

Leitrim County Council
**N4 Carrick-on-Shannon to
Dromod Project**
Option Selection Report

274219-ARUP-02-OS-RP-Z-000002

P07 | 14 March 2023

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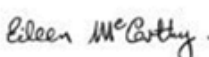
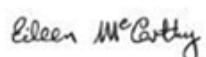
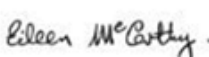
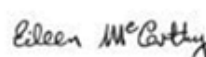
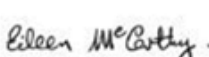
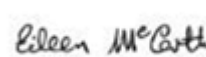
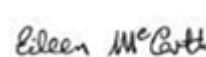
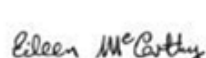
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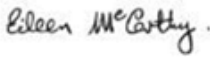
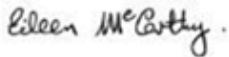
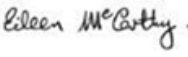
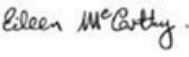
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2 Identification of Need

2.1 Introduction

The N4 forms part of the Trans-European Network for Transport (TEN-T) comprehensive network providing a strategic link between Dublin and Sligo, which is designated as a regional centre in both the National Development Plan and National Planning Framework. The N4 connects directly with the N5 and N6 national primary routes which also form part of the EU TEN-T comprehensive network for reasons of national and international importance. Such a designation carries a requirement to be a high-quality road to serve an important role in long-distance freight and passenger traffic. It also is required to integrate the main urban and economic centres, interconnect with other transport modes and connect peripheral regions.

The N4 carries both long-distance traffic to and from the east of the country to the northwest of the country and significant regional and inter-urban traffic flows between Mullingar, Longford, Carrick-on-Shannon, Boyle, and Sligo and also provides regional connections to the towns of Elphin (R368), Frenchpark (R370) and Leitrim Village onto Manorhamilton (R280).

The section of the N4 under consideration falls within two local authority administrative areas with the River Shannon acting as the boundary. The area to the west of the River Shannon lies within County Roscommon and to the east of the River Shannon within County Leitrim. Leitrim County Council is acting as the Lead Authority and are progressing the scheme with Roscommon County Council.

There is currently one crossing point of the River Shannon at Carrick-on-Shannon via a narrow masonry arch bridge, dating from 1846, which is sub-standard in terms of alignment and cross-section. The section of the N4 under consideration passes through both rural and urban environments, is approximately 20km long and extends from Drumharlow townland west of Carrick-on-Shannon to Faulties townland south of Aghamore.

Significant lengths of the N4 have been improved / upgraded to dual carriageway cross-section in the recent past. With these upgrades, especially the opening of N4 Dromod to Roosky Bypass, and the N4 Collooney to Castlebaldwin dual carriageway, Carrick-on-Shannon has become a bottleneck for long-distance and regional traffic. Carrick-on-Shannon remains the only regional strategic centre on the N4 between Dublin and Sligo which has not been bypassed to date.

There are sections of poor alignment along the built-up areas on the approaches to Carrick-on-Shannon and at Aghamore. There are frequent junctions with local roads and direct frontage accesses which contribute to a high number of accidents in the area.

The need for the N4 Carrick-on-Shannon to Dromod Project is supported in terms of policy from European to national to local level, which is outlined in sections 2.1, 2.3, 2.4 and 2.5 below.

2.2 European Policy

2.2.1 Trans-European Transport Network (TEN-T)

The TEN-T networks are a set of road, rail, air and water transport networks in Europe. The N4 corridor forms part of the TEN-T comprehensive network connecting Dublin to the west and northwest of the country as shown in Plate 2.2.1.

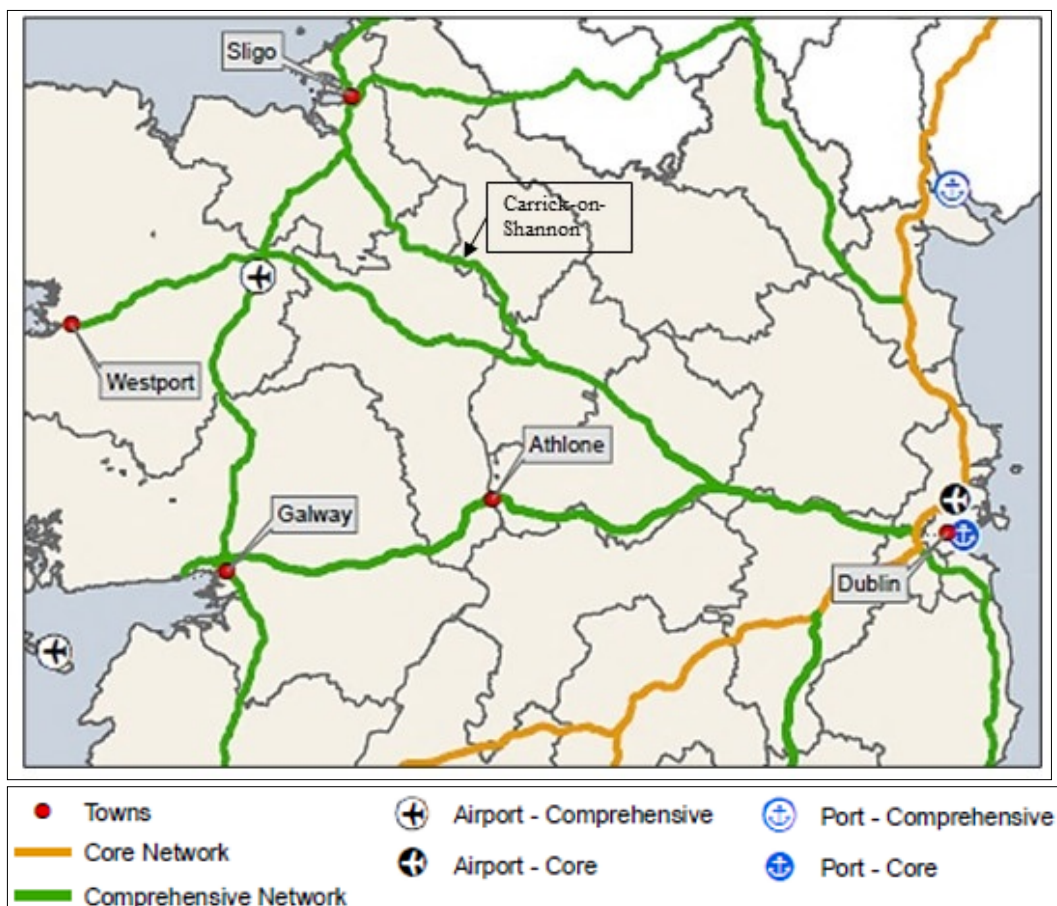


Plate 2.2.1 TEN-T Network connecting Dublin to the West and Northwest

Regulation (EU) Number 1315/2013 sets out the requirements for high quality roads that shall form part of the TEN-T road network, both core (2030)¹ and comprehensive (2050)², and states under Article 17(3), the following:

“High-quality roads shall be specially designed and built for motor traffic, and shall be motorways, express roads or conventional strategic roads”.

Article 10 of the EU Directive No. 1315/2013 sets out the general priorities in the development of the comprehensive network and states:

“In the development of the comprehensive network, general priority shall be given to measures that are necessary for:

¹ The TEN-T Core network is targeted for completion by 2030

² The TEN-T Comprehensive network is targeted for completion by 2050

- a) *Ensuring optimal integration of the transport modes and interoperability within transport modes;*
- b) *Bridging missing links and removing bottlenecks, particularly in cross-border sections;*
- c) *Promoting the efficient and sustainable use of the infrastructure and, where necessary, increasing capacity”*

The N4 is part of the comprehensive TEN-T network. Improvements to the TEN-T comprehensive network would enhance growth to the northwest, thus helping achieve the goal of increased regional connectivity to the northwest.

2.3 Strategic Fit and Priority within the National Road Programme

The National Roads Authority was formally established as an independent statutory body under the Roads Act 1993 with effect from 1 January 1994. The Minister for Transport, Tourism and Sport signed the order for the merger of the National Roads Authority (NRA) with the Railway Procurement Agency (RPA) to establish a single entity called Transport Infrastructure Ireland (TII). The NRA has been known as TII since 1 August 2015. TII's primary function, under the Roads Act 1993, is to secure the provision of a safe and efficient network of national roads. For this purpose, it has overall responsibility for the planning, supervision of construction, and road network maintenance on national roads.

In terms of road development, the objective of TII's capital expenditure programme is to improve the safety and efficiency of the national road network to make it fit for freight, business and social travel. Developing, maintaining, and operating the national road network in a safe, cost effective and sustainable manner generates an improved quality of life and national economic competitiveness.

The three strategic priorities for TII are summarised as follows:

- *Priority 1 – Asset management, Network Rehabilitation and Network Operations;*
- *Priority 2 – National Secondary Roads Improvements, Bottleneck Improvement Projects, safety Projects and Traffic Management projects; and*
- *Priority 3 – Network Improvement Projects.*

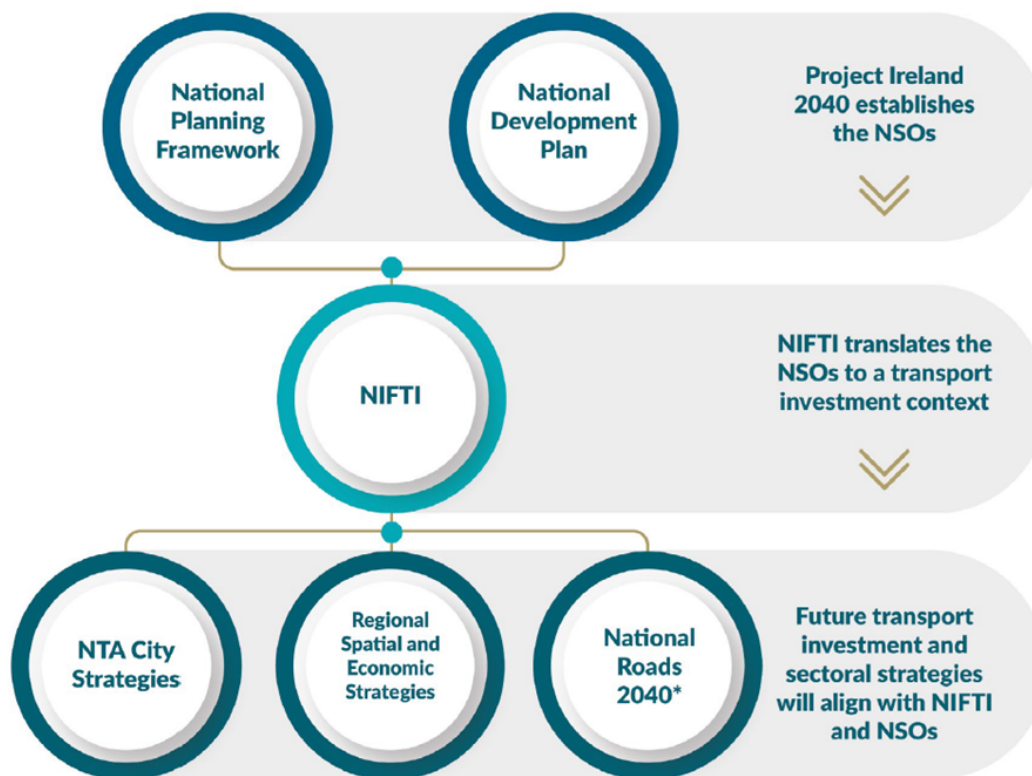
In the above context, it is again noted that the N4 forms part of the Trans-European Transport Network (TEN-T) comprehensive network providing a strategic link between Dublin and Sligo.

2.4 National Policy

The N4 Carrick-on-Shannon to Dromod Project demonstrates compliance with transport and planning policies in the various policy documents, set out below. At a national level, the following policy documents have relevance to the project.

2.4.1 Project Ireland 2040

Project Ireland 2040 is the government’s long-term overarching strategy to make Ireland a better country for all and to build a more resilient and sustainable future. The *National Investment Framework for Transport in Ireland (NIFTI)*³ provides the following graphic to demonstrate the hierarchy of *Project Ireland 2040* strategies and plans.



*Under development

Plate 2.4.1 NIFTI Hierarchy of Project Ireland 2040 Strategies and Plans

2.4.2 Project Ireland 2040 (National Planning Framework)

The National Planning Framework (NPF)⁴ was published by the Government on 16 February 2018. It sets out a strategic planning and development strategy for Ireland and all its regions up to 2040, setting a high-level framework for the co-ordination of a range of national, regional and local authority policies and activities, planning and investment, both public and private.

It is the ambition of the NPF to create a single vision with a shared set of goals for every community across the country. These goals are expressed in the Framework as ‘National Strategic Outcomes’ (NSOs). Whilst all ten NSOs are applicable to this project in so far as they are interlinked and achievable once linked, of note in

³ Department of Transport, 2021. National Investment Framework for Transport in Ireland, December 2021. Available from: <https://www.gov.ie/en/publication/cfae6-national-investment-framework-for-transport-in-ireland-nifti/>

⁴ Government of Ireland, 2018. Project Ireland 2040, National Planning Framework. Available from: <https://npf.ie/wp-content/uploads/Project-Ireland-2040-NPF.pdf>

this instance is NSO 2 which seeks ‘Enhanced Regional Accessibility. In this regard, Section 1.3 of the Framework states the following in relation to enhanced regional accessibility:

“A co-priority is to enhance accessibility between key urban centres of population and their regions. This means ensuring that all regions and urban areas in the country have a high degree of accessibility to Dublin, as well as to each other.”

Under Enhanced Regional Accessibility, the NPF includes the following objective:

“Accessibility to the North-West – Upgrading northern sections of the N4 and N5 routes and sections of the N3/M3 national primary route”

In addition, under this NSO there are specific objectives in relation to inter-urban roads:

- *Maintaining the strategic capacity and safety of national roads network including planning for future capacity enhancements*
- *Improving average journey times targeting an average interurban speed of 90kph*

The N4 National Primary Route is a strategic corridor from Dublin to the northwest and border counties which is of particular importance in enhancing accessibility to some of the most peripheral areas in the northwest (including Leitrim, Roscommon, Sligo and Donegal) and west of the River Shannon.

In this context, improvements to the N4 corridor would facilitate development in the northwest of the country and help achieve the goal of enhanced regional accessibility, as set out in the NPF. In the context of the achievement of NSO 2 of the NPF, a need for the N4 Carrick-on-Shannon to Dromod Project is established at national policy level.

The Plan also identifies the impact Brexit may have on this area and states:

“Better accessibility between the four cities and to the Northern and Western region will enable unrealised potential to be activated as well as better preparing for potential impacts from Brexit”

2.4.3 National Development Plan (2021 - 2030)

The National Development Plan 2021-2030 (NDP)⁵ will drive Ireland’s long term economic, environmental, and social progress across all parts of the country over the period of the plan.

As the constituent parts of Project Ireland 2040, the NDP is fully aligned with the delivery of the outcomes and objectives of the NPF (outlined in Section 2.3.2). It sets out under corresponding Strategic Investment Priorities, investment priorities

⁵ Department of Public Expenditure and Reform, 2021. National Development Plan 2021-2030, October 2021. Available from: <https://www.gov.ie/en/publication/774e2-national-development-plan-2021-2030/>

over the next ten years that will underpin the successful implementation of each of the NSOs in the NPF.

