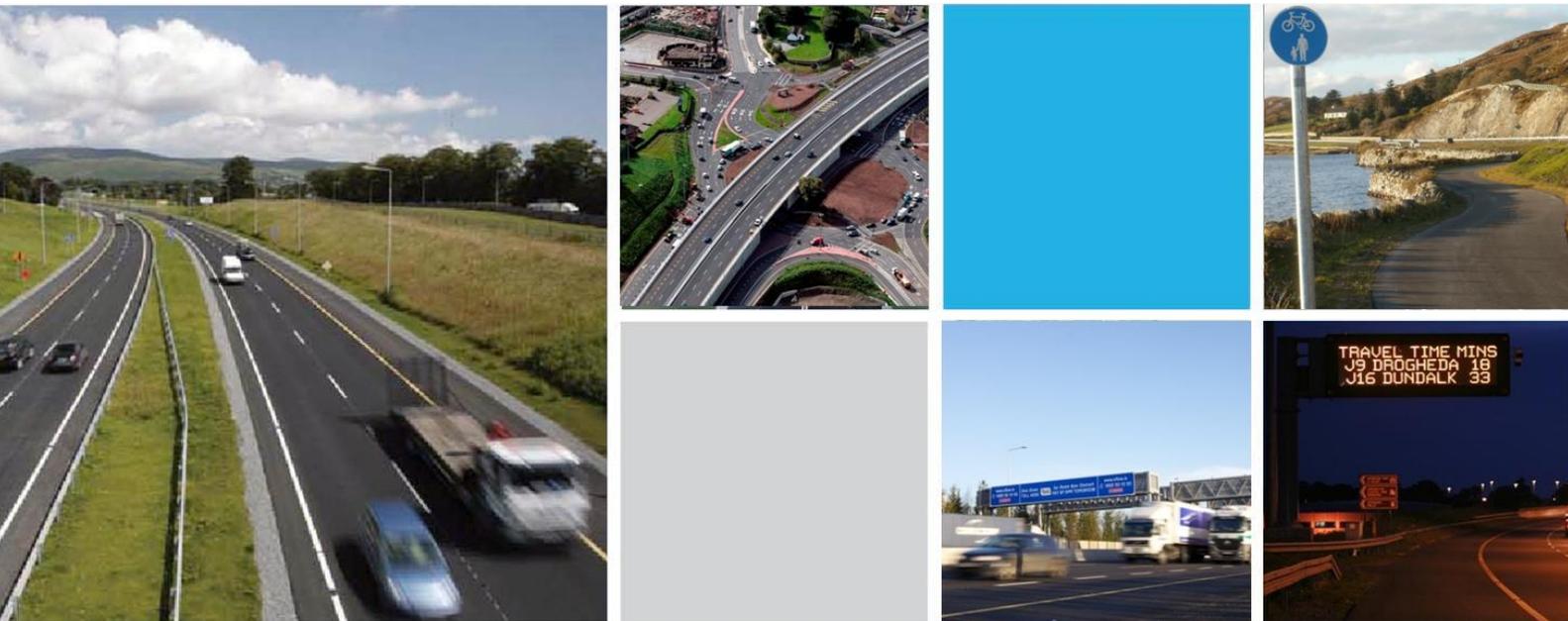


GALWAY COUNTY COUNCIL

Project Brief

N6 Galway City Ring Road



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Project Brief

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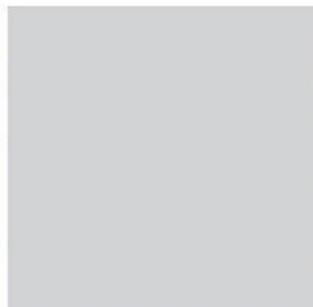
N6 Galway City Ring Road

Project Brief

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Chapter 1
Introduction



1 Introduction

1.1 Introduction

In accordance with the requirements of the Transport Infrastructure Ireland (TII) (formerly NRA)¹ Project Appraisal Guidelines (*PAG Unit 3.0: Project Brief*) and “Common Appraisal Framework for Transport Projects and Programmes” (Department of Transport, Tourism and Sport, March 2016), the Project Brief represents an important deliverable of the Project Appraisal process. The purpose of the Project Brief is to outline the need for an investment, explore the supporting policy documentation, and outline the objectives of the project. The Project Brief then guides the subsequent scheme development process. The Project Brief was prepared initially during Phase 1 Scheme Concept and Feasibility Studies and was updated at Phase 2 Route Selection.

This document presents the Phase 3/4 update to the Project Brief for the *N6 Galway City Ring Road*. The *N6 Galway City Ring Road* is the road component of the *Galway Transport Strategy*.

1.2 Overview of Study Area

This project is located in County Galway on the west coast of Ireland as shown on **Figure 1.1**. The project seeks to resolve the transport issues in the environs of Galway City and therefore, the scheme study area boundary encircles the city of Galway to the north and is bounded by Galway Bay to the south.

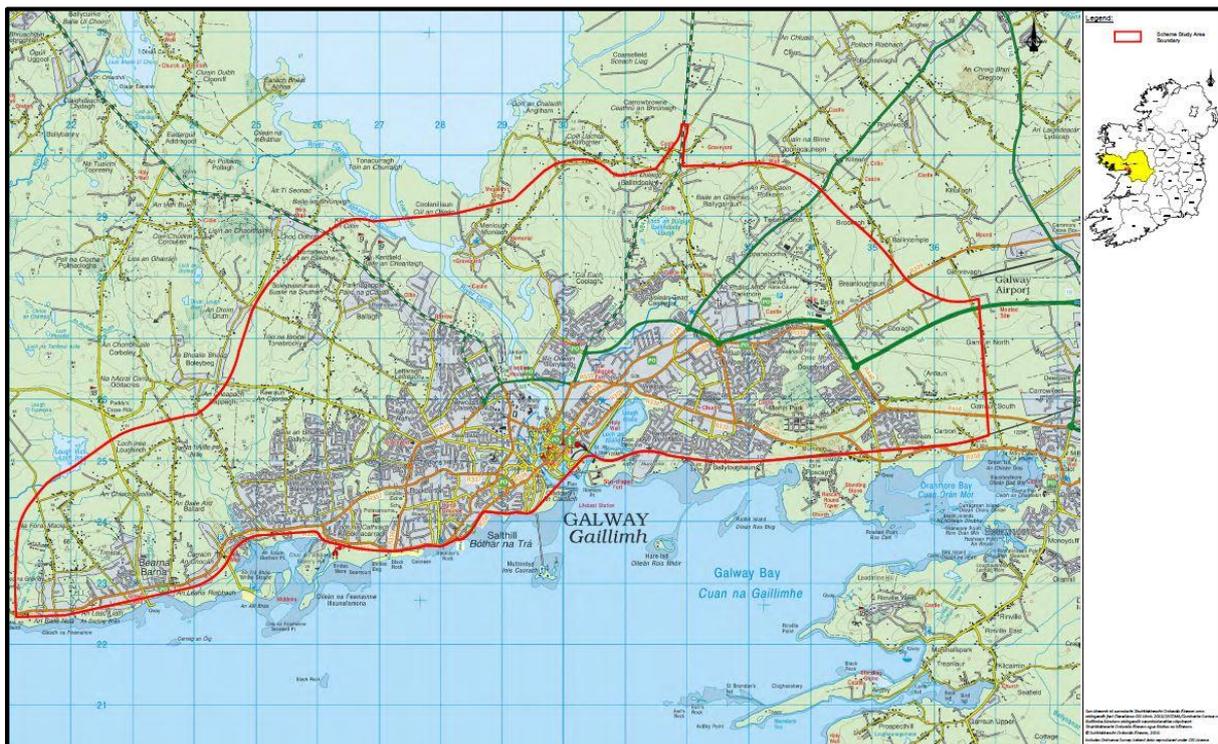


Figure 1.1 Project Location within Scheme Study Area

¹ The Minister for Transport, Tourism and Sport has signed the order for the merger of the National Roads Authority (NRA) with the Railway Procurement Agency (RPA) to establish a single new entity called Transport Infrastructure Ireland (TII). The National Roads Authority is known as Transport Infrastructure Ireland (TII) since 1st of August 2015. All references to guidance documents and standards within this report will retain the *NRA* reference until such time as these documents are updated.

Traffic bypassing Galway City is currently served via the existing N6 which is a National Primary route which connects the N6 on the east side of Galway at Ardaun to the N59 and the R338 on the north-west side of Galway at Newcastle, refer to **Figure 1.2**. The existing N6 passes through the environs of Galway City, namely Briarhill, Ballybrit, Ballybane and Terryland on the east side of River Corrib and Newcastle on the west side of River Corrib. The N6 terminates at the R338 at the at-grade roundabout junction, Browne Roundabout, with the N59/N6. The R338 continues in a westerly direction to the coast road, the R336. Whilst the N6 bypasses Galway City centre, a large portion of the traffic on the N6/R338 is not fully bypassing Galway City environs, rather it is using the N6 to move in an east/west direction across the city.

