobility solution on major travel corridors and routes, reducing traffic and parking congestion. In more dispersed and rural communities, it provides basic mobility for non-drivers and affordable transport for lower-income households. Although it serves a limited portion of total travel in most rural communities, such trips tend to be particularly important, including travel for healthcare, basic shopping, school, work and to avail of critical social and economic services, which increasingly have been centralised and consolidated in larger urban settings. It is notable that demographic factors, changes in transport and communications infrastructure as well as in public policy have substantially altered the role and nature of many mid-sized and smaller towns with functions and services transferring to and building scale in larger urban settlements.

7.2 Access & Quality of Life

Access to adequate, affordable public transport is a basic expectation in a modern society. Lack of access to appropriate transport leaves people without essential services and employment opportunities, disproportionately affecting vulnerable groups – the poor, persons with a disability and the elderly – who rely on public transport as their main means of travel. While by no means exclusive to rural areas, deficiencies in the provision, cost and access to public transport particularly limit the capacity of rural dwellers to engage with and fully participate in economic, social or community life. Where provided, access to public transport can help reduce many of the problems facing rural communities and small towns, including population and economic decline, poverty and social exclusion. Access to employment opportunities and to health, education, social and economic services is critical in addressing social exclusion, marginalisation and continuing cycles of deprivation and decline. The Irish Centre of Gerontology *(Walsh, O'Shea, & Scharf, 2012)* has determined that are five interconnecting domains of exclusion within older rural populations. These are:

- Social connections and social resources.
- Services.
- Transport and mobility.
- Safety.
- Security and crime.

Access to a broad range of employment, public and social services, recreational and retail facilities is thus a key determinant in achieving social equity and in addressing social inclusion. The lack of locally available services, distance from service centres, levels of car ownership, public transport provision and the higher relative costs of living in peripheral rural locations can further reinforce marginalisation, poverty and isolation. A sound quality of life requires that citizens throughout the county have the appropriate and timely access

to an extensive range of services which specifically include employment, education, health care, social and financial services, recreational and retail. The availability and provision of such services within the County is set out as follows:

7.3 Healthcare, Disability and Social Services

Healthcare provision in Ireland has undergone a substantial programme of reform and rationalisation with the creation of 6 Hospital Groups and the intention to locate key specialisms within Centres of Excellence in Dublin, Cork, Galway and Waterford. The National Cancer Control Programme (NCCP) has eight designated cancer centres in urban areas with a further 18 public hospitals, one of which is St Luke's Hospital, providing systemic anti-cancer therapy (chemotherapy, immunotherapy etc.).

The principal health services and facilities provided in the county are outlined in Table 18:

Table 18: Healthcare Facilities, Nature and Location

Healthcare	Nature	Location
St Luke's Hospital	General Hospital – acute, maternity, adult, pediatric	Kilkenny city
St Luke's Acute	Psychiatric	Kilkenny city
Aut Even	Private healthcare	Kilkenny city
St Canice's	Mental health services	Kilkenny city
Lourdes Orthopaedic	Orthopaedic	Kilkenny city
St Columba's	Geriatric & rehab	Thomastown
Community Hospital	Community	Castlecomer
Health Centres	Public Health Nurse support for home and clinic nursing care, including post hospital care, dressings, injections, referral to respite and day care and assessment for Nursing Home Subvention, home support, nursing aids and appliances.	Kilkenny, Ballyhale, Ballyragget, Castlecomer, Bennettsbridge, Callan, Coolbawn, Freshford, Gowran, Johnstown, Graiguenamanagh, Clogh Inistioqe, Stoneyford, Kilmacow, Mullinavat, Paulstown, Thomastown, Urlingford, Windgap, Kilmacow

(Source: Health Service Executive, 2018)

Census 2016 reveals that 13.4% of the local population – equivalent to the national percentage - is categorised as disabled. In addition, a further 4.3% of the local population as categorised as carers, slightly higher than the national figure of 4.1%. Combined, this represents nearly a fifth of the local population likely to require access to health, rehabilitation and other support services. This is also a cohort that is likely to have a greater need for and dependency on frequent and reliable public transport than might exist within the general population.

In emergency situations access to health care and patient facilities is literally a matter of life or death. Access and proximity to emergency healthcare facilities by County populations has been measured by AIRO (2013). This mapping reveals that a significant proportion of the local population within the County can access such facilities in Kilkenny and Waterford city

within 10-20 minutes. However some communities in the north-west, south-east and south-west are recorded as being 30-45 minutes distant from emergency facilities; likely exacerbated by poor quality roads. In the case of the most distant and peripheral locations in the County this is almost double the national average of 20 – 30 minutes.

Figure 12: Access to A&E 24hr & Partial
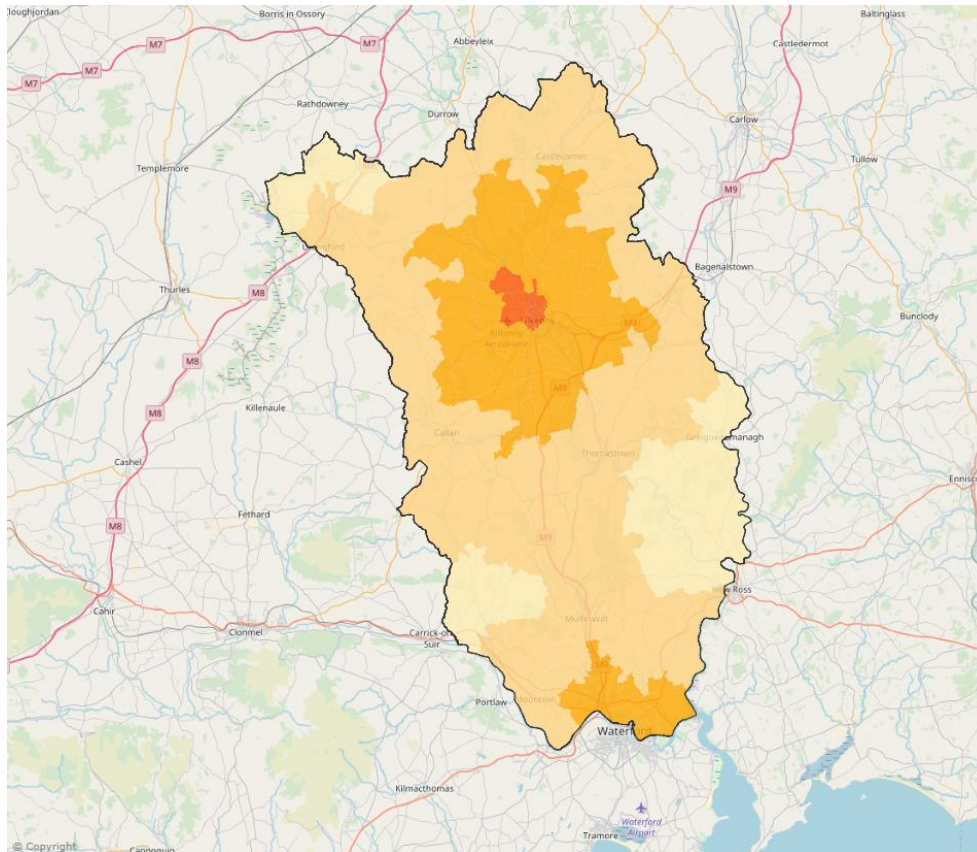
(Source: AIRO, 2013)

Family doctor and general medical practices are located in Johnstown, Freshford, Ballyragget, Castlecomer, Coolbaun, Kilkenny, Gowran, Goresbridge, Callan, Kilmoganny, Ballyhale, Thomastown, Graiguenamanagh, Mullinavat and Piltown. An out of hours service is provided by Caredoc located in Kilkenny city, Waterford, Carlow and New Ross. In Carlow and Kilkenny – the counties are combined for HSE purposes, 70 GPs provide services to 44,930 families. With 71,354 medical cards in use, this represents an average caseload of 1019 cardholders per GP; far higher than the national average of 861 and the tenth highest nationally after Dublin West, 1276; Dublin North Central,1218; Laois/Offaly 1176; Wexford, 1118; Donegal, 1058; Meath, 1057; Roscommon, 1042; Kildare West/Wicklow, 1032 and Clare, 1024. While access to general medical practices appears reasonable, it is notable that the Irish Medical Organisation cites serious problems in the viability of rural General Medical Practices. It states that "*There is a manpower crisis in General Practice, with rural general practice being amongst the hardest hit areas. The age profile of GP's working in rural areas is increasing, and there have been difficulties in securing replacements when these doctors*

retire or resign" On this point Kilkenny GP Tadgh Crowley claims 42% of Kilkenny based General Practitioners will retire in the period to 2025 *(Kilkenny People, March 22, 2018).*

Pharmacies are located in Urlingford, Freshford, Ballyragget, Castlecomer, Kilkenny x 6, Gowran, Goresbridge, Callan, Thomastown and Piltown. The Accessibility – Health - Pharmacy measure (*AIRO, 2013*) reveals that the distance to a Pharmacy in the county accords with the national average of 8 -12 minutes. However significant areas in the South of the County are twice this distance.

Nursing homes are located in Crosspatrick, Freshford, Ballyragget, Castlecomer, Gowran, Archersrath, Kilkenny, Callan, Kilmoganny, Graiguenamanagh, Kilmacow and Mooincoin,

The principal disability and social services, the nature of their supports and their location is as follows:

Table 19: Disability Services, Nature and Location

Disability	Nature	Location
SOS KIlkenny	Day & residential services for adults with intellectual disabilities	Kilkenny City
St Patrick's	Day & residential services for adults & children with intellectual disabilities	Kilkenny City
Rehab Kilkenny Resource Centre and Day Service	Resource centre and accommodation	Kilkenny City
Camphill Communities	Education, enterprise and accommodation for intellectual disability and special needs	Callan, Jerpoint, Ballytobin, Coolagh, Grangemockler, Thomastown
National Learning Network	Education	Kilkenny city
L'Arche Kilkenny	Intellectual disability	Kilkenny city
Irish Wheelchair Association	Assisted living	Kilkenny city
KITE	Autism spectrum disorder	Kilkenny city
Kingsriver	Training & residential	Stoneyford

(Source: Health Service Executive, 2018)

Table 20: Social Services, Nature and Location

Social Services	Nature	Location
HSE	Asylum seekers service	Kilkenny City
C.A.T.S	Addiction services	Kilkenny City
Carlow/Kilkenny Substance Misuse Team	Addiction services	Kilkenny City
HSE	Homeless services	Kilkenny City
Good Shepherd Centre	Homeless services	Kilkenny City
Amber Women's Refuge	Refuge	Kilkenny City
Aislinn Adolescent Addiction	Addiction services	Ballyragget
Droichead FRC	Family support services	Callan
The Mill FRC	Education, training and development	Urlingford
Newpark Close FRC	Family support services	Kilkenny City
St Canice's Community Action	Family supports, training & education	Kilkenny City

(Source: Health Service Executive, 2018)

7.4 Early, Primary, Secondary and Further Education

Registered childcare services, offering a range of supports are provided in 97 locations in County Kilkenny. There are 80 national schools widely dispersed throughout the County, serving all urban, town, village and rural settlements. The Accessibility – Education – Primary Schools measure *(AIRO, 2013)* reveals that the distance to a primary school in the county accords with the national average of 8 - 12 minutes.

Figure 13: Accessibility - Education – Primary Schools
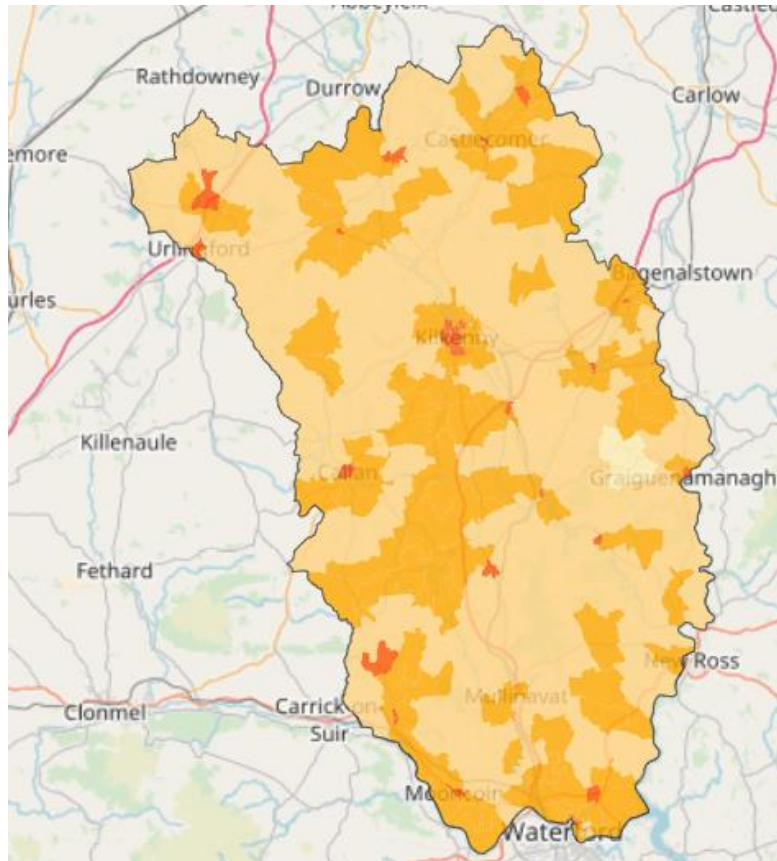
(*Source: AIRO, 2013)*

Secondary and Post-leaving Certificate education is however concentrated in urban areas with 11 of the 19 schools in Kilkenny City. The location and distribution of the school network is as follows:

Table 21: Post Primary Schools

Second Level Education	Nature	Location
Coláiste Pobail Osraí	Gaelscoil	Kilkenny city
Coláiste Mhuire	Secondary	Johnstown
Duiske College	Secondary	Graiguenamanagh
Kilkenny City Vocational School	Secondary	Kilkenny city
Grennan College	Secondary	Thomastown
Ormonde College of Further Ed	Post leaving cert	Kilkenny city
Kilkenny Adult Guidance	Adult Education	Kilkenny city

Service		
VTOS	Vocational training	Kilkenny city
Scoil Aireagail	Secondary	Ballyhale
Coláiste Eamann Rís	Secondary	Callan
St. Brigid's College	Secondary	Callan
Castlecomer Community School	Secondary	Castlecomer
Kilkenny College	Secondary	Kilkenny city
Loreto	Secondary	Kilkenny city
CBS	Secondary	Kilkenny city
Presentation	Secondary	Kilkenny city
Coláiste Cois Siúire	Secondary	Mooncoin
Kilkenny City Vocational School	Secondary	Kilkenny city
St Kieran's College	Secondary	Kilkenny city

The *Accessibility to Education – Secondary Schools* measure in the Census Mapping Module *(AIRO, 2013)* reveals that access across throughout the county to Secondary schools of 8 -12 minutes in contrast to the national average of 20 – 30 minutes.

Figure 14: Accessibility - Education – Secondary Schools

(Source: AIRO, 2013)

89
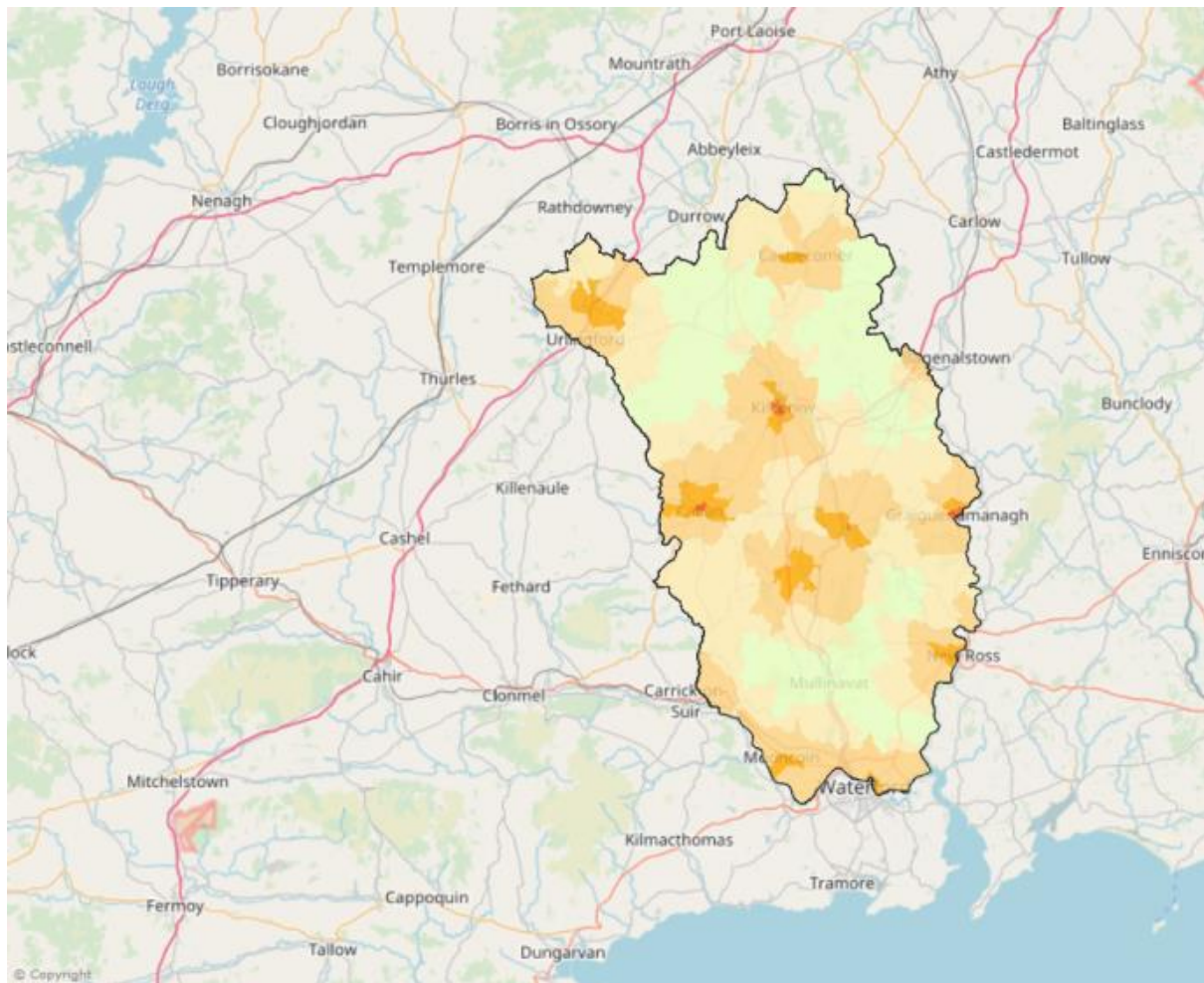
Table 22: Third Level, Vocational & Continuing Education

Third level, Vocational & Continuing Education	Nature	Location
NUI Maynooth – Kilkenny Campus	Undergraduate & post graduate education	Kilkenny city
Kilkenny Education Centre	Training & Education	Kilkenny city
Teagasc	Agricultural college	Kildalton
Grennan Mill	Craft courses	Thomastown
School of Food	Professional and hobby cooking courses	Thomastown

7.5 Financial Services, Consumer and Business Banking

As with healthcare the financial services sector, most particularly banking, has undergone a process of significant change in recent years. This is driven by a combination of factors including changed banking practices, the impact on technology and online banking, service consolidation and branch viability; the impact of which has been the reduction of the local branch network. Moreover the remaining branch network has increasingly moved away from cash counter services to an "advice and self-service" model. While credit unions have also undergone a process of rationalisation and consolidation they have tended to retain the footprint of the local branch network. Branch business banking services are provided in ten locations throughout the county, 40% of which are located in Kilkenny city. The Credit Union network however is dispersed throughout the County with 75% of its branches in rural towns and villages. When the pillar bank network is supplemented with the Credit Union network, a third of branches for consumer or personal banking are located in Kilkenny city.

Table 23: Financial Institutions

Financial Institutions	Nature	Location
AIB	Banking services	Kilkenny city
AIB	Banking services	Callan
Bank of Ireland	Banking services	Kilkenny city
Bank of Ireland	Banking services	Callan
Bank of Ireland	Banking services	Graiguenamanagh
Bank of Ireland	Banking services	Thomastown
Bank of Ireland	Banking services	Castlecomer
Bank of Ireland	Banking services	Urlingford
Ulster Bank	Banking services	Kilkenny city
Permanent TSB	Banking services	Kilkenny city
Castlecomer CU	Credit Union	Castlecomer
Goresbridge CU	Credit Union	Goresbridge
Piltown CU	Credit Union	Piltown
St Canice's CU	Credit Union	Kilkenny city x2
St Canice's CU	Credit Union	Callan
St Canice's CU	Credit Union	Graiguenamanagh
St Canice's CU	Credit Union	Dunnamaggin
Thomastown CU	Credit Union	Thomastown

The decline of the Post Office network is one of the most visible manifestations of rural change and decline. Demographic and technological change as well as the development of competing service channels has seen 41% of all Post Office branches in the State closed in the period from 1992 to 2017. 1,130 Post Office branches remain operational. However, there are suggestions that an optimal branch network would be between 600-700 locations thus indicating the further closure of up to 400 branches nationwide. Rationalisation of this scale would still permit An Post to meet the terms of its core contract to distribute social welfare payments, which requires that 95% of the population should live within 15km of An Post outlet. Despite the prospect of continuing rationalisation, An Post's retail network is amongst the largest in the State and serves approximately 1.7 million customers every week. Despite Ireland's low population density in rural counties, post offices remain within a manageable reach of the vast majority of households - around 93% of the population lives within 5 kilometres of a post office and nearly 99.9% of the population lives within 10 kilometres from a branch. As part of the network consolidation process Post Office branches have expanded their service offerings to cover both personal and business functions and now include a comprehensive range of postage, parcel, bill pay, banking, saving and state investments, public administration functions as well as retail operations arising from co-location of premises. Furthermore, it is universally accepted that the Post Office service and branch network fulfills an important purpose for social interaction and inclusion in rural communities. The location of branch Post Offices in the County is as follows:

Table 24: Post Offices

Post Offices	Services	Opening
Ballyragget	Full range including banking	Monday –Sat half day
Bennettsbridge	Full range including banking	Monday –Sat half day
Callan	Full range including banking	Monday –Sat half day
Castlecomer	Full range including banking	Monday –Sat half day
Freshford	Full range including banking	Monday –Sat half day
Glenmore	Full range including banking	Monday –Sat half day
Goresbridge	Full range including banking	Monday –Sat half day
Gowran	Full range including banking	Monday –Sat half day
Graiguenamanagh	Full range including banking	Monday –Sat half day
Inistioge	Full range including banking	Monday –Sat half day
Irishtown -Kilkenny	Full range including banking	Monday –Sat half day
Johnstown	Full range including banking	Monday –Sat half day
John's Green	Full range including banking	Monday –Sat half day
Kilkenny	Full range including banking	Monday –Sat half day
Kilmacow	Full range including banking	Monday –Sat half day
Kilmanagh	Full range including banking	Monday –Sat half day
Kilmoganny	Full range including banking	Monday –Sat half day
Loughboy - Kilkenny	Full range including banking	Monday –Sat half day
Mooncoin	Full range including banking	Monday –Sat half day
Mullinavat	Full range including banking	Monday –Sat half day
Piltown	Full range including banking	Monday –Sat half day
The Rower	Full range including banking	Monday –Sat half day
Thomastown	Full range including banking	Monday –Sat half day
Urlingford	Full range including banking	Monday –Sat full day

7.6 Miscellaneous Services

Table 25: Civic Business and Community Based Organisations

Civic, Business & Community Based Organisations	Nature	Location
Kilkenny LEADER Partnership	Community and enterprise supports	Kilkenny city
Kilkenny CIS	Information and advocacy services	Kilkenny city
Kilkenny MABS	Money, advice & budgeting service	Kilkenny city
Kilkenny Chamber of Commerce	Business network & advisory	Kilkenny city

Table 26: Employment Services

Employment Services	Nature	Location
Employment Affairs & Social Protection	Intreo office	Kilkenny city
Employment Affairs & Social Protection	Social welfare office	Thomastown
Turas Nua	Employment support	Kilkenny city
Kilkenny Job Club	Employment support	Kilkenny city
Noreside Resource Centre	Employment support	Kilkenny city

A similar range of public and civic services is also provided in larger towns in Counties adjacent to Kilkenny. Service users may also choose to utilise these depending on factors such as social & civic networks, commuting & employment patterns or where areas distant from Kilkenny City are better connected and more accessible such as Waterford City, Carlow Carrick-on Suir, Bagenalstown, New Ross, Thurles, Roscrea or Clonmel.

Employment support services are specifically relied upon by the long term unemployed (LTU) in the County and while they receive supports in work readiness and skills development, in many cases a recipient of a LTU payment is directed to engage with such workfare and activation services in order retain their social welfare benefits. Access to public transport in such circumstances is critical.

7.7 Provision of and access to Retail

The retail offering in the county is comprehensive and encompasses a range of options such as retail multiples, convenience and forecourt stores, independents, hardware, consumer products, clothing, durable goods, specialists, etc. It is evident that the retail environment has changed considerably in recent years; influenced by consumer behaviour, economic conditions, demographic change, retail market dynamics, consolidation in the supply chain and the introduction of new technology. One notable outcome of these changes is the shrinking of the retail sector and its concentration of *bricks and mortar* outlets in fewer but larger settlements. As a regional centre and county town, Kilkenny city attracts a significant

number of shoppers, drawn by the nature and scope of its retail offering as well as by its attractive built environment.

Travel for shopping is a regular need and cited by citizens as second only to the need to travel to work. It should be stated that irrespective of location consumers exercise a great deal of choice and flexibility in choosing the location and store type in which to shop. This is informed by a wide range of variables and demographic factors (age, occupation, income, social class, etc). Supply side factors will also affect consumer behaviour and will likely include store location, ease of access, attractiveness of the destination shop or retail centre, range and variety of retail offering, the ability to combine multiple purposes and activities within a single trip, the availability of ancillary services, provision and cost of parking, quality of public realm, congestion and drive time. Mobility and mode used will also substantially affect the distance a consumer will be able/willing to travel to a retail centre. Mode used will also likely determine the nature of the shopping undertaken as well as the location used. It is notable too that commuting for work and education purposes also provides opportunities for citizens to engage in other economic and social activity, such as shopping and leisure activities.

The *Location of Consumption Survey (Teagasc, 2015)* offers some insight into mobility, retail provision and consumption in urban and rural Ireland. Based on nationwide data - but not including Carlow, Laois and North Tipperary - the survey asked respondents to report on the distribution of consumption classified by category of economic activity and by location (within 10km, between 10 and 40km, elsewhere in the region, elsewhere in the Republic of Ireland (ROI), or elsewhere in the world (ROW). Of the 814 respondents 86% had access to private transport, allowing greater flexibility to access retail offering at greater distance. 43% of all survey respondents were rural based. Given that the nature and purpose for shopping can vary significantly by nature, scale and frequency, the allocation of household consumption was divided into five broad categories of expenditure; *main grocery shop, shopping for small items, shopping while travelling to and from work/school, shopping for durable goods* and *socialising*. Respondents were asked to specify the location where the products/services were purchased.