Through NSO 2 (i.e. Enhanced Regional Accessibility), the NDP seeks to *“...enhance intra-regional accessibility through improving transport links between key urban centres of population and their respective regions, as well as improving transport links between the regions.”*

In terms of National Road projects, it is stated that the focus of many is *“to ensure a high degree of accessibility for all regions and urban areas, to other regional centres and to our cities, developing and supporting regional connectivity...”*

Within this list, the NDP includes the N4 Carrick-on-Shannon to Dromod Project. With respect to this, it is stated that *“Under the revised NDP, the National Roads programme will continue to provide for improved connectivity across the years 2021-2030. The Department and Transport Infrastructure Ireland are working to continue to provide continued protection and renewal of the existing National Roads network as well as progressing new National Road projects which will improve compact growth and regional connectivity across the country. Accordingly, there will be significant investment in the national road network across the next 10 years.”*

The N4 Carrick-on-Shannon to Dromod Project will therefore contribute to the NDP’s National Strategic Objectives of Enhanced Regional Accessibility and Compact Growth, connecting communities and encouraging economic activity. It will also lead to the improvement of transport links by providing better journey times and reliability as well as safer routes for road users.

2.4.4 National Investment Framework for Transport in Ireland 2021

NIFTI³ is the Department of Transport’s high-level, strategic framework for future investment in the land transport network. The purpose of NIFTI is to support the delivery of the NPF⁴. This new framework replaces the previous Strategic Investment Framework for Land Transport (SIFLT), which was published by the Department of Transport in 2015.

NIFTI states that *“future transport investment will have to demonstrate alignment with NIFTI and, by extension, support the delivery of the NPF and the National Strategic Outcomes (NSOs).”*

NIFTI commits to investing in the delivery of *“... a safe and sustainable and transport network which supports prosperous communities, promotes balanced development and helps to realise our climate change goals.”*

To deliver future investment in a sustainable manner, NIFTI promotes the most appropriate solution to a given problem or opportunity. It sets out a clear order of progression for developing this solution from both a modal hierarchy, i.e. active travel, public transport followed by private car, and an intervention hierarchy i.e. maintain, optimise, improve existing infrastructure before building new infrastructure, and does recognise that new infrastructure may be the appropriate solution where higher priority interventions do not achieve the objectives. The four

NIFTI Investment Priorities which identify what the Government will invest in are shown on Plate 2.4.2, noting that they are of equal importance:

- Mobility of People & Goods in Urban Areas
- Protection and Renewal
- Decarbonisation
- Enhanced Regional & Rural Connectivity



Plate 2.4.2 NIFTI Investment Priorities

The N4 Carrick-on-Shannon to Dromod Project would contribute to all of these priorities, particularly those of enhancing regional and rural connectivity and mobility of people in urban areas.

These priorities are supplemented by Modal and Intervention Hierarchies which set out how to approach projects, with the initial focus being on alternative modes such as Active Travel and public transport before provision for private vehicles, and thereafter ensuring that the maximum use is achieved with the existing asset before building new infrastructure.



Plate 2.4.3 NIFTI Modal Hierarchy



Plate 2.4.4 NIFTI Intervention Hierarchy

2.4.5 Programme for Government 2020

The Programme for Government 2020⁶ was published on 29 October 2020 and aims to address the issues that arose during the Covid-19 pandemic and outlines the Government’s immediate approach to “*...recover our economy, rebuild our society, renew our communities, and respond to the challenges we face both nationally and internationally.*”

The Programme states that the Government will “*...continue the investment programme in public transport to improve our bus, light rail, commuter, and inter-city rail network across our country.*”

The Programme also commits to maintaining the existing road network to a high standard and funding safety improvements. In relation to transport infrastructure it sets out a commitment to “*...continue to invest in new roads infrastructure to ensure that all parts of Ireland are connected to each other.*”

⁶ Department of the Taoiseach, 2020. Programme for Government: Our Shared Future. Available from: <https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/>

In terms of regional development, it recognises that balanced regional development is critical to reducing pressure on the Greater Dublin area and, in this regard, there is a commitment in the Programme to *“Ensure sufficient investment in the local and regional road network to maintain roads to a proper standard, deal with road safety challenges, and improve regional accessibility”* and to *“Prioritise public transport projects that enhance regional and rural connectivity, in line with the National Planning Framework, for additional funding in the lifetime of a reviewed and extended National Development Plan.”*

The Programme is relevant to this project as it sets out a series of commitments relating to the maintenance and improvement of transport infrastructure so as to improve regional connectivity and funding safety improvements.

We are committed to maintaining the existing road network to a high standard and funding safety improvements.

We will continue to invest in new roads infrastructure to ensure that all parts of Ireland are connected to each other.

The N4 Carrick-on-Shannon to Dromod Project aligns with the Programme in so far as its key project objectives are to improve safety along this section of the N4 and enhance regional connectivity.

2.4.6 Climate Action Plan 2023

The Climate Action Plan, 2023⁷ was published in December 2022 by the Government and is the second annual update to Ireland’s Climate Action Plan 2019 and implements the carbon budgets and sectoral emissions ceiling agreed in July 2022. This Plan is a roadmap for the actions required to halve emissions by 2030 and to reach net zero by 2050. The objective of this Plan is to reduce Ireland’s greenhouse gas emissions across key areas including Electricity, Buildings, Transport, Agriculture, Enterprise and Services and Waste and the Circular Economy.

The challenge presented by the transport sector is reflected in that it represented 15.7% of the country’s total GHG emissions in 2021 and has been the fastest growing source of such emissions over the past three decades. Without significant changes in travel patterns, modal share, and technology, a growth in current transport activity and demand will further diminish our national competitiveness, quality of life, and decarbonisation goals.

The proposed pathway for addressing this issue in the transport sector is focused on *“... “...reducing the use of private passenger cars, a modal shift to transport modes with lower energy consumption (e.g., public transport, walking and cycling) while accelerating the electrification of road transport (e.g., increased use of electric and low-emission vehicles) and increasing biofuel blend rates.”*

⁷ Department of the Environment, Climate and Communications, 2022. Climate Action Plan 2023, December 2022. Available from: <https://www.gov.ie/en/publication/7bd8c-climate-action-plan-2023/>

The Plan calls for a significant cut in transport emissions by 2030 through a series of measures including:

- Change the way we use our road space
- Reduce the total distance driven across all car journeys by 20%
- Walking, cycling and public transport to account for 50% of our journeys
- Nearly 1 in 3 private cars will be Electric Vehicles
- Increase walking and cycling networks

In terms of N4 Carrick-on-Shannon to Dromod Project, the alternatives being considered as part of the option selection process seek to develop a better-connected transportation network for all users, and improvement in safety which could serve to encourage a shift towards more sustainable travel. Furthermore, through reduction in vehicle numbers within settlement areas the proposed project will support the plan by reducing transportation impacts on localised air quality in towns and villages.

2.4.7 National Ports Policy 2013

The National Ports Policy was published by DTTAS in 2013⁸. The report introduces clear categorisation of the ports sector based on significance and the port governance model to be adopted by Ireland.

Dublin Port is a Tier 1 port of National Significance. Tier 1 ports are categorised as ports that:

- *are responsible for 15% to 20% of overall tonnage through Irish ports*
- *have clear potential to lead the development of future port capacity in the medium and long term, when and as required*

In order to provide resilience to the Irish trading networks following potential outcomes of the Brexit process it is important the internal linkages to Tier 1 ports are enhanced. The N4 is the primary link from Sligo, which is a Project Ireland 2040 assigned urban growth centre, as well as linking the northwest of the country to this Tier 1 port.

In addition, Sligo is identified as a 'Port of Regional Significance'. These are ports that serve an important regional purpose and/or specialised trades or maritime tourism. In this regard, the National Ports Policy recognises the importance of these ports in serving their hinterlands and in supporting balanced regional development.

The N4 provides important connectivity to the northwest of the country and to the Port of Sligo and its improvement will support their status and role under the National Ports Policy.

⁸ Department of Transport, 2013. National Ports Policy. Available from: <https://www.gov.ie/en/publication/4aa3cc-national-ports-policy/>

2.4.8 Connecting Ireland Rural Mobility Plan 2021

The Connecting Ireland Rural Mobility Plan is a major national public transport initiative funded by the Department of Transport. Managed by the NTA, the aim of the plan is to increase public transport connectivity, particularly for people living outside the major cities and towns. Connecting Ireland proposes to expand the public transport network in rural areas and to increase service levels via the rollout of new and improved services planned on a phased basis from 2022 to 2025.

A Public Consultation Report was published in November 2021 which summarises some of the local issues outlined through feedback during the event. The report refers to requests for “*a direct link between Carrick-on-Shannon, Elphin and Strokestown*” via public transport.

The Dublin to Sligo bus route is currently served by route 23. “*A minimum service frequency of 2 hours is proposed between ... and between Sligo and Dublin*”.

2.4.9 National Roads 2040 (Draft)

The draft National Roads 2040 (NR2040) is TII’s strategy to enable delivery of Project Ireland 2040, responding to evolving national policy and aligning to NIFTI, with a vision for the “*National Roads network to be an evolving sustainable transport system focused on safety, innovation, accessibility and mobility of people, goods, and services*”. Public Consultation on the strategy ran from 5 August to 14 October 2022. In line with NSO 2, NR2040 refers to “*Upgrading northern sections of the N4 and N5 routes*” to deliver Enhanced Regional Accessibility.

This strategy acknowledges the challenges faced by the transport sector in reaching the country's climate goal of a 50% reduction in GHG emissions by 2030. In order to achieve this goal NR2040 stresses the importance of facilitating active travel measures alongside new road infrastructure. “*While TII has a limited role in behavioural change, the provision of high quality multi modal infrastructure has an important role in enabling and encouraging a modal shift to support a reduction in carbon emissions*”. Towards more urban areas it is vital to combat congestion, especially by giving road users a viable alternative to the private vehicle in the context of shorter trips, typically those under 15 minutes.

2.4.10 Road Safety Authority-Road Safety Strategy 2021 - 2030

The Road Safety Authority (RSA) Road Safety Strategy 2021 – 2030, sets targets to be achieved in terms of road safety in Ireland as well as policies to achieve these targets. Driving the adoption of the Government’s Safe System approach and underpinning this 2021–2030 strategy is Ireland’s long-term goal of achieving Vision Zero (i.e., zero road deaths or serious injuries) by 2050.

To ensure that the road safety interventions and activities undertaken for the 2021 – 2030 strategy continue to be effective and incorporate the latest innovations and developments in the area of road safety, the strategy will feature three phases of action plans, as follows:

- Phase 1: 2021 - 2024

- Phase 2: 2025 - 2027
- Phase 3: 2028 - 2030

50 High impact actions are set out for Phase 1, around a series of themes, including ‘Safe Roads and Roadsides’ and ‘Safe Speeds’. The actions set out under ‘Safe Roads and Roadsides’ include the delivery of *“an average of 60 road safety improvement schemes, an average of four minor realignment schemes on national roads per year”* and an increase in *“the length of divided roads on the national primary network”*.

The advancement of the N4 Carrick-on-Shannon to Dromod Project fundamentally aligns with this RSA strategy.

2.4.11 National Sustainable Mobility Policy 2022 and National Sustainability Mobility Policy Action Plan (2022 - 2025)

The National Sustainability Mobility Policy⁹ was published by the Department of Transport on 7 April 2022. It sets out a strategic framework for the improvement of active travel and public transport measures to encourage the modal shift to more sustainable modes and *“make it easier for people to travel by more sustainable modes – be that walking, cycling or public transport. The Policy aims to support this modal shift between now and 2030 through infrastructure and service improvements, as well as demand management and behavioural change measures”* to help Ireland meet its climate action commitments and supports the National Planning Framework.

The Policy includes an action plan for the next three years framed around 10 Goals. The N4 Carrick-on-Shannon to Dromod Project supports these goals, and specifically supports Goal 1: Improve mobility safety, Goal 4: Expand availability of sustainable mobility in regional and rural areas and Goal 5: Encourage people to choose sustainable mobility over the private car by improving safety for all road users with improved walking and cycling facilities, developing “pedestrian enhancement” and proposals for cycle network and public transport improvements and the inclusion of demand management measures in the Preferred Transport Solution.

2.4.12 Our Rural Future Rural Development Policy 2021 - 2025

Our Rural Future Rural Development Policy 2021 - 2025¹⁰ (Our Rural Future) was published in March 2021 by the Department of Rural and Community Development to provide *“a framework for the development of rural Ireland over the next five years”* to achieve the *“vision of transforming the quality of life and opportunity for people living in rural areas”*. It recognises the opportunities presented by Covid-19 as *“we transition to a climate-neutral society”* for people to return to rural

⁹ Department of Transport, 2022. National Sustainable Mobility Policy. Available from: <https://www.gov.ie/en/publication/848df-national-sustainable-mobility-policy/>

¹⁰ Department of Rural and Community Development, 2021. Our Rural Future: Rural Development Policy 2021-2025. Available from: <https://www.gov.ie/en/publication/4c236-our-rural-future-vision-and-policy-context/>

communities to live, work/be educated and socialise. This will help “*sustain and increase the population of rural areas, revitalise town centres, reduce commuting times, lower transport emissions and improve the quality of life of our people.*”

Chapter 5 of Our Rural Future sets out the vision for revitalising our rural towns and villages to “*support the regeneration, repopulation and development of rural towns and villages to contribute to local and national economic recovery, and to enable people to live and work in a high quality environment*”. The Government will do this by “*investing in projects which support economic activity and increased footfall in our towns and villages, improve the public realm, encourage town centre living, and provide the necessary services infrastructure to support town and village regeneration and sustainable growth*”. In keeping with this and “*to make our rural towns and villages better places in which to meet, live and work*”, the Government published Town Centre First – A Policy Approach for Irish Towns in February 2022.

A key objective of this Project is to facilitate the enhancement of sustainable travel and improved connectivity to public transport opportunities and provide opportunities to enable the successful creation of place making and generation of a vibrant community in Carrick-on-Shannon which aligns with Our Rural Future.

2.4.13 Town Centre First – A Policy Approach for Irish Towns 2022

Town Centre First – A Policy Approach for Irish Towns¹¹ was published in February 2022 by the Department of Rural and Community Development as part of the implementation of Our Rural Future and is central to the vision set out by the department in the Our Rural Future policy. *It sets out the structures and funding that we will put in place at a national level and at a local level to support our towns to design, deliver and implement a plan that can reimagine each town. A plan that captures their important economic and social role in our society; a plan that recognises the importance of place making; and a plan which delivers vibrant lived-in spaces in the heart of our towns. While it is focussed on our towns, it establishes a framework and principles which can equally be applied to the development of our rural villages.*

Currently the N4 currently passes through Carrick-on-Shannon with circa 650 HCVs crossing the singular bridge over the River Shannon in the town on a daily basis. This bridge crossing also accommodates all other modes such as public transport, cycling, and walking. This bridge and approach streets are also a place at the heart of the amenity and attraction of this town, and traffic volumes at this level with this proportion of HCVs detracts totally from the sense of place. This in turn is having a negative impact on business and tourism due to traffic congestion, noise and air pollution.