The existing N6 is a four lane carriageway between the N6 and the N59, with a varying median width, and a number of at-grade junctions comprising at-grade roundabouts and signalised junctions. There are various forms of at-grade junctions including roundabouts, signals and priority junctions on the R338 from its junction with the N59 to the R336.

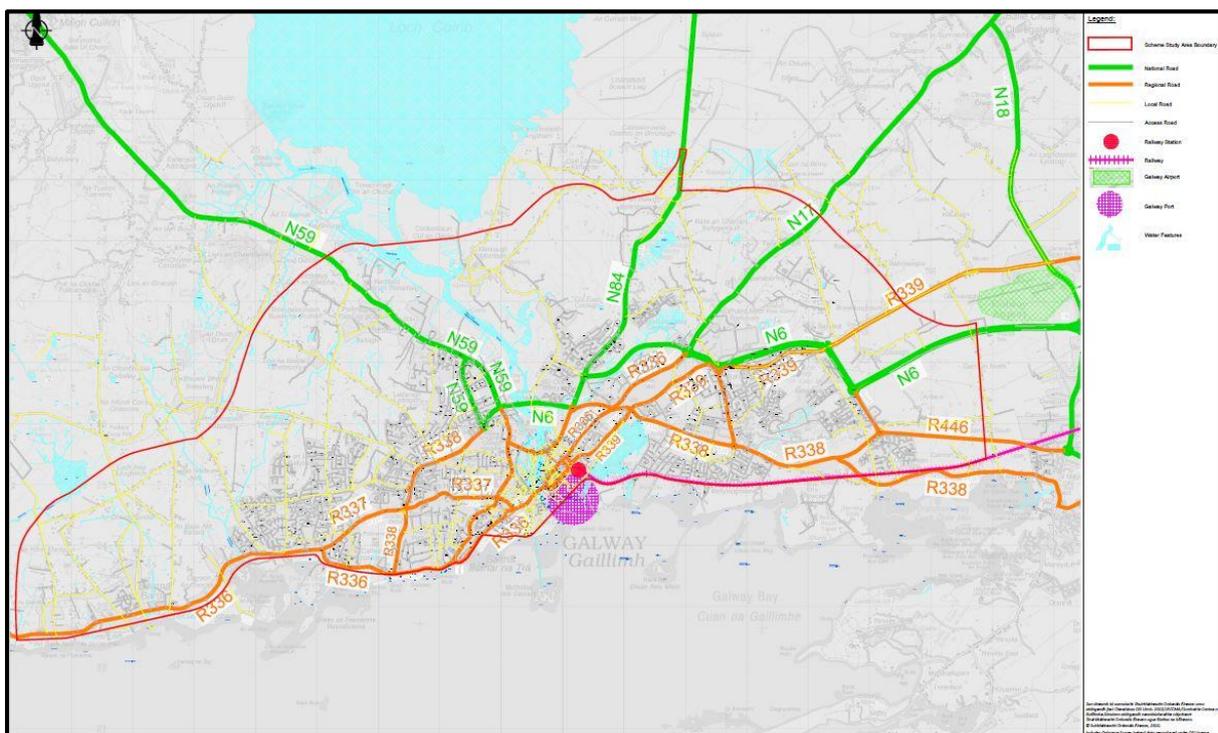


Figure 1.2 Existing Road Network within Scheme Study Area

The objectives of the N6 Galway City Ring Road include, but are not limited to, the following:

- Congestion relief on major through routes;
- Journey time reliability to facilitate mobility of people and goods;
- Removal of peak hour traffic delays to minimise fuel wastage and emissions;
- Support sustainable transport policies for shorter commutes;
- Reduce road traffic collisions by providing safer urban streets by segregation of the interface of through traffic from urban traffic;
- Improved transport links to access markets within the city; and
- Improved transport connections from Galway onwards to Connemara and the Western Region

1.3 History of the Scheme

Work on Phase 1, Scheme Concept & Feasibility Studies, commenced in January 2014 with the initial studies focused on establishing the nature and extent of the existing problem in order to establish the viability of progressing further with a scheme. Analysis of existing travel patterns and desire lines versus the provision of services via the existing transport network was undertaken. Key performance indicators were used to measure and quantify existing performance in terms of congestion levels/delay and also to quantify potential future performance improvements with a scheme in place. An economic appraisal was undertaken at this stage which concluded that options comprising of a combination of works on the public transport network and the road network would offer a positive benefit if advanced whereas the option to do nothing would deliver a negative return for Galway City and County.

The Phase 1 appraisal included cost benefit analysis to compute the cost of known delays on the existing network which a potential future scheme could potentially recoup. This initial high level cost benefit analysis identified that a scheme costing in the order of magnitude of €300 to €500M could generate the potential for journey time savings in the order of €491M over 60 years. Therefore, from an economic perspective, considering journey time savings only, a potential scheme could deliver value for money. Approval to advance to Phase 2 was obtained given the strong justification for advancing a scheme which includes construction works to provide infrastructure to provide a solution to the transportation issues in Galway.

Phase 2 Route Selection commenced in May 2014. The purpose of Phase 2 is to identify a suitable Study Area for the examination of alternative options, to identify key constraints within that Study Area, to develop feasible route options and to carry out a systematic assessment of these options leading to the selection of a Preferred Route Corridor which will form the basis for the detailed design to follow in Phase 3. The analysis undertaken during Phase 2 showed that the solution to the existing problems in Galway required an overall transportation solution as opposed to a typical bypass at a distance from the city. Therefore, from Phase 2 onwards, the focus was on trying to find a transportation solution.

Collectively an upgrade of the existing infrastructure, an 'on-line' option, and numerous 'green field' options, as well as an assessment of improvements to public transport, were considered during Phase 2, both in isolation and in combination with each other. The conclusion of this analysis was that additional road infrastructure is required, which includes an additional River Corrib bridge crossing, as part of the road component of the overall transportation solution. The planning and design of the preferred option for the road component of the transportation solution led to the publication of the Emerging Preferred Route Corridor in May 2015 and the Route Selection Report was published in March 2016².

In parallel to this work, Galway County Council, Galway City Council, Transport Infrastructure Ireland (TII) and the National Transport Authority (NTA) worked collaboratively in developing an integrated transport strategy to resolve the existing transportation issues in Galway City and its environs. The transportation solution developed includes a smart mobility component, public transport component and a road component and is known as the Galway Transport Strategy. The Galway Transport Strategy (GTS) aims to address the current and future transport requirements of the city and its connectivity to surrounding towns and villages, including Bearna, Oranmore, Moycullen and Claregalway.

The GTS sets out a series of actions and measures, covering infrastructural, operational and policy elements to be implemented in Galway over the next 20 years and sets out a framework to deliver the projects in a phased manner. It identifies that Galway has a transport problem

² N6 Galway City Transport Project (2016) Route Selection Report. www.N6galwaycity.ie

due to its reliance on the private car, which has been influenced by the existing public transport network, limited cycling facilities, a large rural hinterland and being the key gateway in and out of Connemara. Combined with this, it has a road and street network which is ill-suited to the high traffic flows currently prevalent and contributing to increased congestion and delay, affecting quality of life and impacting on the functionality of the city. To address this, a fundamental shift is needed towards sustainable travel, reducing the dependency on the private car and taking action to make Galway more accessible and connected, enhancing quality of life within the city for all. Galway City Council are seeking to make Galway an exemplar of Smarter Travel in Ireland. The proposed N6 Galway City Ring Road (GCRR) forms part of the GTS as the main road component of the overall transport solution for Galway City and its environs.

Upon completion of the GTS, which was managed by Galway City Council, and completion of Phase 2, which was managed by Galway County Council, Arup commenced work on Phase 3 Design, the purpose of which is to develop the design of the N6 GCRR to sufficient level of detail to establish landtake requirements and to progress the proposed road development through the statutory process. Phase 4 EIS/EAR and The Statutory Processes is also underway and includes an environmental assessment of the potential impacts of the proposed road development on the receiving environment and the establishment of mitigation measures. Legal documentation for land acquisition has also been prepared as part of the statutory processes necessary to confirm that the proposed road development is in accordance with planning and environmental legislative and procedural requirements.

1.4 Previous Studies

1.4.1 Galway Transportation and Planning Study

In 1996 Galway County Council and Galway City Council commissioned a transportation and planning study of an area which included Galway City and its environs up to approximately a 30km radius of the city. This study was completed in September 1999 and was known as the Galway Transportation and Planning Study (GTPS). The aim of this study was to define the optimum locations for the future development of Galway City and its environs and to define the best transport arrangements to cater for this development. The GTPS considered the merits of options including the construction of an outer bypass and bridge crossing of the River Corrib.

1.4.2 Galway Public Transport Feasibility Study

The Galway Public Transport Feasibility Study was undertaken in 2010. The recommendations of the Galway Public Transport Feasibility Study of 2010 included various improvements to the public transport network in Galway in order to improve the mode share in Galway. Some of these improvements have been initiated at this stage and others remain as objectives.