The survey revealed marked differences between the categories with respect to the spatial distribution of consumption. Among this sample shopping for small items mainly takes place locally while shopping for durable items takes place further from the household. However, there are marked divergences from the national trend when the analysis is conducted at a disaggregated rural-urban scale with those residing in the countryside or village having to travel up to 19km for their desired main grocery shop. In contrast to this, shopping for small items took place mainly within closer proximity to the household residence as did shopping while travelling to and from work/school. With regard to socialising proximity was regarded as important but not exclusively so for respondents in countryside, village or small towns.

Figure 15: Accessibility to Retail – All Grocery Stores
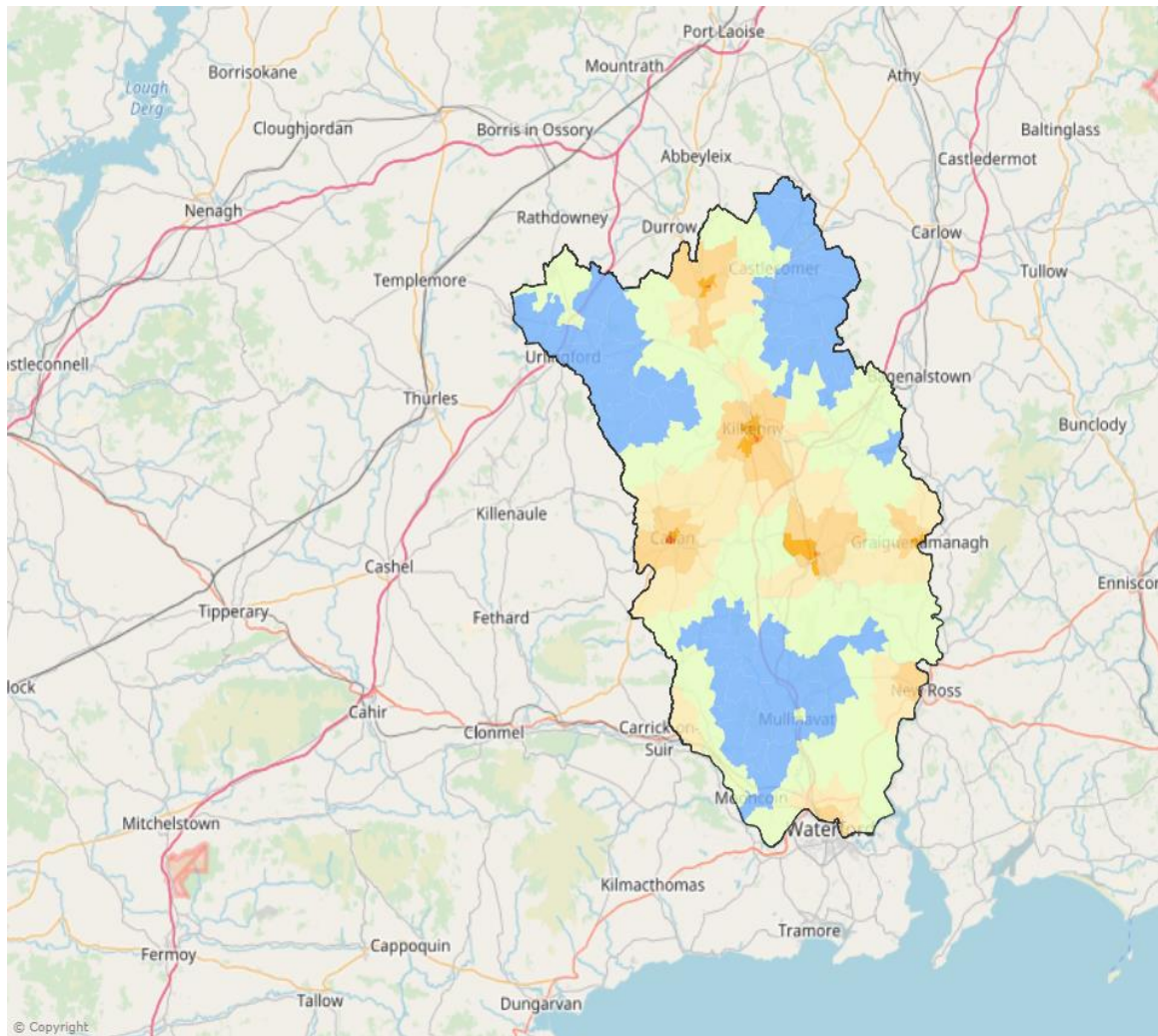
(Source: AIRO, 2013)

Locally, this is corroborated by the *Accessibility to Retail – All Grocery Stores* measure in the Census Mapping Module *(AIRO, 2013)*. Locally, this reveals that significant swathes of the County in the north-east, north-west and south/south west are 20-30 minutes distant from a retail offering; double the national, regional and county averages of 12-15 minutes.

Retail multiples offering a full suite of grocery shopping options are concentrated predominantly in the city and in limited locations in district towns such as Castlecomer, Graiguenamanagh, Callan and Thomastown; the latter two towns each hosting two multiples. This suggests a concentration of retail multiples in a limited number of locations throughout the County and for some a need to travel – as well as a leakage of economic activity and retail spend –to adjacent counties and urban centres like Waterford, Carlow, Clonmel, New Ross, Portlaoise and Thurles. It appears likely also that the towns and villages with a limited or declining retail offering also provide fewer reasons for consumers to visit, thus perpetuating a cycle of decline.

Table 27: Retail Multiples

Retail Multiple	Location
Supervalu	Ballyragget
Supervalu	Callan
Supervalu	Graiguenamanagh
Supervalu	Thomastown
Supervalu	Loughboy – Kilkenny
Supervalu	Market Cross –Kilkenny
Dunnes Stores	Kilkenny
Dunnes Stores	McDonagh Junction Kilkenny
Aldi	Hebron Rd Kilkenny
Aldi	Waterford Rd Kilkenny
Aldi	Callan
Lidl	Johnswell Rd Kilkenny
Lidl	Waterford Rd Kilkenny
Lidl	Thomastown

7.8 Provision of and Access to Recreational Services

In addition to the need to travel to access key employment, healthcare, education or financial services, citizens throughout the County travel regularly to avail of and participate in a wide range of leisure, recreational and active pursuits. As expected, the greater concentration of such services, venues and events – arts, theatre, dining, cafes, cinema, heritage sites and attractions, swimming pool, athletics facilities, etc – are located primarily in Kilkenny city or in adjacent urban areas. Notable exceptions to this include recreation trails (see section xx), community centres and parish halls as well as GAA facilities.

Youth facilities, which schedule a range of social, support and recreation activities on a weekly basis, are located throughout the County in Kilkenny City, Goresbridge, Johnswell, Graiguenamanagh, Kells, Kilmacow, Mooncoin, Robertshill, Urlingford, Slieverue and Windgap.

The GAA, as the largest and best known sports organisation in Ireland, plays an important role in Kilkenny life, not only providing a physical outlet for those playing the games, but also a social and recreational space for people to volunteer and for those attending games. As such the GAA is a useful proxy for sporting and recreational activity in the County reaching into every corner of the County – forty local clubs in addition to County teams - field teams at all grades and levels. Player participation combined with spectator interest thus accounts for the significant and regular movement of people throughout the County and beyond.

Figure 16: GAA Clubs and Grounds
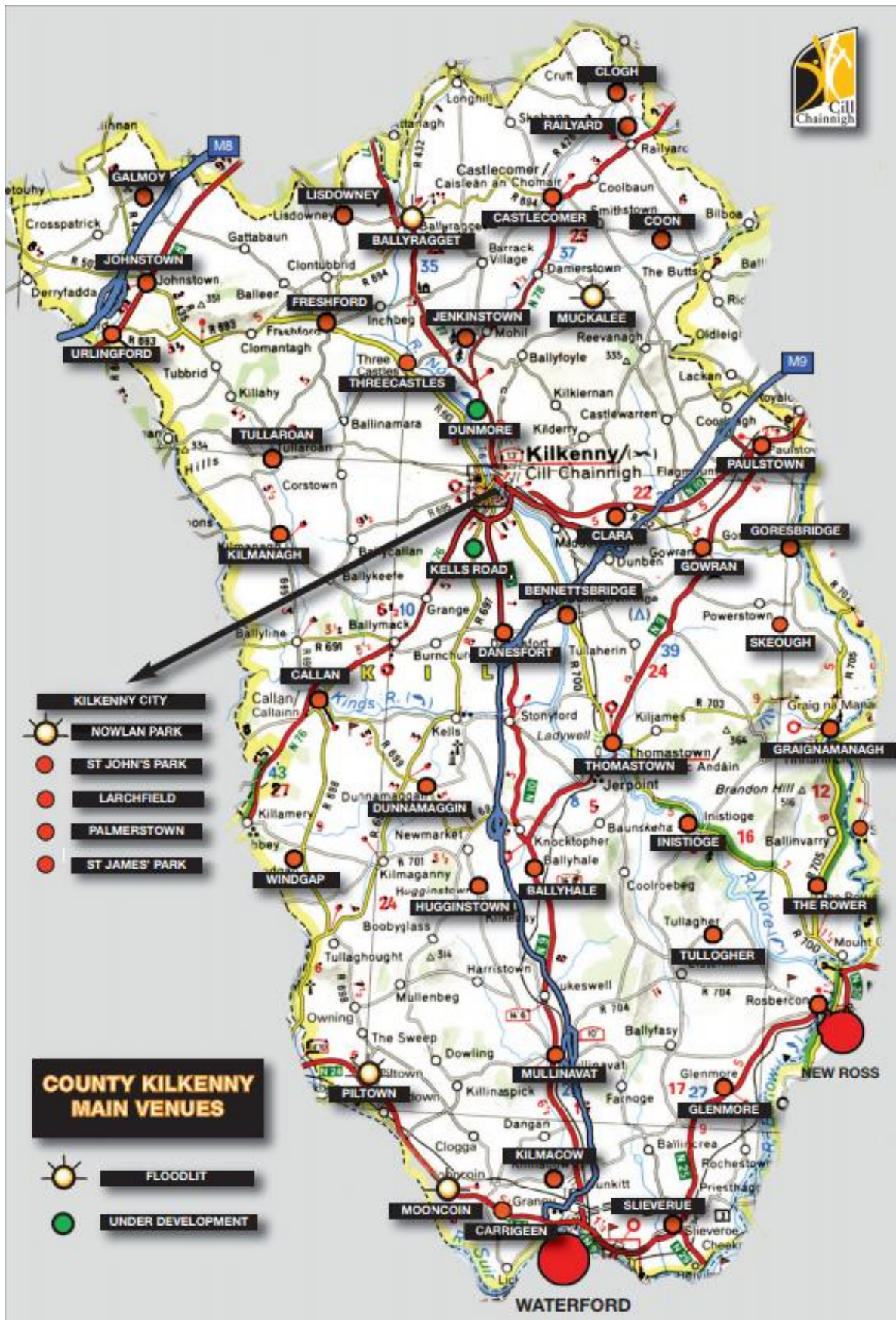
8. Public Realm and Streetscape

8.1 The Public Road

The public road – or the street in its urban setting – was envisaged primarily as a transit corridor and thoroughfare. It is the backbone of the County's transit infrastructure and is the means by which the overwhelming majority of citizens travel locally and to destinations further afield. Considerable demands are made of it; it must facilitate efficient and safe movement, access and egress. Furthermore, it must accommodate multiple modes and user needs such as private car, public transport, the movement of goods and freight in light or heavy vehicles, motorcyclists, cyclists as well as pedestrians. These needs and demands are not always reconciled and satisfied and within the hierarchy of public road users most modes are subordinate to the private car. It is largely a legacy network; for the most part unaltered for many generations, save for the development of the inter-urban motorway network, selected upgrades and re-alignment works and the part development of city orbital routes/relief roads to service Kilkenny and Waterford city centres. Indeed, where such investment has been made in urban locations there have been concerted efforts to rethink their purpose, adapt and re-apportion road space to safely accommodate other modes and user needs; most notably through enhanced pedestrian facilities and in the development and integration of cycle lanes in new road upgrades. In rural areas however, the public road network remains deficient, unsafe and generally less than favourable for soft transport modes such as cycling and walking.

8.2 Competing Uses

As already noted, Kilkenny City suffers from heavy traffic and congestion particularly at peak times and at critical city centre intersections. This is caused by large volumes of traffic within its city centre and the physical constraints and limitations imposed by its medieval character and compact scale. Heavy vehicular traffic means poor air quality, higher noise levels and a weakened public realm and sense of local community. Traffic also gives rise to high costs for the economy through delays caused by congestion. But congestion is not only caused by traffic volumes. Its causes also include the inability to reconcile and accommodate competing uses and modes within the limitations of the street; friction delays caused by individual vehicles (inappropriate street parking, deliveries, passenger drop off, etc.); inefficient signalling at traffic junctions and the quest for convenient - or free- curb side car parking. The latter is a phenomenon that deserves some scrutiny with some estimates suggesting that a third of traffic congestion in urban locations is caused by high volumes seeking suitable car-parking *(Donald Shoup, Cruising for Parking, 2006)*. When traffic congestion becomes a problem – and one which left unchecked will always worsen – it also becomes an opportunity to effect change. Within the limitations of the city centre streetscape the developmental of multimodal streets allows the capacity of the street to be increased by a more balanced allocation of space between modes. Restricted capacity for private car use also improves conditions for pedestrians, cyclists or public transport users and thus facilitates the potential for modal shift. Moreover, this has other likely benefits including a

reduction in accidents, air-quality and ambient improvements, more attractive urban living, greater population densities, enhanced workplace surroundings and improved retail vitality. Redistribution of space in this way allows for a variety of non-mobility activities such as seating and resting areas, trees, planting, public art, active spaces and other green infrastructure strategies as well as enhanced facilities for necessary transport infrastructure like bus stops, inter-modal connectivity hubs, shared mobility facilities, priority access for emergency services, cycling lanes and associated infrastructure such as bike parking, drops-off points for embarkation and departure, loading bays for goods distribution and delivery.

8.3 Defining the Public Realm

In addition to its primary function the public road network also represents a significant proportion of the public realm. This comprises buildings, structures, frontage and architectural monuments but also the '*space between buildings*' - the streets, laneways, the riverside, squares, plazas, parks, civic and open spaces accessible to the public. They facilitate movement but also gathering, interaction and celebration. Whether sedentary or active, they are dynamic spaces possessed of distinct and unique identities and histories. They support and facilitate public life and social interaction and define the civic experience. Streets are the public face of the urban environment, the places that connect us to work, entertainment, shopping, recreation, and each other. Urban areas need to balance public good and business needs—making people feel happy, safe, and connected, while enabling the efficient flow of business. Public space and the streetscape needs to serve a variety of functions and needs for all: people walking, people cycling, people who own and use businesses, private and public vehicle usage, relaxation, exercise, social interaction and commerce and services. As is readily understood in Kilkenny City and widely acknowledged elsewhere, an attractive, well presented and valued public realm has a profoundly positive impact on quality of place, social environment, health and wellbeing as well as on the economy and its competitiveness. Kilkenny City now reaps the rewards from pro-active, far-sighted practices and policies put in place over the years by KCC and civic interests.

8.4 Management

There can be little doubt that transport and mobility exerts a considerable influence on the quality of public realm and on *quality of place* and *quality of life.* As Ireland – and Kilkenny – urbanises, the nature of our public space must change, particularly in the way that transport and mobility is planned, managed and resourced. Transport impacts significantly on KCC planning and management functions. Urban infrastructure such as roads must be apportioned between road users- vehicles, bicycles and pedestrians alike. The commercial realities of a vibrant urban core require safe, reliable and efficient movement of people and goods. Parking, pick up/drop off, deliveries, access for emergency services and utilities must be facilitated. A clear vision, strong planning and active management plays a critical role in the preservation and development of the public realm. Dependable, efficient public

transport and a menu of transportation choices suitable to different needs are critical in keeping urban areas attractive and functioning optimally. While KCC does not have autonomy or control in transport policy and investment it does control how streets are designed, managed and used as well as how new residential and commercial developments and amenities connect with the transport system. In this way KCC can strongly influence modal choice, facilitate and actively promote modal shift. This can be done through:

- Re-allocation of road space and the development of multi-modal streets and the priority or exclusive use by soft modes in selected locations.

- Active promotion of shared mobility.

- Provision of infrastructure to enable connectivity for public or shared transport including the development of transport hubs and park and ride facilities.

- Support for *First Mile/Last Mile* solutions.

- Policies for transit oriented development and for the conversion of municipal fleet to electric or to sustainable forms.

- Use of real-time data to manage traffic flow including real-time car parking information panels on approach and orbital routes.

- Active curb-side management to reduce obstruction, friction and congestion.

- Completion of the Ring Road.

The National Association of City Transportation Officials (NACTO) and its *Global Designing Cities Initiative* has published a series of outstanding technical manuals which collate the inputs from experts in 42 countries worldwide. These guides, rich in detail, offer useful technical advice to inform street design that prioritises pedestrians, cyclists and users of public transport. They are free to download at https://globaldesigningcities.org/about-gdci/

8.5 Reallocation of Road Space

Notwithstanding contentious issues in Cork City recently, globally there is significant evidence that where well-planned measures to reduce road space or to restrict access for private cars are implemented in congested areas and where no alternative network capacity is available, over the long term the dire predictions of traffic chaos does not occur. Research on over 70 case studies of road space reallocation from eleven countries, and the collation of opinions from over 200 transport professionals worldwide, suggest that predictions of traffic problems are often unnecessarily alarmist, and that, given appropriate local circumstances, significant reductions in overall traffic levels can occur, with people making a far wider range of behavioural responses than has traditionally been assumed. "*When Pedestrianisation schemes or wider pavements or cycle lanes or bus (and other priority vehicle) lanes or road closures are introduced, pre-scheme predictions of what will happen are usually excessively pessimistic. In practice, it is rare that schemes result in a significant deterioration of traffic conditions. Traffic levels can reduce by significant amounts, with the average being that perhaps 11% of the traffic on the treated road or area cannot be found in the area afterwards*" (Disappearing traffic the Story so Far, Cairns, Atkins, Goodwin, 2002). Follow-up work has also highlighted the importance of managing how schemes are perceived by the public and reported in the media, with various lessons for avoiding problems. Finally, the findings highlight that well-designed schemes to reallocate road space can often contribute to a multiplicity of different policy aims and objectives. The EU cites successful *traffic evaporation* strategies completed in cities as diverse as Copenhagen, Wolverhampton, Cambridge, Oxford, London, Nuremburg, Strasbourg and Ghent. Factors cited as central to the successful implementation of these strategies are:

- Pre-implementation consultation and communication.

- A well-defined partnership between National, Local Authorities, representative bodies and the private sector.

- Extensive data monitoring and modelling, evaluation of different options and evidence-based decision-making.

- Agreement and communication of expected outcomes and benefits

- Trials, pilot projects and phased development.

- Allocation of the necessary financial and personnel resources.

- Ongoing communications and stakeholder engagement.

9. Transit Design, Integration & Connectivity

9.1 Introduction

Mobility – the movement of people and goods – is a fundamental human need, and a key enabler of economic prosperity and social equity. It is aided by a public transport system through a variety of modes and service operators; with the latter perhaps having different goals, mandates and remits. These might be a public service obligation; the requirement to operate a fully commercial service or one that is designed specifically to meet an equality or social inclusion need or to addresses disadvantage and poverty. Frequently, a transport service provider will seek to combine these goals and mandates in some form but might not manage to resolve an inherent conflict between them. With different transport service providers and operators now under the auspices of the NTA there is an imperative that these goals and mandates can be reconciled, made coherent, articulated and understood.

9.2 Essential Elements

Public transport operates on the basis that it facilitates the movement of multiple passengers to agreed destinations and it is characterised by regularly scheduled vehicle trips, open to all paying or subvented passengers. Irrespective of the operator or mode used, public transport must be considered by users to be reliable, convenient, cost effective and safe in order to be a viable or attractive option. Its planning, provision and operation is underpinned by a number of standard elements:

- The ability and capacity to carry many people within a single vehicle is a defining characteristic of public transport. Passenger volume drives intensity as well as the frequency of service. However, the converse is also true; low volumes or low user demand equate to low, infrequent or non-existent services. Furthermore, a high volume of passengers and their need for speed and reliability militates against frequent stops on any given route, potentially limiting access for other users. In purely economic and financial terms, volume is the most basic measure of efficiency and economic sustainability of public transport services. Volume is also the optimal means by which significant modal shift from private car to public transport can be attained and from which environmental benefits will derive.

- The basic tool of public transport is the travel route with defined starting, interim and finishing points. This facilitates directness and consistency in travel which in turn determines travel time. The speed by which road or rail operates is itself determined by other variables which include infrastructure quality, weather, congestion, accident, maintenance, user demand, industrial action, etc. Circuitous routes are neither direct nor speedy and thus are far less attractive to users that might value such attributes. Optimal route design must consider - but is often constrained by - legacy infrastructure and business models, settlement patterns, population density and dispersal, cost of operations and service provision, differing

user needs and demographics as well as the locations from which important social, education, healthcare and employment are provided.

- The ability of multiple users with different needs and destinations to pre-plan their use of public transport is fundamental to its success. A schedule and regular running time in any given week and at defined times during the day allows users to pre-plan and select the mode, location and/or distance most suitable and convenient to their needs. Frequency of service makes public transport available to more users and thus is critical to attracting volume. Frequency has obvious benefits for the traveller. It reduces waiting time. It can also address reliability concerns – if a service is missed for whatever reason, the expectation is that another can be availed of soon thereafter. Most importantly perhaps, it makes connections between separate services and travel modes easier. Greater and easier connectivity allows multiple single routes to be combined into a network; thus expanding the usefulness and appeal of each route and service individually and collectively.

- A Span of service which denotes the times of day when service begins and ends, on each day of the week is also important in allowing additional users to use services for different purposes. While services with a short span can meet the needs of specialised groups like education, social or healthcare, public transport services that aims for maximum user appeal and that wish to function as part of a network, need a long span, extending across the day and evening and also across the weekend. However frequency and span are expensive – increasing frequency and span, increases capital and operating costs.

- Comprehensive service coverage over a given geographic area allows social and public good objectives to be addressed. The requirement to offer such service coverage often reflects equity and equality goals and a social-service objective that focuses on meeting the needs of people who are especially reliant on public transport, whether due to age, disability, disadvantage or some other need. Service coverage must not only relate to the number of people with a particular need but also to the severity of that need. While regular schedules are necessary for predictability and consistency some variation in route planning and service provision can be offered by Demand Responsive Services (DRT) which may vary routing according to customer requests, within set limits. Conventional DRT services in Ireland tend to be characterised by lower user volume and are therefore most appropriate where demand is irregular or infrequent. Such services have a critical role in in expanding service coverage and do so often at a lower cost to the exchequer and in a way that allows flexible matching of user need and service supply thereby improving the utilisation of assets such as vehicles, capacity, people, drivers, data, etc. DRT services are also critical in enabling connectivity and access

where it would not otherwise exist. It should be noted that services like DRT whose primary objective is coverage by territory or demographic rather than volume require metrics other than the standard economic and Value for Money (VFM) transport measurements to gauge their success and value.

- Irrespective of whether the operator is public or private operating costs for public transport are met through commercial revenues from paying passengers as well as through subventions paid from exchequer resources in order to facilitate social good, inclusivity and equitable access to services for all. Public transport provision in rural areas requires high levels of public funding support.

- The requirement or desire to expand public transport coverage can be achieved through a number of different means including greater investment and/or subvention by public funds in the services that currently exist; through the integration and alignment between different services and operators to enhance connectivity; through rationalisation of incumbent operators; by the development of entirely new services or by the development or adaptation of new technology enabled business models.

9.3 Transit Design

The ultimate goal for public transport should be to improve mobility for all by creating a seamless system of transportation from what are discrete components. Public transport works best where it services many destinations, functions and customers. Population density is fundamental to transport viability; high public transport volumes are a function of population and proximity to employment and vital social and economic services. However, users – current and potential - have journeys whose origins, destinations, times of travel and purposes vary. The "market" for public transport depends on how many people are going to or from places in a given area. How many people live there? How many people work there? How many students are there? Where are services and retail located? Public transport's demand and viability depends on how many of these users it can attract and retain. As evidenced by demographic trends, travel patterns and mode data this is a considerable challenge for public transport in rural areas and for the rural dwellers that depend on its provision.

While it is evident that many rural areas suffer from poor or non-existent public transport provision, a notable weakness also lies in the discrete and disparate elements that comprise the overall network that actually does exist. The roots of this lie in legacy issues but also in how services have been planned, developed and resourced over time. Multiple modes which compete rather than complement each other, service providers that benefit from vastly different levels of public funding and subvention, a lack of *network, systems* and *design thinking*, a failure to adequately consider the needs of the user and other

stakeholders and much more besides has resulted in poor integration and connectivity between services, providers and modes.

The poor responsiveness of public transport to user needs inevitably results in increases in car ownership and car usage: it can be a slow process to win market or modal share once car dependence has been established. Travel patterns amongst car users may vary considerably too and are likely firmly entrenched; reinforced by a number of factors including perceptions of value, time, accessibility, flexibility, comfort and safety. Distance, weather, and travel purpose will also dictate means and mode of travel. Commuting patterns and times can be readily predicted as can travel for education, sporting or leisure purposes; other travel requirements less so perhaps. Consider too, to what extent people use different modes for different purposes. As is demonstrated in the census and in travel surveys, age and gender can also be determinants in the choice to use or not use public transport or to restrict its use at certain times or for particular purposes. Encouraging travellers to switch from private to public transport has proven devilishly difficult: decades of car-centric development, combined with the persistence of the private car as a status symbol, have made it hard for policymakers achieve modal shift. However as is evidenced elsewhere in the World, public transport use can be increased if it is attractive to users in terms of its cost, speed, and reliability and if it represents a realistic alternative to private car use in terms of routes served, frequency and scheduling. Added to this, it needs to deliver journey times that compare favourably to the private car and be supported by high standards of information and service.

A core challenge of public transport design, then, is how to provide reliable and consistent services so that people with different origins, destinations, and purposes can make their trip at the same time and moreover, that they then will be motivated to choose public transport for this purpose. In planning a journey a potential user might legitimately ask whether the available public transport will facilitate and enable a passenger journey that:

- Takes a traveller *where* they want to go?

- Takes a traveller *when* they want to go?

- Represents a good use of travel time? Can the necessary travel time be used for other purposes such as work, socialising, companionship, leisure pursuits, guardianship, etc?

- Represents good value for money?

- Offers the required level of trust, safety, comfort and amenity?

- Offers flexibility and freedom as needed? Are there all day travel needs? Where and for what reasons? What are key times for demand; commuting, work, school, weekends, etc?

9.4 Connectivity

Connectivity is the key measure of whether travel origin and travel destination are optimally linked. It is the means by which different modes and service operators interact to create a seamless mobility system that meets the needs of its users. It must take account of connectivity to specific destinations such as an interim or final destination; onwards to other locations far distant from journey origin as well as connectivity to important services locally or within the region. Furthermore it must also consider the locations, settings and physical environment in which connectivity is facilitated. A seamless, efficient, connected network will depend heavily on the quality of the connection experience at a few locations. Public transport should not merely be seen as facilitating travel from point A to point B or the use of a single service between point A and point B; for many travellers it's also about a connection point C or even connection points D & E. Irrespective of distance, undertaking a journey on public transport will likely consist of the following phases or steps:

- *Understanding*: The traveller must form a sufficient knowledge and understanding of the service, frequency and fare to know whether public transport can meets their needs.