The project aligns with Town Centre First as it seeks to address these issues within Carrick-on-Shannon.

¹¹ Department of Rural and Community Development, 2022. Town Centre First Policy 2021 - 2025. Available from: <https://www.gov.ie/en/publication/473d3-town-centre-first-policy/>

2.5 Regional Policy

2.5.1 Regional Spatial and Economic Strategy for the Northern and Western Regional Assembly (2020)

The Regional Spatial and Economic Strategy (RSES)¹² for the Northern and Western Regional Assembly was adopted in 2020 and sets out a 12-year regional development framework to guide the development of the region. The strategy is focused on delivering effective regional development for the northern and western region and, in doing so, it seeks to ensure coordination between the City and County Development Plans of the Local Authorities in the Region.

In discussing the region, the RSES acknowledges that it has several historical challenges impacting on its competitiveness and sustainability, most notably the comparably lower level of investment in enabling infrastructures such as ports, harbours, roads, rail and utilities. Some of the key responses are set out in Section 3.7.2 and include securing enhanced investment in transport infrastructure, on which it is stated:

To take full advantage of the opportunities offered by the Atlantic Economic Corridor, it will be necessary to pursue the enhancement or upgrading of national roads N15 (to Letterkenny) and N17 (to Galway), as well as the strengthening of connections to the east coast via N4 (to Dublin) and N16 (to Dundalk and Belfast).

The key town of Carrick-on-Shannon is addressed in Section 3.8.5 of the RSES, where it is acknowledged that it plays a strategic role in the region. Key future priorities include:

- *Support the development of the N4 By-Pass of Carrick-on-Shannon*

Chapter 6 of the RSES is concerned with Growth Ambition No.3 - connectivity and the development of a connected region. The purpose of this chapter of the RSES is to identify key issues relevant to the provision of transport and digital infrastructure, the key options for addressing same, and the subsequent financial implications for the next 20 years. Section 6.2 acknowledges:

Transport has a major impact on the quality of life, the level of community interaction, the economic prosperity and the environmental quality of the region. To enable effective regional development, it will be necessary for prioritised investment in roads and environmentally sustainable public transport that will provide for high-quality inter-regional and intra-regional connectivity to places and markets, including international accessibility.

It is also acknowledged that the region is highly dependent upon the private car for travel to work and education, with approximately 70% of the population having commuted by private car according to the Census 2016, up from 66% in 2011. 'High-level Transport Principles' identified include:

¹² The Northern and Western Regional Assembly, 2020. Regional Spatial and Economic Strategy 2020 - 2032 (RSES). Available from: <https://www.nwra.ie/rses/>

- Support improved strategic and local connectivity
- Expand attractive public transport and other alternatives to car transport
- Recognise the role of the car and cater appropriately for it
- Reduce congestion; and cater to the demands associated with longer-term population and employment growth, in a sustainable manner

These principles are in turn developed through what are termed ‘Priority Core Outcomes’, to be delivered across the region, and including:

- *Strengthening inter-regional connectivity, through the improvement of inter-urban road and rail connectivity, with a particular emphasis on improved connectivity between the largest urban centres and access to ports and airports, for the movement of both people and goods;*
- *Protecting the capacity of inter-urban road connectivity within and around the largest cities, ports and airports, through effective traffic management and transport demand management;*
- *Strengthening public transport connectivity between the Assembly Area’s city and large towns, and between the large towns, with improved services and reliable journey times;*

Section 6.3 of the RSES addresses transport investment priorities and first acknowledges that high-quality accessibility to international gateways, located both within and outside of the region, for people and internationally traded goods/services, is of fundamental importance to economic competitiveness at regional and national levels.

Section 6.3.2 focuses on the region’s road network stating that both the National Planning Framework and the National Development Plan strongly acknowledge that accessibility from the northern and western region will need to be significantly improved. It further states that the national road network is a critical enabler in facilitating an island-wide sustainable national transport system and that improving and maintaining the assets of all national roads is critical and must be maintained, including the requirement to safeguard the strategic links into urban centres identified as key economic drivers in the region.

It is stated that it is not intended to establish an exhaustive list of road schemes for development over the period of the RSES. Instead, it is intended that schemes are developed in accordance with all relevant legislation and guidelines and in accordance with the RSES’s objectives and priorities. The following Regional Policy Objectives (RPOs) are set out in relation to national roads:

RPO 6.5 *The capacity and safety of the region’s land transport networks will be managed and enhanced to ensure their optimal use, thus giving effect to National Strategic Outcome No.2 and maintaining the strategic capacity and safety of the national roads network including planning for future capacity enhancements.*

RPO 6.7 *In accordance with National Development Plan investment commitments to progress the following schemes through pre-appraisal*

and early planning, the following projects shall be progressed through pre-appraisal and early planning in the short term and shall thereafter proceed to construction and be delivered to an appropriate level of service within the lifetime of the RSES:

- *N2 Clontibret to the Border connecting to the A5*
- *N2 Ardee to south of Castleblaney*
- *N3 Virginia Bypass*
- *N4 Carrick-on-Shannon to Dromod*
- *N13 Ballybofey Transoral Bypass*
- *N13/N14/N56 Letterkenny Bypass and Dual Carriageway to Manorcunningham.*
- *N14 Manorcunningham to Lifford*
- *N17 Knock to Collooney*

RPO 4.9 addresses the development of key towns, including Carrick-on-Shannon. It states:

To ensure provision is made for the expansion in accommodation, and facilities within key destination towns, such as Carrick on Shannon, Cavan, Roscommon Town and Athlone, together with necessary supporting infrastructural investments, including improvements in the public realm, transport links, accommodation, the night-time economy, and sustainable development of our natural and built economy.

Improvements to the N4 corridor strongly align with the objectives and commitments set out in the RSES. It would facilitate development in the northwest of the country and help achieve the goal of enhanced regional connectivity, particularly given that Cortober/Carrick-on-Shannon remains the only regional strategic centre on the N4 between Dublin and Sligo which has not been bypassed to date and has become a bottleneck for long distance and regional traffic.

It is also stated in the RSES that it is a key future priority for Carrick-on-Shannon to prepare a joint Local Area Plan with Roscommon County Council to deliver an integrated framework for the future development of the urban area of Carrick-on-Shannon/Cortober within 3 years of the adoption of the strategy.

2.6 Local Policy

2.6.1 Leitrim County Development Plan 2015

Section 1.6.1 of the Leitrim County Development Plan 2015¹³, addressing the County's national and regional context, highlights that Leitrim is traversed by three main arterial routes; the N4, the N16 and the N15 and that Carrick-on-Shannon is located on a 'National Transport Corridor' (the N4 and the Sligo-Dublin rail line).

¹³ Leitrim County Council, 2015. Leitrim County Development Plan 2015-2021. Available from: http://www.leitrimcoco.ie/eng/Services_A-Z/Planning-and-Development/Development-Plans/County-Development-Plan-2015-2021/County_Development_Plan_2015-2021/County-Development-Plan-2015-2022-Written-Statement.pdf

Section 2.18 of the Plan discusses transport infrastructure and acknowledges that a modern, efficient, and safe road network is vital for the future development of Leitrim. The three National Primary Routes, N15, N16 and N4 national roads, together with Regional Route R280, are highlighted as forming the principle ‘trans-boundary’ transport corridors within the county.

Section 4.4.6 addresses road development and sets out the following relevant policies:

Policy 54 *It is the policy of the Council to upgrade the National Primary Routes serving the County. This can be achieved by carrying out certain road improvements along these routes and in particular completing the following road schemes within the lifetime of the Plan:*

- *N4 Carrick-on-Shannon to Dromod (including the Carrick-on-Shannon Bypass)*
- *N16 Glenfarne to Glencar (including the Manorhamilton Bypass)*

It is also stated that preferred routes have been chosen for both of these routes and are detailed in Section 4.6.6 and Map 4.4, Map 4.5, Map 4.6 and 4.7 of the Plan.

Policy 55 *It is the policy of the Council to ensure that proposed developments do not prejudice the implementation of any identified/proposed road scheme, whether this relates to the construction of new roads, improvements to or widening of/or re-alignments of existing roads, particularly in relation to National and Regional roads.*

Policy 56 *It is the policy of the Council to preserve, free from development, proposed road realignments / improvement lines and associated corridors, where such development would prejudice the implementation of the scheme.*

The N4 national primary route is discussed in detail, as follows:

N4 National Primary Route *The N4 was significantly upgraded in the early 1990s and the Dromod/Roosky Bypass (Class 2 Dual Carriageway) was completed in 2007. This has greatly improved access between Dublin, Leitrim and the Northwest region. The Council supports the proposed construction of the Carrick-on-Shannon to Dromod Road Scheme; and this project is currently awaiting approval to publish the Compulsory Purchase Order and the Environmental Impact Statement.*

The Council will protect and improve the carrying capacity of the existing N4 through Carrick-on-Shannon pending completion of the new bypass through conventional and innovative /traffic management initiatives.

Objective 30 (b) *It is an objective of the Council to complete the design and construct the proposed Carrick-on-Shannon bypass and to upgrade/realign it as necessary from the western end of the Dromod-Roosky By Pass at Moher/Finnalaghta townlands to link into the Carrick-on-Shannon by-pass. See Map 4.4 N4 Carrick-on-Shannon to Dromod Preferred Route.*

The N4 Carrick-on-Shannon to Dromod Project aligns with the central objectives the County Development Plan, particularly those relating to improving regional integration and connectivity.

It is of note that Leitrim County Council have commenced the preparation of a new County Development Plan.

2.6.2 Draft Leitrim County Development Plan, 2023 – 2029

The Leitrim County Development Plan was adopted on 7 February 2023 and takes effect from 21 March 2023. Acknowledging that accessibility and mobility for all sections of the community is vital for the future development of the county, the strategic aim of Chapter 8, Transport, of the Plan is as follows:

“To support increased use of sustainable modes of transport; the integration of spatial planning more closely with transport planning to reduce the need for travel; enhancing existing strategic transportation infrastructure in the county and regional accessibility; transitioning towards a low carbon energy efficient transport system, and the development of a safer, more efficient, effective and connected transport system within Co. Leitrim”

The following policies are outlined:

ILU POL 3 To support the maintenance and optimisation of the county’s existing transport infrastructure to ensure its optimal use in line with National with Investment Framework for Transport in Ireland’s (NIFTI’s) modal hierarchy and seek to undertake appropriate traffic management measures to prioritise road users in line with the modal hierarchy.

ILU POL 4 To strengthen inter-regional connectivity, through the improvement of inter-urban road, bus and rail connectivity, with a particular emphasis on improved connectivity between the largest urban centres and access to ports and airports, for the movement of both people and goods

ILU POL 6 New transport infrastructure projects, including blueways and greenways, that are not already provided for by existing plans/programmes, which have been subject to environmental assessment, or are not already permitted, will be subject to feasibility assessment, considering need, environmental sensitivities as identified in the SEA Environmental Report, and objectives relating to sustainable mobility. Where feasibility is established, a Corridor and Route Selection Process will be undertaken, where appropriate, in two stages: Stage 1 – Route Corridor Identification, Evaluation and Selection; and Stage 2 – Route Identification, Evaluation and Selection. This Corridor and Route Selection Process will not be applicable to national roads schemes which are required to be progressed in accordance with statutory processes and TII Publications, including the Project Management Guidelines and Project Appraisal Guidelines.

MSSM POL 1 To support sustainable mobility, enhanced regional accessibility and connectivity within Co. Leitrim in accordance with the National Policy Outcomes of the National Planning Framework 2040 and the National Development Plan.

The Plan states an acknowledgement of the importance of county's strategic road infrastructure in providing intra and inter county movement of goods and services. In this respect, the Plan states that the Council will support TII in the progression of a series of projects (in table 8.4), including the N4 Carrick-on-Shannon to Dromod Project.

Section 8.11.2.1 of the Plan specifically address the N4 Carrick-on-Shannon to Dromod Project, and states:

“The N4 is particularly critical in terms of wider connectivity, linking the Regional Growth Centres of Sligo to Dublin in addition to the benefit of enhanced regional and national connectivity to the Key Town of Carrick-on-Shannon. The RSES, consistent with National Development Plan investment commitments, seeks to progress the N4 Carrick-on-Shannon to Dromod scheme through pre-appraisal and early planning and shall thereafter proceed to construction and be delivered to an appropriate level of service within the lifetime of the RSES. The development of a transportation solution to the existing congestion experienced in Carrick-on-Shannon on the national and regional road network is a critical element in the Transportation Strategy being pursued by this Council. A solution is needed to address transportation issues which include congestion on the main routes approaching and, within the town centre. This will be further developed in a Local Transport Plan to be prepared in tandem with the Carrick-on-Shannon/Cortober Local Area Plan which shall seek to maximise the consideration of opportunities to improve public transportation options and improved non-motorised modal shift.

Details on the Preferred Transport Solution were announced in May 2022 comprising of the following components: (1) Active Travel Component (2) Public Transport Component (3) Demand Management Measures and (4) a Road Component.

The non-road components advocate improvements to the walking and cycling infrastructure within Carrick-on-Shannon and Cortober, in addition to enhancements to local bus services and specific interventions to control demand and reduce trips, all of which would support an increase in sustainable trip making. This, in turn, could lead to a reduction in traffic levels and congestion in the town.

The road component of the Preferred Transport Solution includes the development of a new urban street in Carrick-on-Shannon, linking the Castlecara Road just south of St. Mary's GAA club to the Leitrim Road (R280) north of Lis Cara housing development, in addition to a Preferred

Option Corridor in which the existing road infrastructure can be upgraded or new infrastructure can be built. The corridor deviates from the existing N4 to the west of Cortober, Co. Roscommon where it progresses off-line south of the existing N4, north of the Dublin-Sligo railway line. The corridor progresses east, crossing the R368 and subsequently crossing the River Shannon in the townland of Cordrehid on the Cortober side of the River Shannon over to the townland of Attirory on the Carrick-on-Shannon side of the River Shannon. The corridor joins the existing N4 again in the townland of Lisseeghan. The corridor then progresses eastwards along the line of the existing N4 and ceases in the townland of Faulties, as announced in May 2022.”

It is also highlighted in the Plan that some of the designated cycling network within Carrick-on-Shannon is not fully integrated or segregated from traffic, with several routes also coinciding with narrow carriageways or busy junctions and thoroughfares such as the Shannon Roundabout on the N4 road. In response, the Plan states the Council will liaise with relevant stakeholders in developing a Local Transport Plan to inform the LAP for Carrick-on-Shannon/Cortober, Policy Objective MSSM OBJ 1 gives effect to this.

The N4 Carrick-on-Shannon to Dromond Project strongly aligns with and will help give effect to all of the above policies and objectives.

2.6.3 Roscommon County Development Plan, 2022 - 2028

The Roscommon County Development Plan, 2022 - 2028¹⁴ was adopted at a Special Planning Meeting on the 8 March 2022 and took effect from 19 April 2022.

Chapter 7 of the Plan identifies the County Council’s outlook in relation to *Infrastructure, Transport and Communications*. Section 7.4 relates specifically to road transportation and movement. The opening statement in this movement states:

Both the NPF and the RSES for the Northern and Western Region acknowledge that accessibility between centres of scale needs to be significantly improved.