1.4.3 Galway Metropolitan Smarter Travel Area Action Plan 2010-2015

In 2010, Galway City and Galway County Council developed the *Galway Metropolitan Smarter Travel Area Action Plan 2010-2015* which is in line with the Smarter Travel national policy and sets out to develop a world-class area for sustainable travel in the area of Galway City and hinterland. Following this, Galway City and Galway County Council also developed the Galway City and Environs Walking and Cycling Strategy 2010-2017 which sought to deliver on national cycle policy at the Galway City level.

1.4.4 Previous Potential Road Solutions

The 2006 Galway City Outer Bypass, an earlier scheme, was previously developed and submitted to An Bord Pleanála (ABP) for approval on 1 December 2006. Consultants were appointed in 1999 to undertake feasibility studies, route selection, design and planning for the

Galway City Outer Bypass scheme. The resultant scheme including the Compulsory Purchase Order (CPO) and Environmental Impact Statement (EIS) was submitted to An Bord Pleanála (ABP) in December 2006. This scheme consisted of 21.4km of mainline, 9km of link roads, associated intersections and a major bridge crossing of the River Corrib.

On 28 November 2008, ABP delivered its decision in respect of the N6 Galway City Outer Bypass (2006). ABP granted approval for part of the scheme, the section from the N59 east to the existing N6, inclusive of both junctions at the N59 and the N6. In their decision, ABP noted their consideration of all data presented and granted approval as it considered that the part of the road development being approved would be an appropriate solution to the identified traffic needs of the city and surrounding area. ABP noted that there would be a localised severe impact on the Lough Corrib candidate Special Area of Conservation but that this did not adversely affect the integrity of this candidate Special Area of Conservation (cSAC).

ABP refused permission for the section of the scheme from the R336 west of Bearna to the N59. ABP considered that the need for an outer bypass of Galway City connecting the N6 on the east to the R336 coast road as an essential part of the strategic transport network of the Galway area had been established. However, ABP was not satisfied with the section of the proposed road development through Tonabrocky Bog which is:

- part of the Moycullen Bogs Natural Heritage Area (NHA);
- an active Blanket bog listed as an priority habitat in Annex I of the EU Habitats Directive; and
- the site of a population of Slender cotton grass which is a legally protected and vulnerable species.

ABP refused the western section of the scheme on the basis that this part of the road development would not be in accordance with the preservation of the Tonabrocky habitat given the potential for significant adverse effects on the environment and that less damaging alternatives may be available³.

An application was made by a third party to the High Court seeking leave to issue judicial review proceedings against the ABP decision which granted approval of the eastern section of the N6 Galway City Outer Bypass (2006). At that point in time, the N6 Galway City Outer Bypass (2006) scheme was assessed by ABP on the premise that the loss of a relatively small area of Priority Habitat would not adversely affect the integrity of the cSAC, and the eastern section of the scheme was granted approval. The basis for the request for a review was that ABP erred in its interpretation of Article 6 of the Habitats Directive in arriving at the conclusion that the effect of the road scheme on the Lough Corrib cSAC designated site would not constitute an adverse effect on the integrity of the site.

The High Court undertook a judicial review of the ABP decision. The High Court decision of 9 October 2009 upheld ABPs decision to approve the eastern part of the scheme. On 6 November 2009, the third party was granted leave to appeal to the Supreme Court against the High Court decision of 9 October 2009. The Supreme Court sought the opinion of the Court of Justice of the European Union (CJEU) on an interpretation of the Habitats Directive.

The judgment of the CJEU was delivered on the 11 April 2013. The judgement concluded on two significant points:

1. The N6 Galway City Outer Bypass (2006) would have a significant adverse effect on the integrity of the Lough Corrib cSAC due to the removal of 1.5ha of Limestone pavement (a habitat type for which the cSAC was selected); and

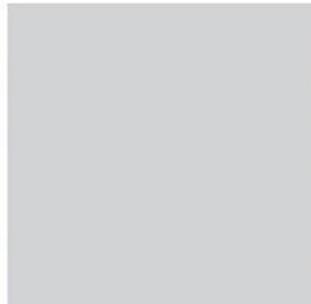
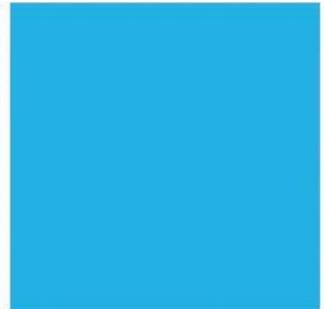
³ Reference ABP decision 07.ER.2056

2. Given that the N6 Galway City Outer Bypass (2006) would have an adverse effect on the integrity of the cSAC, the project could only be granted authorisation under Article 6(4) of the Habitats Directive.

The EU Judgement (i.e. Case C-258/11) established that the loss of a relatively small area of Priority Annex I habitat, where it is a habitat for which the Lough Corrib cSAC is selected, would adversely affect the integrity of the Lough Corrib cSAC and that the provisions of Article 6(4) must apply in granting consent for the project. Therefore, there is a need to consider any feasible alternatives and demonstrate the imperative reasons of overriding public interest that necessitate the project progressing, even though the project would adversely affect the integrity of a Natura 2000 site.

Following receipt of the CJEU opinion, the Supreme Court quashed the earlier ABP decision. Therefore, the process of developing a transportation solution for Galway City and environs recommenced starting again. Galway City Council and Galway County Council signed a Section 85 agreement on 28 November 2013, agreeing that Galway County Council would be the lead authority, acting on behalf of Galway City Council also, to progress the design of a solution to the transport issues affecting Galway.

Chapter 2
Need for the Scheme



2 Need for the Scheme

2.1 Overview

As a Gateway to the Connemara and the Western Region, connectivity and accessibility to and through Galway City is essential in aiding the region to revitalise, improve and develop into the future. Providing well developed transport links via roads, rail and air to the Western Region enables enterprises and the local economy of the west, to grow and develop as a viable alternative to the east coast corridor which is of significant public interest at a national level.

In tackling the city's congestion issues, the scheme will provide a better quality of life for the city's inhabitants and provide a much safer environment in which to live. By reducing the number of cars on the roads within the city centre and improving streetscapes, workers and school children are facilitated to commute using multi modal transport means. This includes travelling on foot, by bicycle and on the public transport system. As a result more sustainable travel is supported and encouraged. This is of overriding public interest at a local level in Galway itself, but more importantly for the entire Western Region as Galway is at the core of the region and needs to be able to function efficiently to serve the region. It also is of overriding public interest at a national level due to the national concern in relation to our health, arising from the high levels of inactivity, especially among our younger children.

Relief of congestion in the city is essential to facilitate the improvement of the existing public transport network through measures such as the reallocation of road space, provision of Bus Rapid Transport (BRT), park and ride facilities, and or complementary traffic measures such as bus priority at junctions.

More sustainable and reliable infrastructure links to and from the Gaeltacht areas of the Western Region enables Irish language speakers to choose to remain in their native areas, and develop its economy in a way that is both language and culture friendly, halting the recent decline in population. This is of public interest as it is of national interest to preserve our heritage including our native language.

The need for an integrated transport solution which will relieve the congestion which is restricting Galway currently guided the development of the Galway Transport Strategy, of which the N6 GCRR is a component, as this congestion is experienced by all travellers using various transport modes.

2.2 Existing Road Network

The existing road network is shown on **Figure 1.2**. The existing N6 is a four lane carriageway between the N6 and the N59, with a varying median width, and a number of at-grade junctions comprising at-grade roundabouts and signalised junctions. There are various forms of at-grade junctions including roundabouts, signals and priority junctions on the R338 from its junction with the N59 to the R336.

The M6 motorway becomes the N6 National Road to the east of Galway City and is the primary access to Galway from the east. The N6 connects to the local road network at Coolagh Roundabout, an at-grade junction which experiences significant congestion during the morning peak hour. The N6 then turns north to Briarhill Junction, an at-grade signalised junction, which connects to Monivea Road and onto Parkmore Road. This junction experiences significant capacity problems during both the morning and evening peak hour due to the volume of traffic trying to access/egress the Parkmore Industrial Estates and Briarhill Industrial Parks.

The N6 continues as a dual carriageway to the at-grade signalised junction at Ballybrit and onto the N17 Tuam Road, again a signalised junction. This particular junction experiences delay at peak hours due to the traffic volumes on the N17 being equivalent to the volumes on the N6. The dual carriageway continues to the Kirwan Roundabout, i.e. the junction of the N6 and the N84 Headford Road. This five arm at-grade roundabout experiences significant delays at peak hour due to the strongest demand controlling the flows onto the roundabout. Again, the traffic volumes on the N84 Headford Road are of the same order as the traffic volumes on the N6 at this point.