- *Choosing:* The traveller must select the mode, service, location and time most convenient and appropriate to their needs.

- *Accessing:* The traveller must then walk, drive, or cycle to the stop or station where the service can be accessed. It is likely that this will also be necessary from the eventual transport stop to the traveller's final destination.

- *Waiting*: The duration will be determined by frequency and reliability of the service. In addition, the quality of the waiting environment must be appropriate and fit for purpose.

- *Paying:* Consideration must be given to the fare, its cost and its perceived value, all things considered. The means by which payment is made or accepted may also be a factor.

- *Travelling*: Travel experience will be shaped by the time spent in a public service vehicle and will be governed by infrastructure quality and condition, average speed (or delay) and reliability. Traveller comfort will be determined by vehicle quality,

efficiency, fellow passengers and perhaps the potential to use travel time for other work or leisure purposes.

- *Connecting:*   A phased or indirect journey might require connections onwards to a final destination thus repeating some, if not all, the previous steps.

- *Arriving*: Public transport must facilitate movement when and as people need to travel. Travellers need consistent frequency and reliable timely arrivals.

Eliminating, reducing to the minimum or managing to optimal convenience the burden of these steps is the essence of connectivity. To illustrate this point perhaps consider how a traveller might travel – or be encouraged to travel - from a rural village in County Kilkenny to Dublin Airport via public transport. To some extent the traveller might use and benefit from a mobile travel app or journey planner available online such as **www.journeyplanner.transportforIreland.ie**. It and others such as Moovit seek to provide timetable and map information from all licensed public transport providers and plans for trains, buses and taxi services combining them into journey plans. They are particularly useful in urban areas where service and mode intensity is greatest. Understandably, they are of much less practical value and use in rural areas, merely demonstrating what is technically possible rather than what is feasible, useful or attractive. Inadvertently, they highlight the inadequacy of the public transport provision in rural areas. An important caveat persists; it's impossible to connect services that don't exist – a particular problem in rural Ireland.

As would soon become apparent to the traveller from rural Kilkenny heading to Dublin Airport, journeys made by public transport tend to be multimodal and require connectivity between operator and mode. The traveller must access a connection point - perhaps by taxi or the *Locallink* service – in Kilkenny City or alternatively to a convenient service stop in one or other of the towns and villages that facilitate connection and direct travel onwards to Dublin Airport. At a minimum this would require the use of two discrete transport operators and two separate, unlinked services. Crucially, it would also require that these separate services could actually connect in a way that makes travel convenient, cost effective and reliable. Consider then the traveller's need, expectation and their likely experience:

- Will connectivity be enabled at a specific, single connection point? Will the connection point be seamless or will a traveller have to walk a distance to make the change? Can mobility issues for the aged, infirm or disabled be managed? How will the movement, transfer or storage of luggage be facilitated?

- Is the connection point located where other important or useful services, functions and demands are combined?

- Will the connection point be conducive to fast and efficient connections?

- Will integrated ticketing be facilitated and are the charges and payment methods consistent across service providers?

- How is travel information presented or accessed? Is this done by both physical and online formats? Is Real Time information used? Is reliable and accessible Wi-Fi freely available?

- What might the wait time be? How might a traveller use this wait time productively? What might one do in the event of a delay?

- Is the connection point a safe and pleasant place to wait? And if so, is it safe and pleasant, both day and night and in all types of weather?

- Does the connection point lend itself to reliable operations for the service providers and travellers without congestion issues or other causes of delay?

Viewed by these criteria, any assessment of the public transport network in County Kilkenny would likely conclude that much remains to be done to enhance connectivity and integration. Few public transport services are aligned in a way that facilitates connectivity or makes it attractive to users. Furthermore, the connection points that exist in towns and villages tend to be informal and thus do little to assist passenger transfer or to assist modal change. You might have little choice but to use the service but would you willingly choose to do so if other alternatives were available? Improvements in the connection point would facilitate greater integration and connectivity between multiple service providers and other modes and would offer the potential for additional passenger volumes. Indeed when convenient and accessible to social, residential, employment or commercial locations such connection points could evolve more fully to become defined transport hubs with the network; something entirely absent in the County.

9.5 First Mile, Last Mile

As our example illustrates public transport is inherently multimodal since users generally have to travel to access the public transport service nodes. In urban areas, walking and cycling can help to bridge these gaps and enable access. However soft modes are optimised and made most attractive when they have an enabling, dedicated infrastructure; most commonly found in cities and large towns and frequently the result of new road developments or alignments. In rural areas, walking and cycling is likely to be a far less practical, safe or attractive proposition thus requiring motorised travel to link individuals to public transport access points. Public transport isn't a viable alternative for many travellers because it doesn't address the *first mile, last mile* issue: that stretch between the public

transport access/egress and their origin/destination. Throughout the world, much thought and a wide variety of solutions have been – and are continuing to be - developed to meet *first-mile, last-mile* needs of those who might use public transport. The options run the gamut from developing pedestrian priority and infrastructure; enhancing the public realm around bus stops and train stations to encourage walking (pavements, trees and foliage, street lighting, information and signage), developing cycling infrastructure, supporting bicycle share initiatives, shared and on-demand mobility like carpooling, car sharing and ride hailing and high-frequency shuttle services. By providing a robust array of options, a variety of different needs and users can be accommodated, greatly increasing the number of destinations serviced by public transport. A problem persists however in that many of the solutions offered can potentially succeed in urban locations where scale and critical mass exist. A different suite of solutions is necessarily required for rural areas not least the need to develop hub-and spoke networks in order to optimise volumes and to feed passengers to public service routes. This would require integration and connectivity be achieved between public and private operators with an expanded role for locally based DRT initiatives such as *Locallink.*

9.6 Real Time Information

Real time information is crucial to facilitate integration and connectivity. More generally, gaps in transport service provision can be identified and managed if good quality information is at hand. It should be a priority of all transport services providers and support agencies to make information easily accessible to the public, and in a timely manner. This can be achieved through open data sharing protocols. Real time information combined with convenient and affordable solutions for the beginning (*first mile*) and end of a journey (*last mile*) can be integrated to comprise a fully-fledged mobility-as-a-service offering.

Figure: 17: Mobility as a Service
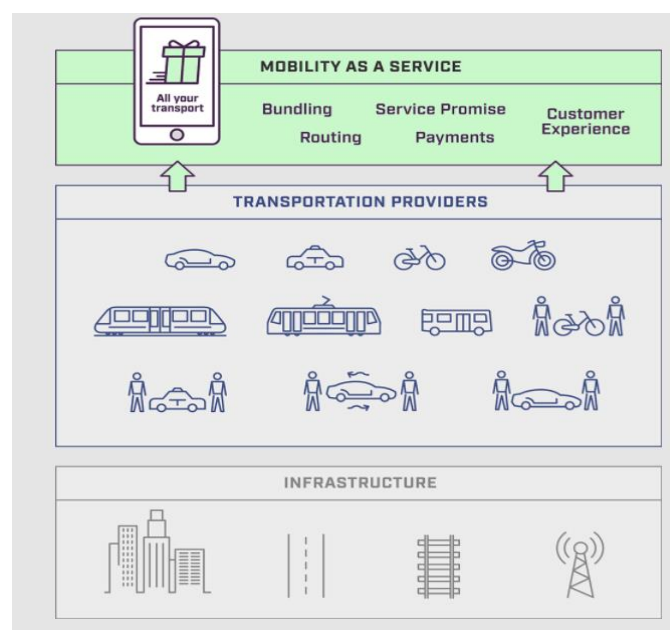
Helsinki, the location of now abandoned Kutsuplus intelligent demand-responsive transport programme, which was piloted in 2012-2015, provides an interesting pointer on how optimal mobility and connectivity is achieved. Maas Global, backed by automotive manufacturer, Toyota, having built the world's first mobility eco-system describes itself as the world's first mobility operator. Its concept is to combine public and private transport into a comprehensive, point-to-point mobility on demand system that integrates all forms of shared and public transport in a single payment network intended to make private car use and ownership in the capital obsolete. It allows users to purchase mobility in real time, straight from their smartphones presenting them with an array of options so cheap, flexible and well-coordinated that it becomes competitive with private car ownership not merely on cost, but on convenience and ease of use. Subscribers specify an origin and a destination, and some preferences. A mobile app then functions as both journey planner and universal payment platform, knitting everything from trains, buses, taxis and shared bikes into a single, supple mesh of mobility. Recently launched in the West Midlands, UK, it has ambitions to expand to over 60 countries in the next five years.

Such developments inform the World Economic Forum's *Shaping the Future of Mobility* initiative which aims to enable faster, safer, cleaner and more affordable mobility for people and goods by integrating disparate transportation modes across digital platforms, geographical boundaries and functional regulations into a seamless integrated mobility system (SIMSystem). A SIMSystem promotes interoperability between modes of transport to avoid potentially uncoordinated or conflicting investments, assets, standards, rules and technologies *(See Appendix 4)*. The principles of the SIMsystem, intended to guide government and private sector leaders to collaborate effectively in overcoming the mobility and transportation obstacles and challenges, are:

- *User-centred*: The system is designed and operated to meet the collective and individual needs of all the users it serves.

- *Designed to be adaptable*: It will adapt to the capabilities and conditions of the place it is deployed in, to the behaviours and needs of its users, and to improvements in technology.

- *Open standards and protocols*: The private sector will need to play a leading role in establishing open standards and protocols for the creation of mobility-related data exchanges and application programming interfaces.

- *Public-private collaboration*: Governments should act as conveners to increase collaboration within and between governments and the private sector, which will enable a SIMSystem to operate across transport types, geographies and functionalities.

- *Participation and value*: Maintaining the ability for the private sector to derive value from their products, services and intellectual property will encourage broad-based participation and enable the full realization of a SIMsystem.

- *Agile governance*: Governments should reduce institutional complexity and create more focused governance models, to facilitate agile coordination with the private sector and other governments.

- *Funding and financing*: Governments should create innovative funding instruments and business models that enable private-sector actors to underwrite the cost of a SIMSystem and share in the monetary benefits.

- *Performance measurement*: Standardized performance indicators should be established to measure the impact of a SIMSystem on accessibility, affordability, sustainability, safety, efficiency and integration.

- *Learning and improvement*: An international public-private coalition should be formed and tasked with the frequent sharing of knowledge and best practices across geographies.

- *Scaling and growth*: A public-private working group of leaders should be established to define and address fundamental framing decisions and enable SIMSystem pilots in various geographies.

10. Licensed Public Transport Provision

10.1 Overview

Public transport for passengers is provided by a variety of modes and operators in County Kilkenny; all of which are regulated and licensed by the NTA to provide an agreed range, schedule and standard of service. Provision is limited to rail - Iarnród Éireann operates seven passenger services daily between Dublin and Waterford, servicing Kilkenny City and Thomastown in the County- and bus, which encompasses Bus Eireann Expressway, regional and local services, the RTP delivered locally by Ringalink as well as a number of private operators providing scheduled or specific purpose routes.

Bus Éireann operates a fleet of 12 buses from Waterford City and operates daily Expressway services via locations in the County to Dublin/Dublin Airport *(route 4)*, Rosslare/Tralee *(route 40)* and to Limerick *(route 55)*. Daily scheduled regional services link Waterford to Athlone/Longford *(route 73)*, to Cahir and Clonmel *(route 355)*, to Wexford (route 370) while Waterford/New Ross to Thomastown *(routes 365 and 374)* are Thursday services only; the latter also servicing Kilkenny, Bennettsbridge and Inistioge.

There are 32 licensed bus operators, a reduction of nearly 10% since 2009. Kilkenny's 250 large Public service Vehicles drive a combined 10m km per annum; an average of 40, 654. Private operators in the County licensed by the NTA include Bernard Kavanagh & Sons Ltd (Urlingford); BGM Coaches Ltd (Piltown); Buggy's Coaches Ltd (Castlecomer); Gerard & Dermot Ronan (Callan); JJ Kavanagh & Sons Ltd (Urlingford); M&A Coaches Ltd (Ballyragget); Michael Kilbride (Thomastown); Tour Ireland Excursions (Castlecomer); Sheridan City Tours Ltd (Kilkenny). In term time private operators provide scheduled daily services to third level institutions in Waterford, Carlow and Maynooth, with Galway and Limerick serviced weekly.

Following competitive tender competitions, M&A Coaches Ltd, Bernard Kavanagh & Sons Ltd. and Bus Eireann were awarded public transport service contracts for the provision of bus services. M&A Coaches Ltd. operates route 828 return services between Cashel and Portlaoise while Bernard Kavanagh & Sons Ltd and Bus Éireann operate different elements of route 817 which operates between Kilkenny and Dublin (return) via Castlecomer and from Naas to Castlecomer (return). These routes supplement the commercial bus service provided by JJ Kavanagh & Sons Ltd on Route 717 (Clonmel – Kilkenny – Dublin – Dublin Airport). Both Bernard Kavanagh & Sons Ltd. and Bus Éireann were awarded gross cost contracts in September 2015. The term of the contract for Route 817 (Castlecomer- Naas) operated by Bus Éireann expired in December 2016. However, following a review of the service, it was decided not to re-tender this service due to very low passenger numbers.

Operators located outside the County but providing scheduled or specific targeted services to destinations in the County include: Around Ireland Day Tours Ltd (Dublin); Brian Callanan Coach Hire (Carlow); Edward Moore (Portlaoise); Paddywagon Ltd (Annascaul); Slieve Bloom Coach Tours Ltd (Mountmellick); Dublin Coach (Dublin).

10.2 Rural Transport Programme

Commercial and Public Service Obligation (PSO) supported rail and bus services are augmented by the RTP; the responsibility for which transferred from Pobal to the NTA in 2012. Officially launched in 2006 following a successful pilot progamme, it aims to provide a community based public transport tailored to meet local needs. Following a process of rationalisation and consolidation - one objective of which was to improve integration and connectivity in local and rural transport provision - there are now 17 local offices nationwide branded as *LocalLink.* Collectively, these manage approximately 1000 public bus services throughout the country with nearly 1.8m passengers accessing its services in 2016; 75% of whom receive a door-to door service. In 2017, the budget for the RTP was €15.9 million representing less than 1.2% of the total annual investment in public transport. Contracted revenue is revenue paid from agencies such as the HSE or from community groups for the provision of specific bus services.

In County Kilkenny *LocalLink* is operated by Carlow, Kilkenny and South Tipperary Rural Transport Ltd. The mission of the company is *"to ensure adequate transport for all rural residents across County Kilkenny, Carlow and South Tipperary".* The aim of the company is to offer transport to rural areas not already serviced by existing public or private transport services and, where possible, to integrate with existing transport services. Trading as *[Ring a Link](#)*, it is a not-for-profit, voluntary organisation with charitable status which provides DRT services for passengers living in rural locations across Carlow, Kilkenny Wicklow, South Tipperary. Approximately 54% of its users are female while 55% of all users are fare payers; a trend which is growing. Bookings are generally made by telephone rather than online or via an app. It has a fleet of 16 minibuses with a capacity for 12-16 people and it operates 19 scheduled routes and 98 services weekly (including service trips) on *a door to door* basis to locations within the County. Service intensity varies considerably from multiple services on a daily basis to a single weekly service. *Locallink* has the potential to develop new service options where demand can be demonstrated. However, this is dependent on NTA approval and is subject to the availability of funds. More recently it has expanded its services to Fingal and Dun Laoghaire/Rathdown and it currently services a larger territorial footprint than any other Transport Co-ordination Unit (TCU) resourced by the NTA. It is expected that the NTA will initiate a re-contracting process for the 17 TCUs in the near future. Changes that might arise as a consequence are not yet known.

In May 2018, DTTAS announced that *LocalLink* services would be expanded to incorporate a pilot scheme in which services would operate at night and over the weekend between the hours of 6pm and 11pm. Promoted as a means of combatting social isolation and addressing concerns over the decline of the rural pub, the scheme will operate on a trial basis from June to December 2018 at a cost of €450,000. Service coverage will be provided in 19 counties including Kerry, Cork, Donegal, Kildare, Waterford, Wexford, Cavan, Monaghan, Offaly and Laois. *Ring-a-Link* services are not included in the pilot scheme.

10.3 Location, Route, Operator & Mode

In order to illustrate the level of public transport service intensity in the County and in particular to note the level of service provision in individual settlements for scheduled, demand responsive and special purpose services, the combined services of Iarnród Éireann, Bus Eireann, private operators and *Locallink* have been aggregated. These are represented in Table 26 as follows:

Table 28: Location, Route, Operator & Mode

Location	Mode	Scheduled	DRT	Frequency
Aglish	Ringalink service (501) to/from Waterford via Mullinavat, Kilmacow, and Grannagh.	√	√	W,F
Ballyfacey	Ringalink service (492) to/from Waterford via Mullinavat, Glenmore, and Listrolin.	√	√	W,F
Ballycallan	Ringalink service (470) to/from Kilkenny via Callan, Kilmanagh and Tullaroan.	√	√	Tu
Ballyhale	Ringalink service (499) to/from Kilkenny city via, Kilmoganny, Kells, Knocktopher, Dunamaggin, Stoneyford and Danesfort.	√	√	Th
	Bus Eireann service (73) to/from Waterford to Carlow, Portlaoise, Athlone, and Longford via Ballyhale, Thomastown, Bennettsbridge, Kilkenny and Paulstown.	√		M,Tu,W, Th, F, Sa, Su
	Bus Eireann Regional service (365) to/from Waterford via Knocktopher, Ballyhale, Mullinavat and Kilmacow.	√		Th
	Bus Eireann Expressway service (4) to/from Waterford and Carlow, Dublin Heuston/Dublin Airport via Ballyhale, Mullinavat and Gowran	√		M,Tu,W, Th, F, Sa, Su
	Dunne's Coaches operate a Daily College service to Waterford via Stoneyford, Knocktopher, Ballyhale, Mullinavat and Kilmacow.	√		M,Tu,W, Th, F
Ballyragget	K Buggy Coaches operate a service (891) from Castlecomer to Kilkenny City via Jenkinstown and Dunmore.	√		M,Tu,W, Th, F, Sa
	Edward Moore operates a service Abbeyleix to Urlingford via Johnstown.	√		Su
Bennettsbridge	Ringalink service (471) to/from Kilkenny.	√		Sa
	Bus Eireann service (73) to/from Waterford to Carlow, Portlaoise, Athlone, and Longford via Ballyhale, Thomastown, Bennettsbridge, Kilkenny	√		M,Tu,W, Th, F, Sa, Su

	and Paulstown.	√		Th
	Bus Eireann service (374) to/from Kilkenny to New Ross via Bennettsbridge, Clodagh and Inistioge.	√		M,Tu,W, Th, F, Sa
	Michael Kilbride operates a twice daily service from Kilkenny to New Ross via Thomastown and Inistioge.			
Callan	Ringalink service (470) to Kilkenny via Kilmanagh, Ballycallan and Tullaroan.	√	√	Tu
	Ringalink service (817e) from Grangemockler land Camphill.	√	√	M, Tu, W, Th, F
	J.J. Kavanagh operates a scheduled service (717) from Clonmel to Dublin/Dublin Airport via, Kilkenny and Castlecomer.	√		M, Tu, W, Th, F, Sa, Sun
Castlecomer	Ringalink looped service (493) via Clogh, Moneenroe, Coon and Coolbaun.	√	√	Th,F,Sa
	K Buggy Coaches operate a service from Castlecomer (890) to Kilkenny City.	√		M,Tu,W, Th, F, Sa
	K Buggy Coaches operate a scheduled service (891) from /to Kilkenny City via Jenkinstown, Dunmore.	√		M,Tu,W, Th, F, Sa
	K Buggy Coaches operate a scheduled service (892) from/to Carlow via Clogh and Moneenroe.	√		W, Th, F, Sa
	Bernard Kavanagh operates a scheduled service (817) to/from Kilkenny to Naas/Dublin.	√		M,Tu,W, Th, F, Sa
	J.J. Kavanagh operates a scheduled service (717) from Clonmel to Dublin/Dublin Airport via, Kilkenny and Callan.	√		M, Tu,W, Th, F, Sa, Sun
Clodagh	Bus Eireann service (374) to/from Kilkenny to New Ross via Bennettsbridge, Clodagh and Inistioge	√		Th
Clogh	Ringalink looped service (493) serving Castlecomer, Moneenroe, Coon and Coolbaun.	√	√	Th,F,Sa
	K Buggy Coaches operate a scheduled service (892) from /to Carlow via Clogh and Moneenroe.	√		W, Th, F, Sa
Clonmantagh	J.J. Kavanagh operates a scheduled route (871) Urlingford to Kilkenny via Johnstown, Tubbrid and Threecastles.	√		M, Tu, W, Th, F, Sa

Coon	Ringalink looped service (493) via Clogh, Moneenroe, Coolbaun and Castlecomer	√	√	Th, F, Sa
Coolbaun	Ringalink looped service (493) via Clogh, Moneenroe, Coon and Castlecomer.	√	√	Th, F, Sa
Crosspatrick	Ringalink service (491) to/from Kilkenny via Urlingford, Gathabawn, Lisdowney and Freshford.	√	√	Tu
	Bernard Kavanagh & Sons operate a daily scheduled service Urlingford to Roscrea via Johnstown.	√		M,Tu,W, Th, F, Sa
Danesfort	Ringalink service (499) to/from Kilkenny city via Ballyhale, Kilmoganny, Knocktopher, Dunamaggin, Kells and Stoneyford.	√	√	Th
Dunamaggin	Ringalink service (499) to/from Kilkenny city via Ballyhale, Kilmoganny, Knocktopher, Kells, Stoneyford and Danesfort.	√	√	Th
Dunmore	K Buggy Coaches operate a service from Castlecomer (890) to Kilkenny City.	√		M,Tu,W, Th, F, Sa
	K Buggy Coaches operate a service from Castlecomer (891) to Kilkenny City via Ballyragget and Jenkinstown.	√		M,Tu,W, Th, F, Sa
Ferrybank	Bus Eireann Route 40 Cork/Tralee route and Rosslare.	√		M,Tu,W, Th, F, Sa, Su
Fiddown	Bus Eireann Route 355 daily scheduled service Waterford/Clonmel/Cahir via Piltown, Mooncoin.	√		M,Tu,W, Th, F, Sa, Su
	Bus Eireann operates an Expressway service (55) to/from Waterford, Clonmel and Limerick Junction/Limerick.	√		M,Tu,W, Th, F, Sa, Su
Freshford	Ringalink service to Kilkenny via Urlingford, Crosspatrick, Gathabawn, Cullahill and Lisdowney,	√	√	Tu
	Ringalink looped service (494) linking Johnstown, Gathabawn and Freshford.	√	√	Tu
	J.J. Kavanagh operates a scheduled route (871) Urlingford to Kilkenny via Johnstown, Tubbrid, Clonmantagh and Threecastles.	√		M, Tu, W, Th, F, Sa
	J.J. Kavanagh operates a scheduled term time service (C204) Galway to Carlow via Urlingford, Freshford, Kilkenny and Paulstown.	√		Su
	J.J. Kavanagh operates a scheduled term	√		Su

	time service (CRLM) Carlow to Limerick via Urlingford, Freshford, Kilkenny and Paulstown.			
Freneystown	Ringalink service (500) to/from Kilkenny city via Gowran, Goresbridge, Johnswell and Freneystown.	√	√	F
Galmoy	Ringalink service (491) to/from Kilkenny via Urlingford, Crosspatrick, Gathabawn, Lisdowney and Freshford.	√	√	Tu
Gathabaun	Ringalink service (491) to/from Kilkenny via Urlingford, Crosspatrick, Lisdowney and Freshford.	√	√	Tu
	Ringalink looped service (494) linking Johnstown, Gathabawn and Freshford.	√	√	Tu
Glenmore	Ringalink service (492) to Waterford via Mullinavat, Ballyfacey and Listrolin.	√	√	W,F
	Bus Eireann operates a scheduled service (370) from Waterford to Wexford and Rosslare Europort.	√		M,Tu,W, Th, F, Sa,
Goresbridge	Ringalink service (500) to/from Kilkenny city via Gowran, Goresbridge, Johnswell and Freneystown.	√	√	F
	Michael Kilbride operates a twice daily service from Graiguenamanagh to Kilkenny via Gowran.	√		M,Tu,W, Th, F, Sa
Gowran	Ringalink service (500) to/from Kilkenny city via Gowran, Goresbridge, Johnswell and Freneystown	√	√	F
	Michael Kilbride operates a twice daily service from Graiguenamanagh to Kilkenny via Goresbridge.	√		M,Tu,W, Th, F, Sa
	Bus Eireann Expressway service (4) to/from Waterford and Carlow, Dublin Heuston/Dublin Airport via Ballyhale and Mullinavat.	√		M,Tu,W, Th, F, Sa, Su
Graiguenamanagh	Michael Kilbride operates a twice daily service to Kilkenny via Goresbridge and Gowran.	√		M,Tu,W, Th, F, Sa
Grannagh	Ringalink service (501) to/from Waterford via Mullinavat, Kilmacow, and Aglish.	√	√	W,F
Grangemockler	Ringalink service (817C) to Carrick on Suir.	√	√	M,Tu, W, Th, F, Sa, Su
	Ringalink service (505) to/from Carrick on Suir via Windgap, Ringalink service (505) to/from Carrick on Suir via	√	√	M, W, Th, F, Sa

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	Windgap, Grangemockler and Owning.	√	√	
	J.J. Kavanagh operates a scheduled service from Clonmel to Dublin/Dublin Airport via, Kilkenny and Castlecomer.			M,Tu, W, Th, F, Sa, Su
Hugginstown	Ringalink service (499) to/from Kilkenny city via Ballyhale, Kilmoganny, Knocktopher, Dunamaggin, Kells, Stoneyford and Danesfort.	√	√	Th
Inistioge	Bus Eireann operates a service (374) to/from Kilkenny to New Ross via Bennettsbridge, Clodagh and Inistioge.	√		Th
	Michael Kilbride operates a twice daily service from Kilkenny to New Ross via Thomastown, Inistioge, and The Rower.	√		M,Tu,W, Th, F, Sa
Jenkinstown	K Buggy Coaches operate a service (891) from Castlecomer to Kilkenny City via Ballyragget and Dunmore.	√		M,Tu,W, Th, F, Sa
Johnstown	Ringalink looped service (494) linking Johnstown, Gathabawn and Freshford.	√	√	Tu
	Edward Moore operates a service Abbeyleix to Urlingford via Johnstown.	√		Su
	M & A Coaches operate a daily schedule service Cashel to Portlaoise via Johnstown.	√		M,Tu,W, Th, F, Sa
	Bernard Kavanagh & Sons operate a daily scheduled service Urlingford to Roscrea via Crosspatrick.	√		M,Tu,W, Th, F, Sa
	J.J. Kavanagh operates a scheduled service Urlingford to Kilkenny via Johnstown, Tubbrid, Clonmantagh, Freshford and Threecastles.	√		M,Tu,W, Th, F, Sa
Johnswell	Ringalink service (500) to/from Kilkenny city via Gowran, Goresbridge and Freneystown.	√	√	F
Kells	Ringalink service (499) to/from Kilkenny city via Ballyhale, Kilmoganny, Knocktopher, Dunamaggin, Stoneyford and Danesfort.	√	√	Th
Kilkenny	Ringalink city service (498) linking St.Mary's & St.John's daycare	√	√	W
	Ringalink service (471) to Bennettsbridge	√	√	Sa
	Ringalink service to Kilkenny city via Ballyhale, Kilmoganny, Knocktopher, Dunamaggin, Kells, Stoneyford and Danesfort.	√	√	Th