The Plan identifies the requirement for road upgrades for the future development of the county “ensuring sufficient connectivity within the county, as well as wider regional and national connectivity, as advocated in Growth Ambition 3”.

In this respect, it notes that “the M6, N4, N5, N60, N61, N63 and N83 traverse the county, providing important linkages and networks within, into and out of the county” and that national primary roads in the county equate to 85.68km in length (Table 7.1).

The Plan indicates two key National Road Projects relating to the N4 and N5. It also acknowledges continuing a programme of pavement improvement and

¹⁴ Roscommon County Council (2022) Roscommon County Development Plan, 2022-2028. Available from; <https://www.rosdevplan.ie/roscommon-county-development-plan-2022-2028/>

maintenance, signage and markings and winter maintenance as per annual programme of works on an ongoing annual basis along the M6, N4 and N5.

In relation to the N4 specifically, Table 7.2 of the Plan states:

Route	Proposal	Approximate Location	Timeframe 2022-2028
N4	N4 Carrick-on-Shannon to Dromod Road Project	Drumharlow townland in Roscommon to Faulties townland in Co. Leitrim	Co-operate with Leitrim Co. Co. (as the lead Authority) to ensure publication of Statutory Planning documentation (subject to TII approval)

The following Infrastructure, Transport and Communications policy objectives support this proposal:

ITC 7.12 *Provide a safe and modern road network throughout the county, having regard to national and regional policies and guidelines as well as liaising with national agencies.*

ITC 7.13 *Support and provide for improvements to the national road network, including reserving corridors for proposed routes, free of development, so as not to compromise future road scheme.*

ITC 7.14 *Maintain and protect the safety, capacity and efficiency of national roads and associated junctions in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities (DECLG, 2012).*

ITC 7.19 *Seek to implement the Road Improvement Schemes indicated in Table 7.2.*

The Plan acknowledges that Carrick-on-Shannon has been designated as a Key Town in the RSES. It is further acknowledged that the settlement of Cortober in County Roscommon forms part of the wider Carrick-on-Shannon settlement and will continue to support the future overall development of the town and also that a key future priority of the RSES is the preparation of a Joint Local Area Plan for Carrick-on-Shannon and Cortober.

The proposed Joint LAP is to deliver an integrated framework for the future development of the settlement. Policy objectives CS 2.10 and CS 2.11 reflect this:

CS 2.10 *Support the continued growth and sustainable development of Roscommon, to act as a growth driver in the region and to fulfil its role as a Key Town and to function as the County Town.*

CS 2.11 *Prepare a Local Area Plan (LAP) for Roscommon, to align with the RSES and this Core Strategy.*

2.6.4 Carrick-on-Shannon Local Area Plan, 2010 - 2019

This Carrick-on-Shannon Local Area Plan, 2010¹⁵ has a stated period of 2010 - 2019, however it is still in force. It will be replaced by the proposed joint Local Area Plan for Carrick-on-Shannon and Cortober as referenced in the Draft Leitrim County Development Plan 2023 - 2029.

In the town SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) in Section 1.6 of the Plan, the bypass project is identified as an opportunity to create development in the town centre. That fact that it has been delayed due to the economic downturn is seen as a weakness. The opportunities arising from the construction of the bypass are discussed further in section 2.04 on urban design.

The development of the proposed new bypass for the town as part of the upgrading of the national road network, presents major opportunities for the town. This plan is geared to maximise the benefits that will arise from this investment. This plan was informed by the previous preferred route for the N4 Carrick-on-Shannon bypass. The new road is likely to form a natural boundary to the town. It will allow the town to reconnect with the Shannon and Cortober by removing extraneous traffic. This is also being facilitated by a new footbridge (see photo 2.6a) which was completed in May 2010.

Section 2.05 addresses Transportation and states the following:

The Council recognises that Carrick-on-Shannon occupies a strategic position on the national primary road network being on the route of the N4 strategic radial corridor linking the Sligo Gateway to the Dublin Metropolitan Gateway via the Midlands Gateway. The Council recognises the importance of ensuring that the carrying capacity, operation efficiency, safety and significant national investment being made in National Roads should be protected.

The only National Roads project as it applies to Carrick-on-Shannon is the N4 Carrick-on-Shannon to Dromod Road Scheme. While a preferred route had been identified, this project is under review again and Map No.8 indicates the latest constraint study area as it applies to the town boundary of Carrick-on-Shannon. The protection of the capacity of the existing national route (N4) will be maintained until such time as the new route has been developed. In the interim the Council will ensure that proposed developments do not prejudice the implementation of this Scheme.

Section 1.04.02 relates to roads and reads as follows:

The limited capacity of the Shannon Bridge and the Leitrim Rd. junction still continue to act as bottlenecks in the town, causing traffic congestion. In time they are to be relieved with the construction of the proposed by-pass, the route of which is currently being re-considered (see Map No.8 showing the study area for the proposed Carrick-on-Shannon By-Pass).

¹⁵ Leitrim Council, 2010. Carrick-on-Shannon Local Area Plan 2010 - 2019. Available from http://www.leitrimcoco.ie/eng/Services_A-Z/Planning-and-Development/Development-Plans/Local-Area-Plan/Amendment-2-Carrick-on-Shannon-2010 - 2019/

The restricted nature of the road network in the town may act as a brake on future development if new relief roads are not provided. This plan identifies key links which will facilitate ease of movement through the town.

Map 8 of the Plan illustrates the ‘Study Area for Proposed Carrick-on-Shannon By-Pass and Preliminary Road Reserve at Hartley Junction’ but noting that this map references the earlier study.

The following associated policy objectives are relevant:

Policy 5.1a *It is the policy of the Council to construct a by-pass around the town as part of the N4 national primary route, in partnership with the NRA. A preferred route has been identified. No new development (other than minor works or alterations to existing premises) will be allowed within the route corridor as identified in Map No. 8 without the consent of the NRA*

Policy 5.1b *It is the policy of the Council to ensure that proposed developments do not prejudice the implementation of the Carrick By-Pass.*

Policy 5.1c *It is the policy of the Council to protect the safety, carrying capacity and efficiency of the existing (and future) N4.*

Policy 5.1h *It is the policy of the Council to ensure new roads are designed and built to a standard appropriate for their role. Details of design standards are set out in Section Three of this plan.*

2.6.5 Cortober Local Area Plan, 2014

The Cortober Local Area Plan 2014¹⁶ was prepared in conjunction with the Roscommon County Development Plan, 2014. It is still in force but will be replaced by the proposed joint Local Area Plan for Carrick-on-Shannon and Cortober as referenced in the Roscommon County Development Plan 2022 - 2028.

It is noted in the LAP that Cortober is strategically situated in close proximity to Carrick-on-Shannon and is bound to the east by the River Shannon. Among the principal land use issues identified in the area is a tendency for the developed area to sprawl, particularly towards the west, along the N4. Chapter 4 addresses ‘Roads and Transport Infrastructure’ where the Plan’s strategic goal is to “*develop a safer, more efficient and integrated transport system that will improve the road network and other forms of transport to serve the population of Cortober*”.

In section 4.1 there is discussion on the impact of the N4 in the context of existing development in the area and the potential to impact on the development of new land uses in the future.

The Council acknowledges that there are problems with the level of pedestrian accessibility in the area with the N4 (National Route) and its

¹⁶ Roscommon County Council, 2014. Cortober Area Plan 2014 - 2020. Available from: http://www.roscommoncoco.ie/en/Services/Planning/Roscommon-County-Council-Planning-Publications/Roscommon-County-Council-Planning-Publications/County_Development_Plan_2014_-_2020/County-Development-Plan-2014_-_2020/2-Cortober-Area-Plan.pdf

associated heavy traffic providing a barrier between several residential and commercial areas. Likewise, there is a shortfall in public footpath provision along both the R368 and R370 which is a disincentive for pedestrian access from residential areas to the Neighborhood Centre and commercial areas.

Relevant policy objectives include:

Policy 4.1 *Ensure that all development proposals within Cortober fulfil traffic safety and car parking requirements.*

Policy 4.2 *Provide adequate pedestrian paths and cycle tracks along all main routes in the area to ensure safety and convenient access.*

Policy 4.3 *Improve the pedestrian environment in the area, provide pedestrian crossings and good quality pavements in the area.*

Policy 4.8 *Ensure the provision of a comprehensive traffic system which is compatible with the pattern of land use in the area and with through traffic.*

Policy 4.9 *Minimise the number of new access points onto Regional and National Routes in order to maintain traffic capacity and minimise traffic hazard.*

2.7 Project Specific Need

2.7.1 Overview

The Phase 1 (Concept and Feasibility) studies undertaken in 2020 identified numerous transportation issues on the N4 corridor as outlined in Section 1.5.2 and concluded that there was strong justification for advancing a project to provide solutions to these transportation issues.

It is necessary to consider the evolution of the N4 in the context of its function locally and nationally to fully understand the origins of the transportation issues identified above. The N4 serves as the principal internal distribution route in Carrick-on-Shannon as well as being the major route providing regional connectivity to the northwest.

The majority of early settlements in Ireland originated around our waterways as they provided a source of food and fresh water as well as forming a transport network for trading and commerce. Carrick-on-Shannon and Cortober are typical of such settlements and developed east and west of the River Shannon respectively. Mapping published as early as 1777 in George Taylor & Andrew Skinner's "*Maps of The Roads of Ireland*" illustrates the roads connecting these two towns via the river crossing of the River Shannon.

The settlements grew out from the river crossing point as the river was synonymous with trading routes and access to the transport network. Thus, from the outset the focal point was the river crossing point with the internal street network of the settlement simply extending along the road leading to the crossing point. Thereafter, as the settlement grew, some internal streets were laid out, but they all had a

tendency to lead to the original principal route, thus converging back to the single river crossing point.

The expansion of Carrick-on-Shannon as a market and post town on the Dublin to Sligo mail coach road through the 1800s was supported by the completion of the new bridge across the river in the 1840s, which exists today as the N4 national primary road, plus the extension of the Midland Great Western Railway from Mullingar to Sligo. Extensive dredging works were undertaken on the River Shannon, the Jamestown Canal was cut, the locks at Drumsna and Knockvicar were built, and new quays were constructed at Carrick-on-Shannon. This infrastructure made Carrick-on-Shannon a major trading depot for the next century.

Between 1829 and 1842 the Ordnance Survey of Ireland completed the first ever large-scale survey of the entire country. The map for Carrick-on-Shannon as seen on Plate 2.7.1 shows the growth of a linear settlement along the principal Dublin to Sligo Road, with all eventually leading back to the original crossing point of the river.

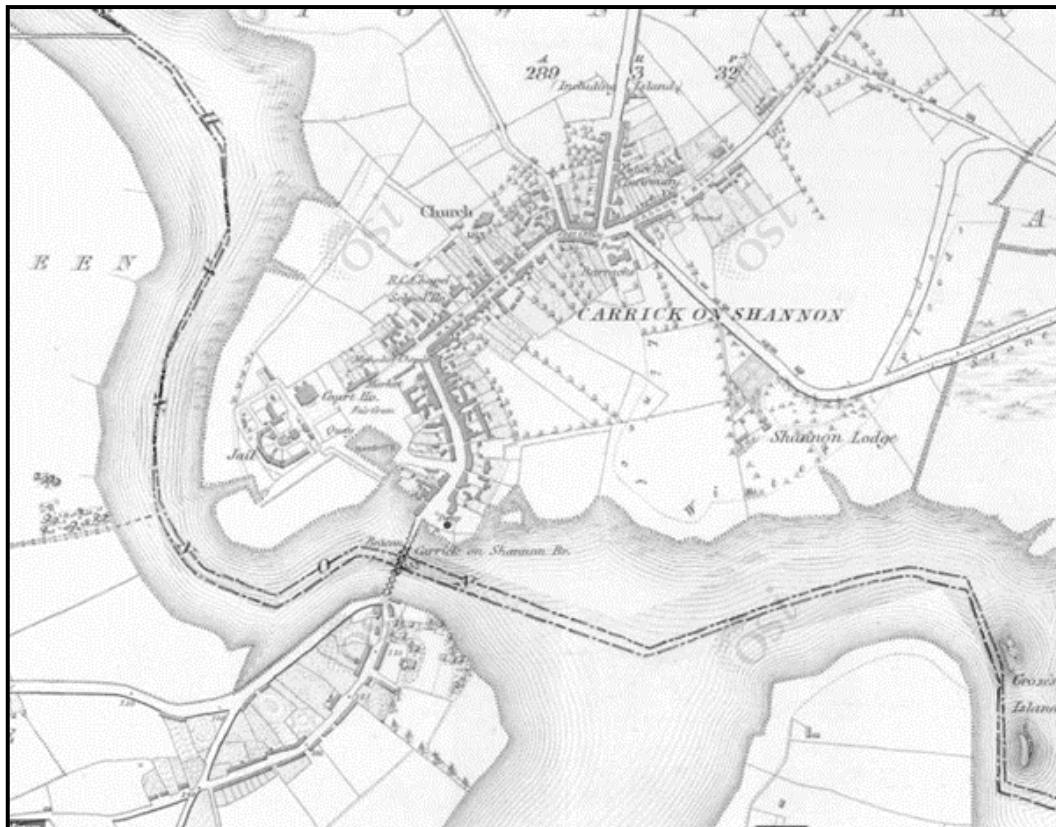


Plate 2.7.1 Extract from First Edition Six Inch Maps (1829 to 1842)

The town expanded either side of this principal axis and the regional roads to the north also experienced some growth over the next 100 years. In 1984, the Inner Relief Road was constructed and essentially provided an alternative road to the Main Street adjacent to the River Shannon, but it converged back to the single river crossing again. The Inner Relief Road subsequently was designated the N4 national primary road with the same bridge crossing of the River Shannon retained as the N4.

Since 1995, the town has turned to embrace the River Shannon with various businesses and enterprises developing along the Inner Relief Road. This was followed by the relocation of retail from the Main Street to large retail centres off the N4 in Cortober to the west and in Carrick-on-Shannon to the east of the river. Furthermore, large residential estates have been constructed in Carrick-on-Shannon since 2000 with direct access onto the N4 and regional roads which are the radials entering the town from the northeast and southwest. This transition can be seen in Plate 2.7.2 and Plate 2.7.3.