The N6 Headford Road between the N84 Kirwan Roundabout and the N6 Bodkin Junction is one of the busiest roads in the city carrying approximately 32,000 vehicles per day. This short section also has two additional traffic signals to facilitate access to retail and residential areas. The N6 over the Quincentenary Bridge, to the west of the Bodkin Junction, carries 34,600 vehicles per day. This volume decreases on the west of the river as traffic accesses the university and the hospital at the N6/Newcastle Road and N6/N59 Browne Roundabout junctions. However, the R338 Seamus Quirke Road to the west of Browne Roundabout, which is a single carriageway plus bus lanes, carries approximately 24,000 vehicles per day along a busy street with frontage, retail accesses, cyclists and high pedestrian usage. There are also numerous signals on this section, all of which adds to delay.

The R338 then connects to the R336 Coast Road by continuing south along Threadneedle Road. There are two major secondary schools, and three primary schools in the vicinity of Threadneedle Road, all of which contribute to delay.

Therefore, the N6 weaves a route through many at-grade junctions from east to west around Galway City. The proximity of the junctions and the frequency of these junctions does not facilitate movement of vehicles in a timely manner or in a reliable manner. It also hinders and discourages modal shift as the public transport vehicles are also experiencing similar delays and such congested streets are perceived as dangerous for cyclists and pedestrians.

2.3 Existing Traffic Conditions

2.3.1 Travel Patterns

The West Regional Model (WRM) is a strategic transport modal model for the counties Galway, Mayo, Sligo and surrounding areas, with a focus on the city of Galway. It is part of a hierarchical multi-modal transport modelling system for Ireland that will allow the appraisal of a wide range of potential future transport and land use options. The regional models are focussed on the travel-to-work areas of major population centres (e.g. Dublin, Cork, Galway, Limerick, and Waterford). The models are being developed under the Modelling Services Framework (MSF) by the NTA, SYSTRA and Jacobs Engineering Ireland. The WRM is used in the analysis and testing of various scenarios for the N6 GCRR.

An analysis of desire lines for travel in Galway has been undertaken to gain an understanding of travel patterns in the scheme study area. This has been developed using the extensive information on trip origins and destinations incorporated into the base year transport model. The model is divided up into approximately 300 zones, which have been aggregated to 16 sectors for the purposes of establishing the desire lines or demand between the sectors. The desire line analysis can be further aggregated into a broad representation of strategic travel patterns in Galway focusing on trips that cross the River Corrib and that either travel into Galway City or travel through the city.

Figure 2.1 below is a schematic diagram to illustrate the travel patterns for private car trips to, from or through Galway City in the 2012 Base year morning peak hour (extracted from the traffic model). Red arrows show movements that cross the River Corrib and green arrows show movements that do not cross the River Corrib.

In total 35% of total car trips into and around Galway City cross the River Corrib. Of this total number of cross-river trips, approximately 9% are bypass traffic. Some 40% of all trips remain on the same side of the city as where they started.

The strongest movements are from the west side of Galway City to the east side of Galway City and vice versa which represents 20% of all trips. This analysis implies that the preferred option must cater for movements from one side of the city to the other in addition to through traffic, rather than a conventional bypass of the city which would mainly cater for through traffic. This analysis also demonstrates the importance of an integrated solution which supports modal shift for shorter commutes.

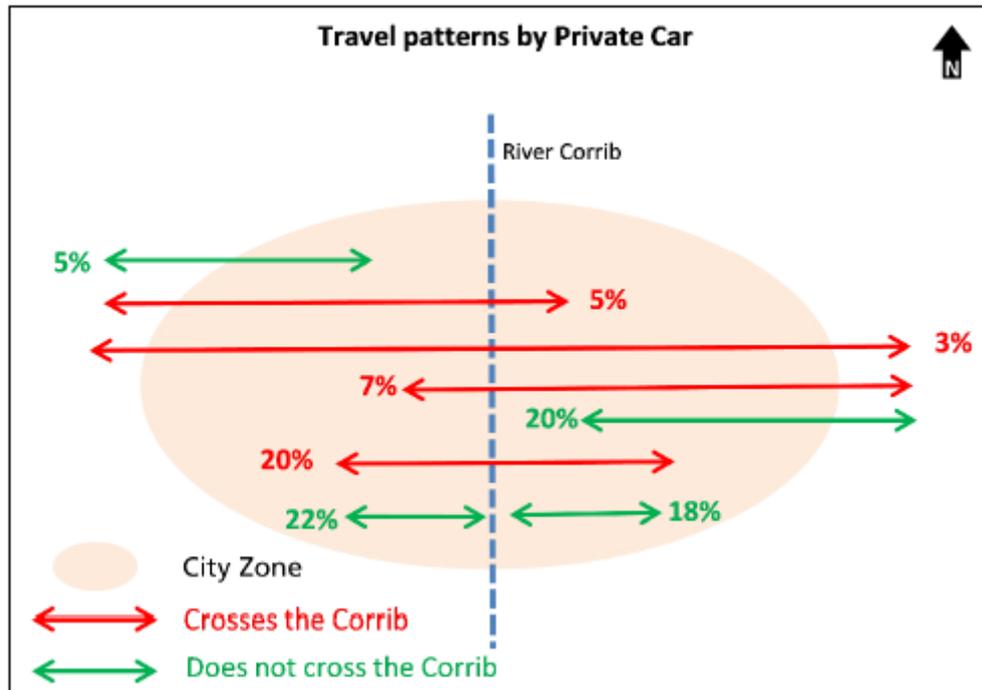


Figure 2.1 Travel Patterns 2012 Base Year Morning Peak Hour

2.3.2 AADT on Key Links

The following Annual Average Daily Traffic (AADT) flows were estimated based on traffic counts undertaken by Galway City Council November 2012 and 2013 along the existing N6:

- N6 between Coolagh Roundabout and Monivea Road – 21,400 AADT;
- N6 at Galway Racecourse – 19,900 AADT;
- N6 between Tuam Road and Kirwan Roundabout – 22,400 AADT; and
- N6 River Corrib Crossing – 34,600 AADT.

2.3.3 Peak Traffic Volumes on Key Links

TA 79/99 of the UK DMRB is used to determine the capacity of urban roads. This standard is not formally implemented in Ireland but is considered as background reading which indicates good practice. Within this standard, classifications such as Urban Motorways or Urban All Purpose roads are used, with further sub-classification of Urban All Purpose Roads as UAP1 to UAP4. The N6 in Galway can be defined as a UAP2 which refers to a “good standard single/dual carriageway road with frontage access and two side roads per km”

The N6 Bóthar na dTreabh is generally a four lane single carriageway from the R338 Seamus Quirke Road to the R339 Monivea Road junction. The N6 then becomes a dual carriageway between the Monivea Road and the Coolagh Roundabout. From TA 79/99, a 2 lane UAP2 road has a capacity of approximately 1,470 vehicles per hour for a 7.3m wide 2 lane single carriageway. This capacity increases to 3,200 vehicles per hour for a 7.3m wide 2 lane dual carriageway

Average weekday peak hour traffic flows on the N6, within the Galway urban area have been derived from the November 2012 traffic surveys and are presented in **Table 2.1**.

Table 2.1: N6 Peak Hour Traffic Volumes (November 2012)

Road	Location	C'way	Direction	AM Peak (08:00-09:00)	PM Peak (17:00-18:00)
N6	Quincentenary Bridge	Single	Eastbound	1,614	1,357
			Westbound	1,466	1,520
N6	North of Bodkin Roundabout	Single	Northbound	1,315	1,132
			Southbound	1,286	1,052
N6	Terryland	Single	Eastbound	925	885
			Westbound	1,000	1,000
N6	Galway Race Course	Dual	Eastbound	881	1,178
			Westbound	905	1,357
N6	Coolagh	Dual	Northbound	1,274	731
			Southbound	490	1,201
N6	Ardaun	Dual	Eastbound	601	1,183
			Westbound	930	603

The four lane single carriageway section of the N6 between the Quincentenary Bridge and Terryland carries the highest volumes of traffic in the peak hour. These are frequently at or above the capacity threshold defined in TA 79/99, which results in congestion on the route. Lower traffic volumes are carried on the dualled eastern section of the N6 Bóthar na dTreabh, however congestion is still experienced along this section, due to capacity restrictions at junctions.

2.4 Existing Journey Times

Analysis of travel surveys, journey times and delays on the existing network was carried out to establish a set of measurable key performance indicators (KPI) to define the existing problems and ultimately with which to compare future potential solutions.

An analysis of observed journey times on three key routes around Galway and environs as shown on **Figure 2.2** below was carried out to show the variance in journey times between the peak and off-peak periods in the base year. The difference between the peak and off-peak journey times is a measure of the level of congestion during the peak, and increasing congestion results in worsening journey time reliability.

Observed travel times in 2012 Base Year on each of the routes in the inbound direction in the morning peak period versus the off-peak period are tabulated in **Table 2.2** below.

This assessment of journey time shows that the travel times on these three key routes in the morning peak hour are on average more than double the off-peak travel times.