	Ringalink service (491) to/from Kilkenny via Urlingford, Crosspatrick, Gathabawn, Lisdowney and Freshford.	√	√	Tu
	Ringalink service to Gowran, Goresbridge, Johnswell and Freneystown.	√		Fr
	Ringalink service (470) to Kilkenny via Kilmanagh, Ballycallan and Tullaroan.	√	√	Tu
	Bus Eireann service (73) to/from Waterford to Carlow, Portlaoise, Athlone, and Longford via Ballyhale, Thomastown, Bennettsbridge, Kilkenny and Paulstown.	√	√	M,Tu,W, Th, F, Sa, Su
	Dublin Coaches operates a Cork to Dublin via Waterford & Kilkenny.	√		M, Tu, W, Th, F, Sa, Su
	Bus Eireann service (73) to/from Waterford to Carlow, Portlaoise, Athlone, and Longford via Ballyhale, Thomastown, Bennettsbridge, Kilkenny and Paulstown.	√		M,Tu,W, Th, F, Sa, Su
	Bus Eireann service (374) to/from Kilkenny to New Ross via Bennettsbridge, Clodagh and Inistioge.	√		Th
	Bernard Kavanagh operates a scheduled service (817) to/from Kilkenny to Naas/Dublin.	√		M,Tu,W, Th, F, Sa
	J.J. Kavanagh operates a scheduled service (717) from Clonmel to Dublin/Dublin Airport via, Kilkenny, and Castlecomer.	√		M,Tu,W, Th, F, Sa, Sun
	J.J. Kavanagh operates a scheduled service (736) from Waterford to Dublin/Dublin Airport via Kilkenny.	√		M,Tu,W, Th, F, Sa, Sun
	J.J. Kavanagh operates a scheduled route (873) from Kilkenny to Carlow via Paulstown.	√		M, Tu, W, Th, F
	J.J. Kavanagh operates a scheduled route (871) Urlingford to Kilkenny via Johnstown, Tubbrid, Clonmantagh and Threecastles.	√		M, Tu, W, F, Sa
	J.J. Kavanagh operates a scheduled term time (C204) service Galway to Carlow via Urlingford, Freshford, Kilkenny and	√		Su

	Paulstown.			
	J.J. Kavanagh operates a scheduled term time service (CRLM) Carlow to Limerick via Urlingford, Freshford, Kilkenny and Paulstown.	√		F, Sun
	J.J. Kavanagh operates a daily college term time service (N12) Route to Carlow, Naas and Maynooth.	√		M, Tu, W, Th, F
	K Buggy Coaches operate a scheduled service (891) from Castlecomer to Kilkenny City via Ballyragget and Dunmore.	√		M,Tu,W, Th, F, Sa
	Michael Kilbride operates a twice daily service to Kilkenny via Goresbridge and Gowran.	√		M,Tu,W, Th, F, Sa
	Dunne's Coaches operate a Daily College service to Carlow via Paulstown.	√		M,Tu,W, Th, F,
	Dunne's Coaches operate a Daily College service to Waterford via Stoneyford, Knocktopher, Ballyhale, Mullinavat and Kilmacow.	√		M,Tu,W, Th, F
	Irish Rail 14 services daily linking to Dublin, Carlow, Thomastown and Waterford.	√		M,Tu,W, Th, F, Sa, Su
Kilmacow	Ringalink service (501) to/from Waterford via Mullinavat, Kilmacow, Aglish and Grannagh.	√	√	W,F
	Bus Eireann Regional Service (365) to/from Waterford via Knocktopher, Ballyhale and Mullinavat.	√		Th
	Dunne's Coaches operate a Daily College service to Waterford via Stoneyford, Knocktopher, Ballyhale and Mullinavat.	√		M,Tu,W, Th, F
Kilmanagh	Ringalink service (470) to/from Kilkenny via Ballycallan and Tullaroan.	√	√	Tu
	Ringalink service (489) to/from Kilkenny.			Sa
Kilmoganny	Ringalink service (499) to/from Kilkenny city via Ballyhale, Knocktopher, Dunamaggin, Kells, Stoneyford and Danesfort.	√	√	Th
	Ringalink service (505) to/from Carrick on Suir via Windgap, Grangemockler and Owning.			M,W, Th, F, Sa, Su
Knocktopher	Ringalink Service (499) to/from Kilkenny city via Ballyhale, Kilmoganny,	√	√	Th

	Dunamaggin, Kells, Stoneyford and Danesfort.			
	Bus Eireann Regional Service 365 to Waterford via Ballyhale, Mullinavat and Kilmacow.	√		Th
	Dunne's Coaches operate a Daily College service to Waterford via Stoneyford, Ballyhale, Mullinavat and Kilmacow	√		M,Tu,W, Th, F
Lisdowney	Ringalink service (491) to/from Kilkenny via Urlingford, Crosspatrick, Gathabawn and Freshford.	√	√	Tu
Listrolin	Ringalink service (492) to Waterford via Mullinavat, Ballyfacey and Glenmore	√	√	W,F
Mooncoin	Ringalink service (501) to/from Waterford via Mullinavat, Kilmacow, Aglish and Grannagh.	√	√	W,F
	Bus Eireann service (355) Waterford/Clonmel/Cahir via Fiddown.	√		M,Tu,W, Th, F, Sa, Su
	Bus Eireann operates an Expressway service (55) to/from Waterford to Limerick Junction/Limerick via Clonmel.	√		M,Tu,W, Th, F, Sa, Su
Moneenroe	Bernard Kavanagh operates a scheduled service (817) to/from Kilkenny to Naas/Dublin.	√		M,Tu,W, Th, F, Sa, Su
	K Buggy Coaches operate a scheduled service (892) from Castlecomer to Carlow via Clogh.	√		W, Th, F,Sa
	Ringalink looped service (493) via Clogh, Coon, Coolbaun and Castlecomer.	√	√	Th, F, Sa
Mullinavat	Ringalink service (492) to Waterford via Ballyfacey, Listrolin, Glenmore.	√	√	W,F
	Ringalink service (501) to/from Waterford via Mullinavat, Kilmacow, Aglish and Grannagh.	√	√	W,F
	Bus Eireann Regional Service (365) to/from Waterford via Knocktopher, Ballyhale and Kilmacow.	√		Th
	Bus Eireann service (73) to/from Waterford to Carlow, Portlaoise, Athlone, and Longford via Ballyhale, Thomastown, Bennettsbridge, Kilkenny and Paulstown.	√		M,Tu,W, Th, F, Sa, Su
	Bus Eireann Expressway service (4)	√		

	to/from Waterford and Carlow, Dublin Heuston/Dublin Airport via Ballyhale, Thomastown and Gowran.			M,Tu,W, Th, F, Sa, Su
	Dunne's Coaches operate a Daily College service to Waterford via Stoneyford, Knocktopher, Ballyhale, and Kilmacow.	√		M,Tu,W, Th, F,
Ninemilehouse	Ringalink service (505) to Carrick on Suir via Windgap, Kilmoganny, Grangemockler and Owning.	√	√	M, W, Th, F, Sa, Su
Paulstown	Ringalink service (500) to/from Kilkenny city via Gowran, Goresbridge, Johnswell and Freneystown.	√	√	F
	J.J. Kavanagh operates a scheduled service (736) from Waterford to Dublin/Dublin Airport via Kilkenny.	√		M,Tu,W, Th, F, Sa, Su
	J.J. Kavanagh operates a scheduled route (873) from Kilkenny to Carlow.	√		M,Tu,W, Th, F,
	J.J. Kavanagh operates a scheduled term time (C2014) service Galway to Carlow via Urlingford, Freshford, Kilkenny and Paulstown.	√		Su
	J.J. Kavanagh operates a scheduled term time service (CRLM) Carlow to Limerick via Urlingford, Freshford, Kilkenny and Paulstown.	√		Fr, Sun
	Bus Eireann service (73) Waterford to/from Carlow, Portlaoise, Athlone, Longford via Mullinavat, Ballyhale, Thomastown, Bennettsbridge and Kilkenny.	√		M,Tu,W, Th, F, Sa, Su
	Dunne's Coaches operate a Daily College service from Kilkenny to Carlow.	√		M,Tu,W, Th, F,
Owning	Ringalink service (505) to/from Carrick on Suir via Windgap and Grangemockler.	√	√	M, W, Th, F, Sa, Su
Piltown	Ringalink service (487) to Waterford via Mooncoin and Kilmacow	√	√	M, Sa
	Bus Eireann operates a service (355) Waterford/Clonmel/Cahir via Fiddown, Mooncoin.	√		M,Tu,W, Th, F, Sa, Su
	Bus Eireann Expressway operates a service (55) to/from Waterford to Limerick Junction/Limerick via Clonmel.	√		M,Tu,W, Th, F, Sa, Su
Stoneyford	Ringalink service (499) to/from Kilkenny city via Ballyhale, Kilmoganny, Knocktopher, Dunamaggin, Kells and	√	√	Th

	Danesfort			
	Dunne's Coaches operate a Daily College service to Waterford via Knocktopher, Ballyhale, Mullinavat and Kilmacow.	√		M,Tu,W, Th, F
The Rower	Michael Kilbride operates a twice daily service from Kilkenny to New Ross via Thomastown, Inistioge and The Rower.	√		M,Tu,W, Th, F, Sa
Thomastown	Bus Eireann operates a service (374) to/from Kilkenny to New Ross via Bennettsbridge, Clodagh and Inistioge.	√		Th
	Bus Eireann Service (73) Waterford to/from Carlow, Portlaoise, Athlone, Longford via Mullinavat, Ballyhale, Bennettsbridge, Kilkenny and Paulstown	√		M,Tu,W, Th, F, Sa, Su
	Bus Eireann Regional Service (365) to/from Waterford via Knocktopher, Ballyhale, Mullinavat, Kilmacow.	√		Th
	Bus Eireann operates an Expressway service (4) linking Waterford and Carlow, Dublin Heuston/Dublin Airport via Ballyhale, Mullinavat and Gowran.	√		M,Tu,W, Th, F, Sa, Su
	Michael Kilbride operates a twice daily service from Kilkenny to New Ross via Thomastown and Inistioge.	√		M,Tu,W, Th, F, Sa
	Irish Rail 14 services daily linking to Kilkenny, Waterford, Dublin and Carlow.	√		M,W,Th, F, Sa, Su
Three Castles	J.J. Kavanagh operates a scheduled route (871) Urlingford to Kilkenny Via Johnstown, Tubbrid and Clonmantagh.	√		M,W,Th, F, Sa
Tubbrid	J.J. Kavanagh operates a scheduled route (871) Urlingford to Kilkenny Via Johnstown, Tubbrid, Clonmantagh and Threecastles.	√		M,W,Th, F, Sa
Tullaroan	Ringalink service (470) to Kilkenny via Kilmanagh, Callan and Ballycallan.	√	√	Tu
Urlingford	Ringalink looped service (494) linking Johnstown, Gathabawn and Freshford,	√	√	Tu
	Ringalink service (491) to/from Kilkenny via Urlingford, Crosspatrick, Gathabawn and Freshford.	√	√	Tu
	Edward Moore operates a service Abbeyleix to Urlingford via Johnstown and Ballyragget.	√		Su
	Bernard Kavanagh & Sons operate a daily scheduled service Urlingford to Roscrea via Johnstown and Crosspatrick.	√		M,Tu, W,Th, F, Sa, Su

	Bernard Kavanagh & Sons operate a daily scheduled service Clonmel to Thurles via Urlingford	√		M, Tu, W,Th, F, Sa
	M & A Coaches operates a daily schedule service (828) Cashel to Portlaoise via Johnstown.	√		M,Tu, W,Th, F, Sa, Su
	J.J. Kavanagh operates a scheduled service (871) Urlingford to Kilkenny Via Johnstown, Tubbrid, Clonmantagh, Freshford and Threecastles.	√		M, Tu, W,Th, F, Sa
	J.J. Kavanagh operates a scheduled term time service Galway to Carlow via Urlingford, Freshford, Kilkenny, and Paulstown.	√		Su
	J.J. Kavanagh operates a scheduled term time service (CRLM) Carlow to Limerick via Urlingford, Freshford, Kilkenny and Paulstown.	√		Su
Windgap	Ringalink service (505) to Carrick on Suir via Kilmoganny, Grangemockler and Owning.	√	√	M, Tu, W, Th, F, Sa, Su

Source: www.buseireann.ie/; http://www.irishrail.ie/; www.ringalink.ie/bus-services/kilkenny/; http://jjkavanagh.ie/; https://bustimes.org/areas/827; http://dunnescoaches.com/; http://mandacoaches.com; http://www.dublincoach.ie/; http://www.bernardkavanaghcoaches.com/timetables/; https://kilbridecoaches.com/;

10.4 Mapping the Network

Using the locations serviced, routes, frequency and operator, the tabulated data forms the basis of a network map. This is illustrated in figure 18 as follows:

Figure 18: Mapped Network

The network map illustrates that the inter-urban rail and road routes traversing the County facilitates the greatest levels of service provision and intensity. For the most part these routes are serviced by the CIE; Iarnrod Eireann and Bus Eireann Expressway, regional and local services. Kilkenny City is well connected to Dublin, Waterford, Clonmel and Carlow as well as to other locations serviced to and accessed from these locations. This level of service provision reflects the simple fact that the greater volumes of travellers using public transport will do so in and between the larger urban centres. As such, local mobility and access to regularly scheduled public transport is a function of proximity to a city or large town as well as to legacy infrastructure. Frequent services and good connectivity also benefit smaller towns and villages located on the inter-urban routes with Callan, Bennettsbridge, Paulstown, Mullinavat, Ballyhale, Pilltown, Fiddown, Mooncoin and Thomastown well served by scheduled services; the latter also benefitting from scheduled rail services.

It is noteworthy to consider the extent to which towns and villages relate to Kilkenny and Waterford Cities as their primary service centres. The County Development Plan 2014-2020 presents a sound taxonomy of the principal settlement locations and hierarchy, connecting road and rail transport infrastructure and determines whether rural areas are *under urban influence*; *stronger rural areas* or *areas of population decline.*

Figure 19: Settlement Typology

Irrespective of the quality of public transport provision, towns and villages in the north, west and east of the county tend to access services in Kilkenny City within the County whilst in the extreme south proximity, access and service provision to Waterford facilitate towns and villages such as Piltown, Fiddown, Mooncoin, Kilmacow, Mullinavat and Glenmore. Carrick-on-Suir, whilst not in County Kilkenny, is an important hub having regular scheduled rail and bus links to Waterford city but also offering multiple daily connecting services to Grangemockler and route 717 from Clonmel to Dublin airport. DRT services connect Carrick-on-Suir five times weekly, to smaller villages and settlements in south-west Kilkenny. Twice weekly DRT services link Glenmore to Waterford, Mooncoin to Waterford and Piltown to Waterford via Mooncoin and Kilmacow.

In the west of the County, Urlingford benefits from a twice daily service to Kilkenny City. However it is notable that Urlingford and adjacent settlements have better connectivity to towns outside the County. A service between Cashel and Portlaoise via Johnstown operates four times daily. Scheduled services via Galmoy and Crosspatrick operate twice daily to Roscrea. Similarly a twice daily service links Urlingford to Thurles and Clonmel. A DRT loop operates once weekly to connect Johnstown, Gathabawn, Freshford and Urlingford, whilst a once weekly service connects Galmoy to Kilkenny via these villages as well as Crosspatrick, Freshford and Lisdowney.

In the north and east of the County, with the exception of services using the M9 inter-urban motorway, scheduled bus services are generally provided by private operators with twice daily services linking Ballyragget, Castlecomer, Graiguenamanagh, Goresbridge and Gowran to Kilkenny city. A DRT loops services Castlecomer and outlying villages three times weekly. A twice daily service between New Ross and Kilkenny connects Inistioge and the Rower. This is supplemented by a Thursday only service operated by Bus Eireann. DRT services are not operated in the east and south-east of the county, other than once weekly services from Bennettsbridge, Gowran and Goresbridge.

While *Locallink* augments and bolsters PSO service provision in many parts of Kilkenny, within the County there are numerous settlements largely or exclusively serviced by *Locallink.* A once weekly DRT schedule from Callan to Kilkenny services Kilmanagh, Ballycallan and Tullaroan. A similar frequency services Kilkenny city from South Kilkenny via Hugginstown, Kilmoganny, Dunnamaggin, Kells, Stoneyford and Danesfort. Likewise Galmoy, Lisdowney, Johnswell and Freneystown are serviced once weekly. For the most part, there is no other general public transport provision in these villages.

10.5 Kilkenny City Bus Routes

Passenger mobility will be greatly enabled when the NTA launch two PSO bus routes in Kilkenny City. These services will provide comprehensive coverage by serving areas of high population density, deprivation and low car ownership. Retail, services, schools, businesses, tourist facilities as well as the train station will be directly served. The *Green* route will

operate on an east/west axis route from Talbotsinch to Purcellsinch and 2 buses per hour will service 14 stops throughout its 8.5km length and its estimated journey time of 27 minutes. The *Red* route will operate on a north/south axis from Castlecomer road to Loughboy) and 2 buses per hour will service 19 stops throughout its 8.7km length and its estimated journey time of 36 minutes. Both routes feed into a central spine, doubling bus frequency across the city centre.

Figure 20: Kilkenny City Bus Routes
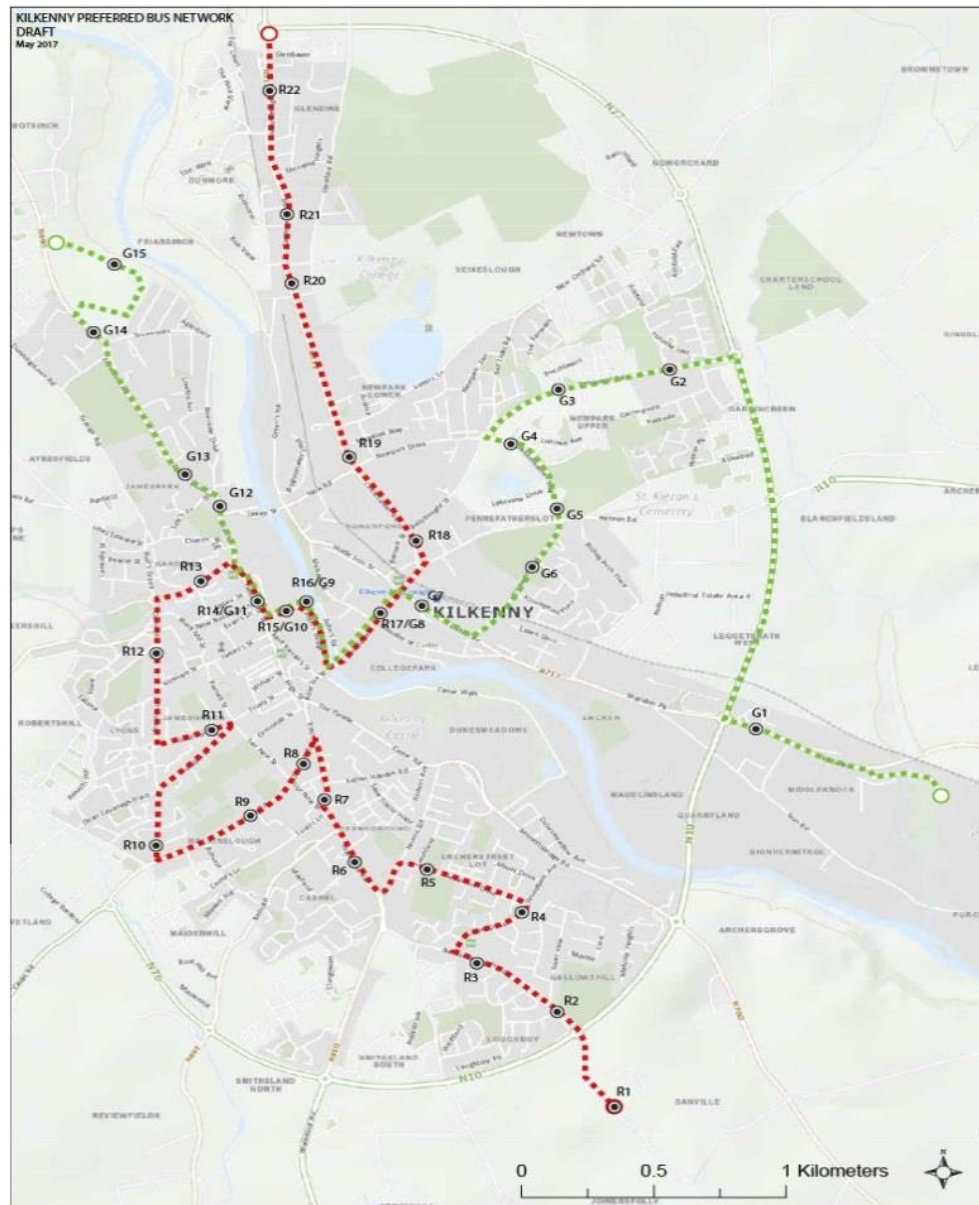
(Source: Kilkenny County Council/NTA, 2018)

10.6 Small Public Service Vehicles

The NTA is responsible for the licensing and regulation of small public service vehicles (SPSVs) in Ireland. SPSVs – which comprise of taxis, wheelchair accessible taxis, hackneys,

wheelchair accessible hackneys and limousines - are defined as vehicles capable of carrying for hire or reward a maximum of eight passengers. There are 199 licensed small public service vehicles in County Kilkenny, representing 1% of the national fleet. Of this amount 21 are hackneys, 11 are limousine and 142 are taxis. 17% of the taxi fleet and only a single hackney vehicle is wheelchair accessible. Only 38% of the small public service vehicle fleet is less than 5 years old, with 20% of the fleet aged 10 years or older.

In addition to the licensed SPSVs *Go Car* - an on-demand mobility provider with nearly 200 car share vehicles throughout the country, including electric vehicle and van options - operates a car from MacDonagh Station in Kilkenny City.

10.7 School Transport

The provision of transport for primary and post-primary schoolchildren is funded by the Department of Education and Skills (DES), which engages Bus Éireann to deliver school transport services on its behalf. Functions delegated to and undertaken by Bus Éireann in the provision of the school transport service include:

- Planning route itineraries and scheduling.
- Identification of vehicle type and capacity requirements
- Assessment of pupil eligibility to travel
- Collection of pupil financial contributions
- Contracting of private operators
- Monitoring of contractor performance
- Operating its own school bus fleet
- Vetting of all drivers
- Supervision and monitoring of service performance and standards
- Provision of administrative support for the operation of the scheme.

Bus Éireann subcontracts many of the school transport routes to private operators, but has the role of operator of last resort. As such, it aims to have the ability and flexibility to organise and transfer fleet resources in order to maintain full service coverage where there is a threat to service for any reason.

The scheme facilitates travel for children who live some distance from their nearest school; Primary school children are eligible to avail of school transport services if they live not less than 3.2 kilometres from and are attending their nearest school (having regard to ethos and language) while the eligible minimum distance for post primary pupils is 4.8 kilometres. In 2015, 89,000 pupils travelled in 4,200 vehicles to 3000 schools via 6,300 routes. In the period 2007-2015 the number of reported routes increased by 777 (14%). The scheme is also open to school children who do not qualify under the eligibility rules where spare capacity on the route exists. 22,000 pupils hold concessionary tickets.

The cost to the DES of school transport services in 2015 was €173 million or close to €1 million per school day. In 2015, Bus Éireann was paid €149 million – 54% of its operating turnover - (€163 million in expenditure less €13.7 million (8.4%) in fees collected from fare-paying pupils) by the Department to operate the scheme. The balance is accounted for by remote area grants and special needs escorts and transport grants. Charges were first introduced for eligible children attending primary school in 2011 and changes to eligibility rules were introduced in 2012. In 2015, fees were collected from 64,000 pupils, including from those availing of the service on a concessionary basis. However, eligible children benefitting from medical cards (38,000) and pupils with special needs (9,800) are exempt from charges. The average cost per eligible pupil increased from €1,500 to €1,800, with an annual ticket purchased cost on average of just over €200 per fare-paying pupil.

Nationally, while there has been an increase in route provision as well as a steady increase in the total number of enrolments in primary and post primary schools in the years from 2007 to 2015, usage of the scheme has fallen significantly in the same period. In 2007, the number of eligible pupils who availed of the scheme was 127,000 comprising 16% of all enrolled pupils. By 2015, this had fallen to 89,000 pupils comprising 10% of all enrolled pupils. Of this amount 85,000 were carried on the school transport bus fleet, which is comprised of a combination of large and medium buses (1,900), and minibuses (1,400). In addition to travel on the school transport fleet 3,000 pupils were carried by taxi (800) with the remainder carried on scheduled bus and rail services. Between 2007 and 2015, the number of special needs pupils requiring specific/individual transport arrangements increased by an estimated 2,300 (31%); travel arrangements for whom are substantially more expensive on an average per capita basis.

In 2015, the core school transport fleet had a combined carrying capacity of 163,000 seats, unchanged since 2007. Given that the number of eligible pupils using the service has fallen, it is estimated that the level of spare carrying capacity in the system has increased from 28% in 2007 to 48% in 2015. The Comptroller and Auditor General in its special report *(Provision of School Transport, 2015)* considers that this large amount of spare capacity points to possible inefficiencies in network design and vehicle mix. It notes further that no service level agreement exists between the Department and Bus Éireann nor is any review of the route network or fleet undertaken in order to ensure that optimal efficiency or cost effectiveness is achieved.

The availability of school transport to school can be a critical component in a child's right to access an education. The Ombudsman for Children *(School Transport in Focus, 2017)* notes a steady increase in complaints to its office in relation to the school transport scheme, particularly concerning the refusal of transport to Children with special needs or disabilities. In 2016, 8.4% of all complaints made related to access and the provision of school transport, rising from 5.5% in 2014.

11. Deprivation, Disadvantage and Access to Transport

11.1 Defining Poverty

The Department of Employment Affairs and Social Protection (DEASP) notes that many terms concerning poverty and social exclusion are used interchangeably. However, they do have different meanings, defined as follows:

- *Deprivation* is defined as unmet basic human needs.

- *Poverty* is deprivation due to a lack of resources, both material and non-material, e.g. income, housing, health, education, knowledge and culture. It requires a threshold to measure it.

- *Social exclusion* is being unable to participate in society because of a lack of resources that are normally available to the general population. It can refer to both individuals, and communities in a broader framework, with linked problems such as low incomes, poor housing, high crime environments and family problems.

- *Inequality* is a comparative or relative concept. It does not measure deprivation or poverty and does not require a threshold. It is possible for inequality to exist with or without poverty. Similarly, poverty can exist with or without inequality.

The National Anti-Poverty Strategy (NAPS) published by Government in 1997 adopted the following definition of poverty: *"People are living in poverty if their income and resources (material, cultural and social) are so inadequate as to preclude them from having a standard of living that is regarded as acceptable by Irish society generally. As a result of inadequate income and resources people may be excluded and marginalised from participating in activities that are considered the norm for other people in society"*. This definition, reiterated in the National Action Plan for Social Inclusion 2007-2016, highlights that while poverty is about income; it is also associated with access to services, resources and outcomes for people who experience poverty and social exclusion. There are three ways of measuring poverty levels in Ireland:

- *Relative/At Risk of Poverty*: According to the Combat Poverty Agency, "Relative income poverty is having an income that is less than what is regarded as the norm in society, giving a lower than normal standard of living. It is "relative" because it is measured by how much less it is relative to the income of the majority of people. It is usually expressed as a percentage figure, e.g. the 60% relative income poverty line is 60% of the disposable income of the median (or middle) household. This is the most common measure of poverty used across the EU, where it is often referred to as the '*at risk of poverty*' level.