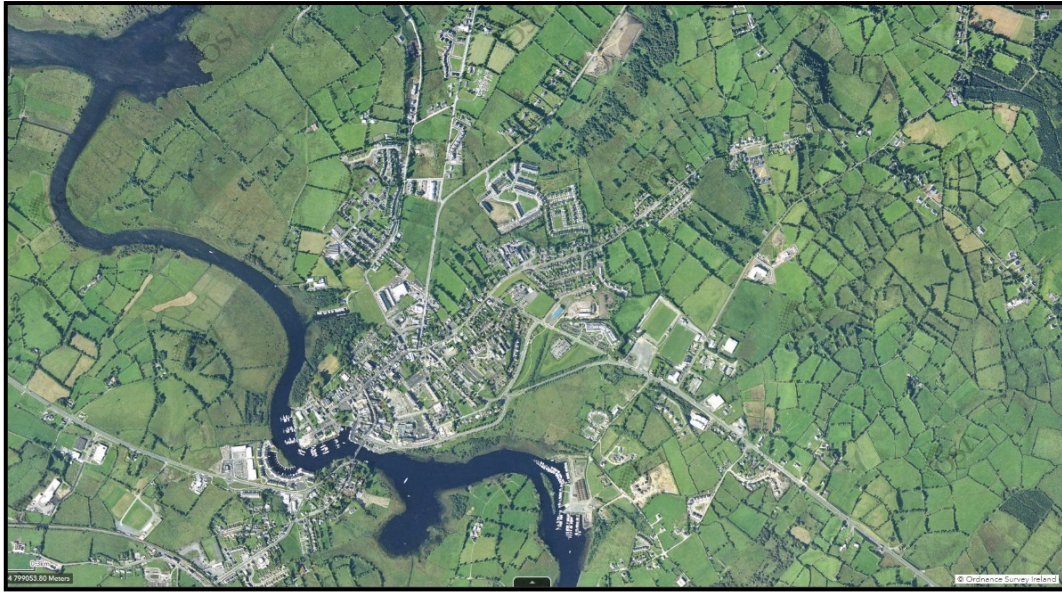


Plate 2.7.2 Extract from 2005 Aerial Mapping



Plate 2.7.3 Extract from 2005 to 2012 Aerial Mapping

The implications of continuing to build around the principal axis of the N4 is that most of the internal journeys in Carrick-on-Shannon today require passage along this single link. The radial routes that converge on Carrick-on-Shannon have been used to provide access to development that has taken place. These radial routes are

then in turn connected to each other by the existing N4. This makes the N4 pivotal for internal circulation within the town, with virtually every trip either for education or retail purposes having to travel on the N4.

Plate 2.7.4 presents a graphical illustration of the existing N4 in the context of its current role in serving both a local and a national function whilst also providing the only crossing of the River Shannon. This is at the core of the transport problem which has been identified in Phase 1 and for which a solution is sought. Journeys to access education, recreation areas, retail and residential are all using the existing N4 for a part of their journey. This is compounded by the fact that the N4 link across the river comprises a bridge dating from 1846, almost 200 years old, which is sub-standard to meet either the N4 TEN-T requirements or for use by all modes in a local context, see Plate 2.7.5. Furthermore, there is no backup and no resilience in the network as evidenced when this bridge is blocked due to an incident or accident.

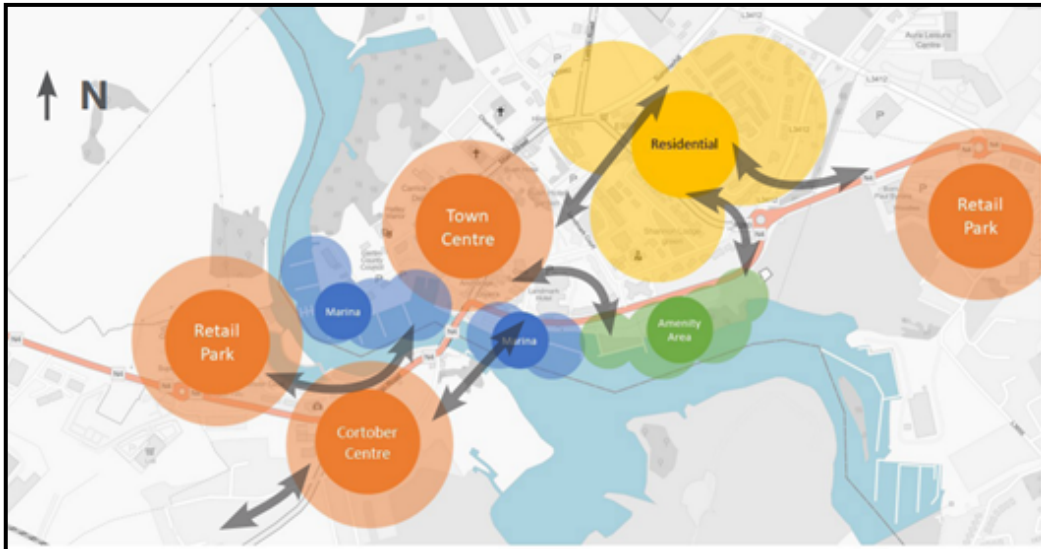


Plate 2.7.4 Existing Road and Street Layout



Plate 2.7.5 Existing River Shannon Bridge, Carrick-on-Shannon

This project needs to address the specific requirement of the N4 to be a high-quality road to serve an important role in long-distance freight and passenger traffic to connect peripheral regions and to integrate the main urban and economic centres, and includes the need for a new bridge crossing the River Shannon.

2.7.2 Existing Deficiencies on the N4 Corridor

This section of the report provides an overview of the existing deficiencies along the corridor within the study area in the context of establishing and supporting the need for the project. The overriding need for the upgrade to this section of the N4 national primary road is to remove existing deficiencies which impose significant restrictions on the efficiency and safety of the existing transport network, with the congestion within Carrick-on-Shannon and the sub-optimal infrastructure provision for the TEN-T network being the most significant deficiencies.

2.7.2.1 Efficiency of Existing N4 TEN-T

The TEN-T designation carries a requirement to be a high-quality road to deliver on its role in providing connectivity to the peripheral regions as well as interconnecting economic centres. The horizontal alignment of the existing N4 within the study area, outside of the speed restricted areas in Carrick-on-Shannon and Cortober, is made up of 19% of Band C curves which provide long sections with uncertain overtaking conditions, thus creating hazardous and uncomfortable conditions for road users and as such are not recommended due to safety issues. This sub-optimal alignment does not align with the functional requirements of the N4 as part of the TEN-T network.

There are 197 direct accesses on the N4 mainline which included 113 farm accesses, 58 domestic accesses, 24 commercial accesses and 2 pedestrian/cycle accesses. A total of 150 of these accesses occur outside of the urban area. There is a high concentration of accesses on the approaches to Carrick-on-Shannon/Cortober, a 100km/h section, and significant clusters of accesses to the south of the junction with the R201 and on the approaches to Aghamore village. In total, 52 junctions were identified along the N4 mainline within the area under consideration with 44 junctions connecting local roads and the remaining connecting regional roads. These direct accesses and junctions reduce the efficiency of the N4 as a strategic corridor in addition to presenting potential collision risks.

The majority of the N4 corridor has a speed limit of 100km/h within the study area. This reduces to 50km/h through Carrick-on-Shannon and Aghamore. There is an intermediate speed limit of 60km/h on the western side of Carrick-on-Shannon and also north and south of Aghamore. As set out in Chapter 3, journey time reliability is compromised by the congestion in Carrick-on-Shannon, again which impacts on the functionality of the TEN-T network.

The N4 currently crosses the River Shannon at Carrick-on-Shannon via a narrow masonry arch bridge, dating from 1846, which is sub-standard in terms of alignment and cross-section as seen on Plate 2.7.6. The bridge currently caters for all 'through' traffic, much of the local and regional traffic and non-motorised users (NMUs). It is noted that in order to avoid mounting the footpath HGVs turning onto the bridge cross into the opposite carriageway, forcing oncoming traffic to give way, as the available carriageway width on the bridge is less than 5.8m for the extent of the river crossing.

In the period 1999 to 2017, traffic flow and the serviceability of the N4 along the section under consideration was seriously affected for extended durations. Flooding

has led to the closure and associated diversion of the route on three separate occasions, with the N4 being closed for a period of 19 days in November 2009. In December 2017, the closure of the N4 immediately west of the bridge required traffic travelling west to divert via Roosky along the R371 regional road, N5 national primary road and the N61 national secondary road before re-joining the N4 at Boyle adding approximately 20km to the journey. Eastbound traffic diverted at Ardcarne along regional roads R285, R284, R280 and R299 before joining the N4 at Drumsna adding approximately 12km to the journey – refer to Plate 2.7.7. While the westbound diversion route can accommodate national road traffic in the short term the eastbound diversion route is wholly inadequate for anything other than emergencies.

The existing river crossing on the N4 is a significant deficiency on the TEN-T network and impacts all modes of transport. The fact that it is the only crossing point in the town, highlights the vulnerability of the transport network and the lack of resilience on the transport network.



Plate 2.7.6 Existing River Shannon Bridge, Carrick-on-Shannon

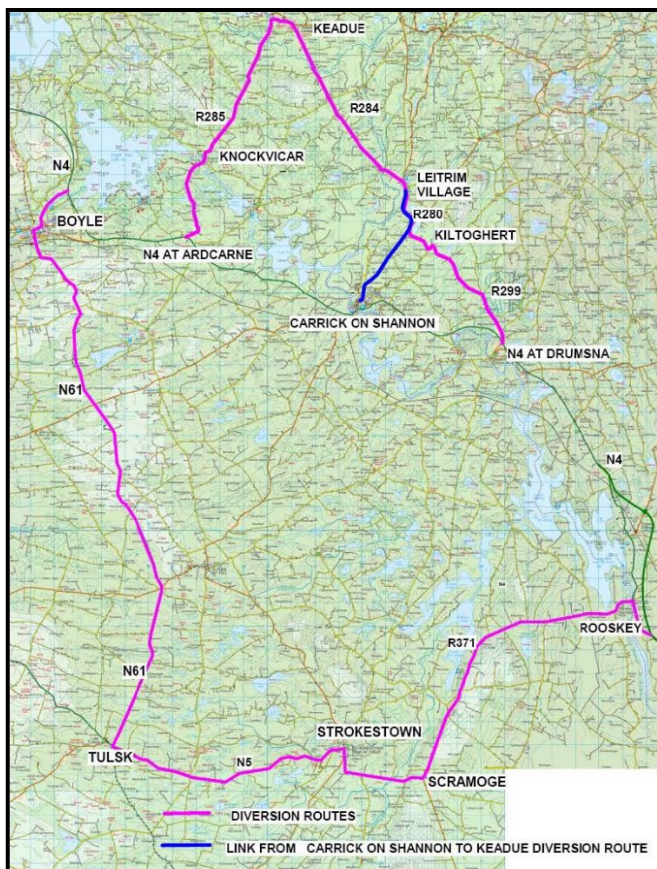


Plate 2.7.7 Diversion Route 2017

2.7.2.2 Existing Road Safety

As part of the Phase 2 Road Safety Impact Assessment (RSIA), an analysis of the collision history of this section of road for the period 1996 to 2016 was undertaken. This has identified three significant collision locations as follows:

1. Carrick-on-Shannon – The road network through Carrick-on-Shannon shows a large cluster of minor and serious collisions, as this is where the potential for conflict between road traffic, pedestrians and cyclists is highest
2. Mountcampbell (TII Site ID N04LM_139.0) – Two collisions with three fatalities and one minor injury. The three fatalities were a result of two separate head-on collisions in the townland of Mountcampbell, northwest of Drumsna, approximately only 300m apart. This section of the N4 is on a Band C curve and has a speed limit of 100km/h. This section also comprises a wide single carriageway cross-section, which is no longer permissible within the standards.
3. N4 Junction at the R201 (TII Site ID N04_137.0) – Three minor collisions

In addition, the existing road contains the following problematic road safety concerns:

- Change in carriageway cross-section from Type 2 Dual Carriageway which segregates the travel directions to two-way Type 1 Single Carriageway without the provision of a junction to demark the change in cross-section at the western end of the Dromod Bypass. This does not comply with the recommendations of Section 8.7 of TII Publication DN-GEO-03031 (Rural Link Design)
- Direct access from Annaduff GAA club grounds and the adjacent Leitrim GAA Centre of Excellence to the N4 on the 100km/h speed limit
- 50km/h speed limit and associated traffic calming measures at Aghamore
- Six roundabouts over 2.2km within the Carrick-on-Shannon 50km/h speed limit, which is an area with significant vulnerable road users
- Direct access from the Leitrim GAA County Grounds (Páirc Seán Mac Diarmada) within the 50km/h speed limit
- On street parking on the N4 at commercial premises within the 50km/h speed limit
- Zebra controlled crossings on the national primary road
- Substandard carriageway width and restricted facilities for vulnerable road users at the River Shannon bridge crossing in Carrick-on-Shannon

A more detailed analysis of existing road safety issues is presented in the Phase 2 RSIA in Appendix A.6.4.1.

2.7.2.3 Existing Conditions for Vulnerable Road Users

Pedestrians and other vulnerable road users within the study area require consideration. Collision statistics indicate pedestrian involvement in 21% of all collisions within the study area but this statistic increases to over 34% in the urban/town area of Carrick-on-Shannon, with 82 collisions between 1996 and 2016.

No pedestrian fatalities were recorded in this time, however seven individuals were seriously injured, while a further 120 sustained minor injuries.

The existing infrastructure is configured to favour the use of private cars with very little allocation of dedicated space for more sustainable modes. Currently the cycling network within the urban area is compromised by the high traffic volumes with the associated HGVs, lack of segregation from such volumes and lack of priority for active travel modes. The compounding of these circumstances disincentivises cycling and walking as a means of transport.

Access from the residential areas and hotels to the amenity parks along the River Shannon is across the existing N4 where traffic volumes exceed 16,000 vehicles on a daily basis. There are minimal crossing facilities and no signalised crossing facilities to enable vulnerable road users to cross the national primary road.

There are various initiatives underway to provide a Blueway linking Carrick-on-Shannon and Drumshanbo which will also link in Leitrim Village and Kilclare. This will enhance tourism and attract cyclists. However, the fact that there is no designated cycle network heading west or east from Carrick-on-Shannon leads to a fragmented level of provision and does not encourage the shift towards more sustainable transport for active travel trips.

Facilities for vulnerable road users outside of the urban area are disjointed and not fully connected, with alternative local roads only available on some sections of it. Furthermore, access to significant amenities such as the Annaduff GAA Club and the Leitrim Centre of Excellence have direct access off the N4 on a section of road with a speed limit of 100km/h. These facilities are close to the village of Aghamore but lack a connection which is safe for vulnerable road users.

There is an existing walking trail known as the Anthony Trollope Trail which is another popular walking route located around Drumsna. This route is more rural in nature and has no dedicated non-motorised facilities apart from the footpaths within Drumsna Village. This route crosses a section of the existing N4 in the 100km/h zone, utilising the existing N4 for approximately 150m.

2.7.2.4 Existing Public Transport

There are a limited number of rail services along the Sligo-Dublin corridor. The western rail line extending from Dublin Connolly (City Centre) to Sligo traverses the study area. This service serves several towns located along, or close to the N4 corridor, including Mullingar, Longford, Dromod, Carrick-on-Shannon, Boyle and Collooney. Plate 2.7.8 below illustrates the N4 corridor and Dublin-Sligo Rail line. This line is single track between Sligo and Maynooth.



Plate 2.7.8 Existing Rail Network

The journey time between Dublin and Sligo by rail is approximately 3 hours and there is a total of 8 daily weekday services in each direction between Dublin and Sligo, with a reduced number of services at weekends. The 2018 National Transport Authority (NTA) Heavy Rail Census provides data on the number of daily rail passengers boarding and alighting at each station with daily boarding of 48 and 95 in the northbound and southbound directions respectively, with the daily alightings of 109 and 34 in the northbound and southbound direction respectively at Carrick-on-Shannon. The relatively low demand is likely reflective of the limited number of services and dispersed population within the study area.

There are a very limited number of bus services available in the study area, with only one bus route serving the entire section of the N4 under consideration. Bus services utilising the N4 must negotiate the same traffic volumes as private cars and are subject to the same unreliability in journey time – this in turn disincentivises take up of public transport alternatives to the private car.