Table 2.2 Journey Time Reliability

		2012 Observed Journey Times (minutes)			
		Off-peak average hour	Morning peak hour	Difference	%Difference
Inbound	Route 1 IN	14	28	14	100%
	Roue 2 IN	14	25	11	79%
	Route 3 IN	8	19	11	138%
	Average	12	24	12	105%

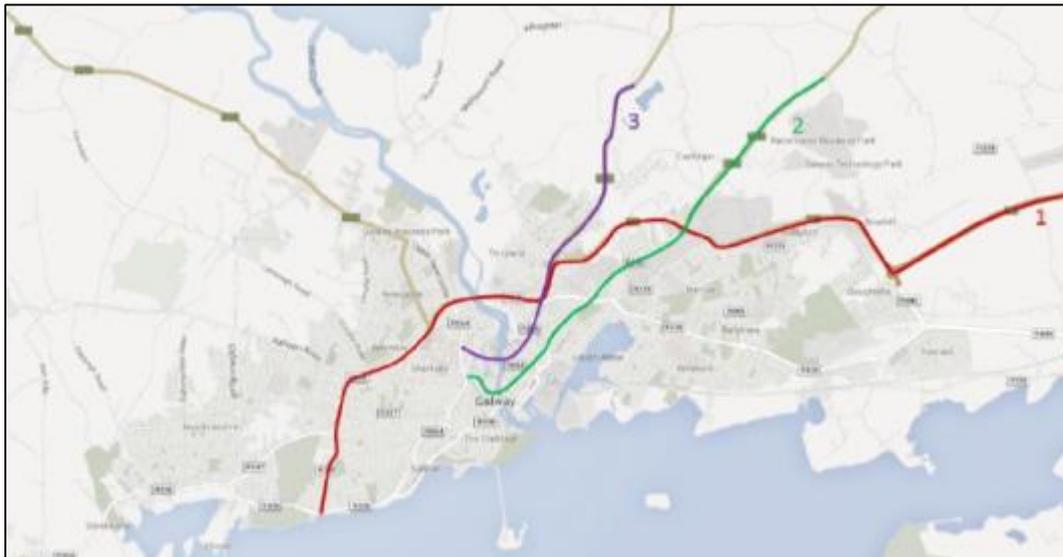


Figure 2.2 Journey Time Reliability Routes

From the analysis of the existing journey times, it is clear that there is a problem with journey time reliability, which is caused by delay. The proportion of total passenger car unit journey time attributable to delay along the key routes varies considerably throughout the city. This is very significant as it is impossible to determine or predict in advance with confidence that a particular journey can be completed in a particular time.

The lack of certainty in journey time is a significant deterrent to attract industry, to access markets and to the entire viability of the city and county of Galway. Investment in a scheme which provides a solution to redress these issues is wholly justifiable to ensure that the western area of Ireland can achieve critical mass and growth and ultimately offer an alternative development corridor to the east coast corridor.

Galway and the Western Region in general, have experienced difficulties in the past and continue to experience difficulties due to its peripheral location along the Atlantic seaboard and on the periphery of the European Union. Investment in the provision of strong communication links would redress this peripherality and would allow for growth.

The N6 GCRR seeks to address this issue by relief of the traffic congestion by removal of traffic both through modal shift and provision of additional road space.

2.5 Level of Service

Level of service is a quality measure describing operational conditions within a traffic stream. At present, 24hr weekday flows on a number of sections of the N6 exceed the suggested

AADT value of 20,000 for LOS D which is what is suggested as a guideline for the AADT flow of a Type 2 Dual carriageway. In the urban area, junction capacity is the key contributor to road congestion and level of service, over and above link capacity however. Therefore, an assessment of the volume / capacity (V/C) ratio was undertaken at signalised junctions and roundabouts, plus other key junctions in the study area as shown on **Figure 2.3**. Data was extracted from the AM peak base year traffic model to show the maximum volume-to-capacity ratio for the turns at each junction. The volume to capacity ratios are then related to level of delay and congestion at the junctions.

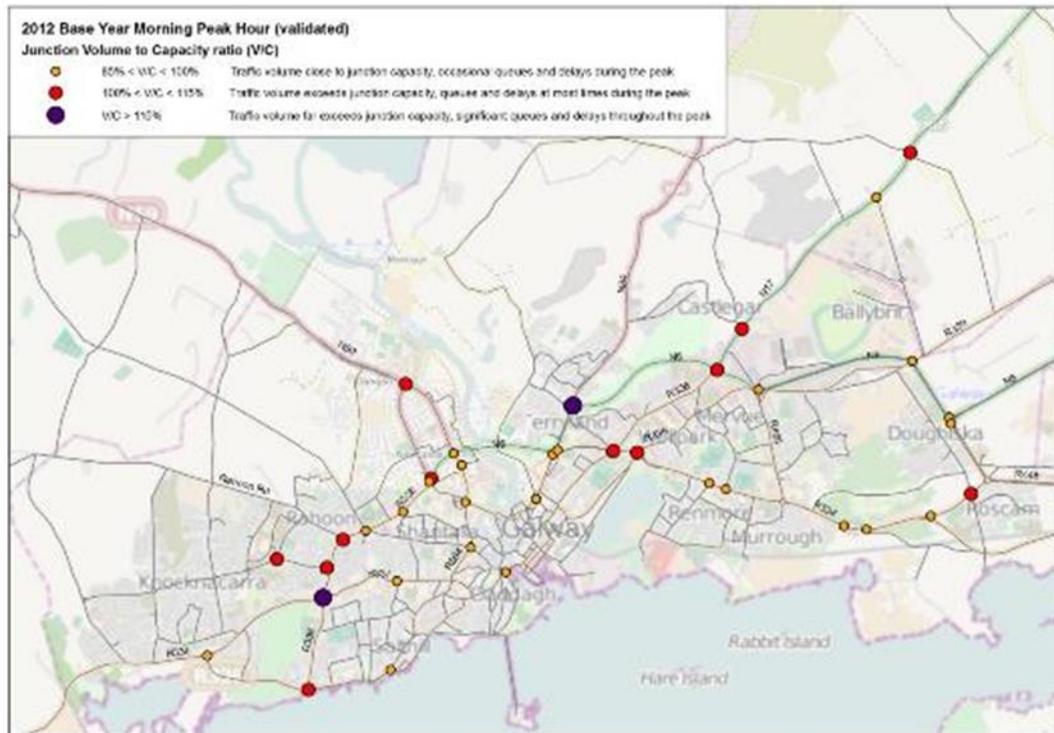


Figure 2.3 Volume / Capacity Ratios at Junctions (2012)

Figure 2.3 shows the number of junctions with a max turn V / C within standard ranges of 0.85-1.00, 1.00-1.15 and >1.15. Junctions with a V / C ratio greater than 1 are over capacity. Ideally junctions should operate at a V / C ratio of < 0.85, which would allow 15% spare capacity in the junction to cope with an unexpected event or natural growth.

This analysis demonstrates that the existing network is restricted by junction capacity. The junctions on the critical corridors accessing the city, namely the junctions of the N84, N17 and N59 junctions with the N6, are all currently over capacity at peak hour as shown on **Figure 2.3** above. These junctions are operating at greater than 100% of their capacity, which in turn leads to the significant delays at these junctions. As these junctions are the main arteries into the city and the main junctions on the circumferential route around the city, this is a significant issue for the Gateway of Galway.

In addition, approximately 40% of all junctions on the key access routes across the scheme study area are operating above 85% capacity. This demonstrates that the network is finely balanced with minimal spare capacity to allow for any unforeseen event or natural growth. This is significant as grid-lock on a city wide scale is evident in the event of an unforeseen occurrence such as an accident, significant weather event, temporary traffic management associated with regular maintenance works on existing road network, seasonal events and particular match day events.

The N6 GCRR is essential to resolve this constant lingering problem of the existing N6 route and existing network which frequently results in grid-lock in the city which results in the existing network often being at forced or breakdown flow level of service.

2.6 Existing Road Safety Issues

The existing traffic volumes through Galway City lead to congestion and collisions. There are significant conflict points between vehicular traffic and pedestrians, cyclists and other non-motorised users at junctions. In many instances no provision at all is made for non-motorised users at junctions. As a result there is a proliferation of collisions in Galway City and its environs. These collisions can, in part, be attributed to the congestion, the effects of which lead to collisions in the following manner:

- (i) Motorists use 'rat runs' many of which transverse residential areas which are not suitable for large traffic volumes, leading to an increased likelihood of collisions between non-motorised users and vehicular traffic.
- (ii) Driver frustration results in drivers making swift lane change to queue jump and to make sudden sharp direction changes in response to a perceived gap, all of which can be fatal for a cyclist also manoeuvring in the traffic.
- (iii) As congestion increases, adherence to the rules of the road decreases, which is evident with vehicles ignoring red lights and continuing through into the junction. This can lead to fatalities with pedestrians trying to negotiate the crossings with frustrated drivers trying to jump ahead of a signal cycle.

A study undertaken by the Road Safety Authority into different collisions in the cities in the Republic of Ireland, including Galway City, indicated that almost half of all fatalities in the period from 1997 to 2006 in Galway City were pedestrians with the majority of these fatalities occurring at junctions. Therefore, if it is possible to reduce the collisions at the junctions within an overall transportation solution, there is potential to save lives most importantly.