- *Material Deprivation*: Those in material or enforced deprivation in Ireland are those who cannot afford at least two of the eleven goods or services considered essential for a basic standard of living. The 11 indicators used to define material deprivation are:

1. Two pairs of strong shoes
2. A warm waterproof overcoat
3. Buy new not second-hand clothes
4. Eat meals with meat, chicken, fish (or vegetarian equivalent) every second day
5. Have a roast joint or its equivalent once a week
6. Had to go without heating during the last year through lack of money
7. Keep the home adequately warm
8. Buy presents for family or friends at least once a year
9. Replace any worn out furniture
10. Have family or friends for a drink or meal once a month
11. Have a morning, afternoon or evening out in the last fortnight, for entertainment

- *Consistent poverty*: This is the poverty measurement preferred by the Irish Government and developed independently by the Irish Economic and Social Research Institute (ESRI). This measure identifies the proportion of people who are both relatively poor (less than 60% of median income) and who are materially deprived because they cannot afford two of the eleven agreed items.

The annual Survey on Income and Living Conditions (SILC), conducted by the CSO and last published in December 2016, provides useful data and metrics on poverty. Compiling data from a sample of 5,219 households containing 13,186 individuals, it incorporates income from work, welfare, pensions, rental income, dividends, capital gains and other regular transfers. In 2016, the median nominal income per individual was €20,597. The *'at risk of Poverty'* threshold, set at 60% of median income, was €12,358; each having increased progressively since 2012. The *'at risk of poverty'* rate was 16.5%. The percentage of people considered to be experiencing *'enforced deprivation'* - defined as not being able to afford two or more of the 11 basic indicators - was 21.0%. The *'consistent poverty rate'* which includes those persons who are defined as being both '*at risk of poverty'* and who are also experiencing 'enforced deprivation' was 8.3%. These figures are not disaggregated to County or sub county level.

11.2 Disadvantage

The standard means to determine local disadvantage is the 2016 *Pobal HP Deprivation Index (Haase and Pratschke, 2016)* which provides a method of measuring the relative affluence or disadvantage of a particular geographical area using data compiled from various censuses. This index is particularly useful in analysing data on a county, or sub county (Electoral Division or Small Area) basis. Within the Deprivation Index and using a range of indicators, its authors identify and define three dimensions of affluence/disadvantage:

- Demographic Profile – "*is first and foremost a measure of rural affluence/deprivation. Whilst long-term adverse labour market conditions tend to manifest themselves in urban areas in the form of unemployment blackspots, in rural*

areas the result is typically agricultural underemployment and/or emigration. Emigration from deprived rural areas is also, and increasingly, the result of a mismatch between education, skill levels and expectations, on the one hand, and available job opportunities, on the other. Emigration is socially selective, being concentrated amongst core working-age cohorts and those with post-secondary education, leaving behind communities with a disproportionate concentration of economically-dependent individuals as well as those with lower levels of education. Sustained emigration leads to an erosion of the local labour force, a decreased attractiveness for commercial and industrial investment and, ultimately, a decline in the availability of services".

- Social Class Composition - *"Social class background has a considerable impact in many areas of life, including educational achievements, health, housing, crime and economic status. Furthermore, social class is relatively stable over time and constitutes a key factor in the inter-generational transmission of economic, cultural and social assets. Areas with a weak social class profile tend to have higher unemployment rates, are more vulnerable to the effects of economic restructuring and recession and are more likely to experience low pay, poor working conditions as well as poor housing and social environments."*

- Labour Market Situation - *Unemployment and long-term unemployment remain the principal causes of disadvantage at national level and are responsible for the most concentrated forms of multiple disadvantage found in urban areas. In addition to the economic hardship that results from the lack of paid employment, young people living in areas with particularly high unemployment rates frequently lack positive role models. A further expression of social and economic hardship in urban unemployment blackspots is the large proportion of young families headed by a single parent".*

In overall terms, the *2016 Pobal HP Deprivation Index* shows that the level of deprivation in County Kilkenny has been consistent at *marginally below average*, with minor improvements in the period from 2006 to 2016. EDs clustered around Castlecomer, Ballyragget, Freshford, Callan, Graiguenamanagh, Paulstown, Bennettsbridge, Rosbercon, Thomastown, Piltown, Fiddown and the peri-urban areas proximate to Waterford city reflect this designation. However, a more detailed examination of the Small Area statistics - standardised in size, with a minimum of 50 households and a mean of just under 100, thus providing street-level information on the Irish population within these EDs identifies specific localised pockets of *disadvantage* in Clogh, Moneenroe, Ballyragget, Castlecomer, Johnstown, Baunmore, Urlingford, Freshford, Kilkenny Rural, Kilkenny No.1 Urban, Callan Urban, Jerpoint, Graiguenamanagh, Kilculiheen, Rosbercon rural, Pilltown and Portnascully.

Localised communities within the EDs of Kilkenny No.1 Urban, Kilkenny Rural, Castlecomer, Callan Urban, Graiguenamanagh and Urlingford are classified as *very disadvantaged*.

It might be noted that the Pobal HP Deprivation Index while extremely comprehensive in nature, neither its narrative nor the indicators referenced in the compilation of its three defined dimensions explicitly reference transport provision, availability, cost or access; each a critical determinant in whether a citizen can access suitable education, training, employment and other miscellaneous support or public services. Indeed, this absence of an explicit reference to transport is a striking feature of most of the definitions in relation to social exclusion and disadvantage. While the causes of poverty and disadvantage are multi-faceted, it is evident that location, access to employment and services (education, healthcare, financial, retail, social, etc) as well as income levels and costs of living are essential elements in its composition. Accordingly, transport provision, availability and cost become critical factors; particularly so in rural areas where public provision and availability is limited - if indeed it exists - and where living costs and most particularly transport costs are generally higher. A notable consequence of this simple reality is the requirement for many rural households to provide or arrange their own transport to access the range of services fundamental to their wellbeing.

11.3 Access to Public Transport in County Kilkenny

One of the 17 UN SDG's defined in *Transforming our World: the 2030 Agenda for Sustainable Development* that explicitly references public transport is Goal 11, *Sustainable Cities and Communities.* Ireland's progress towards achieving this goal can be readily determined by some agreed metrics including the proportion of the population that live adjacent to public transport services. Using Public Transport Access Nodes data produced by the NTA, Small Area Population Statistics from the CSO and Small Area Boundary data produced by Ordnance Survey Ireland (OSI), the proportion of the population living within a 2 kilometre radius of a public transport stop in 2016 can be calculated for each Local Authority area in the Country.

Table 29: Access to Public Transport by Local Authority Area

Local Authority Area	Total Population within 2km Radius	% within 2km Radius
Dublin City	55,4554	100
Galway City	78,668	100
Cork City	125,657	100
South Dublin	278,767	100
Dún Laoghaire-Rathdown	218,018	100
Fingal	295,339	99.77
Sligo	64,820	98.91
Clare	116,297	97.88
Louth	125,711	97.54
Westmeath	84,690	95.40

Kildare	211,277	94.95
Limerick City and County	183,942	94.38
Waterford City and County	108,631	93.51
Wexford	139,807	93.37
Meath	180,700	92.64
Longford	37,765	92.40
Cork County	384,079	92.05
Laois	77,693	91.73
Kerry	134,819	91.27
Wicklow	129,444	90.88
Mayo	118,583	90.86
Offaly	70,055	89.85
Galway County	160,151	89.27
Leitrim	27,695	86.43
Cavan	65,749	86.31
Donegal	133,255	83.71
Kilkenny	82,178	82.81
Tipperary	130,291	81.66
Roscommon	50,577	78.36
Carlow	41,657	73.17
Monaghan	40,573	66.10

(Source: http://irelandsdg.geohive.ie)

Despite the compact size of the County, a rail network as well as two inter-urban motorways in and proximate to it, Kilkenny ranks 27th out of 31 Local Authority areas. Almost 83% of the County's population are regarded as living in locations convenient to public transport; substantially below the mean of 91.13% averaged across all Local Authorities nationwide.

11.4 Car Ownership in Kilkenny

Census 2016 provides insights into household car ownership in the County:

Table 30: Car Ownership

Number of Cars per Household	Persons-Kilkenny	Percentage-Kilkenny	Percentage - National
No car	3,920	11.3%	15.2%
One car	13,578	39.0%	41.0%
Two Cars	13,466	38.8%	33.4%
Three cars	2,331	6.7%	5.6%
Four or more Cars	829	2.4%	1.8%
Not stated	619	1.8%	3.0%
Total	34,743	100%	100%

(Source: CSO percentage of households without a motor car, 2016)

This illustrates that the percentage of the local population in the County without a car is notably below the national average. This suggests a dependency amongst households on private car use. Census 2016 also confirms that the percentages of households with multiple car ownership in the County are notably higher than the national average. This combined with the County's rurality and limited public transport provision suggests that car ownership

and its associated costs are simply a reality of rural living and a necessity to allow rural dwellers access to employment and services.

Although Small Area statistics are not yet available for Census 2016, mapped data from Census 2011 reveals the spatial distribution of these households throughout the County. Of the 309 Small Areas in the County, 148 recorded that in excess of 10% of households within that Small Area did not have a car. Leaving aside Kilkenny City where public transport provision is at its most intense in the County, towns and villages such as Castlecomer, Johnstown, Urlingford, Freshford, Ballyragget, Callan, Graiguenamanagh, Kells, Owning, Mullinavat, Pilltown, Slieverue, Thomastown as well as their immediate environs had levels of household non-car ownership in excess of 20%. It is notable that these towns and villages include many areas of limited public transport availability adjacent to the boundaries of neighbouring counties. There are notable concentrations of these settlements found in the north east and south west of the county.

Figure 21: Non-Car Ownership by Electoral Division
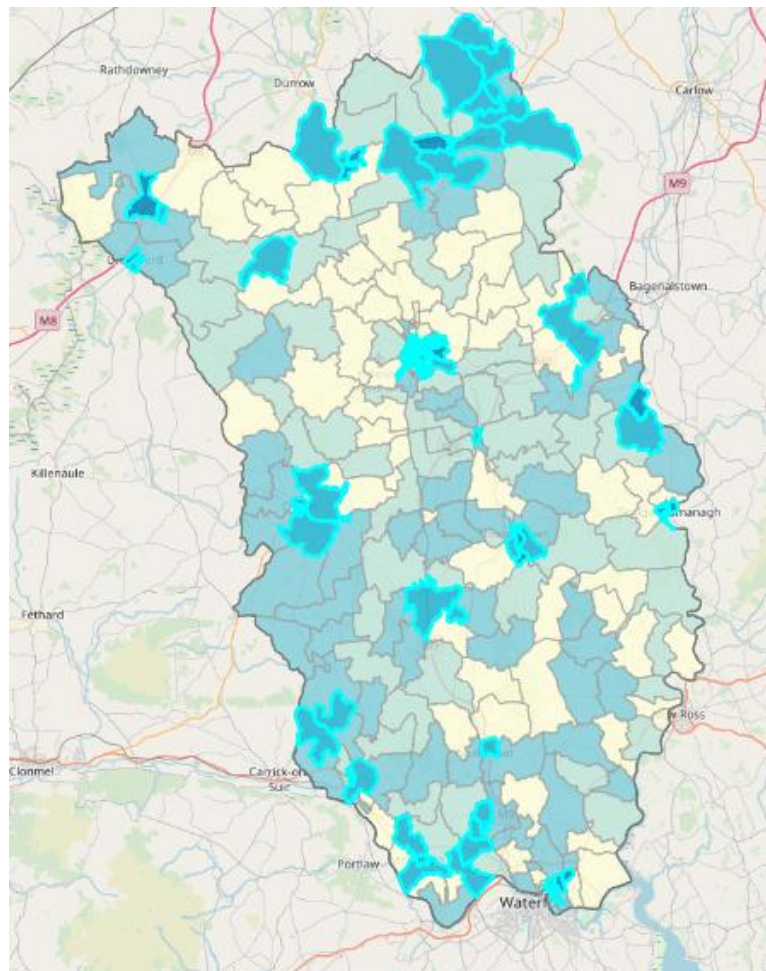
(Source: CSO percentage of households without a motor car, 2011)

11.5 Costs of Car Ownership

Annually, the Automobile Association publishes a detailed breakdown of motoring costs. Allowing for variables such as use, local traffic conditions and engine size, it takes account of *Standing Charges* – motor tax, insurance, cost of capital and depreciation – and *Running Costs* – fuel, parking, tolls, tyres, servicing and repairs and assumes an annual mileage of 16,000km for a car purchased new and retained for an eight year period. In 2017, it determined the annual average running cost of a private car to be €10,761.37 with the basic annual costs of having increased by €750 between 2012 and 2016; insurance costs having almost doubled during that period *(AA Cost of Motoring, 2017).*
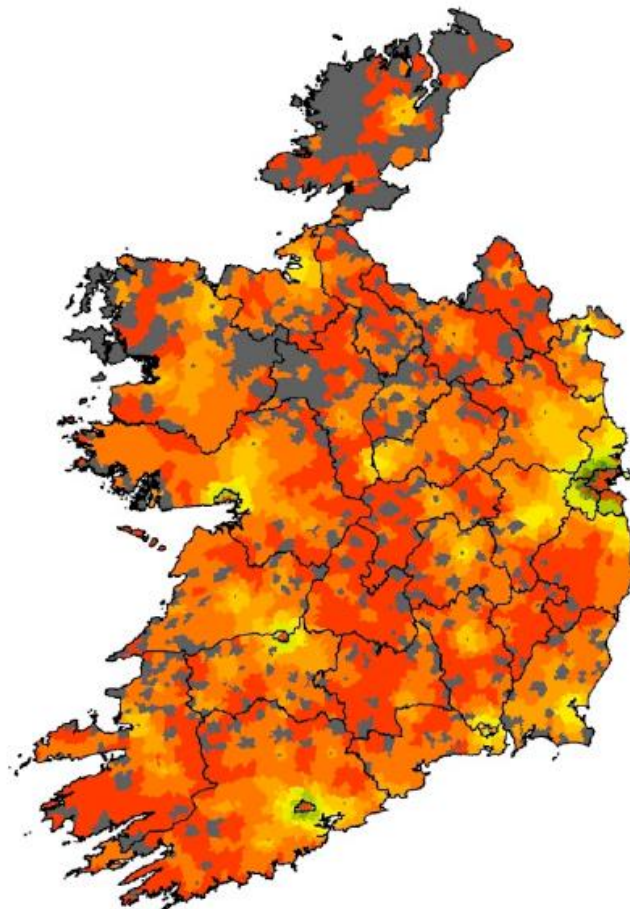
A particularly useful insight into the costs of car ownership in rural areas is provided by detailed research undertaken by the Vincentian Partnership for Social Justice *(Minimum Essential Budgets for Households in Rural Areas, 2010).* This established a negotiated social consensus on a minimum, but socially acceptable, standard of living for households. The data specified the minimum required to live and partake in the social and economic norms of life in contemporary Ireland at an agreed acceptable standard of living. The core *Minimum Essential Standard of Living* costs specify the core minimum costs, and exclude housing costs (e.g. rent), categories of expenditure which may vary by employment pattern such as childcare, and also the effect of secondary benefits such as a medical card. The use of a *Consensual Budget Standards* approach quantified the distinctive burden faced by rural households in maintaining a minimum essential standard of living in a rural area. The research summarises the minimum expenditure and income needs of a set of twelve demographic representative household types and demonstrated how peripherality, distance and access relate to rural disadvantage and poverty. It identified an *Additional Rural Cost* as being between €69.91 and €108.61 higher for rural households (based on one adult working full-time/in receipt of Contributory State Pension, and excluding rent and childcare expenditure) and *Transport & Access* costs ranging from €51.77 to €126.35 weekly depending on circumstances and dependants. Such costs arise due a lack of sufficient public transport and the need for car ownership. Rural households must meet all the costs associated with a car (two parent households, where at least one adult is employed, require two cars); this contributes greatly to their overall weekly expenditure, and accounts for over half of the additional rural household expenditure. Updated in 2017, in its *Minimum Essential Standard of Living Report* this research determined that rural couples with children incur costs of approximately €100 per week over their urban counterparts and over €50 per week higher than other household types. Expenditure on car transport costs generally ranking second behind food costs (and childcare for one parent families) within a weekly range of €52.06 and €127.92 varying by household type and dependents.

11.6 Forced Car Ownership

A potential causality between levels of deprivation and transport disadvantage has been identified in *Transport Disadvantage and Forced Car Ownership in Ireland (Benevenuto, Carroll and Caulfield, 2017)*. This paper provides weight to the argument that more resources and policy action need to be introduced to adequately reduce dependency on the private car in rural areas by providing more alternatives and support to people whose transport needs are not addressed. Using the *Pobal HP Deprivation Index*, this research examined specific EDs experiencing high levels of disadvantage and poor access to vital social services, such as schools, health care, banks and post offices as well as employment centres in rural Ireland. It identifies what it terms potential *Forced Car Ownership* (FCO) hotspots, arising as a consequence of the high incidence of single households and the non-existent, limited or scarce availability of public transport, including services provided by the RTP. This research determines that the majority of transport disadvantaged areas in rural Ireland are also deprived in socio-economic dimensions. It further concludes that it in such circumstances car ownership is a symptom of deprivation rather than of economic growth. Put simply households in rural areas have little choice but to own a car in order to avail of and access services.

Figure 22: Forced Car Ownership in Ireland

(Source: *Benevenuto, Carroll and Caulfield, 2017)*

The research further provided useful insights into the use of the RTP by respondents throughout the Country. It determined that the main services were the house-to-house demand-responsive service and the Health Service Executive (HSE) service which links patients with various health care clinics and hospitals. The most popular trips of the fixed-route services were regarded by users as being pension collection, shopping and access to healthcare facilities; all activities fundamental to and essential for wellbeing and reflective of the fact that people used the service because they needed to.

In County Kilkenny the research indicates that the Electoral Divisions of Freshford, Killamery, Kilmaganny, Urlingford, Graiguenamanagh, Inistioge, Rosbercon Rural, Pollrone, Clogh and Castlecomer exhibit high degrees of FCO. The total population in these Electoral Divisions is 11,482, comprising 11.6% of County's population.

Figure 23: Forced Car Ownership in Kilkenny

(Source: CSO, 2016)

11.7 Equitable Access for Mobility & Transport

Equitable and fair access by citizens to public transport citizens is often cited in progressive social strategies at EU and National level. Frequently however this is stated in aspirational, implicit or vague ways which can lack specificity or rigour. If society generally and organisations more specifically were to enunciate this as a right or expectation what might this look like and how might it be articulated? Some clues to this are offered by the UN in the development and measurement of the progress of its Sustainable Development Goals. Building upon on this, the Vientiane Declaration on Sustainable Rural Transport powerfully articulated and made explicit fundamental values and principles underscoring equitable and fair access to transport in rural areas. Most notably it expressed a commitment *"to promote inclusive, affordable, accessible and sustainable rural transport infrastructure and services, thus facilitating improved access to basic utilities and services including health and education by the rural poor, farmers, agricultural workers, girls and women, youth, and differently abled and vulnerable groups"*.

In November 2017, the European Parliament, the Council and the European Commission jointly adopted the European Pillar of Social Rights. Its aim is to serve as a guide towards efficient employment and social outcomes when responding to current and future challenges which are directly aimed at fulfilling people's essential needs, and towards ensuring better enactment and implementation of social rights. Its establishment should be seen part of wider efforts to build a more inclusive and sustainable growth model by improving Europe's competitiveness and making it a better place to invest, create jobs and foster social cohesion. In seeking to deliver new and more effective rights to European Citizens the Pillar affirms citizen rights within three specific categories *Equal opportunities and access to the labour market; Fair working conditions; Social protection and inclusion.* These categories, in turn, detail 20 social rights ranging from access to education and training; support to employment; gender equality; work-life balance; social protection; access to healthcare and essential services; the latter making specific reference to "*the right to access essential services of good quality, including water, sanitation, energy, __transport__, financial services and digital communications. Support for access to such services shall be available for those in need"*. Delivering on the European Pillar of Social Rights is a shared political commitment and responsibility, requiring implementation at both EU level and Member State level taking due account of different socio-economic environments and the diversity of national systems, including the role of social partners, and in accordance with the principles of subsidiarity and proportionality. How and to what extent such commitments, rights or obligations cascade down from the UN or the EU to Member States and made manifest at local level is not evident.

The principles and definitions of poverty, disadvantage, deprivation and social inclusion as well as their supporting policies and strategies at EU and national level make clear the expectation of and the entitlement for citizens to fully engage with and access a range of

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services to ensure equality and wellbeing. Thus stated, it becomes evident that mobility and equitable access to transport has a fundamental bearing on the capacity of an individual to do so. In a working paper *Public Transport and Urban Citizenship* (2004) James Wickham argues explicitly that *"one element of an anti-poverty strategy should therefore include transport policy, and conversely, transport policy itself needs 'poverty proofing'. From this perspective, the right to live according to the standards prevailing in the society involves a right to mobility. Since exercising the right to individual motorised mobility (within the city) usually undermines the rights to mobility of others who do not have cars, public transport becomes crucial. Public transport increases the chances that all citizens can have access to the same physical spaces. An effective public transport system thus increases choice for all. An effective public transport system is thus crucial to ensuring social inclusion".* Indeed while the logic to such a demand for the *'poverty proofing'* of transport policy is sound and legitimate, it is notable how few, if any, anti-poverty, disadvantage or social inclusion strategies appear explicit or directive on this point.

In this context it is instructive to consider the role of [Pobal](#), an intermediary that works on behalf of Government to support communities and local agencies toward achieving social inclusion, reconciliation and equality. In 2016 it provided management and support services to over 20 development programmes and initiatives for four different Government departments and EU bodies including programmes such as the Social Inclusion Community Activation Programme (SICAP); the Community Services Programme (CSP); and various other programmes targeting those within dependent age cohorts. Such an expansive role in addressing disadvantage and combating social exclusion, not to mention its engagement across Government Departments, leaves it ideally placed to integrate mobility and transport rights and entitlements within social inclusion supports and measures. Furthermore, the original incarnation of the RTP from 2002 – 2006 was managed under its remit with Pobal explicit on its purpose and rationale having been "*initiated as a response to the growing acknowledgement of the economic and social impacts of inadequate transport in rural areas and the increasing level of interest amongst community and local development groups in developing and implementing locally based solutions".* Moreover, Pobal reiterated the RTP's mission as *'to provide a quality nationwide community based public transport system in rural Ireland which responds to local needs'.* It would seek to do so through the following programme aims and objectives:

- To provide, enhance and sustain a nationwide community-based public transport system in rural areas.

- To maximise existing transport assets and to utilise new technology where necessary in the co-ordination and development of transport.

- To act as a catalyst in providing models of partnership at all levels where key sectors actively engage in transport provision.

- To **ensure** equality of access for all, including older people as well as people with mobility, sensory and cognitive impairments.

- To continue to contribute to rural public transport policy.

- To maintain, promote and develop models of good practice.

In 2012, responsibility for the RTP passed from Pobal to the NTA, a process intended to ensure its integration into the wider national public transport network. Pobal's current Strategic Plan 2014-2017 which sets out its vision, mission, strategic aims and objectives as well as clarifying the general context within which its strategic plan was framed makes no reference to mobility or transport at all; this despite being a key enabler in addressing social exclusion and facilitating equitable access to services for those most in need.

Despite the change in management of the RTP, its mission remains unchanged and as stated in its original incarnation. Indeed, public transport's contribution to social inclusion and cohesion is explicitly acknowledged by DTTAS, albeit in a general way. It states its strategic objectives in relation to public transport as the provision of a "*well-functioning, integrated public transport system, which enhances competitiveness, sustains economic progress, promotes balanced regional development and contributes to social cohesion*" as well as "*the provision of a defined standard of public transport, at reasonable cost to the customer and the taxpayer*". As might be expected the NTA however, is much more explicit in relation to a social inclusion remit referencing it in the *Rural Transport Statement of Strategy 2018-2022.* This sets out the key objectives for both the delivery and development of the RTP over the medium term, noting that "*the key priorities of the programme continue to include addressing rural social exclusion and the integration of rural transport services with other public transport services.* It articulates this further in specific terms and affirms as a priority objective to "e*nsure that the Rural Transport Programme continues to best meet the needs of users from a social inclusion perspective by promoting a suite of additional transport options including the Community/Voluntary Car Scheme, Car Sharing options, Rural Hackney services and Evening/Night time services".* In elaborating on its social inclusion remit, the *Statement of Strategy* explicitly references and acknowledges:

- That access to basic amenities through public transport services is an essential requirement for sustainable rural communities and that the lack of such access caused by inadequate public transport is a major cause of rural social exclusion. It further emphasises the potential for more flexible forms of transport such as DRT as a means to connect rural dwellers to services and amenities.

- The need for rural transport services that are designed and developed around the needs of local communities with a specific focus on target groups at risk of rural social exclusion.

- The role of the TCUs in managing the community transport needs of socially excluded people and in the identification of local service gaps as well as in the development of new routes and services to address unmet needs.

- The requirement for continued funding for the *'Once off Transport Services'* scheme –the stated aim of which is to address the persistent social exclusion, created by transport deprivation as experienced by identified target groups in rural areas.

- The requirement to update the *Transport Deprivation Index for Ireland (2008)* to reflect data in *Census 2016* as well the *2016 Pobal HP Deprivation Index*. This would provide an evidence –based approach to the identification of areas most in need of transport provision.

- The requirement for fully accessible transport services on almost all services with a target to achieve at least 95% fully accessible trips by 2020.

- The transport needs of young people in rural areas accessing higher education and further education and training opportunities.

- An intention to conduct 2-3 Social Impact Assessments on an annual basis to assist in monitoring the delivery of the Rural Transport Programme nationally.

Instructive too, is the view of the NTA as expressed in its *Review of withdrawal of Bus Éireann and J.J. Kavanagh licensed services from locations along the Cork via Clonmel to Dublin and Waterford to Dublin corridors (2015)*. In its analysis the NTA states that its primary concern in reviewing local service options *"is that transport links that allow the public to access ordinary every-day services are available. These socially necessary needs would include being able to reach the local market town or urban centre to be able to carry out tasks such as visiting a doctor, dentist, physiotherapist or optician; be able to go clothes shopping; having access to a greater variety of shops selling food or drinks items."* In this instance, in order to maintain the necessary level of service provision and connectivity in the areas affected by the withdrawal of services, the NTA addressed the issue of potential deficits in service and access. It did so through recourse to a PSO as well as through expanded service coverage and connectivity to be delivered by the RTP.

11.8 Subsidising Public Transport

EU and National legislation provides that where public transport services are deemed socially necessary but commercially unviable they are supported by PSO payments. Regulation 1370/2007 is the EU wide legal framework governing the regulation of public bus and rail passenger services and sets out the methodology in terms of awarding contracts for service delivery and providing PSO compensation for the provision of such services. In Ireland the funding of PSO services is governed by public service contracts between the NTA and a selected operator, with responsibility for the amount of PSO payments decided by the NTA, subject to the level of exchequer funding available. The use of PSOs is regarded as an efficient competitive tendering process for ensuring provision of required services and for containing costs. Services reviews, quality performance benchmarks, safety requirements and service innovations and enhancements can also be facilitated as part of the tender process and thereby used to improve the quality, cost and responsiveness of the service supply to consumers.