2.7.3 Project Specific Need Summary

The N4 Carrick-on-Shannon to Dromod Project is required to address the significant deficiencies which impact on the ability of the N4 to meet the functional requirements of the TEN-T designation as well as address the safety deficiencies which present collision risks, in particular in the urban areas as a result of prioritisation of the strategic traffic over and above the needs of the vulnerable road users. Even with such prioritisation of traffic through the urban area, it remains congested with poor journey time reliability, with the wholly sub-standard and outdated singular River Shannon bridge crossing contributing to considerable delay. Outside of the urban area, the project is necessary to address the horizontal

alignment which is also a significant safety concern when coupled with the proliferation of direct private accesses and junctions onto the national road within the study area.

As set out in Chapter 1, Section 1.2, accessibility and mobility within the region have a direct effect on the region's economic competitiveness as well as the attractiveness of the region. As set out in Section 2.5.1 above, the RSES states that transport has a major impact on the quality of life, the level of community interaction, the economic prosperity and the environmental quality of the region. Effective regional development is dependent on having high-quality inter-regional and intra-regional connectivity to places and markets, including international accessibility.

International connectivity via ports at Sligo and Killybegs, which are connected via the N4 to the other regions, play an important role in enablers of economic growth. Killybegs is Ireland's leading fishing port, accounting for over one-third of all fish landings in the country and services other commercial activity associated with the oil and gas industry, the tourism industry and the on-shore renewable energy industry. The significance of Sligo Port in national terms may be quite low but it remains important in the regional and local economy, supporting local industry and providing an import/export transportation facility.

International air connectivity is provided at Ireland West Airport Knock (IWAK), and Donegal Airport. Sligo Airport no longer provides passenger flights but continues to operate an important function as the Northwest base for the Irish Coast Guard Search and Rescue. Connectivity to the airports improves the attractiveness of the region and in turn enables economic growth.

The provision of new infrastructure will seek to enable the delivery of sustainable transport solutions that move more people more efficiently, improving journey time reliability and enabling better provision for alternative modes within the urban area. The project represents an integral component in supporting investment within the study area, and the northwest, by aligning the corridor with the wider policy of the TEN-T comprehensive network. The project is supported in terms of policy from international to national to local level as it is consistent with current transport policy and planning policy as set out in various policy documents over the past number of years.

3 Traffic Assessment and Intervention Required

3.1 Introduction

This chapter of the report provides an overview of the scope and methodology adopted for the transport modelling undertaken to inform option selection. In addition, a discussion on the initial selection of intervention required on the N4 over the project extents is included in Section 3.3, along with a description of the preliminary junction and access strategy considered is presented in Section 3.4.

3.2 Summary of Traffic Modelling Report

3.2.1 Introduction

An overview of the Traffic Modelling Report (TMR) and the methodology adopted in undertaking the transport modelling work on the project is presented in this Section 3.2. A copy of the full TMR is included in Appendix A.3.2.1. As outlined in PAG Unit 5.4, the TMR is used to outline the process by which the existing travel patterns are captured and thereafter to describe the transport forecasting that has been undertaken to inform the Phase 2 Option Selection. The TMR captures current traffic conditions in the study area for the 2020 base year and allows Phase 2 environmental and multi criteria assessments to take place. The report outlines the process of the development of the base year transport model and the use thereafter for the appraisal of the project.

3.2.2 Modelling Overview

The National Transport Authority's (NTA's) Western Regional Model (WRM) has been used as a starting point for the development of a single project Local Area Model (LAM) for the appraisal of alternatives and options. The WRM is a multi-modal transport model based in SATURN and CUBE Voyager with a focus on the city of Galway, but includes the counties of Galway, Mayo, Leitrim, Roscommon, Sligo and Donegal. As it encompasses the study area for this project and the likely area of influence of this project, it is deemed appropriate to use this model initially.

The highway element of the WRM provides the basic road network, zoning structure, trip matrices and traffic growth forecasts for the development of the LAM. The LAM has been developed using SATURN (strategic modelling software).

The WRM has also been used to identify the area of influence of the scheme and the associated study area for the LAM. This provides accurate representation of traffic loading in the study area and a detailed zonal structure was developed to include schools, retail centres, housing estates. The study area captures any potential competition with alternative routes or rerouting of traffic as a result of the proposed scheme. This study area has been cordoned from the WRM base models to form the initial LAM. The cordoned version of the LAM was then refined with

additional detail added where necessary to ensure the physical characteristics of the road network are reflective of the existing 2020 network.

The zoning structure of the LAM was also refined at this stage. The WRM zonal structure is based on the CSO Electoral Divisions (ED) boundaries with each zone containing one or more ED. These zones have been refined based on the CSO small area boundary system for consistency, to allow demographic data to be linked to each LAM zone.

Once the LAM road network and zone structure were appropriately refined the model was calibrated and validated against observed data in accordance with criteria set out in PAG Unit 5.1.

3.2.3 Data Collection

3.2.3.1 Traffic Surveys

A review of existing traffic survey data available for the model area was initially undertaken using any existing counts in the area and TII counter data. However, as this data was insufficient to robustly calibrate and validate the LAM, a comprehensive set of traffic count data was collected and used to calibrate and validate the N4 LAM. In accordance with PAG Unit 16.0, additional traffic surveys were undertaken to inform this transport study. Traffic surveys were carried out in December 2020 and comprised the following:

- 18 Automatic traffic counters (ATCs) along the N4 and on other key routes within the model
- 50 Junction turning counts (JTCs) at the main junctions along the route and at key points on the local road network
- ANPR (Automatic Number Plate Recognition), which is used to determine origin-destination surveys at 8 locations
- Journey time surveys between 8 locations

Full details of the traffic surveys commissioned, including survey locations, are provided in the Transport Modelling Report in Appendix A.3.2.1.

3.2.3.2 Impact of Covid-19 on Traffic Surveys

Traffic surveys were carried out in December 2020 when government restrictions arising from the Covid pandemic were removed and a certain level of travel was permitted. However, as the economy was not fully open at this time to all activities, analysis showed that whilst the 2019 and 2020 traffic flows show a similar profile, the 2020 traffic flows are approximately 11-19% lower than those in 2019 (pre – pandemic). As a result of this, the forecast AADTs output from the models (which have been calibrated to 2020 data) are likely to be approximately 11-19% lower than if the model had been developed using “typical” or pre-Covid traffic data as shown on Plate 3.2.1.

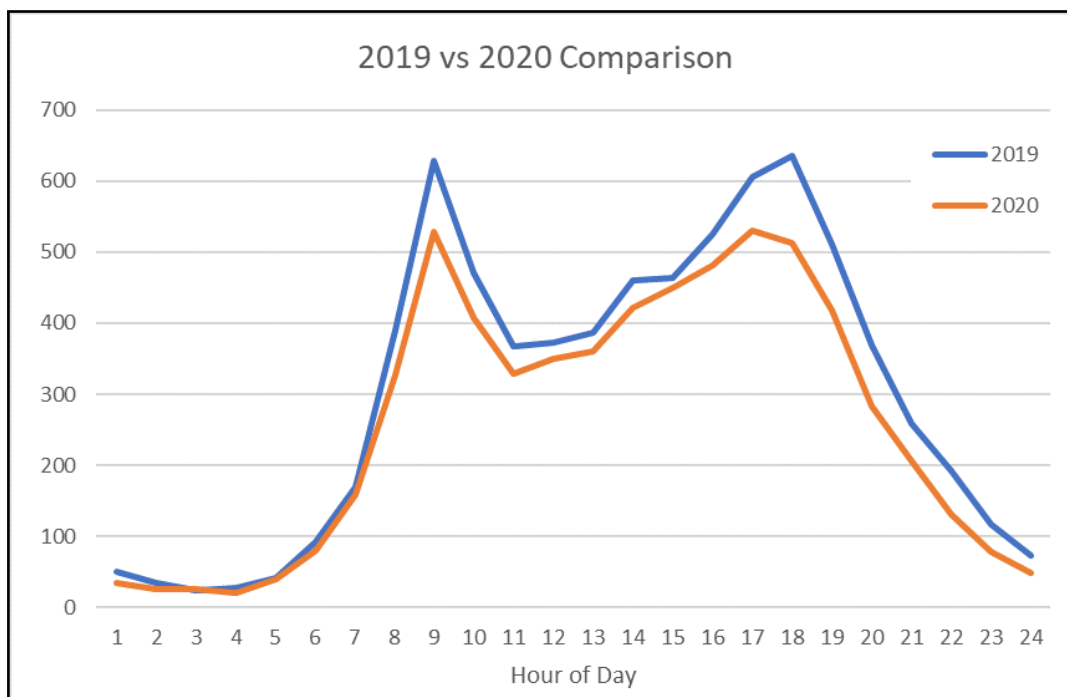


Plate 3.2.1 N4 (Between Carrick-on-Shannon and Dromod) TII Traffic Counter Data Analysis

Additionally, it follows that the calculated benefits of each option are also likely to be underestimated. The models developed will still provide a robust and consistent platform with which to assess the various options during Phase 2 of this project. However whilst stating this, it is recognised that Covid-19 changed when people travel, how they travel and whether they travel at all. The data used to develop the Phase 2 models was collected in a period when more people were working from home than usually would, causing there to be less travel to employment centres, but more travel to and within local centres and communities. Therefore, a sensitivity test will be carried out during Phase 2 on the Do Minimum and Preferred Option models with uplifted highway trip demand (+15%) to replicate a post-pandemic Base model.

As travel restrictions were lifted in 2022, employees who were able to work from home during the pandemic began to return to their place of work within an employment centre. There is potential for long-term effects on people's travel patterns that will outlast the pandemic. During Phase 3 the models will be updated using survey data collected post-pandemic (without any travel restrictions).

3.2.4 Model Development

3.2.4.1 Overview

The WRM is a strategic multi-modal transport model representing travel by all the primary surface modes – including, walking and cycling (active modes), and travel by car, bus, rail, tram, light goods and heavy goods vehicles. The WRM sits within the overall NTA Regional Modelling System which comprises of the following three main components, namely:

- The National Demand Forecasting Model (NDFM)
- 5 Regional Models (including the WRM)
- A suite of Appraisal Modules

The NDFM takes input land-use attributes such as population, no. of employees etc., and estimates the total quantity of daily travel demand produced by, and attracted to, each of the 18,488 Census Small Areas in Ireland.

The WRM is comprised of the following key elements:

- **Trip End Integration:** The Trip End Integration module converts the 24-hour trip ends output by the NDFM into the appropriate zone system and time period disaggregation for use in the Full Demand Model (FDM)
- **The Full Demand Model (FDM):** The FDM processes travel demand, carries out mode and destination choice, and outputs origin-destination travel matrices to the assignment models. The FDM and assignment models run iteratively until an equilibrium between travel demand and the cost of travel is achieved
- **Assignment Models:** The Road, Public Transport, and Active Modes assignment models receive the trip matrices produced by the FDM and assign them in their respective transport networks to determine route choice and the generalised cost for each origin and destination pair

Destination and mode choice parameters within the WRM have been calibrated using two main sources: Census 2011 Place of Work, School or College - Census of Anonymised Records (2011 POWSCAR), and the Irish National Household Travel Survey (2012 NHTS). Therefore, the WRM is the ideal tool from which to cordon the N4 LAM, and to estimate the multi-modal impact of transport schemes within the N4 study area. In addition, it provides the platform to forecast the future trip demand and distribution to/from the area.

Through a review of survey data, it was noted that the highest traffic flows entering and leaving the area were experienced from 08:00 to 09:00 in the AM, 17:00 to 18:00 in the PM and 15:00 to 16:00 for the IP period. Therefore, the LAM was developed, calibrated and validated to represent the following time periods:

- AM Morning peak period: 08:00 to 09:00
- PM Evening peak period: 17:00 to 18:00
- Inter peak period: 15:00 to 16:00

The model software used to develop the N4 LAM is the SATURN (Simulation Assignment of Traffic to Urban Road Networks) suite of transportation modelling programs.

3.2.4.2 Road Network Development

The goal in developing the N4 LAM was to create a model that accurately reflects current traffic conditions in the study area for the 2020 base year to a sufficient level of detail to allow the appraisal of each alternative and option. To achieve this goal, the model must be defined in terms of road network and trip demand

representation. The WRM developed for the NTA was utilised as a base for generating the highway network for the LAM. However, as the WRM is primarily focused on Galway, areas outside the city are represented in lesser detail within the model.

In developing the N4 LAM, additional detail was added to the cordoned WRM network to enhance the modelled road network and better represent localised access points for traffic. Best practice approach was utilised to generate the detailed traffic network for the LAM, reviewing existing link detail and adding junction detail. Digital mapping systems such as Google Earth were used to get a high-level view of the network including junction layout details, such as permitted or banned turns, junction priority etc., to ensure it represented, as accurately as possible, the existing road network.

3.2.4.3 Model Zone System

The WRM was used as a basis for development of the LAM road network. However, as the study area is located outside of the main model area, the WRM zone structure is not sufficiently localised to accurately reflect traffic loading along the N4.

To provide an accurate representation of traffic loading onto and near the existing N4 route, a detailed zonal structure was developed for the LAM to reflect key generators and attractors of trips such as:

- Shopping centres/retail car parks/supermarket car parks
- Education centres
- Key employment locations
- Townlands
- Housing Estates – areas that load onto the network in one specific place

In total, 107 zones have been created, with 91 internal zones within the study area and 16 external zones representing the roads that enter the area of interest. This level of detail ensures that traffic loads accurately onto both sides of the N4 and within Carrick-on-Shannon and the surrounding road network.

3.2.4.4 Model Calibration and Validation

Following calibration of the network, trip demand is adjusted in line with count data, so that there is an improved agreement between counts and modelled flows i.e. demand is as expected. Furthermore, controls are placed on zones to ensure that the trip demand generated is sensible and in line with census population and employment statistics. An excellent calibration has been achieved in the model for the morning, evening and inter peak periods with the resulting models falling well within required TII calibration standards.

Journey time analysis was carried out between the ANPR sites and an excellent match was achieved on cumulative route totals and all of the individual sections for all of the time periods.

3.2.4.5 Summary

The NTAs WRM was used as a basis for development of the N4 LAM with additional network and zonal detail added to more accurately represent localised traffic movements.

The N4 LAM has been calibrated and validated in-line with TII Project Appraisal Guidelines and meets all specified criteria for both the AM, PM and Inter peaks. The LAM is fit for purpose, and represents AM, PM and Inter-peak period base year traffic conditions well, as demonstrated statistically through calibration and validation. It provides a robust basis for assessing the potential alternatives and options.

3.2.5 Existing Travel Patterns

TII's Traffic Count Data website presents information on traffic volume and composition obtained via a network of traffic counters embedded in the road surface. Using this database, Annual Average Daily Traffic (AADT) volumes for the existing N4 within the study area for the year 2019 have been obtained from TII Traffic Monitoring Units (TMU) located on the route and are presented below. A review of the AADT values from 2015 - 2019 shows that, on average, traffic levels have increased by 9.2% in the last 5 years (1.8% per annum). The percentage of HGVs is also seeing an increased percentage. The TMU locations are shown in Plate 3.2.2.