Therefore, congestion relief on the existing road network is critical to a reduction in collisions. Relief of congestion is measured against improvement in levels of service and in improved journey times resulting from the redistribution of traffic once the N6 GCRR is in place. This transfer of trips to a new safer network results in segregation of the through traffic from urban traffic, which is measured in terms of reduced traffic volumes on city centre streets. It also leads to a reduction in collisions, which is measured in terms of positive safety benefits.

2.7 Need for the Scheme Summary

The overriding need for the N6 Galway City Ring Road (GCRR) is underpinned by the fact that a modern economy requires world-class road transport infrastructure that is sustainable from an economic, social and environmental perspective. An efficient transport network which works for Galway City and environs will improve access to the Western Region, enhancing its attractiveness for inward investment and new employment opportunities and will contribute to enhanced competitiveness by reducing transport costs.

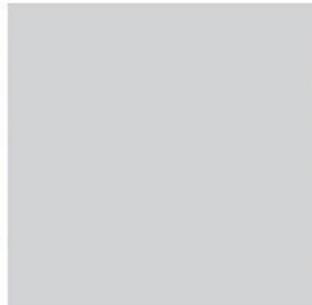
The need to deliver the N6 Galway City Ring Road is supported in terms of policy from national to local level. The N6 GCRR is congruent with current transport policy and planning policy as set out in the various policy documents over the past number of years. Specific details for each of the policies and how the N6 GCRR complies with these and more local and regional policies are outlined in **Section 3** below.

The specific project need is defined in terms of its potential to solve existing transport issues in Galway City and environs which include but are not limited to the following:

- Major routes through the city are congested;

- Journey time unreliability due to uncertain quantum of delay;
- Journey time variability throughout the day;
- Peak hour traffic delays;
- By-passable traffic is in conflict with internal traffic;
- Road traffic collisions on existing network;
- Inadequate transport links to access markets within the city;
- Inadequate transport connections from Galway onwards to Connemara, and
- Lack of accessibility to the Western Region as a whole.

Chapter 3
Strategic Fit and Priority



3 Strategic Fit and Priority

3.1 Overview

The N6 GCRR is congruent with current transport policy and planning policy as set out in various policy documents over the past number of years. Specific details for each of the policies and how the N6 GCRR complies with these and more local and regional policies are outlined below.

3.2 European Context

3.2.1 EU Sustainable Development Strategy

The EU Sustainable Development Strategy (EU SDS, 2001, reviewed 2009), is a framework for a long-term vision of sustainability in which economic growth, social cohesion and environmental protection go hand in hand and are mutually supporting. In developing EU transport policy, the EU states that it is essential to take account of all aspects of sustainability (such as emissions, noise, land occupancy and biodiversity) and to base any action on a long term vision for the sustainable mobility of people and goods that covers the entire transport system, and on complementary efforts at EU, national and regional levels.

The EU SDS dedicates one of its seven key challenges to sustainable transport, with the overall objective to 'ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment'. The EU SDS operational objectives and targets include:

- Decoupling economic growth and the demand for transport with the aim of reducing environmental impacts.
- Achieving sustainable levels of transport energy use and reducing transport greenhouse gas emissions.
- Reducing pollutant emissions from transport to levels that minimise effects on human health and/or the environment.
- Achieving a balanced shift towards environment friendly transport modes to bring about a sustainable transport and mobility system.
- Reducing transport noise both at source and through mitigation measures to ensure overall exposure levels minimise impacts on health.
- Modernising the EU framework for public passenger transport services to encourage better efficiency and performance.

The Europe 2020 strategy unites two flagship initiatives under the sustainable growth priority to tackle the issue of sustainable transport:

- 'Resource efficient Europe' supports the shift towards a resource-efficient, low-carbon economy. This flagship initiative provides a framework for actions in many policy areas including transport. One of the key components is a roadmap presenting a vision for a transport system by 2050 that promotes clean technologies.
- 'An industrial policy for the globalisation era' highlights ten key actions for European industrial competitiveness, including a more efficient European transport infrastructure and services.

It is within this broader EU policy context that the proposed road development project is set.

As of January 2014, the European Union has a new transport infrastructure policy that connects the continent between east and west, north and south. This policy aims to close the

gaps between Member States' transport networks and to remove bottlenecks that still hamper the smooth functioning of the internal market. It is recognised that integrated transport networks are essential to a single market.

The aim of the European Union's land transport policy is to promote a mobility that is efficient, safe, secure and environmentally friendly. Congestion is not just a nuisance for road users; it also results in an enormous waste of fuel and productivity. Many manufacturing processes depend on just-in-time deliveries and free flow transport for efficient production. Congestion costs the EU economy more than 1% of GDP – in other words, more than the EU budget. To reduce this, the EU needs more efficient transport and logistics, better infrastructure and the ability to optimise capacity use.

The EU Commission also recognises that Europe needs transport which is cleaner and less dependent on oil. Moving towards low-carbon and more energy efficient transport, as well as developing more efficient urban and intermodal transport solutions as alternatives is essential to developing a more environmentally friendly transport policy.

3.2.2 TEN-T Network

The European transport infrastructure (TEN-T) includes the core transport routes in all EU Member States for all transport modes: air, rail, road, maritime and inland waterways. The N6 around Galway forms part of the TEN-T comprehensive network in Ireland. It serves to relieve congestion along the existing access routes around Galway, especially the key access route to Galway Port and Galway Train Station as both of these locations are key to intermodal transportation options. Equally, the N6 GCRR seeks to link the entire Western Region to the air transport network in Ireland by providing a reliable link to the other sections of the TEN-T network in Ireland and facilitate transfer to Knock Airport, Shannon Airport or Dublin Airport.

The objectives of the N6 GCRR align with the European Union's land transport policies as included among its objectives are the following targets:

- Segregation of the interface of through traffic from urban traffic
- Increase journey time certainty
- Reduce journey times
- Implement sustainable transport policies for shorter commutes
- Improve accessibility to Galway City
- Improve accessibility of Galway urban area to its main markets
- Integration of Galway City and environs (including western parts of Galway County) into the national economic development agenda
- Improve linkages between the west and east sides of the county
- Improve accessibility of the Gaeltacht areas to the remainder of the county and country
- Recognition of the role of Galway City as a gateway to the west and Connemara, and the consequent socio-economic benefits of enhanced connectivity of Galway City to national markets, enhanced tourism accessibility, and the national transport system
- Improvement to the TEN-T network to ensure connectivity of the west of Ireland to the single European market.

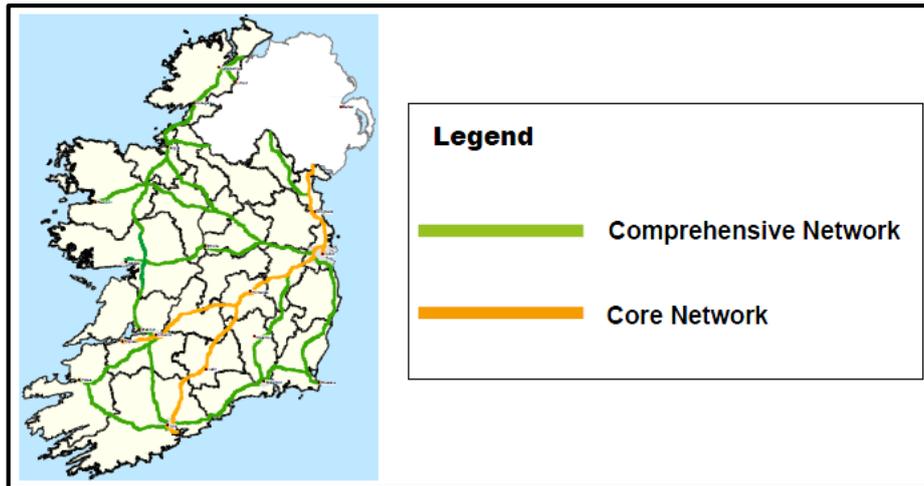


Figure 3.1 TEN-T network

3.3 National Policy Context

3.3.1 Building on Recovery: Infrastructure and Capital Investment 2016-2021

The *Building on Recovery: Infrastructure and Capital Investment 2016-2021* This Capital Plan presents the Government's new framework for infrastructure in Ireland over the period 2016-2021. A recovering economy, jobs growth, and strengthening public finances means the Government revised its capital expenditure commitments for the remainder of the decade recognising that '*High quality infrastructure is an important element of a modern society and economy. It strengthens economic growth through enhancing efficiency, productivity and competitiveness*'.

The transport capital allocation in this Capital Plan is largely framed by the recommendations and priorities set out in the 2015 Department of Transport, Tourism and Sport (DTTaS) *Strategic Investment Framework for Land Transport*, which centre on:

- maintaining and renewing the strategically important elements of the existing land transport system
- addressing urban congestion
- maximise the contribution of land transport networks to national development, including providing access to poorly served regions

The Capital Plan incorporates the following key objectives relevant to this proposed road development:

- €6 billion for investment in the national, regional and local road network over the 7 year period, with € 4.4 billion to ensure the existing extensive network throughout the country is maintained and strengthened, with € 1.6 billion for new projects
- It supports the proposed road development specifically by reference to supporting the commencement of the 'Galway By-Pass' subject to planning permission

The proposed road development is consistent with these recommendations, priorities and objectives as set out in the DTTaS 2015 investment framework and the Capital Plan, as it seeks to deliver the Galway City Ring Road, to address urban congestion in Galway City, and to enhance national development through improved connectivity to west Galway.