In Ireland the greater proportion of PSO payments accrue to the CIE group of companies (Dublin Bus, Bus Éireann and Iarnród Éireann) and these direct award public service contracts are operated on a net cost basis with the operators retaining passenger revenues and PSO subsidy payments. A small number of additional public transport services contracted by the NTA – sourced by public tender - are provided by a number of other operators under a *gross cost contract* model with the cost of providing the service fixed based on the tender and all fare revenue is transferred to the NTA. In 2016 there were four operators providing services following public tender competitions namely M&A Coaches Ltd., Andrew Wharton Coach Hire, Bernard Kavanagh & Sons Ltd and Bus Éireann. The PSO subsidy paid to the operators of the *gross cost contracts* amounts to less than 0.2% of the total PSO allocated to bus operators. (*Source: NTA Bus and Rail Statistics for Ireland – State Funded Services, 2017*). In 2016, 18% of PSO passenger journeys were undertaken on Iarnrod Éireann services; 14% on Bus Éireann and other PSO services with 1% on passenger journeys by the RTP. In that year PSO payments totalled €248.88m of which €133.06 was in respect of Iarnrod Éireann; €40.84m for Bus Éireann and €11.86m for the RTP in respect of passenger journeys of 42.81m; 32.12m and 1.79m respectively. In recognition of growing PSO passenger journeys in Budget 2018 the Government announced an 8% per cent increase in PSO funding.

Subsidies or subventions for public transport are also provided through funds from the Free Travel Scheme (FTS). This is operated by DEASP which spends in the region of €76m on the scheme each year. The scheme allows people, permanently resident in the State, aged 66 or over, to travel free of charge on most public transport services. The scheme is also open to individuals in receipt of a qualifying social welfare payment. A total of 43.63m passengers journeys were undertaken across all providers in 2016 with FTS payments to Iarnrod Éireann, Bus Éireann and the Luas totalling €14.6m; €13.29m and €3.91m respectively.

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Funding for the scheme has remained stable since 2010 and has not responded to the increase in passenger journeys undertaken by FTS passengers. Based on ageing population trends, it is expected that FTS passenger journeys will continue to increase to 5.1m by 2021, based on a conservative annual growth rate of 1.5%. The RTP has been in receipt of an annual subvention of €1.5m from DEASP since 2013. However, the NTA in its *Rural Transport Programme Statement of Strategy 2018-2022* believes that this does not accurately reflect FTS use on RTP services. Specifically, it notes that the current level of payment underprovides by at least of 50% and that the appropriate funding model for free travel on subsidised services is under discussion between DEASP, DTTAS and the NTA.

The NTA's *Rail Review Report (2016) and* specifically the *Roland Berger* analysis provides a detailed assessment and analysis of all routes within the Irish Rail Network. This reveals that all routes –intercity and commuter – require some level of subvention to attain breakeven sustain operations at current maintenance levels. In 2015, this ranged from a low of €.9 per passenger journey on the DART network to a high of €551.9 per passenger journey between Ballybrophy and Limerick City. In 2015, the subvention for the Dublin to Waterford service was €10.8 per passenger journey with that on the Limerick Junction to Waterford Service being €362.4 *(See Appendix 5).*

12.   Recommendations

12.1 Introduction

This CMP has presented a detailed analysis of transport and mobility in County Kilkenny. It has framed this within an interpretation and understanding of the multiple drivers of change, trends and dynamics that will irrevocably transform the means and patterns by which citizen's will work, socialise, consume and recreate, globally and in Ireland. This plan takes particular account of County Kilkenny's demographics and its social, economic and environmental context and presents a suggested course of action and specific recommendations to assist its stakeholders build towards an efficient, integrated transport and mobility system for County Kilkenny; one that is available to and of benefit to all users.

This Plan recommends actions under each of the following categories

- Structures and Strategic Planning.

- Representation, Communications & Advocacy,

- Funding & Finance

- Provision, Integration & Connectivity

- Modal Shift

The genesis of this project lies in the work undertaken by the Kilkenny Integrated Transport Action Group (KITAG) which draws its stakeholders from Kilkenny County Council, Kilkenny LEADER Partnership (KLP), *Ring-a-Link*, and the Three Counties Energy Agency as well as from a broad coalition of supportive community, enterprise and environmental interests. These organisations originally partnered to examine the potential for the development of a sustainable transport system for the City and County. The fruits of this partnership were evidenced in June 2017 at the iRoute conference held in Kilkenny at which an expert panel of speakers presented innovative thinking, proven workable models and international best practice on the development of efficient, equitable and future oriented transport systems. Amongst the many issues under consideration the conference sketched out ideas and proposals on integration and connectivity, technology, on-demand and responsive services as well as the means by which unmet transport needs within the County could best be addressed. These, as well as the workshops in which experts and delegates collaborated to create a new vision for transport in County Kilkenny, provided the impetus for a CMP for County Kilkenny.

The partnership and collaboration at the heart of KITAG and the iRoute conference demonstrates what can be achieved when like-minded stakeholders – drawn from the public and private sectors - pool their creativity and resources and offer leadership, a platform, momentum and a vision for change. In time, inevitably questions arise as to how

the momentum created can be maintained and how the desired change in transport and mobility should best be planned, implemented and managed. Moreover, the question arises as to who should lead – and also who should actively support - this process. Effective transport and mobility planning requires Government action, a legislative backstop, interdepartmental co-ordination, as well as appropriate planning and supporting policies amongst multiple stakeholders. It also requires a defined role for Local Authorities and a partnership model to facilitate stakeholder-led planning and delivery at local level. As previously noted, there is little autonomy locally in mobility and transport planning and provision, but this lack of local autonomy in decision-making can be countered by a cohesive local multi-actor vision and plan. Effective transport and mobility planning and development requires vision and leadership. It must foster strategic thinking innovation, direction and coordination among stakeholders. Creating a high-performing, resilient, and inclusive transport and mobility system is unlikely to occur by happenstance. Moreover, the transport and mobility needs of citizens in County Kilkenny are best evidenced, articulated, planned and addressed via a bottom-up process facilitated by an overarching local representative structure.

12.2 Structures & Strategic Planning

KITAG with the respective remits of its stakeholders and their reach into spatial planning, economic development, social inclusion, community development, public realm and amenity development, local transport provision, scalable DRT services, sustainable development, energy and environmental management is particularly well placed to fulfil such a leadership and representative role. Furthermore, KITAG is uniquely placed to consider, co-ordinate and manage the specifics of transport and mobility in both urban and rural contexts within the County. KITAG and its constituents need now reflect as to whether it or some designated successor entity – perhaps fully vested in and resourced by one of its partner organisations – evolves and defines a role for itself in this regard. Such deliberations might reasonably consider:

- Transitioning from an informal *ad hoc* alliance to formalising a legal structure and defining a core remit for the group in local mobility and transport planning, provision and management. This would require that defined roles and functions be agreed for each of its constituent organisations and members. However, progression to a formalised legal structure should only be undertaken on the basis and understanding that the entity – or its designated successor - can substantially *add value* to the remit, functions and resources of other organisations and agencies active in these spheres, whether these are nationally, regionally or locally focused.

- Establishing a local planning, co-ordination and research function in mobility and transport planning and development to better facilitate inter-agency synergies and resource use. This would also include agreements and protocols for the regular

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gathering, collation and sharing of data in order to build a consensus and an evidence basis to inform high level objectives and strategic actions.

- Agreeing, implementing and resourcing an overarching County-wide Transport and Mobility Action plan based on the commonalities and synergies identified within the individual strategic plans of its constituent parties including the County Development Plan 2014-2020; Kilkenny City & Environs Development Plan 2014-2020; the Local Economic and Community Plan; the Local Development Strategy; *Ring-a-Link* Strategic Plan, the SICAP strategy and others as appropriate. Objectives, policies, strategies and resources related to transport and mobility within these individual plans would be reviewed, adapted and combined with the relevant findings detailed in this CMP and in the City & Environs Mobility Management Plan. This would create a shared ownership and commitment to the planning of social, economic and environmental goals as well as in their implementation through agreed project actions.

- Developing a *Kilkenny Transport Charter* for all stakeholders affirming the key principles and values and defining a critical path towards an integrated, seamless, accessible, equitable, smarter and sustainable transport system.

- Building its structures, vision, objectives and actions around innovation, ambition, integration and a future orientation. The entity should have as its ethos the need to achieve better outcomes in mobility and transport planning, management and provision from its existing suite of financial and human resources. The requirement for additional resources in research, technical expertise, marketing and communications, technology development and utilisation as well as the larger scale capital investment necessary for infrastructure should be carefully assessed and specifically made the subject of funding applications to EU and national sources only where backed by a clear shared vision, strategy and evidence basis.

- Identifying the specific project actions that relate directly or indirectly to transport and mobility (infrastructure, public realm, research, marketing, amenity and recreation, social inclusion, etc) in the City and County that can be resourced and implemented from within existing strategic and operational plans.

- Including defined transport and mobility goals within grant and project funding evaluation criteria by KCC and KLP where appropriate.

- Ring-fencing funding from within existing KCC and KLP project budgets and seeking *Expressions of Interest* or initiating formal *Calls for Proposals* for mobility and transport related projects that assist in achieving agreed objectives or priorities

outlined in the overarching County-wide Transport and Mobility Action Plan. Projects could include community-led public realm enhancements and upgrades, infrastructure for recreation and soft modes, social inclusion initiatives, marketing and promotion, etc. as well as technology or environmentally oriented projects from the private sector.

- Facilitating data sharing and agreeing to information gathering between project partners and associates on a collaborative basis through the agreement of protocols and metrics to be used in the monitoring and evaluation of transport and mobility projects locally.

- Staking out a competitive position to establish Kilkenny – City and County - as a leader and innovator in the planning and implementing of future oriented, progressive and integrated transport and mobility solutions.

- Reflecting the respective needs and challenges as well as the diversity of its urban and rural settlements through the formal structured participation by KCC in the EU initiated Smart cities and by KLP in the Smart Village concept. The engagement by both contemporaneously would facilitate a holistic and co-ordinated approach to transport and mobility on a County-wide basis.

12.3 Representation, Communications & Advocacy

Effective mobility and transport planning can be facilitated and supported by a formal structure that is representative of and articulates the needs of all local stakeholder interests. Fundamental to this is representation, engagement and active support from the public, private and third sectors. Consideration should be given to achieving greater support and engagement from the private sector by the identification and targeted invitation of suitable representatives from within local employers of scale, industry leaders, companies with corporate social responsibility initiatives (CSR), the Chamber of Commerce or other sectoral bodies, transport and mobility providers, ICT or communications providers. The engagement of the private sector should be predicated on the need to collect and share transport and mobility data. Valuable third sector or community input, engagement and perspective can be sourced, if appropriate, from the Public Participation Network (PPN), social inclusion advocacy groups, transport user fora, etc,. Advocacy and representation functions could include:

- Presenting a single, coherent and unified vision and voice on behalf of County Kilkenny stakeholder interests in mobility and transport matters.

- Building public support to promote better transport access, efficiency and frequency as well as to promote the benefits of modal shift. This can be assisted by a tailored

communications strategy in which a future vision of transport and mobility in the County is presented and in which the resulting benefits and impacts of planned changes and improvements for all stakeholders are evidenced and demonstrated.

- Conducting general stakeholder assessments as well as specific transport user surveys to determine unmet needs; the optimal or likely means by which these might be addressed; whether a consensus exists for change; feedback on potential or planned initiatives, to build active support for the implementation of strategy; to identify constraints or blockages and to encourage stakeholders to develop shared solutions.

- Building stakeholder alliances to explore, re-imagine and visualise what mobility and transport *could be* in a truly smart, liveable, economically vibrant and socially inclusive County.

- Defining and articulating goals for ***equitable*** *access* to and the provision of public transport tailored to the needs of peripheral areas, areas of transport disadvantage or for demographic cohorts whose unmet needs persist. Specifically this would seek a convergence at a minimum to the mean percentage of the population nationally living adjacent to the public transport network. It would also seek to include defined and quantified equity goals in order to rebalance provision and better address the matching of supply/demand in areas with public transport service coverage and frequency deficits and to apportion service provision in response to defined need and observed patterns of demand.

- Establishing shared targets for ***sustainable mobility*** in order to facilitate modal shift towards more sustainable modes; targets to reduce air and noise pollution resulting from transportation; targets to moderate energy consumption in transportation and reduce its contribution to climate change and targets to increase the proportion of renewables and clean energies consumption. In addition, it could seek to define targets for ***equitable mobility*** in shared or alternative uses of the public road as well as targets for ***efficient mobility*** through the new technologies in mobility management.

- Engaging with and participating in the [Eltis](#) Urban Mobility Observatory. This is a useful means of knowledge gathering, exchange and networking and as a resource for information, good practices, communication channels, technical manuals, tools and studies including [rural public transport](#).

- Engaging with and participating in [CIVITAS](#) the network of cities dedicated to cleaner, better transport in Europe and beyond. Launched by the EU Commission in 2002, the

CIVITAS Initiative offers practitioners the opportunity to see innovative transport solutions being developed and deployed first-hand and to learn from peers and experts working in the field. The initiative has tested and implemented over 800 measures and urban transport solutions as part of demonstration projects in more than 80 Living Lab cities across Europe. The project offers a wealth of information and knowledge on 10 thematic areas related to sustainable transport mobility covering including car-independent lifestyles, clean fuels and vehicles, collective passenger transport, demand management strategies integrated planning mobility management, public involvement safety & security, transport telematics and urban freight logistics. It also provides a handy precis for EU funding on transport and mobility related projects. To participate in the initiative Kilkenny would be required to commit to the introduction of integrated urban transport strategies and a significant change in the modal split. 216 member cities in the CiViTAS Forum have signed the [CiViTAS Declaration](#).

- Creating alliances with Third Level and Higher Education Institutes to build knowledge, expertise and networks on future-oriented transport and mobility planning, management and provision. This, as well as engagement with the private sector and most particularly *Maas* operators, should be seen as a progressive step towards creating a formal public-private sector cluster initiative optimally positioned to avail of R&D funding.

- Seeking a formally defined working partnership with the NTA through which a range of pilot transport and mobility actions will be identified, planned, resourced, implemented and evaluated. In its *Rural Transport Statement of Strategy 2018-2022,* the NTA has expressed its interest in partnering with local initiatives to pilot and develop new models of public transport provision, shared mobility and technology applications. It also states its plans for environmentally sustainable practices in RTP provision including pilot electric car schemes and the use of low carbon emission vehicles within the Programme. The NTA also state its intention to engage with international best practice and models; a process that can be readily facilitated by KITAG stakeholders through its own network and also through formal transnational co-operation projects such as Interreg and LEADER.

- Demonstrating the ambition and capacity to develop projects that deliver on the objective for seamless, integrated mobility and transport in the City and County.

- Formally adopting the principles and undertakings outlined in the [Vientiane Declaration](#) and to seek further to build a national consensus on its application in an Irish context.

- Defining and seeking the provision of a basic standard or minimum level of mobility access for all citizens within the County and the articulation and integration of this as a key enabler of social inclusion and equity within all future social, economic and community development strategies.

- Identifying and articulating the transport and mobility needs of Kilkenny City and County in the specific context of the proposed capital spend on public transport infrastructure announced Budget 2018; amounting to €400m in 2018; €500m in 2019; in excess of €700m in 2020 and over €1bn in 2021.

- Seeking equity in the apportionment of €8.6bn of resources to be dedicated to public transport over the duration of the Ireland 2040 Plan, having developed and advanced proposals for sustainable, seamless, integrated and accessible transport provision, its supporting infrastructure and for technology-led led shared mobility solutions.

- Continuing to host the iRoute conference as a forum to demonstrate thought leadership, innovation and ownership within the sector as well as being a means to engage technical expertise, to showcase international and best practice initiatives and build further collaboration in addressing transport and mobility issues.

- Building stakeholder support for the WEF *SIMSystem Manifesto*, which outlines the guiding principles to achieve a seamless integrated mobility system and further to collaborate with national and regional authorities to trial the manifesto principles to a specific mobility application or appropriate location in the County.

- Working with civic and tourism interests to develop a *Wayfinding Strategy* as a means to best provide widespread, user-friendly information about mobility options and local destinations in the City and County. Delivered through a variety of channels including traditional signage and digital platforms, this assists citizens and visitors to navigate locations and destinations of interest through walking or cycling. It could be useful in managing capacity and flow in and around key destinations, along major routes, streets and at intersections as well as at multi-modal mobility hubs such as car parks, station, bus stops or a *Park and Ride* facility. In addition to traditional signage, technology serves an increasingly valuable role in wayfinding, enabling directions to be individually customised, and delivering a wealth of place-based information.

12.4 Funding & Finance

Planned actions to enhance mobility and transport in County Kilkenny will require funding and resourcing substantially over and above that currently available to KITAG stakeholders and from other conventional sources. The principal funding sources are likely to include EU and National exchequer funding. It should be noted also that greater competition for these available resources can be expected as indeed will be the requirement to demonstrate partnership, vision, coherence, value for money as well as defined outcomes and impacts in project delivery.

The EU has set out in its Multi-annual Financial Framework a funding [blueprint](#) totalling €1.23tn for the period 2021-2027. This reflects the Union's priorities for the period within which can be seen a discernible shift in emphasis. Supports for climate action and mitigation strategies, sustainable mobility, migration, inclusivity, technology, open science and innovation are likely to benefit from additional resources while the Common Agriculture Policy (CAP) and Cohesion Policy – funds from which Ireland has benefited strongly - are likely to see their budgets cut from current levels. It's perhaps timely to note that under the new 2021-2017 EU budget arrangements Ireland will transition from a net beneficiary to a net contributor of funds, irrespective of the proposed cuts to CAP and to regional development funds:

Eltis provides a useful summary of the current EU [funding sources](#) for the 2104-2020 period. Programme arrangements and supporting budgets for the 2021-2027 period, have yet to be determined but are likely to include opportunities to support innovative mobility and transport actions in programmes such as:

- *Horizon Europe* – a successor programme to Horizon 2020 – which will support EU policy priorities in areas such as the achievement of the UN Sustainable Development Goals, health, food and natural resources, resilience and security, climate, energy and mobility and other societal challenges in order to secure a low-carbon, circular and climate-resilient society and industrial competitiveness.

- *Invest EU Fund* will target investments promoting sustainable infrastructure, research and innovation, digital transformation, the access to finance for small and medium-sized enterprises, education, skills, social infrastructure.

- The *Connecting Europe Facility* will support investments in cross-border infrastructure in the transport, energy and digital sectors. The programme will emphasise EU transition towards connected, sustainable, inclusive, safe and secure mobility and will contribute to the decarbonisation of transport, for example by constituting a European network of charging infrastructure and for alternative fuels

or prioritisation of environmentally friendly transport modes. Smart and digitised energy grids and high capacity digital networks will also be supported.

- The **Digital Europe Programme** will support ambitious projects that will make the best use of digital capacities and of the latest digital technologies in areas of public interest. It will seek to address societal challenges and bring the benefits of digital transformation to every citizen and business.

- The **European Regional Development Fund** and **Cohesion Fund** will support research and innovation; climate change and environment; support to small businesses; services of general economic interest; telecommunications, energy and transport infrastructure; health, education, culture and social infrastructure; sustainable urban development and smart villages. It will assist Member States reduce their economic, social and territorial disparities thanks to interventions focused on five objectives: **A smarter Europe** to promote competitiveness, digital transformation, entrepreneurship and innovation (including inclusive growth and social enterprises), and enhance the business environment as a part of industrial adaptation to the challenges of globalisation, circular economy and climate change; **A greener carbon free Europe** to support clean and fair energy transition, to enhance energy efficiency; to support transition to low-carbon economy; to stimulate renewable energy; to support innovative use of low-carbon technologies, to support green and blue investment, including in sustainable natural resource management, circular economy, climate adaptation and mitigation; **A more connected Europe to enhance** mobility, energy and regional ICT connectivity to develop regional networks and systems to promote sustainable transport, smart energy grids and high-speed digital access in order to enhance regional, local and cross-border connectivity, including security; **A more social Europe** to implement the principles of the European Pillar of Social Rights, in particular life-long learning, education and training infrastructure as well as health, culture and social infrastructure; **A Europe closer to citizens**: sustainable and integrated development, through local initiatives to foster growth and socio-economic local development of urban, rural and coastal areas.

- The **European Social Fund+** will support the implementation of the principles of the European Pillar of Social Rights and will seek to address the current fragmentation of funding instruments in the social policy area.

- The **LIFE Programme** will support the transition towards a circular, resource- and energy-efficient, low-carbon and climate-resilient economy.

At a national level funding opportunities transport and mobility actions and projects may be currently supported by:

- Conventional Local Authority funding including Town and Village Renewal Funding, Rural Economic Development Zone Funding (REDZ) and Rural Recreation Funding.

- Local Development Company funding such as LEADER (including inter-territorial and transnational cooperation funds) and SICAP.

- Enterprise Ireland's Regional Enterprise funds; Cluster Initiative funds, Commercialisation funds and Innovation Partnership funds

- DTTAS Sports Capital Programme.

- Pilot action funding from the DTTAS/NTA.

- DTTAS Smarter Travel Funds.

- Corporate and Social Responsibility funds.

- Local Enterprise Office funds

The Ireland 2040 Plan and the NPF details a range of objectives and development priorities including compact growth, enhanced regional accessibility, sustainable mobility, access to quality childcare, education and healthcare services, strengthened rural economies and communities and transition to a low carbon and climate resilient society. Its implementation is costed as €115bn; €22bn of which is for climate change actions in transport, energy and commercial state agencies. The Plan also includes four new funds designed to stimulate renewal and investment in rural and urban areas, the environment and innovation. These are a €2bn *Urban Regeneration and Development Fund*; a €1bn *Rural Development Fund*; a €500m *Climate Action Fund* and a €500m *Disruptive Technologies Fund*.

12.6 Provision, Integration and Connectivity

Provision, integration and connectivity is best achieved by considering the multiple mobility elements in the County as part of a singular transportation network comprising infrastructure, mode, services and frequency. Each discrete element serves an individual purpose but must also act in tandem to support the defined needs of the network user. The aims and objectives of each must be aligned and in sync in order to allow the integration and connectivity of multiple modes into a seamless whole. The scale of this challenge in Kilkenny is considerable but progress can be made by:

- Critically re-appraising the existing public transport service provision as outlined in Chapter 10 of this CMP and the areas identified as public transport blackspots *(FCO)* identified in Chapter 11 and further determining whether new or expanded DRT services can meet local needs and/or where connectivity to mainstream public transport can be better achieved. This analysis should also determine if greater frequencies are required to expand the once weekly DRT service provided in many rural areas within the County.

- *Ring-a-Link* assessing its potential, capacity and the additional resources necessary to expand DRT service in order that County Kilkenny – and in particular peripheral rural locations – converge at a minimum to the national average of the population resident within 2km of a public transport node (91.13%). This would see expanded minimum coverage to serve the basic needs of a further 8,252 citizens within the County.

- Defining the optimal locations within the City and County to facilitate connectivity and transfer between services and modes; appraising the infrastructure and support services required (shelters, defined bus lanes and stopovers to facilitate access and egress, timetable information, route-mapping, etc,) and agreeing investments in the public realm to enhance the wait/transfer experience.

- Assessing the opportunity to formally create defined transport hubs for transfer and connectivity within Kilkenny City and selected other towns. There appears to be no such loci comprised of dedicated purpose built transport facilities, bays, shelter, toilet facilities, real-time information, route mapping, service information, timetables, Wi-Fi, etc.

- Partnering with the NTA to develop new models of rural transport service provision throughout County Kilkenny. A new model of rural transport service provision arising from this partnership would have as its objective the convergence for County Kilkenny and its citizens to the mean percentage of the national population with ready access to public transport and the development of an optimal, coherent transport network. It would seek to address identified gaps in provision where users are not serviced by existing public transport schedules or where existing services are infrequent or irregular or are not optimally configured to service travel to work or for social, health, leisure and tourism purposes. Such an approach would accord with each of the nine priority areas set out by the NTA in the *Local Link Rural Transport Programme Strategic Plan 2018 to 2022*; most notably this new model would focus on strategic priorities in route development and expansion, integration with other statutory services, accessibility of services, access for all and in innovation in RTP provision. It is suggested that a new model would see a backbone network

developed throughout all parts of the County through which the principal population settlements would be regularly serviced as well as connected to and integrated with existing scheduled local regional and inter-urban bus and train services. This backbone network would be further augmented by a localised on-demand *"collect and connect"* service, operating as a feeder system as demand dictates. Key objectives of the backbone network and its localised feeder system would be to build coherence, scale and connectivity within the network, expand service provision, regularity and coverage as well as to optimise asset usage and operational efficiencies. It would also play an important social equity and inclusion role in connecting people to critical social, health and employment services. More prosaically, public transport developed in this way can play facilitate the growing numbers of tourists who wish to visit attractions and points of interest distributed throughout the county. In achieving these aims, the improved network is likely to appeal to a substantial number of potential users whose diverse needs currently remain unmet by public transport.

Appendix 6 outlines a proposal, provisionally costed at €3.8m, in which seven specific transport routes or corridors are developed throughout the county. These routes would operate with a defined schedule and regular frequency – seven days a week at a two-hourly interval for a span of service of sixteen hours daily - between outlying settlements and key transport hubs at Kilkenny City, Waterford City, Carlow and Carrick on Suir. Each of these locations would in turn facilitate ease of connection/transfer to service intense routes onwards to other locations as necessary. The localised on-demand *"collect and connect"* service would be configured loosely around five separate zones of a 15-20 km radius, centred at specific strategic rural locations such as Castlecomer, Johnstown, Callan, Thomastown and Mullinavat. The existing RTP model could trial hybrid services with both fixed and DRT elements as well as the trialling of shared mobility options such as shared taxis using existing licensed operators, DRT minibuses, community car, voluntary car and/or car sharing schemes; the objective of which will that the specific mode used can be optimally tailored and adjusted to meet demand. Connectivity between locations and modes would be facilitated by the development of *"Super Stops"* within the City at Kilkenny Train Station, the Market Yard and St Luke's and also at Thomastown in the County. These *"Super Stops"*, which would incorporate real time information and which would provide shelter, seating and lighting, etc. would greatly improve the travel user experience and could be expected to promote modal shift and increase the attractiveness and usage of public transport in the County.

- Partnering with the NTA to trial new ICT methodologies and tools to facilitate RTP booking and ticketing (*mTicketing* and the *ITMS Driver App)* as well as to enhance integration and connectivity with mainstream service provision.

- Incentivising the private sector by means of specific calls for *Expressions of Interest* or *Formal Proposals of Funding* to enable/develop the technology applications to allow infrastructure and service operators to easily connect their assets and perform data analyses without having to develop or invest in the requisite IT infrastructure.

- Committing to the provision and use of *Real Time Information* to ensure timely, reliable and accurate information allowing public transport users make informed decisions about mode of travel, travel routes, and travel time.

- Supporting a comprehensive, integrated transportation database and digital platform that manages existing assets and dynamically updates information, allowing informed users to create a cleaner, smarter and more efficient transport system. By utilising emerging spatial and communication technologies, a dynamic, comprehensive transportation database and digital platform could seamlessly manage and share - in real-time – the many types of data gathered locally. In addition to real-time information, the system could use historical trends to predict near-future conditions. Information regarding road closures, traffic conditions and public transport scheduling would afford individuals greater flexibility to adjust their travel choices as changes occur in real-time.