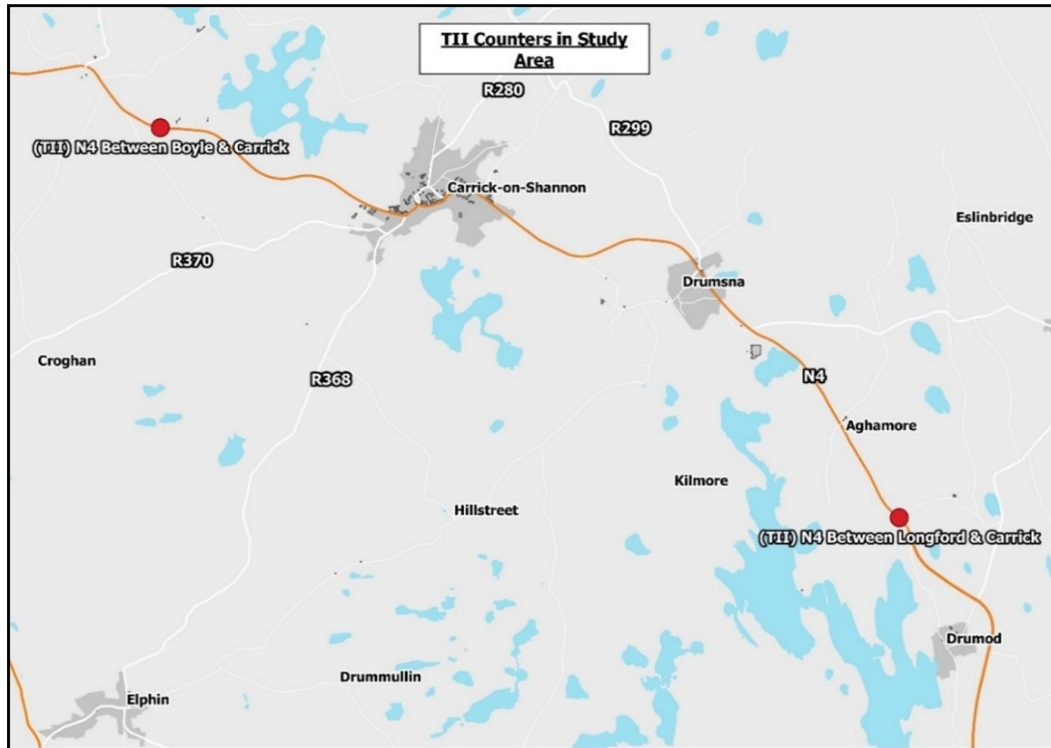


Plate 3.2.2 TII Traffic Counter Locations

Table 3.1 TII Traffic Count Data

Traffic Count Location	AADT (2019)	HGV (%)	AADT (2022)	HGV (%)
N4 Between Boyle and Carrick-on-Shannon, Usna, Co. Roscommon	8,338	5.1%	7,939	6.2%
N4 Between Longford and Carrick-on-Shannon, Dromod Bypass, Co. Leitrim	7,468	6.3%	7,352	6.9%

Average weekday traffic flow profiles extracted from the TMU's listed above shows that the AM peak occurs between 08:00 – 09:00 and the PM peak occurs between 17:00 – 18:00. Relatively high levels of traffic prevail in the interpeak period (14:00 – 16:00), indicating that this section of the N4 is well used throughout the day and that most of the demand is not solely related to commuting traffic. Significant weekend traffic flow is a regular occurrence during the tourist season, bank holidays, matchdays, special events in Carrick-on-Shannon.

An analysis of desire lines for travel around Carrick-on-Shannon has been undertaken to gain an understanding of existing travel patterns in the study area. This methodology has been developed using the extensive information on trip origins and destinations incorporated into the 2020 base year model.

The base year model is divided up into 150 zones which have been aggregated into seven sectors for the purposes of establishing the desire lines (or demand) between

each sector. Plate 3.2.3 denotes the sector boundaries, whilst noting that trips arriving at the perimeter of the outer sectors are also loaded onto that sector to ensure that the entirety of the trips within the model are captured.

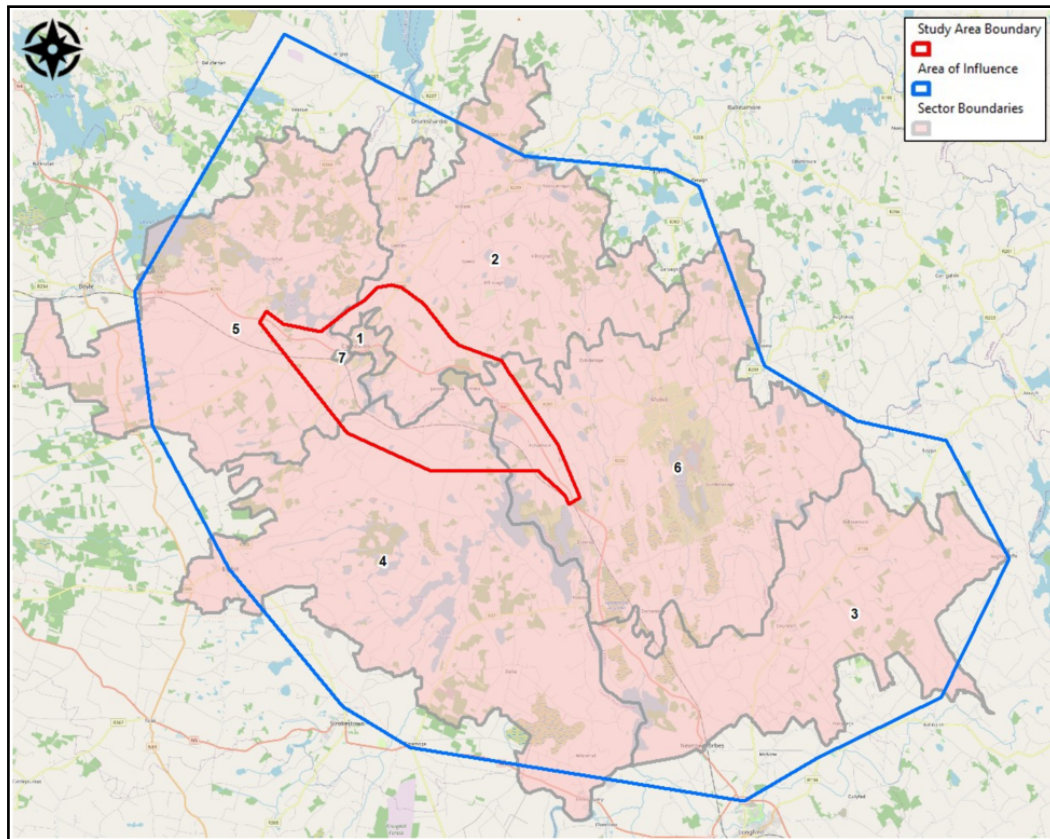


Plate 3.2.3 Sectors within Transport Model

Plate 3.2.4 below shows the desire lines between all the sectors in the vicinity of Carrick-on-Shannon using AADT values derived from the base year model. As trips arriving at the perimeter of the outer sectors are loaded onto that sector, the desire lines appear to converge outside of this graphic; however, this is necessary to ensure that all trips are captured.

The following should be noted when interpreting Plate 3.2.4:

- Sectors are delineated by solid grey lines
- Journeys from one sector to another sector are aggregated together and shown as a single red or green line, with the colour dependent on whether that traffic crosses or does not cross the bridge in Carrick-on-Shannon. The thickness of the line highlights the level of demand and includes both directions of travel combined together to give an AADT figure
- The aggregated journeys are shown from the approximate centre of one sector to the approximate centre of the destination sector
- Journeys undertaken and completed internally within sectors are not shown
- Desire lines shown are not road based, but rather are as the crow flies

- Green lines denote journeys which commence and end without crossing the bridge in Carrick-on-Shannon
- Red lines denote journeys which include crossing the bridge in Carrick-on-Shannon.

Plate 3.2.4 shows trip demand to and from Carrick-on-Shannon across the entire transport model, with particularly strong demand from the northeast and northwest, as well as strong trip demand to and from Cortober. It also shows many red desire lines which commence from sectors outside Carrick-on-Shannon and terminate in sectors outside the town, demonstrating that many trips are forced through the town and over the bridge as part of their longer journey to destinations beyond the town.

The appropriateness of a potential solution will be judged by assessment of its ability to serve these desire lines. Therefore, a bypass may be part of a potential solution if it is able to capture those sector-to-sector movements which do not need to interact with the bridge and the town.

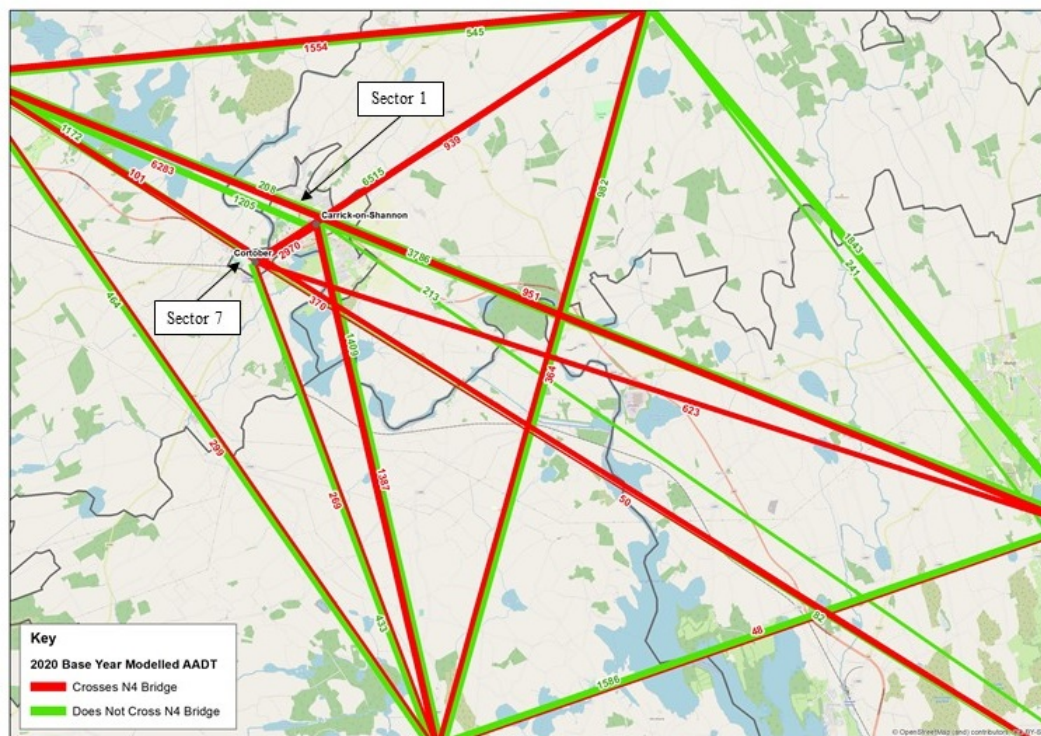


Plate 3.2.4 Desire Lines between sectors

Table 3.2 Trips between sectors over River Shannon Bridge in 2020 Base Year

Sector To / From	Origin – Destination crossing the N4 Bridge						
	1	2	3	4	5	6	7
1	-	-	-	694	2,978	-	1,601
2	-	-	-	171	644	-	428
3	-	-	-	1	212	-	32
4	694	192	1	0	159	21	184
5	3,306	910	158	141	66	420	42
6	-	-	-	27	530	-	400
7	1,369	511	18	85	59	223	-

Note the daily trips noted in the table are one-directional whereas the numbers shown in red on the graphic in Plate 3.2.4 are two-directional, e.g. Sector 6 to/from Sector 7 = 223+400=623 and Sector 5 to/from Sector 1 = 3,306+2,978=6,284. The cumulative daily trips over the River Shannon Bridge in the base year is 16,278. This table shows that the greatest number of trips crossing the river have an origin/destination in Carrick-on-Shannon on the west of the river.

Table 3.3 Trips between sectors which do not cross River Shannon Bridge in 2020 Base Year

	Origin – Destination which do NOT cross the N4 Bridge						
Sector To / From	1	2	3	4	5	6	7
1	5,749	3,162	112	748	541	2,034	-
2	3,353	1,051	122	469	186	947	-
3	101	119	1,573	47	32	924	-
4	661	513	41	787	210	751	229
5	664	358	50	254	1,238	130	632
6	1,752	896	881	835	78	1,943	-
7	-	-	-	204	540	-	3

Again the daily trips noted in the table are one-directional whereas the numbers shown in green on the graphic in Plate 3.2.4 are two-directional, e.g. Sector 2 to/from Sector 1 = $3,162 + 3,353 = 6,515$ and Sector 6 to/from Sector 1 = $2,034 + 1,752 = 3,786$. This table shows that there is a significant number of trips, i.e. 5,749 which start and end on the eastern side of the river within Sector 1, the urban area of Carrick-on-Shannon, without ever crossing the river. Furthermore, there are a significant number of trips originating on the east of the river in the Leitrim Village area in Sector 2 to the northeast and in the Mohill area in Sector 6 in the southeast that have an origin/destination in Carrick-on-Shannon without the need to cross the river, i.e. 6,515 and 3,786 respectively.

Plate 3.2.5 is a schematic diagram illustrating the travel patterns of vehicular trips to, from or through Carrick-on-Shannon and Cortober in the 2020 base year as extracted from the travel demand matrices and after converting the peak hour figures into AADT volumes. Red arrows show movements that cross the bridge and green arrows show movements that do not cross the bridge. The cumulative daily trips over the River Shannon Bridge in the 2020 base year is 16,278, with 5% of them consisting of HGVs, that is approximately 650 HGVs driving over this narrow bridge daily.

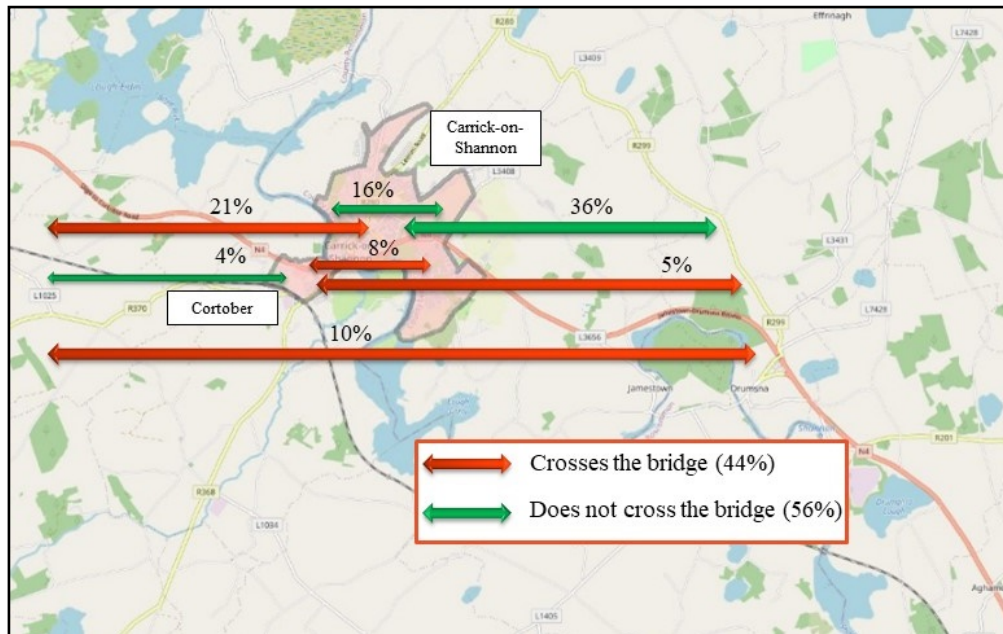


Plate 3.2.5 Existing Travel Patterns

In total 44% of trips in the transport model area cross the bridge, as represented by the red arrows. The other 56% of trips in the transport model area do not cross the bridge, as represented by the green arrows.