This connectivity is essential to ensure the viability of the western parts of the county which have a very high quality tourist offering which is dependent on connectivity to achieve its potential.

County Galway has a thriving tourism industry which contributes to the national tourism industry. There were over 1.3 million overseas visitors to Galway in 2015 alone, generating an estimated €475M in revenue (Fáilte Ireland Regional Tourism Performance by County 2015, Oct. 2016). Approximately, two thirds of the tourists visit the area in the period from May to September, with one of the main attractions being Connemara with its scenic landscapes and unpolluted environment. Tourism traffic, together with local recreation traffic accessing the beaches at the west of the city, add to the traffic volumes on this linear transport corridor in this summer period. Galway is also located on the Wild Atlantic Way which is a new initiative by Fáilte Ireland to encourage tourism into the west and is likely to generate additional traffic into the area.

Tourism is a vital industry to ensure the viability and survival of the South Connemara region, which is linked to overall improved social provision, quality of life and environmental sustainability.

3.3.2 Smarter Travel, A Sustainable Transport Future, 2009

“Smarter Travel – A Sustainable Transport Future” a policy framework approved by the Government in 2009 sets out measures so that by 2020 we can have thousands more people walking, cycling, using public transport and leaving their cars at home. With this action plan, the Government aims to change the transport mix in Ireland so that by 2020 car share of total commutes drops from the current 65% to 45%.

This involves new ways of approaching many aspects of policy making in Ireland. It affects how we plan our schools and school curricula, influences where we develop residential areas and centres of employment in the future, opens up social and employment opportunities for people who experience reduced mobility and returns urban spaces to people rather than cars.

The policy acknowledges that *“transport is vital for our economy. As an island nation we need good transport connections with our trading partners; we also need to ensure efficient movement on the island. Safe and comfortable travel is also a key element of a good quality of life. The issue is not to restrict travel and transport but to facilitate smarter ways of meeting these needs”*.

Key actions set out in the policy to achieve this vision include:

- Actions to reduce distance travelled by private car and encourage smarter travel, including focusing population growth in areas of employment and to encourage people to live in close proximity to places of employment and the use of pricing mechanisms or fiscal measures to encourage behavioural change
- Actions aimed at ensuring that alternatives to the car are more widely available, mainly through a radically improved public transport service and through investment in cycling and walking

In keeping with Smarter Travel policy, a national cycle policy was announced in 2009. Ireland’s *National Cycle Policy Framework, 2009 to 2020* sets out to create a strong cycling culture in Ireland with a target level of 10% of all trips to be made by bike by 2020. The key to achieving the Government target of 10% commuting by bike by 2020 is threefold; firstly, planning at all levels needs to consider cyclist needs; secondly, transport infrastructure must provide cycle

friendly safe direct routes; and finally, education and communication is necessary to foster a cycling culture from a young age.

Over the years, Galway City and Galway County Council have developed a number of plans and strategies to help achieve national Smarter Travel policy objectives. These include:

- Galway Metropolitan Smarter Travel Area Action Plan 2010-2015
- Galway City and Environs Walking and Cycling Strategy (2010)
- Galway Transport Strategy (2016)

In 2010, Galway City and Galway County Council developed the *Galway Metropolitan Smarter Travel Area Action Plan 2010-2015* which is in line with the Smarter Travel national policy and sets out to develop a world-class area for sustainable travel in the area of Galway City and hinterland. Following this, Galway City and Galway County Council also developed the Galway City and Environs Walking and Cycling Strategy 2010-2017 which sought to deliver on national cycle policy at the Galway City level.

In 2016, Galway City and Galway County Council, in partnership with the National Transport Authority (NTA), developed the Galway Transport Strategy (GTS). This involved reviewing and consolidating various existing transport proposals to form a coherent and integrated transport strategy for Galway City and its environs and sets out an overview of the proposed actions and measures for implementation, covering infrastructural, operational and policy elements. This strategy encompasses all modes of transport, including the development of a core bus network, a cycle network and a city centre traffic management plan, all of which have been validated by transport modelling, route options assessment and development of concept designs. These consolidated proposals will provide Galway City and its environs with a clear implementation framework for the next 20 years and will underpin the objectives of the current and future Galway City and Galway County Development Plans. Smarter Travel forms the core principle of the Galway Transport Strategy.

The N6 GCRR forms part of the actions set out in the Galway Transport Strategy and it aligns with smarter travel policies both at a national level and local level. It is necessary to resolve existing traffic congestion issues in Galway in order to achieve smarter travel policies. The N6 GCRR will assist with the removal of traffic congestion from within Galway City and its environs by transferring existing and future traffic from the existing road network to the new road infrastructure. Therefore journey times will reduce and journey time certainty will increase for both public transport and private vehicle users.

Significant improvements have been made to the bus network in Galway City in recent years with the addition of dedicated bus lanes along Seamus Quirke Road on the west side and the Dublin Road on the east side, addition of sheltered waiting facilities, provision of Real Time Service Information at existing bus stops and provision of increased frequencies on busy routes. However, the overall journey from origin to destination, both in terms of time, reliability, and cost, must be more attractive via public transport in order to encourage the mode shift from the private vehicle. Therefore, whilst the public transport schemes delivered to date are significant in Galway, the bus lanes installed to date terminate in advance of the city centre and the bus returns to the congested streets with the associated lack of certainty on journey times. The strategy has identified that improvements to the Galway bus network are necessary to better cater for existing and future travel patterns in Galway City. The N6 GCRR facilitates the improvement to the bus network as it attracts traffic off the city streets, thus allowing for the reallocation of road space for public transport, which in turn creates journey time certainty which ultimately encourages modal shift to public transport. This is achieved by improving bus journey times through bus priority at traffic signals, additional dedicated bus lanes, and delivery of bus routes through to the city centre terminus. In turn, all of these

measures will also discourage city centre through traffic and force such journeys that may be necessary by car on to the new road space.

The reduction in traffic congestion will also help to realise other proposed actions in the Galway Transport Strategy because the existing road space can also be reallocated for cyclists and pedestrians. This will result in reducing the number of short commuter journeys by car by facilitating journeys by bicycle which are faster, cheaper, and more sustainable and generate health benefits.

The delivery of an overall solution which alleviates the current congestion will in turn improve the streetscapes to enable workers/school children to commute by walking and cycling, thereby reducing the very high percentage of short commutes by providing a safe environment for such a change in behaviour. Reallocation of the existing road space which will be created once traffic moves to the new road space is necessary to deliver this high quality safe environment within which vulnerable road users can move safely.

Currently, Galway City Council have projects in design stage to deliver a Greenway from the city centre to Bearna and from the city centre to Oughterard. The Bearna Greenway will enable school children to cycle from the western suburbs of Galway City and Bearna to the secondary schools in the Salthill area. Galway City Council have recently completed construction of the Threadneedle Road cycle lane which is a significant improvement, designed again to promote cycling as a mode of transport to the secondary schools which are located on and adjacent to Threadneedle Road. Further improvements are possible once congestion is reduced thus facilitating further increases in journeys by bicycle, such as junction upgrades including installation of traffic signals, speed reduction measures and installation of additional nodes on the existing network to improve connectivity. In turn, all of these measures will also discourage city centre through traffic and force such journeys that may be necessary by car on to the new road space. It is a cyclical process which can deliver significant mode shift, especially in a smaller city like Galway.

Achieving the targets as set out in Smarter Travel policies will deliver a more attractive, vibrant and economic Galway City with associated health and environmental benefits, all of which are necessary for sustainable travel into the future. The N6 GCRR aligns with these policies and this project is necessary to firstly resolve the congestion issues which are currently restricting maximum implementation of the Smarter Travel policies by supporting sustainable transport policies for shorter commutes.

3.3.3 Forfás Regional Competitiveness Agendas

Forfás was Ireland's national policy advisory body for enterprise and science until 2014 when it was dissolved and integrated with the Department of Jobs, Enterprise and Innovation. Forfás' policy functions included the provision of independent and rigorous research, advice and support in the areas of enterprise and science policy. This work informed the Department of Enterprise, Trade and Employment and wider Government in its responses to the fast-changing needs of the global business environment.

In their suite of seven Regional Competitiveness Agendas (RCAs): *Overview, Findings & Actions of December 2009*, Forfás assessed how each region could strengthen its competitive environment in support of enterprise. The RCAs proposed specific actions to address barriers to development and focused efforts on realising the potential of each region. The 2006 Galway City Outer Bypass is listed under Priority Actions for Physical Infrastructure in the West.