- Optimising the utility and function of the road space to prioritise shared mobility.

12.7 Modal Shift

Private car use is the dominant mode of transport in County Kilkenny. For many this is by preference or choice but for some it is a costly necessity required in order to access employment, education, retail and healthcare services to ensure their needs and wellbeing are addressed. The dominance of the private car in Kilkenny gives rise to a number of adverse impacts such as pollution, nuisance, congestion and a poorer public realm and social environment. KIlkenny has the opportunity to lead and innovate where national policies have fallen short. It can do so by:

- Prioritising modal shift by setting specific short, medium and long term goals for the City and the County.

- Providing accessible and safe alternatives and investing in the appropriate infrastructure to facilitate shared mobility and soft modes like walking and cycling. Pedestrian and cycle facilities will be most successful where they form a coherent

network, place an emphasis on safety, directly serve the main areas where people wish to travel, provide priority over vehicular traffic at junctions, are free from obstructions and have adequate public lighting. The use of bicycles as regular transport requires safe and secure spaces for their parking in some points of origin and destination of travel: urban facilities, parks, squares and gardens, modal interchanges or in the bicycle network itself. In addition, support facilities such as secure parking and changing/showering facilities at places of employment are a key determinant in encouraging people to cycle.

- Reducing car use in Kilkenny City Centre by altering street design to facilitate multi modal use. This could involve the removal of on-street parking other than for exclusive access for distribution, collection, public transport, shared mobility, fully electric vehicles or where specific needs and demographics need to be catered for (limited mobility, disabled, etc.) Active curb management policies would also enhance public realm and reallocate road space to bike lanes and bus lanes.

- Affording a greater priority to pedestrians whether by full or partial pedestrianisation of selected City Centre streets or by allocating further street space to pedestrian use. Pedestrianisation should not only be about restricting access to vehicles, it's also about making locations safer, more attractive and participatory for citizens and visitors. Kilkenny City's scale and compact nature as well as its medieval character lends itself to pedestrianisation much in the manner of cities like Santiago de Compostela, Carcassone or Kotor; all recognised and successful tourist destinations.

- Integrating mobility and transport planning and management into the planning and hosting of the many local events and festivals in order to trial new approaches to effect behavioural change and custom amongst private car users. This could allow more radical approaches such as car-free days, car free zones, and pedestrianisation or shared mobility solutions to be trialled in a way that's acceptable to a broad range of stakeholders. Where such trials are held it is vital that there are agreed metrics and a means of collating qualitative and quantitative data.

- Artificially creating scale and density through the development of a Park and Ride facility linked to the new City bus routes. This would facilitate parking and traffic management outside of the City Centre and allow user demand to be built up with positive benefits for route viability and frequency. Opportunities also exist to locate modal transfer such a bike docking and storage at locations served by the Green and Red routes.

- Re-evaluating the City cycle lane network to ensure its suitability and fitness for purpose with the short term objective to create and maintain to an appropriate standard a consistent, safe, and continuous network. This network duly improved should be promoted as a discrete amenity within the City but also integrated and promoted within the broader *Trail Kilkenny* Initiative.

- Introducing a bike sharing scheme to the City of a scale proportionate to the resident and visiting population. Site locations should also serve to address *first mile, last mile* connectivity solutions.

- Developing or supporting a rental system for electric bicycles to encourage tourist or visitor travel to attractions, heritage sites and recreational amenities in adjacent or outlying towns and villages.

- Engaging with employers, workplaces and the Smarter Travel programme to facilitate and accommodate more sustainable and environmentally staff travel choices (walking, cycling, cycle-to-work scheme, shared transit, electric vehicles, remote working, telecommuting, flexible working hours, home working, personalised and work travel planning, etc). Workplace travel plans should also be integrated with company corporate social responsibility initiatives

- Promoting Cycle Friendly Employer certification which was developed to establish a European standard for Cycle-friendly companies https://cfe-certification.eu/about/background.

- Identifying local sporting ambassadors and champions to actively promote cycling and walking activity.

- Promoting shared transit via ridesharing, car sharing and carpooling through resources such as Carpool World, Go Car and Get There

Appendices

Appendix 1

Sustainable Urban Mobility Planning

Starting Point: "We want to improve mobility and quality of life for our citizens!"

Preparing well

1. Determine your potential for a successful SUMP
- 1.1 Commit to overall sustainable mobility principles
- 1.2 Assess impact of regional/national framework
- 1.3 Conduct self-assessment
- 1.4 Review availability of resources

2. Define the development process and scope of plan
- 1.5 Define basic timeline
- 1.6 Identify key actors and stakeholders

3. Analyse the mobility situation and develop scenarios
- 2.1 Look beyond your own boundaries and responsibilities
- 2.2 Strive for policy coordination and an integrated planning approach
- 2.3 Plan stakeholder and citizen involvement
- 2.4 Agree on workplan and management arrangements
- 3.1 Prepare an analysis of problems and opportunities
- 3.2 Develop scenarios

Milestone: Analysis of problems & opportunities concluded

Rational and transparent goal setting

4. Develop a common vision
- 4.1 Develop a common vision of mobility and beyond
- 4.2 Actively inform the public

5. Set priorities and measurable targets
- 5.1 Identify the priorities for mobility
- 5.2 Develop SMART targets

6. Develop effective packages of measures
- 6.1 Identify the most effective measures
- 6.2 Learn from others' experience
- 6.3 Consider best value for money
- 6.4 Use synergies and create integrated packages of measures

Milestone: Measures identified

Elaborating the plan

7. Agree on clear responsibilities and allocate budgets
- 7.1 Assign responsibilities and resources
- 7.2 Prepare an action and budget plan

8. Build monitoring and assessment into the plan
- 8.1 Arrange for monitoring and evaluation

9. Adopt Sustainable Urban Mobility Plan
- 9.1 Check the quality of the plan
- 9.2 Adopt the plan
- 9.3 Create ownership of the plan

Milestone: SUMP document adopted

Implementing the plan

10. Ensure proper management and communication
- 10.1 Manage plan implementation
- 10.2 Inform and engage the citizens
- 10.3 Check progress towards achieving the objectives

11. Learn the lessons
- 11.1 Update current plan regularly
- 11.2 Review achievements - understand success and failure
- 11.3 Identify new challenges for next SUMP generation

Milestone: Final impact assessment concluded

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Appendix 2

Indicators	Weighting	Score	Rank
GHG per Capita - current level (including LULUCF)	10%	36,00	53
GHG per Capita - current trend (excluding LULUCF)	10%	41,18	35
GHG per Capita - compared to a well-below-two-degrees benchmark	10%	27,97	55
GHG 2030 Target - compared to a well-below-two-degrees benchmark	10%	31,11	44
Share of Renewable Energy in Energy Use (TPES) - current level (including hydro)	5%	18,54	31
Renewable Energy - current trend (excl. hydro)	5%	45,62	18
Renewable Energy Development (excluding hydro) - compared to a well-below-two-degrees benchmark	5%	33,40	15
Renewable Energy 2030 Target (incuding hydro) - compared to a well-below-two-degrees benchmark	5%	43,19	28
Energy Use (TPES) per Capita - current level	5%	64,06	35
Energy Use (TPES) per capita - current trend	5%	53,37	27
Energy Use (TPES) per Capita - compared to a well-below-two-degrees benchmark	5%	60,86	44
Energy Use 2030 Target - compared to a well below two-degrees-benchmark	5%	68,12	31
National Policy	10%	11,42	59
International Policy	10%	46,15	32

Appendix 3

THE MAIN PROBLEMS ASSOCIATED WITH INCREASING URBAN TRAFFIC AND CONGESTION

Negative impact on urban quality of life

INCREASING MOTORISED VEHICLE DOMINANCE AND CONGESTION

EQUITY

Nearly 30 % of households in Europe have no access to a car – they pay the price of traffic without enjoying mobility benefits offered by car ownership.

ECONOMIC EFFICIENCY

Traffic congestion, pollution and accidents result in significant direct and indirect costs. The total bill has been estimated at EUR 502 billion per year across the EU Member States [2].

LOSS OF URBAN 'LIVING SPACE'

Motorised transport infrastructure- such as roads and car parking – takes up highly valuable city centre land, and spoils and threatens existing open spaces.

AIR POLLUTION

Multiple effects including global warming, health problems & building decay. The Department of Health in the United Kingdom estimates the health costs of particulates in urban areas of Britain to be up to GBP 500 million per year [3].

ACCIDENTS

Over 40 000 deaths on Europe's roads/year, of these four times more fatalities occur in urban areas [4].

VISUAL INTRUSION

Diminished quality of the urban environment caused by parked cars and other infrastructure.

NOISE AND VIBRATION

Transport is one of the main sources of urban noise pollution.

ENERGY CONSUMPTION

Transport consumes 4 % more energy every year which represents a doubling of energy used every 20 years [4].

SEVERANCE

Congested urban roads cause severance of communities which can have a social cost.

COMPETITIVENESS

Traditional centres face competition from less congested out-of-town retail centres.

Negative impact on urban quality of life

Appendix 4

SIMSystem

Foundational Elements

Rules
- Policy and Governance
- Consistent Standards
- Fiscal Support & Insurance

Digital
- Data Exchanges
- Dynamic Supply/Demand Mgmt.
- Real-Time Analytics
- Integrated Platform and Marketplace
- Dynamic Routing
- Intermodal Management
- Seamless Billing and Payments
- 5G+ Secure Digital Infrastructure
- Connected Sensors

Physical
- Energy Network
- Infrastructure
- Vehicles and Vessels

Appendix 5

Some of IÉ's route require very high levels of cash per passenger journey to breakeven at current maintenance levels

Cash result per passenger journey by route [EUR / pax journey]

Route	Cash result - Actuals 2014	Cash result - Actuals 2015
a Cork	-24.1	-22.1
b Galway	-10.4	-8.5
c Tralee	-17.9	-15.6
d Limerick	-25.0	-18.4
e Westport/Ballina	-25.7	-26.9
f Waterford	-12.7	-10.8
g Sligo	-21.9	-20.0
h Belfast	-15.1	-9.4
i Rosslare	-30.8	-29.1
j Lim.Jct - Waterford	-360.2	-362.4
k Limerick - Ballybrophy	-417.2	-551.9
l Cork commuter	-10.5	-9.6
m Limerick - Galway	-55.0	-44.0
n Kildare Suburban	-4.6	-4.9
o Northern suburban	-4.8	-4.8
p Western Suburban	-4.7	-3.2
q DART	-1.1	-0.9

NB: The level of actual expenditure incurred in 2015 does not reflect the AECOM spend required for steady-state operation

1) Cash result is after farebox and before exceptional items, depreciation, amortisation and capitalisation; 2) All results exclude any government funding (e.g. PSO, MAC)

Source: Iarnród Éireann, Roland Berger

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Appendix 6

Kilkenny Local Link Network: Expansion Proposal

Context

Carlow, Kilkenny and South Tipperary Rural Transport CLG, (trading as '*Ring-a-Link'*), was founded in 2001 as a community based non-profit company servicing the transport deficits of its part of the south east region. *Ring-a-Link* has operated successive iterations of state-funded rural public transport initiatives in that period. '*Local Link*' is the nationally brand name for the 17 community-based organisations delivering the *Rural Transport Programme*, which provide 'safe secure and reliable Public Transport services in local and rural areas of Ireland', of behalf of the *National Transport Authority* (NTA). *Ring-a-Link* is the Local Link agent for the Kilkenny, Carlow and Wicklow region. The Company now manages and delivers Rural Transport services in 6 counties: these are Fingal, Dun Laoghaire-Rathdown, Wicklow, and Carlow, Kilkenny and South Tipperary.

Current passenger numbers carried by *Ring-a-Link* are approximately 170,000 per annum- almost 10% of the total Local Link passengers carried in Ireland. It has been successful in securing National Transport Authority (NTA) funding for six evening rural transport bus services for the three counties.

Ring-a-Link makes this submission to the NTA on the funding of new public transport services in Kilkenny part of its region. Key features of the new service developments supported by NTA include greater integration with existing public transport services and better linkage of services between and within towns and villages. The proposed services are designed to provide both additional coverage in themselves- and to form a network structure to facilitate integration and increased penetration of public transport options for the optimum number of residents and visitors to the county.

Kilkenny County Development Plan 2014-2020

- The Kilkenny County Development Plan 2014 – 2020 highlighted distinct population changes/movements from 2006 to 2011.

- Yellow and grey indicate high population increases.

Kilkenny County Development Plan 2014-2020
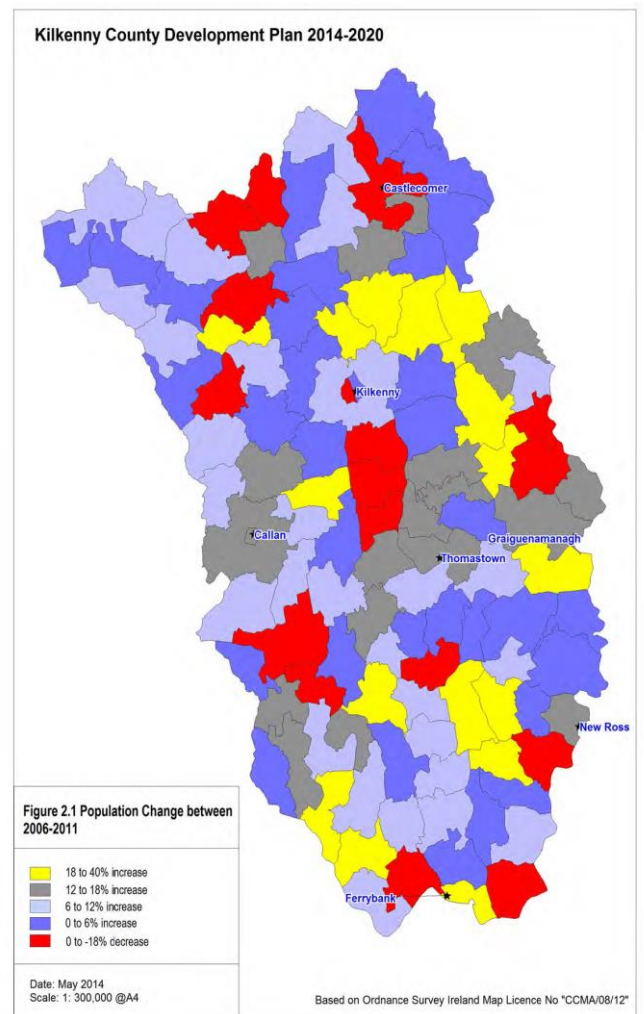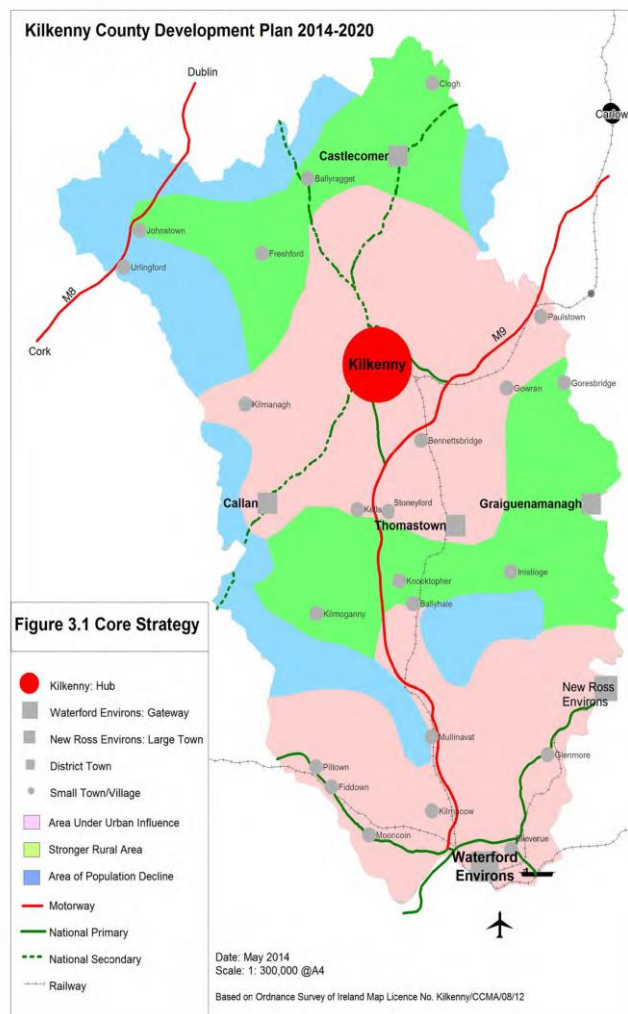
The purpose of the *Core Strategy* is to articulate a medium to longer term quantitatively based strategy for the spatial development of the County and to demonstrate that the Development Plan and its objectives are consistent with national and regional development objectives set out in the NSS and South East Regional Planning Guidelines (RPGs).

Specific reference is within the development plan to support and for resources and facilities and tourist travel.

11.3 Public Transport

The development of public transport is critical in achieving more sustainable travel patterns and a reduced reliance on the car. The local authority does not provide any public transport services but can facilitate their provision through infrastructural works.

The Council will co-operate with the various public and private agencies responsible for transport services within the County in the provision of new services and supporting

11.3.2.1 Bus Objectives

• To facilitate the provision of bus shelters as appropriate.

• To facilitate parking provision for tourist buses in towns and villages and at tourist attractions.

Kilkenny County Council Tourism Statement of Strategy & Work 2017-2022

The Kilkenny County Council Tourism Statement of Strategy includes a significant focus was work on the Ancient East brand and establishing mobility/access across the county. There are actions and objectives focused on the development of both rural destinations/ hubs and the linage of city and rural tourism offerings.

II. Develop sub County, clustered, Destination Groups/ Hubs, reporting through the Municipal Districts for the following geographic areas/ hinterlands:

- CASTLECOMER / NORTH KILKENNY/ GORESBRIDGE/GOWRAN
- KELLS / CALLAN/ and hinterland
- JERPOINT (Abbey, Park ,Mt. Juliet etc)
- INISTIOGE / GRAIGUENAMANAGH/ THOMASTOWN
- PILTOWN /OWNING/ LINGAUN / KNOCKROE(in conjunction with KLP)

Action 3.5: Continue development of the ' Medieval Mile' and develop an action plan that links complementary visitor attractions across the county aimed at prolonging and enhancing the visitor experience. This will be a critical element of Kilkenny's' offering within Irelands' Ancient East . Cross promotion of nearby attractions will be important in the success of encouraging visitors to spend more time in the region rather than using it as a transit zone.

Kilkenny LEADER Partnership *"Transport Think Tank"* & Kilkenny Transport Services Report

In line with the objectives of the Kilkenny County Council Development Plan and its own 'local development strategy' for transport and access, in early 2017, Kilkenny LEADER Partnership completed a consultation process ('Think Tanks') on public transport- that included an audit of existing public transport services in the Kilkenny region. Ring-a-link participated actively in the consultation process. The results of was compiled in the *Kilkenny Transport Services Report 2017*.

KILKENNY TRANSPORT SERVICES REPORT 2017
Kilkenny LEADER Partnership Transport Think Tank

The map illustrates the provision at that time; the current situation (as of spring 2018), has altered slightly, but not to a significant extent. Large gaps in basic services exist throughout the county.

Public Transport Provision in Kilkenny
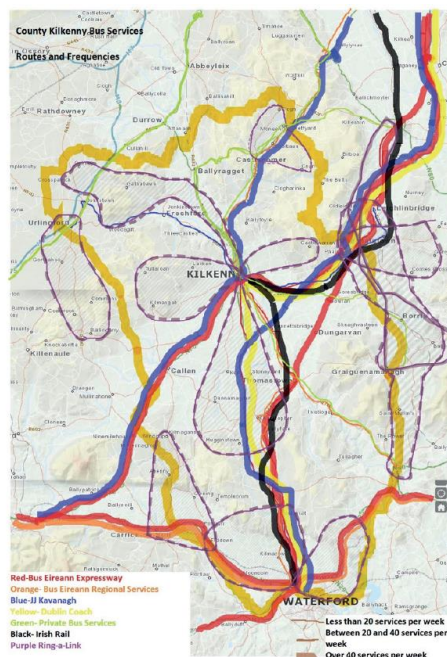
iRoute Conference

The completed and research led in turn to the decision to host the *Integrated Rural & Urban Transport Evolution* (*iROUTE*) Conference in June 2017. KLP, Ring-a-Link, Kilkenny County Council and other local and regional stakeholders organised the ambitious event to consider what could be achieved at local level to improve the transport situation. Over 100 people from throughout the country attended with a list of international speakers from other EU states presented case studies on how other smaller countries, with similar limited resources to Ireland, managed their public transport systems to the optimum effect on the needs and wants of their residents and visitors.

The iROUTE conference generated great enthusiasm and identified a series of headline issues to be addressed.

- Structures and Strategic Planning
- Representation, Communication and Advocacy
- Funding and Finance
- Provision, Integration and Connectivity
- Modal shift

The iROUTE partners agreed to cooperate to address the issues and to bring what resources they could access to the process.

Ring-a-link Proposal to National Transport Authority

Based on the evidence and objectives of the Kilkenny County Development Plan, the research of the Kilkenny Transport Services Report, its participation in the *iROUTE* conference and its own expensive local knowledge, Ring-a-Link has identified seven possible 'Local Link' services to be developed as an entire network of services. The services are in illustration as a whole outlined on the map below.

While Ring-a-Link has a funding and reporting relationship to the NTA, it understands that the funding of routes will be dependent on both the availability of NTA finances and the completion of an open tender 'public procurement process'.

Tourism Destinations Serviced by Proposed Services
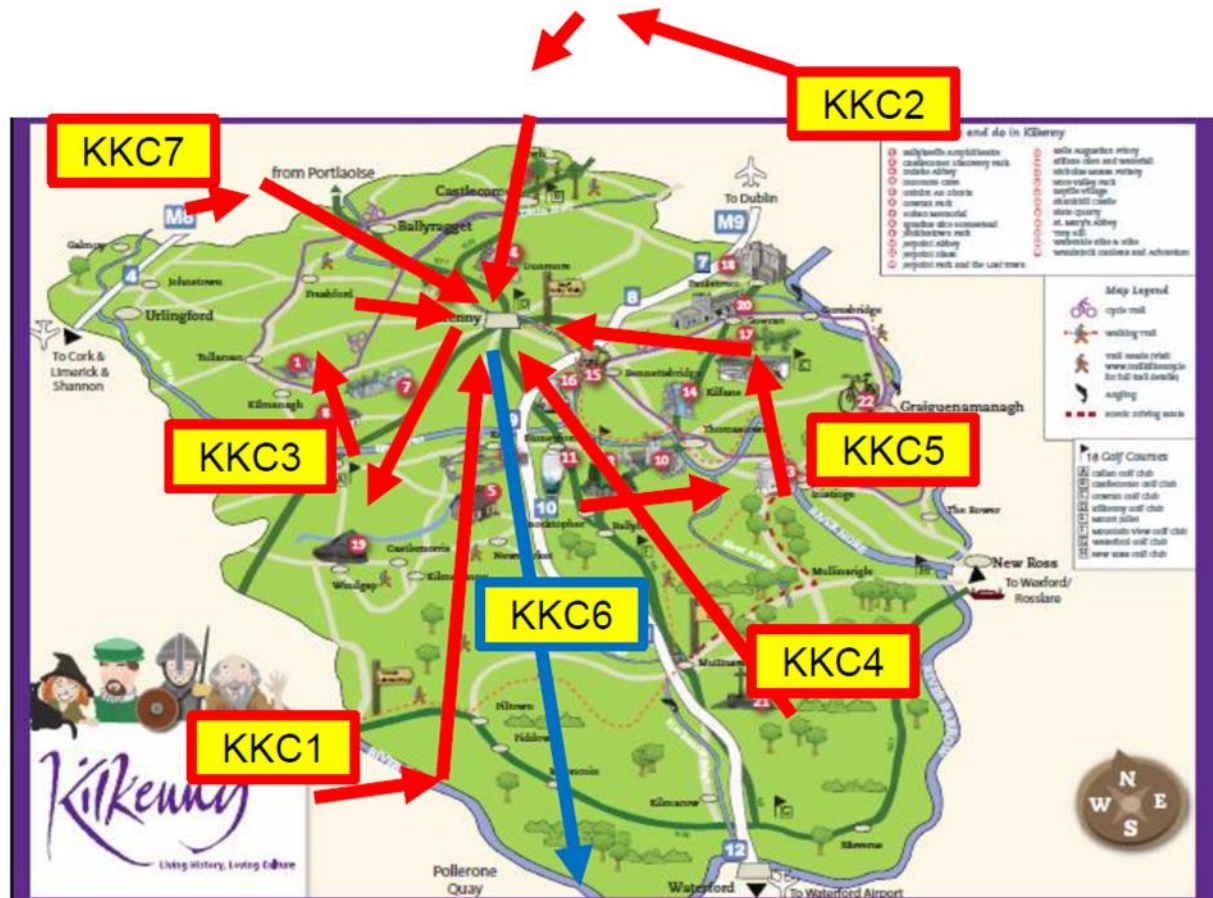
Residents & Visitors   Research on the relative travel patterns of rural residents and tourist visitors indicate that the travel timing profile of both cohorts offer a large degree of complementarity. Visitors wishing to access rural tourism destinations by public transport typically embark in the late morning and return in the afternoon. This provides a synergy with that of many rural residents journeying to work, education/ training or business which have a predictable early morning and evening profile. This factor provides a notional 'payload' to support the economically important sustainable day-long vehicle usage required by business.
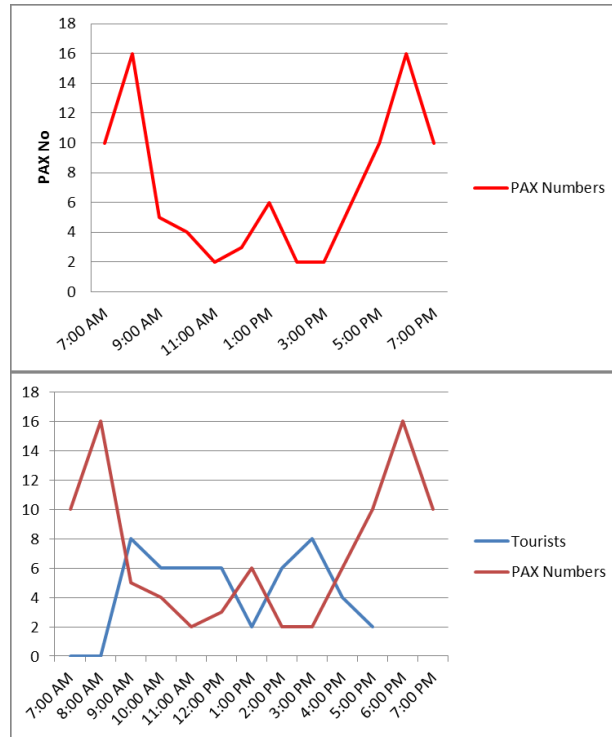
Proposed Services