The strongest movement is to and from Carrick-on-Shannon with 21% of trips from the west/northwest of Cortober having a destination in Carrick-on-Shannon, and 36% of trips from the east of Carrick-on-Shannon having a destination in Carrick-on-Shannon. There also is a high percentage of trips at 16%, circulating within this urban area of Carrick-on-Shannon without crossing the bridge to Cortober. The through trips comprise 10% of all trips i.e. do not stop in either Cortober or Carrick-on-Shannon urban areas.

Plate 3.2.6 shows the travel patterns of just those 44% of total trips in the study area which cross the bridge.

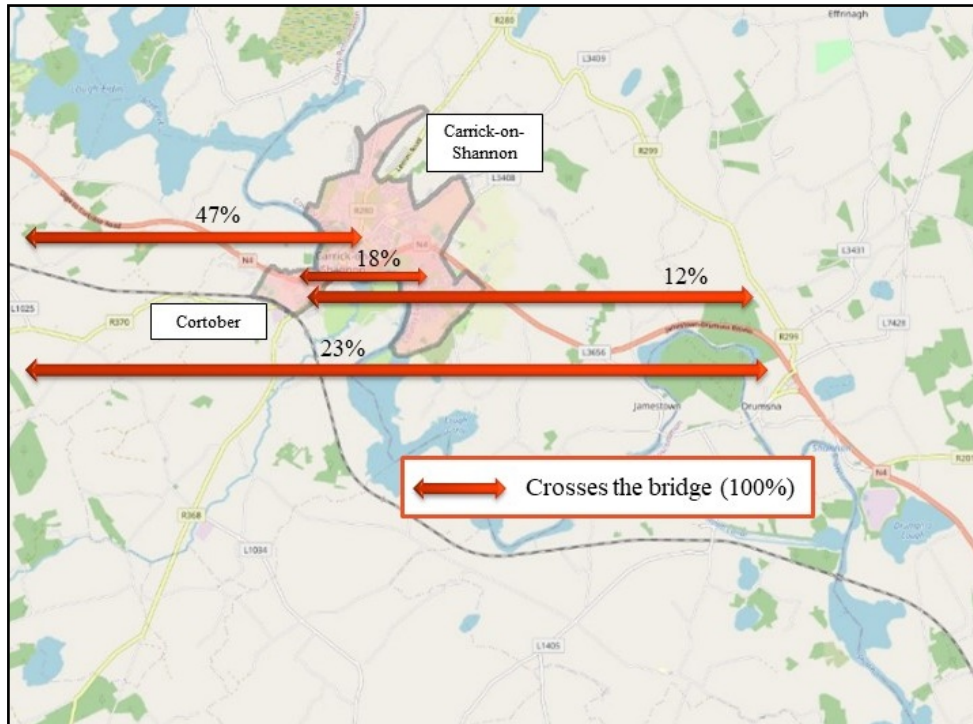


Plate 3.2.6 Existing Travel Patterns which cross the River Shannon Bridge

A review of the trips crossing the River Shannon Bridge only, shows 23% of these trips are through trips. A further 47% of these trips pass through Cortober on the west to access areas on the east of the river within Carrick-on-Shannon and in reverse, 12% pass through Carrick-on-Shannon to access Cortober on the opposite side of the river. Finally, a total of 18% of trips across the bridge originate and terminate within the urban sectors of Cortober and Carrick-on-Shannon respectively. This analysis implies that there would be use of a bypass if one were built, given that there is strong demand for travel across the existing bridge, not only on movements between the sectors comprising Carrick-on-Shannon and Cortober, but more significantly on journeys that start or end in Carrick-on-Shannon with destinations elsewhere in the study area and those journeys that pass through the town as through trips.

3.2.6 Future Year Model Development

This section sets out the development of the future year N4 LAM models for the scheme opening year (2030) and design year (2045). These forecast years will be used for assessing the performance of the project and for input into the design process.

Origin and Destination growth rates for both the internal and external zones for light and heavy vehicles were provided by TII for the years 2016 - 2030, 2030 - 2040 and 2040 - 2050. These years correspond with the NTpM forecast years. The growth rates were provided for a low, central and high growth scenario which are based on the CSO population and labour force projections. The central growth scenario, which is based on the National Planning Framework 2040 population and employment projections, was used for Phase 2 as a single growth scenario is

sufficient for this phase of the project appraisal in order to compare the different options against each other on an equal basis.

Once a preferred option is selected, low, medium and high growth scenarios will be prepared, and the preferred option will be tested in these additional scenarios as required for both the economic and environmental sensitivity tests. Additionally, the preferred option will also be assessed using an alternative demand scenario, to reflect a potential change arising from home working following the Covid-19 Pandemic.

For the NTA's Regional Models and therefore the LAM, goods vehicle growth is assumed to increase broadly in line with economic growth forecasts. CSO Gross Domestic Product (GDP) forecasts have been used to derive a growth factor for HGV traffic for each of the future years assessed.

A quantitative assessment of the impact of the traffic forecasting process was undertaken to ensure that the process of applying traffic growth factors did not unduly distort the trip matrix. This essentially comprises a comparison of trip length distribution, trip end growth and zone to zone growth in the Base Year versus the 2030 Opening Year and 2045 Design Year scenarios. Full details of this assessment are included in Appendix A.3.2.1. This shows that the profiles of these three components have a similar profile and distribution in the future years as the base year.

3.3 Initial Selection of Intervention Required

An examination of the issues contributing to existing transport deficiencies across all modes on the N4 corridor within the study area is needed in order to identify appropriate and successful interventions. Furthermore, it is imperative that the broader objectives of the project, including the promotion of active travel in particular in and around Carrick-on-Shannon, and enhancing inter-regional connectivity remain at the forefront in shaping a sustainable transport solution and achieving the project objectives.

At present, the N4 is a single corridor which is expected to cater for the following:

- Provide connectivity on the EU TEN-T comprehensive network between the N5 and N6 national primary routes
- Provide a high-quality¹⁷ road as part of the TEN-T comprehensive network
- Strategic traffic travelling between Sligo and Dublin

¹⁷ 2. The high-quality roads referred to in point (a) of paragraph 1 are those which play an important role in long-distance freight and passenger traffic, integrate the main urban and economic centres, interconnect with other transport modes and link mountainous, remote, landlocked and peripheral NUTS 2 regions to central regions of the Union. Those roads shall be adequately maintained to allow safe and secure traffic. (Extract from Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU)

- Local trips in Carrick-on-Shannon and Cortober
- Local access for private dwellings with frontage onto the N4 and farming operations with direct accesses onto the N4
- All modes including vehicular traffic, walking, cycling and public transport
- Non-motorised users of all ages from the very young to the very old
- All classes of vehicle from a simple scooter to the bus to emergency service vehicles to the farm vehicles to the HGV

Within the urban area, the N4 is located on the riverside of the River Shannon with significant marina facilities accessed from cars parked on the N4. There is a riverside amenity park along the extents of the N4, between the N4 and the river which contains local biodiversity gardens and children's activity zones. Furthermore, the N4 crosses the River Shannon via the only bridge crossing in Carrick-on-Shannon which is a sub-standard cross-section and dates from 1846. Therefore, the N4 is conflicted in that it is expected to provide for all trips by all modes by all people safely and efficiently, but this is physically impossible. The selection of intervention required for the N4 project is dependent on many factors, as discussed in the following sections.

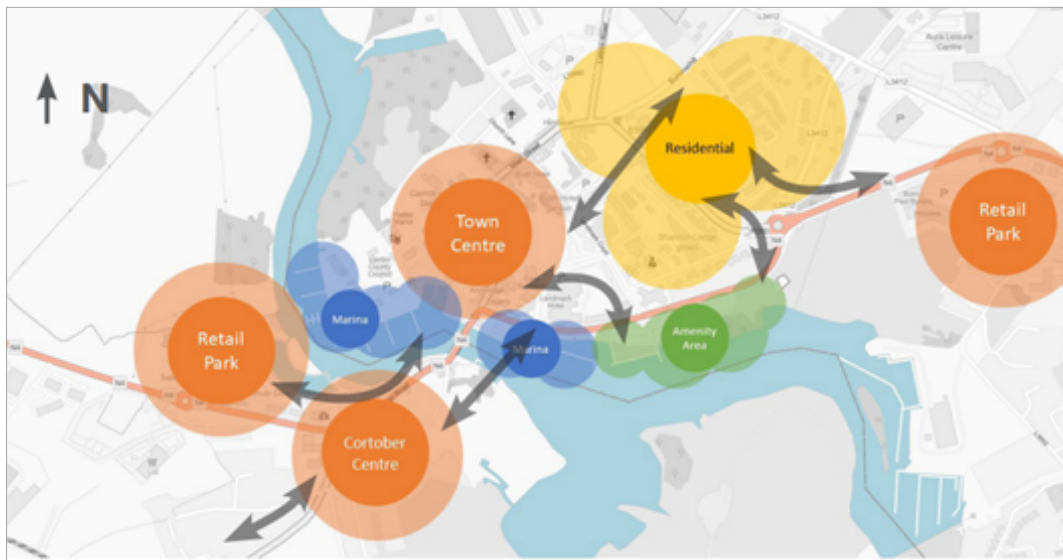


Plate 3.3.1 N4 through Carrick-on-Shannon, River Shannon Bridge and Cortober

Chapter 5 provides an overview of the methodology for the development and assessment of a range of alternatives and options that are likely to contribute to achieving the project objectives. The hierarchy of modal intervention as set out in national policy requires a primary focus on active travel measures and improved public transport systems before increased provision for the private car is contemplated. Road based options will feature among potential solutions but as set out in national policy, an incremental approach should be adopted when considering potential road based solutions commencing with an option which maximises and optimises the reuse of the existing asset before moving onto providing new road infrastructure.

The concepts of modal hierarchy and intervention hierarchy form part of the strategy when considering the initial level of intervention required. An assessment of the transport issues within the urban area identifies the need for additional space to accommodate active travel modes, the need for additional public transport provision and the need to accommodate by-passable traffic on the TEN-T network. A similar assessment in the rural area identified the need for provision for active travel modes and local traffic movements in conjunction with traffic movements on the TEN-T network.

Traditionally, selection of road type and cross-section for new or improved national road schemes has been based on projected values of Annual Average Daily Traffic (AADT) flow for a future design year. An assessment of the traffic volumes on the N4 outside of the urban area would dictate the need for a single carriageway, whereas traffic volumes in the urban area lean towards a dual carriageway.

Table 6.1 of TII Standard DN-GEO-03031 presents a range of recommended rural road layouts for various AADT capacities, and further advises that the capacity figures presented in the standard are indicative for general guidance and that the appropriate cross-section shall be selected with reference to the TII Project Appraisal Guidelines. Therefore, the appropriate road type and cross-section will be influenced by a multitude of factors, including:

- TEN-T regulations in respect of access control and junction type
- AADT
- Junction capacity and junction frequency
- Peak hour flows
- Availability of access to alternative modes of transport
- Provision for active travel
- Demand management policies and traffic control measures
- Journey time reliability

Consequently, the selection of the appropriate future road cross-section needs to consider a much broader range of criteria and influences, as opposed to adopting a traditional predict and provide or supply management approach. An incremental assessment will be undertaken on the preferred solution to establish the intervention level should a road form part of the transport solution.

Considering all of the above, various alternatives which provide for active travel and additional public transport services were developed for assessment in addition to road based solutions. As a starting point, the minimum level of intervention considered maintaining and optimising the existing N4 road, before improving certain sections of it by upgrading it to standard Type 1 single carriageway before going further to providing a wholly new Type 2 dual carriageway.

Therefore, for the purposes of option selection during Phase 2, a range of cross-section configurations and specific transport interventions have been assessed with the aim of more accurately defining the future N4 corridor needs which include:

- Future public transport provision in terms of bus
- Additional public transport improvement measures in the form of improvements to the rail service and rail station with a view to curtailing private car dependency through improved accessibility to alternative modes
- Junction improvements in certain areas together with junction closures and rationalisation elsewhere
- Capacity enhancement measures including improving the existing N4 and/or providing new off-line road infrastructure

The range of interventions are outlined in Chapter 5 of this report. Assessment of these interventions is detailed in Chapters 6, 7 and 8, with further analysis provided within the Transport Modelling Report included in Appendix A.3.2.1.

3.4 Preliminary Junction and Access Strategy

As outlined in Section 3.3 above, the N4 is a multi-modal corridor with multiple accesses and junctions as it tries to accommodate all modes, vulnerable road users and activities in a single shared place. The current junction and access provision is not entirely conducive to the safe and efficient operation of a strategic road forming part of the TEN-T comprehensive network. Few, if any, junctions along the existing N4 comply fully with current TII geometric standards. There is an absence of consistency in junction standard and design characteristics, which does not present drivers with intuitive and expected layouts. Problems also stem from the 197 direct accesses onto the N4 mainline which includes 113 farm accesses, 58 domestic accesses, 24 commercial accesses and 2 pedestrian/cycle accesses. Further details of the existing deficiencies at junctions and accesses are noted in the *Existing Road Condition Assessment Report* included as an appendix to the *Road Safety Impact Assessment (RSIA)* which is located in Appendix A.6.4.1.

The aim of a junction strategy as defined in TII Document – Rural Road Link Design (DN-GEO-03031), Section 7.10, is to ensure that the overall access arrangement and connectivity to the new road infrastructure provides drivers with layouts that have consistent standards and are not likely to confuse them whilst also providing the necessary level of connectivity and meeting the requirements of the TEN-T regulations. On lengths of rural road, sequences of junctions should not therefore involve many different layout types. TII DN-GEO-03060 “Geometric Design of Junctions” paragraph 4.1 also states “*As an overarching principle TII supports a junction strategy which seeks to prevent a proliferation of side roads junctions along national roads with speeds limits of greater than 60km/h. The application of this strategy will maintain the capacity, efficiency and safety of the national road network*”.

The junction strategy objectives for the N4 project will seek to align with the following basic principles, irrespective of the option corridor:

- Compliance with the TEN-T regulations
- Restriction of number of junctions as the N4 is of strategic importance, whilst providing sufficient junctions to provide a minimum level of accessibility to the

region to support further economic and social development. Junction frequency reduction will improve safety and road network performance.

- Connectivity to the existing national and regional road network
- Serve existing travel demand which currently comprises both strategic and local
- Promote a mobility that is efficient and safe
- Provide junction layouts which are consistent and intuitive and remove or re-locate non-standard junction types
- Provide junctions which are safe for non-motorised users
- Ensure an overall junction and access provision which achieves the wider objectives of the project, including enhancing regional connectivity