Possible Service KKC1 – Carrick-on-Suir, Piltown, Owning, Kilkenny City and Train Station
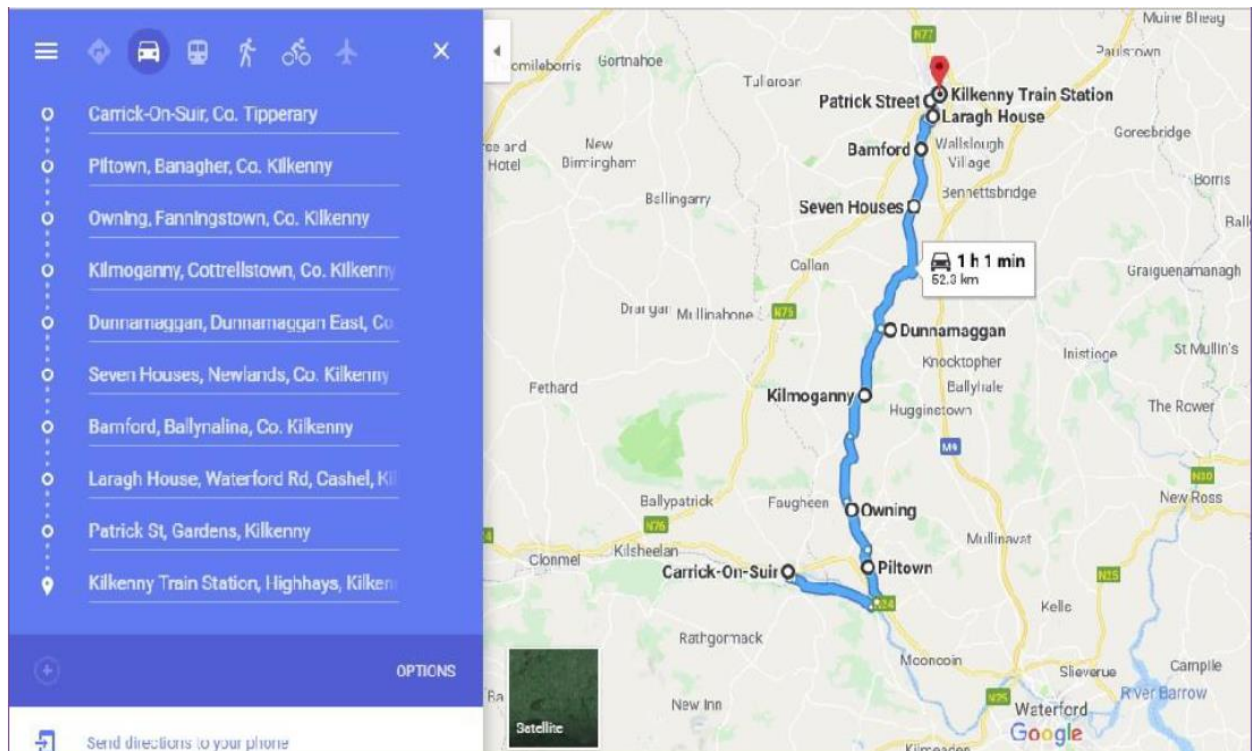
Possible Service KKC2 – Carlow, Train Station, Clogh, Ballyragget, Kilkenny Train Station, St Lukes Hospital
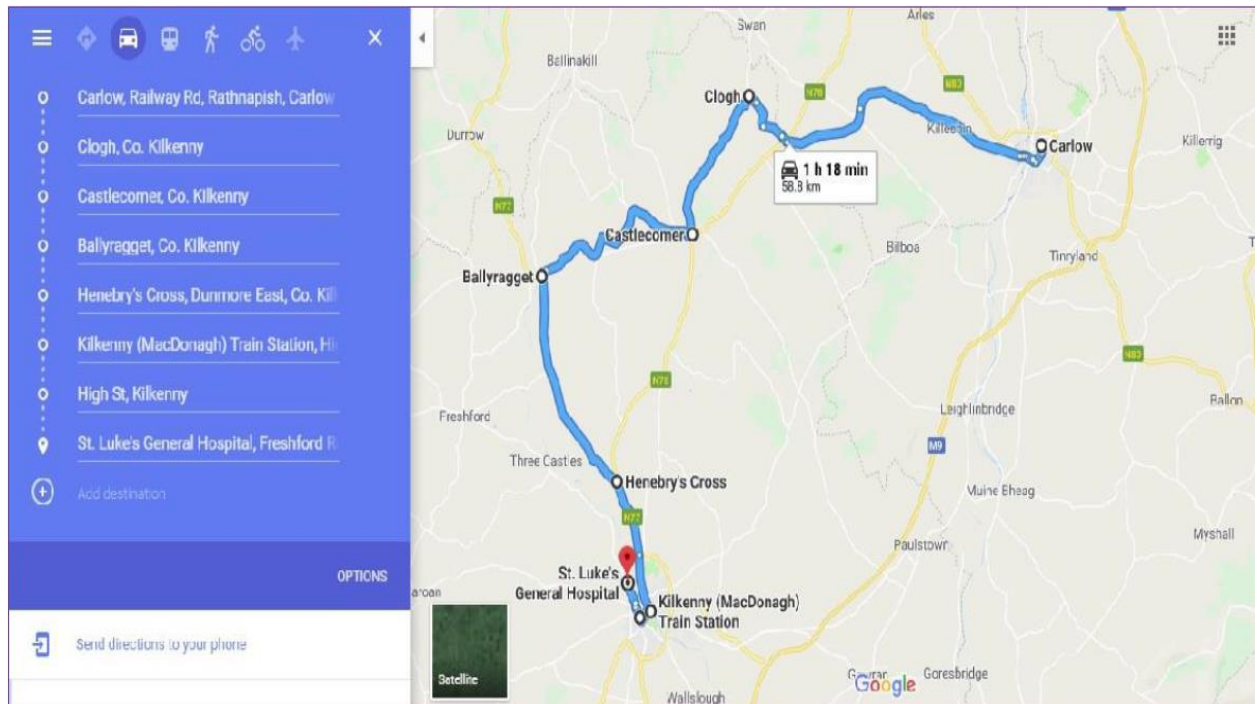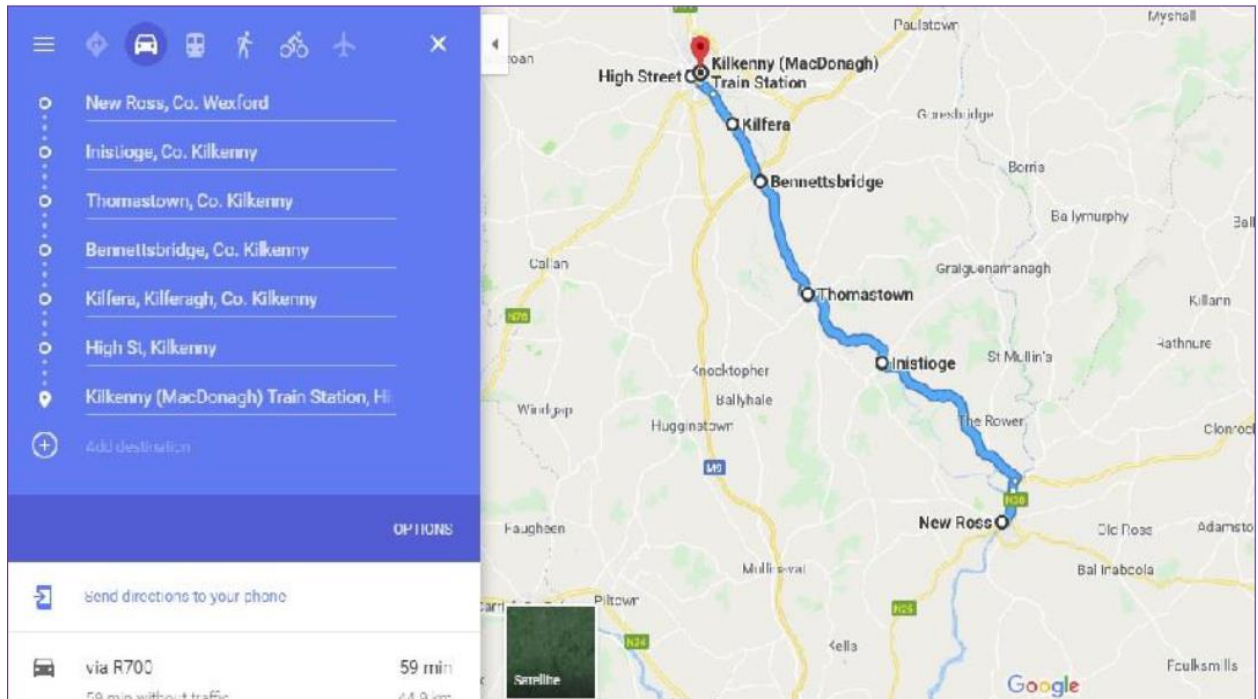

Possible Sevice KKC3 – Callan, Tullaroan, Bonnettstown, Kilkenny Train Station, Two Mile Bridge, Tennypark, Callan Loop
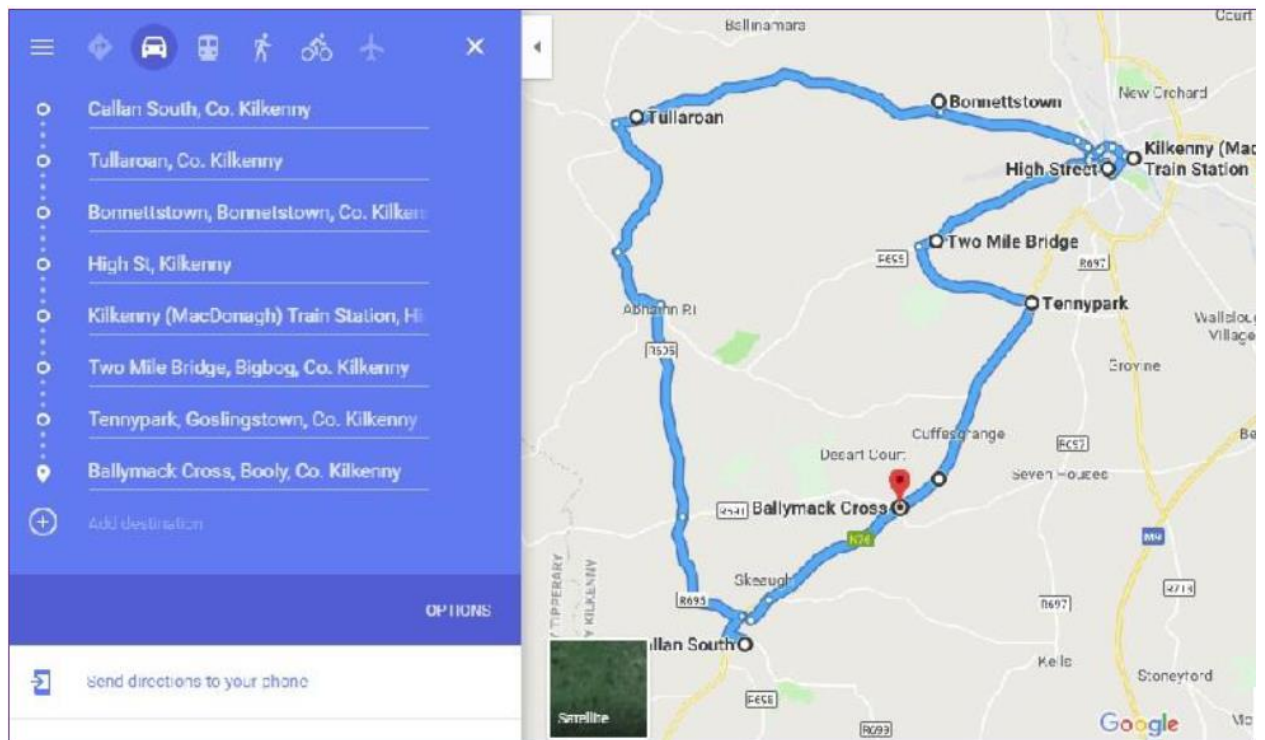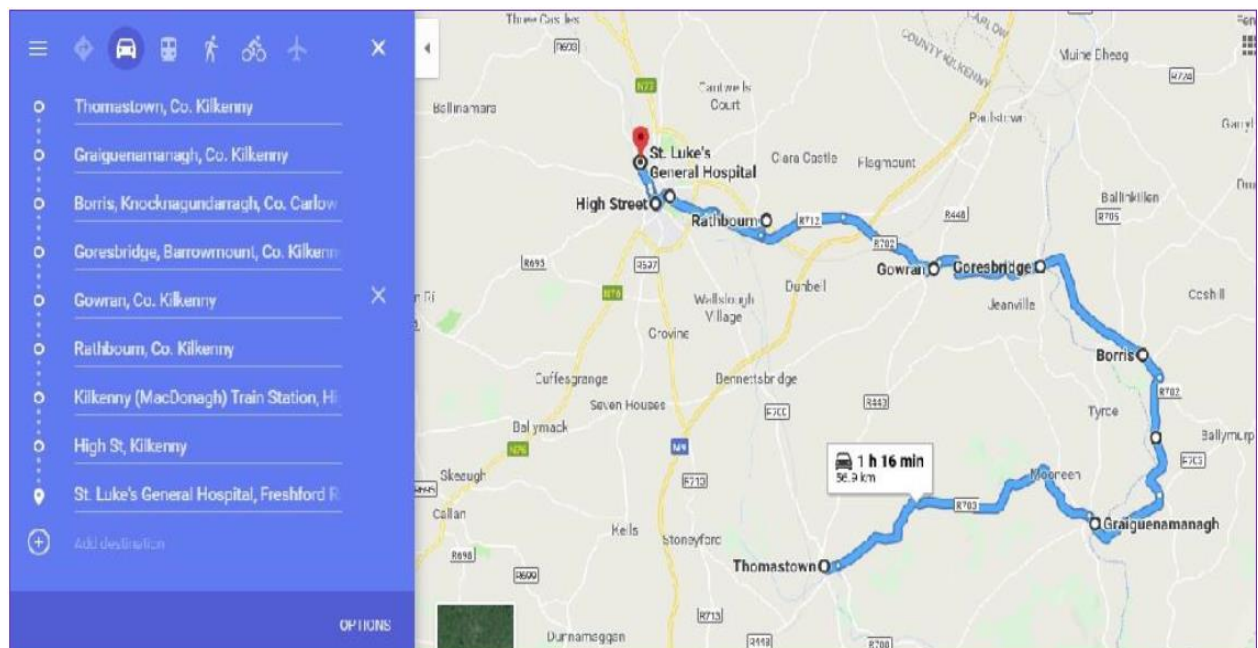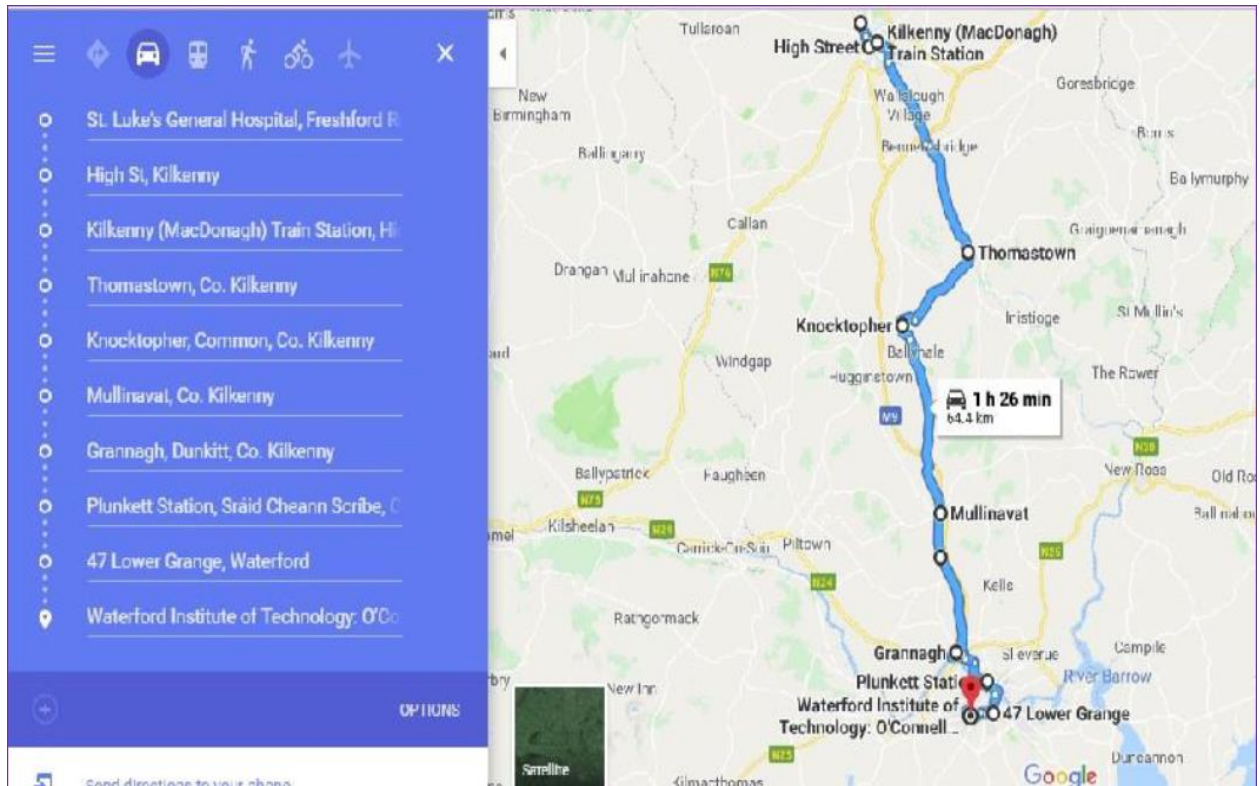
## Possible Service KKC4 – New Ross, Inistioge, Thomastown, Bennetsbridge, Kilfera, Kilkenny City and Train Station

Possible Service KKC5 – Thomastown, Graiguenamanagh, Borris, Goresbridge, Gowran, Rathbourne, Kilkenny Train Station, High Street, St Luke's Hospital

## Possible Service KKC6 – Kilkenny to Thomastown to Waterford City via Mullinavat

Possible Service KKC7 – Urlingford, Johnstown, Woodsgift, Freshford, Three Castles, St Lukes, High Street, Kilkenny Train Station
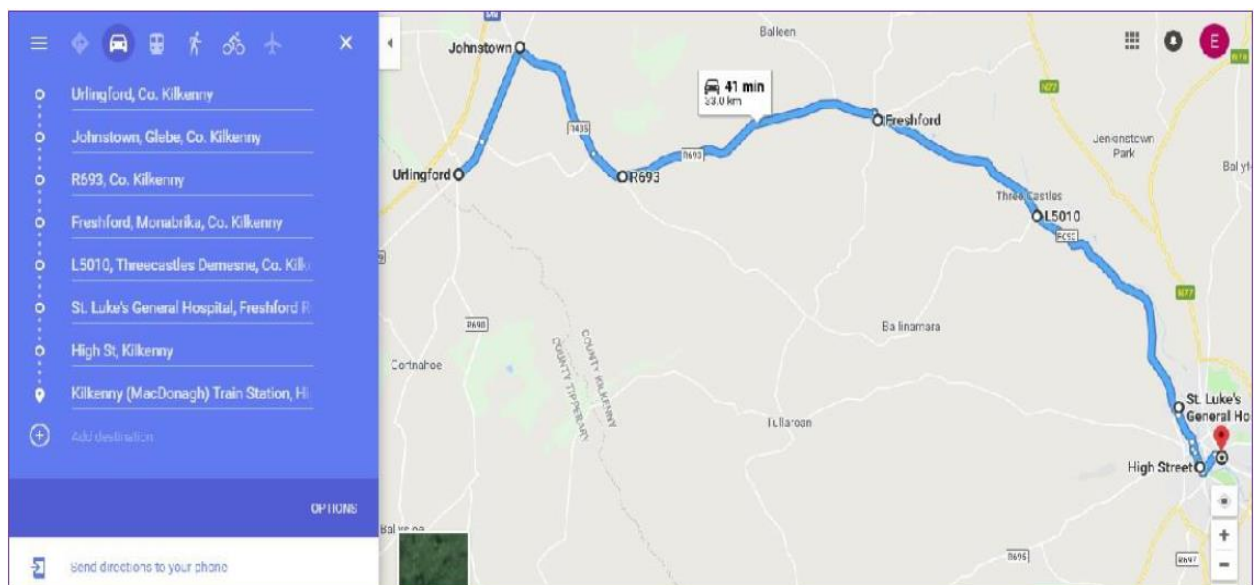
On Demand Mi-Route *"Collect and Connect"* Project

The proposed introduction of additional services will provide a significant additional level of transport options for residents and visitors. However they will not in themselves provide universal access to areas not directly covered by the services. Many of these areas are more sparsely populated and will find difficult to sustain conventional services. However flexible and 'demand responsive transport' (DRT) has proven to be effective in such areas and situations- providing it integrates reliably with the conventional fixed corridor systems. Ring-a-Link proposes the following *On Demand Mi-Route- 'Collect and Connect' Project.*
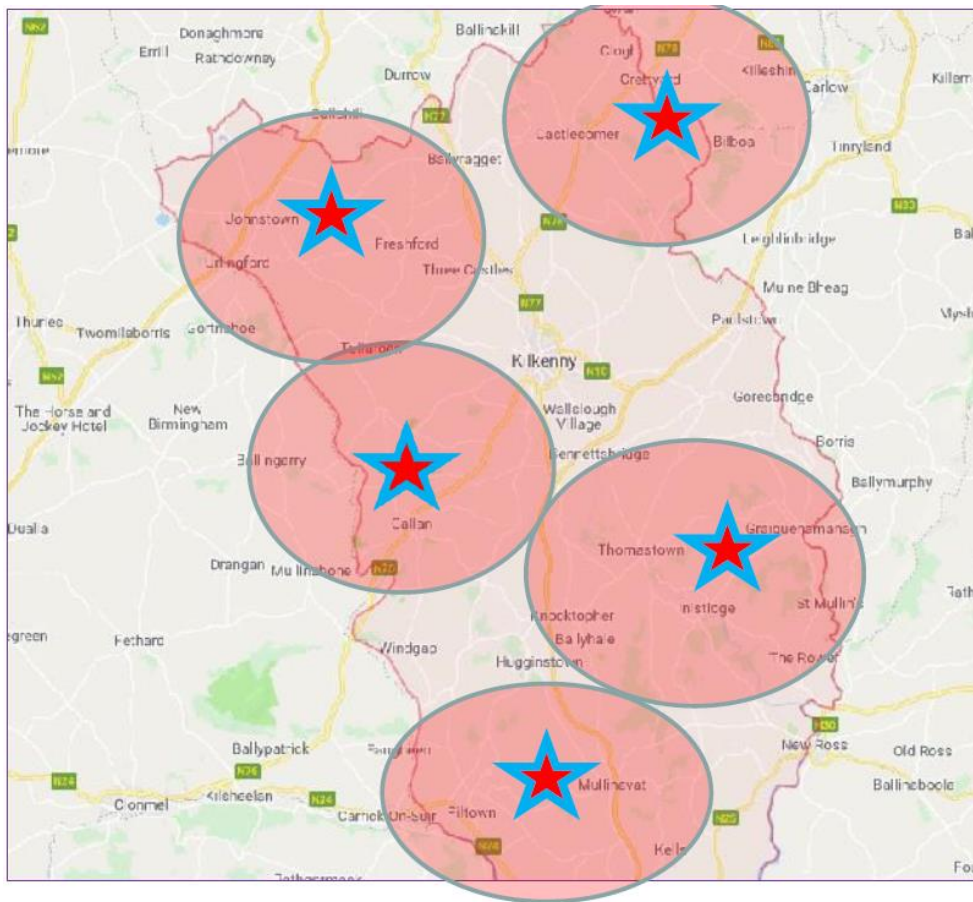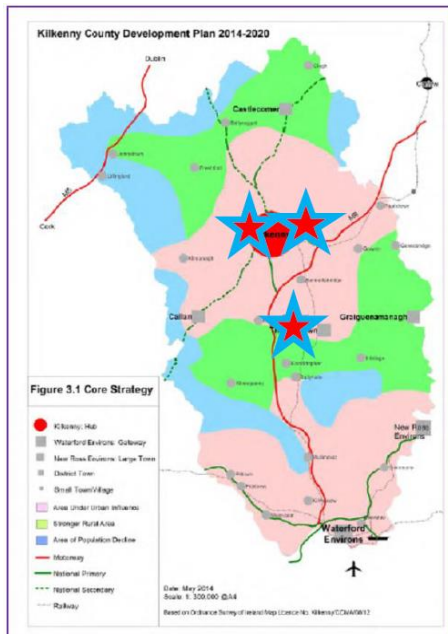

- Pilot Kilkenny Mi-Route Zone Travel Project providing integration of transport to the fixed corridor services

- On Demand public transport/DRT operating within 30km zone

- Zones proposed at:

- *Castlecomer*

- *Johnstown*

- *Callan*

- *Thomastown*

- *Mullinavat*

"Super Stops" Integration Points

As an important aid to integration of services in the county, Ring-a-Link is proposing that the NTA finance the construction and installation of a number of high-specification 'Super Stops' which will be placed in strategic sites in the County and City. The Kilkenny Local Link 'Super Stops' could have:

- RTPI via GPS
- Call button to Ring-a-Link/ TIO
- Solar lighting
- Seating
- Shelter
- Information/maps, etc.

4 pilot 'Super Stops' are proposed for installation at sites in:
- Thomastown
- Kilkenny Train Station
- Kilkenny Market Yard
- St Luke's Hospital

The establishment of such stops will add visibility and security to the public in terms of transport integration and transfer; they will be seen as the tangible evidence of integration. Other stakeholders in the Kilkenny Transport Action Group (KLP and the local authority) have indicated their willingness to support the development of Super Stops in other sites in the County and City, as part of their contribution towards the development of a fully integrated transport service.

Proposed Expansion Budget Estimate

Kilkenny and Carlow LocalLink Network Expansion Estimate				
Route	Days Per Week	Average Hours Per Day	Intervals of Service	Indicative cost estimate
Possible Route KKC1 – Carrick On Suir, Piltown, Owning, Kilkenny City and Train Station ⚠	7	16	2 hours	€328,500
Possible Route KKC2 – Carlow Train Station, Clogh, Ballyragget, Kilkenny Train Station, St Lukes ⚠	7	16	2 hours	€328,500
Possible Route KKC3 – Callan, Tullaroan, Bonnettstown, Kilkenny Train Station, Two Mile Bridge, Tennypark Callan Loop ⚠	7	16	2 hours	€328,500
Possible Route KKC4 – New Ross, Inistioge, Thomastown, Bennetsbridge, Kilfera, Kilkenny City and Train Station ⚠	7	16	2 hours	€328,500
Possible Route KKC5 – Thomastown, Graiguenamanagh, Borris, Goresbridge, Gowran, Rathbourne, Kilkenny Train Station, High Street, St Lukes ⚠	7	16	2 hours	€328,500
Possible Route KKC6 – Kilkenny to Thomastown to Waterford City via Mullinavat ⚠	7	16	1 hour	€657,000
Possible Route KKC7 – Urlingford, Johnstown, Woodsgift, Freshford, Three Castles, St Lukes, High Street, Kilkenny Train Station	7	16	2 hours	€328,500
			Total	€2,628,000
Capital Cost Estimate for 'Super Stops' and Infrastructure				€400,000
Marketing/Promotion				€657,000
Additonal LocalLink Admin/Dispatch Staff				€120,000
			Grand Total	€3,805,000