The additional Forfás publication of 2012, entitled *Overview of Main Infrastructure Issues for Enterprise*, was published post the publication of the Infrastructure and Capital Investment

2012-2016 (November 2011). It noted the need to develop smarter solutions to leverage the significant investments already made and improve our competitiveness and Galway ring road (or outer by-pass) is listed as a priority:

“Given the limited capital resources available in the short to medium term, it is critical that we prioritise investment that will support economic recovery and sustainable growth. These include the completion of the Cork and Galway ring roads and two short sections of the Atlantic Corridor (Galway-Limerick-Cork) which will improve the mobility of people and goods in and between Ireland’s main regional cities. Improving public transport in the main cities is critical to enhance mobility for all urban transport users.”

This was subsequently continued through to *the Building on Recovery: Infrastructure and Capital Investment Plan 2016-2021*, as referenced above

The N6 GCRR is identified as a project which is necessary at a national level to support economic recovery and sustainable growth because of its ability to improve mobility of people and goods into and out of Galway and is vital to the economic recovery of the Western Region as a whole.

The objectives of the N6 GCRR include but are not limited to the following, all of which are targeted at economic recovery of the Western Region:

- Congestion relief on major through routes;
- Journey time reliability to facilitate mobility of people and goods;
- Support sustainable transport policies for shorter commutes;
- Improved transport links to access markets within the city; and
- Improved transport connections from Galway onwards to Connemara and the Western Region.

3.3.4 National Spatial Strategy, 2002 – 2020

The National Spatial Strategy (NSS) 2002 to 2020 is a twenty year national planning framework designed to deliver more balanced social, economic and physical development between regions.

The NSS provides the policy framework for all regional and local plans, including the Regional Planning Guidelines for the West Region (referenced below).

The strategy emphasises significant growth improvement in the regions and more particularly in the nine gateway cities and nine hub towns. Balanced regional development is defined as *“developing the full potential of each area to contribute to the optimal performance of the state as a whole – economically, socially and environmentally”*.

The National Spatial Strategy (NSS) identified the main cities and surrounding hinterlands of Cork, Galway, Limerick and Waterford as having the potential, when combined, of counterbalancing the strong development in the eastern regions around Dublin.

It further states:

“Building on the dynamic role of Galway as a gateway and expanding its influence in promoting economic activity will be at the heart of extending balanced regional development to the West region.

- *strategic medium to larger sized towns as hubs linked to the gateways, in turn reaching out to more rural parts*
- *a strengthened county and large to medium sized town structure*
- *diversified and vibrant rural communities, which contribute to and benefit from the development of larger centres such as gateway and hubs”*

Whilst the National Spatial Strategy is due for review by the Government, the fundamental concept of balanced development is relevant and necessary at a national level to ensure that there is sufficient infrastructure and services to serve the population needs into the future, to ensure a decent quality of life, to deliver national economic competitiveness and attract high-tech industries which in turn generate employment, trade, industry and investment in regions such as the Western Region.

The concept of achieving spatial balance whereby Galway serves the Western Region is dependent on having the capacity to move people and goods in a cost effective, efficient and timely manner. The existing congestion in Galway totally restricts this capacity which in turn restricts the economic development of the West Region. The N6 GCRR seeks to address the congestion which is becoming a barrier to regional accessibility and development.

3.3.5 National Development Plan, 2007 - 2013

The need for the development of the gateways as national and regional engines of growth formed part of the general goals set out in the Overview Summary Section 2, the National Development Plan (NDP) again are consistent with the National Spatial Strategy above:

- *Decisively tackle structural infrastructure deficits that continue to impact on competitiveness, regional development and general quality of life and to meet the demands of the increasing population; and*
- *Integrate regional development within the National Spatial Strategy framework of Gateway cities and Hub towns to achieve the goals of economic growth in the regions and provide major investment in the rural economy.*

Section 3 of the NDP, sets out the need for balanced regional development so that all regions can achieve their full potential:

“This Plan aims to promote the development of all regions in Ireland within a co-ordinated, coherent and mutually beneficial framework. Balanced regional development is, accordingly, central to the investment strategy of the Plan. The promotion of regional development will be implemented through:

- *A major programme of investment under the Plan in infrastructure with a particular focus on addressing deficits in the various National Spatial Strategy Gateway areas.”*

Tackling the congestion in Galway is consistent with one of the objectives of the development of the Gateways as part of the policy to strengthen the regions, (refer NDP, Chapter 3: Economic Infrastructure Priority, The Galway Gateway):

“Development challenges include implementing an agreed strategic development strategy for the city and its wider environs to maintain quality of life and competitiveness and tackling traffic congestion, better and more compact urban planning and further renewal of the city centre.”

3.4 Regional Policy Context

3.4.1 Western Regional Authority: Regional Planning Guidelines

The Regional Planning Guidelines (RPGs) for the West Region 2010 - 2022 were made by the Members of the West Regional Authority on 19 October 2010. The RPGs set out the planned direction for growth for the West Region, within which Galway County and City is located, up to 2022 by giving regional effect to national planning policy under the National Spatial Strategy (NSS). The RPGs inform and direct the City and County Development Plans of each of the Councils in the West Region, comprising Galway City and Galway County, Roscommon, Mayo.

The RPGs recognise that the West Region has a significant and valuable resource in its natural heritage environment with a wide variety of species and habitats of local, national and international importance, the extent of which enhances the quality of life but also represents a real challenge in achieving sustainable development.

The RPGs acknowledge that the West Region has experienced difficulties in the past due to its peripheral location along the Atlantic seaboard and on the periphery of the European Union. For the West Region to achieve critical mass and growth and ultimately offer an alternative development corridor to the east coast corridor, strong communication links are required to achieve this through well-developed road, rail and air links as they are key stimuli for 'corridor' growth.

Section 3.5.2 of the RPGs, sets out specifically the need for a reduction in transport costs by improving the road networks particularly the M6 and potential Galway Outer Bypass as part of the economic development of the region. Section 5.2.1 of the RPGs outlines the necessary road priorities for the Region, including the Galway City Outer Bypass.

As outlined above, the N6 GCRR is necessary to support economic recovery and sustainable growth of the Western Region as a whole which is of overriding public interest at a national level as the country moves towards sustainable growth and recovery.

3.5 Local Policy Context

3.5.1 Galway County Development Plan, 2015 – 2021

The Galway County Development Plan 2015 – 2021 was adopted on January 2015, and is effective from 23 February 2015. The Plan sets out its vision for the County which is to *“enhance the quality of life of the people of Galway and maintain the County as a uniquely attractive place in which to live, work, invest and visit, harnessing the potential of the County’s competitive advantages in a sustainable and environmentally sensitive manner.”* A variation, Variation No. 1, is underway currently to update the Plan to reflect the status of the N6 Galway City Ring Road in the Plan.

The strategic aims of the Plan (Refer to Section 1.7) include:

- Promote regional development and growth through harnessing the competitive advantages of County Galway
- Afford suitable protection to the environment
- Recognise the importance of living landscapes while ensuring they are managed in a sustainable and appropriate manner
- Seek balanced urban and rural development

- Encourage and support the development of inclusive communities
- Ensure integrated development
- Promote sustainable mobility
- Promote An Ghaeltacht as an Irish speaking community
- Facilitate the development of infrastructural projects which will underpin sustainable development
- Enhance and protect the built heritage and natural environment
- Integrate climate change consideration in planning and delivering work programmes

The principle of sustainable development is a major component of the Plan which is reflected in the Plan's policies and objectives. It retains the objectives of the previous County Plan to provide a solution to congestion, to provide better connection from all parts of the County to the trans-national network, and to improve safety levels on all public roads. "*The integration of land use and transportation shall continue to be the overarching strategic aim of the Galway County Development plan 2015-2021.*" (Refer Section 5.1).

The Plan further states that "*the timely provision of high quality transportation infrastructure within County Galway is critical to the County's socio-economic development and in the promotion of social and economic well-being.*" (Refer Section 5.1)

The Development Plan transportation objectives (section 5.1.1) include the following strategic aims among others:

- "*To provide a safe and efficient network of transport to serve the needs of the people and the movement of goods and services to and within County Galway*
- *Provide access for all in an integrated manner with an enhanced choice of transport options including the Rural Transport Programme*
- *To promote and encourage the use of alternative sustainable modes of transport and to promote the use of transport energy from renewable resources*
- *To safeguard the strategic transport function and carrying capacity of the motorway and national road network and associated junctions in order to provide for the safe and efficient movement of inter-urban and inter-regional traffic"*

The performance targets of the N6 GCRR align with the strategic aims of the Galway County Development Plan as they include the following targets:

- Reduction of journey times which will promote regional development through improved connectivity to markets and journey time reliability
- Improve connectivity to the Gateway of Galway by providing high capacity linkages connecting east and west sides of the county
- Support sustainable transport policies for shorter commutes which will enable delivery of improved living landscapes
- Protection of existing residential communities and minimise environmental impacts which could make Galway a uniquely attractive place in which to live, work, invest and visit, in a sustainable and environmentally sensitive manner.

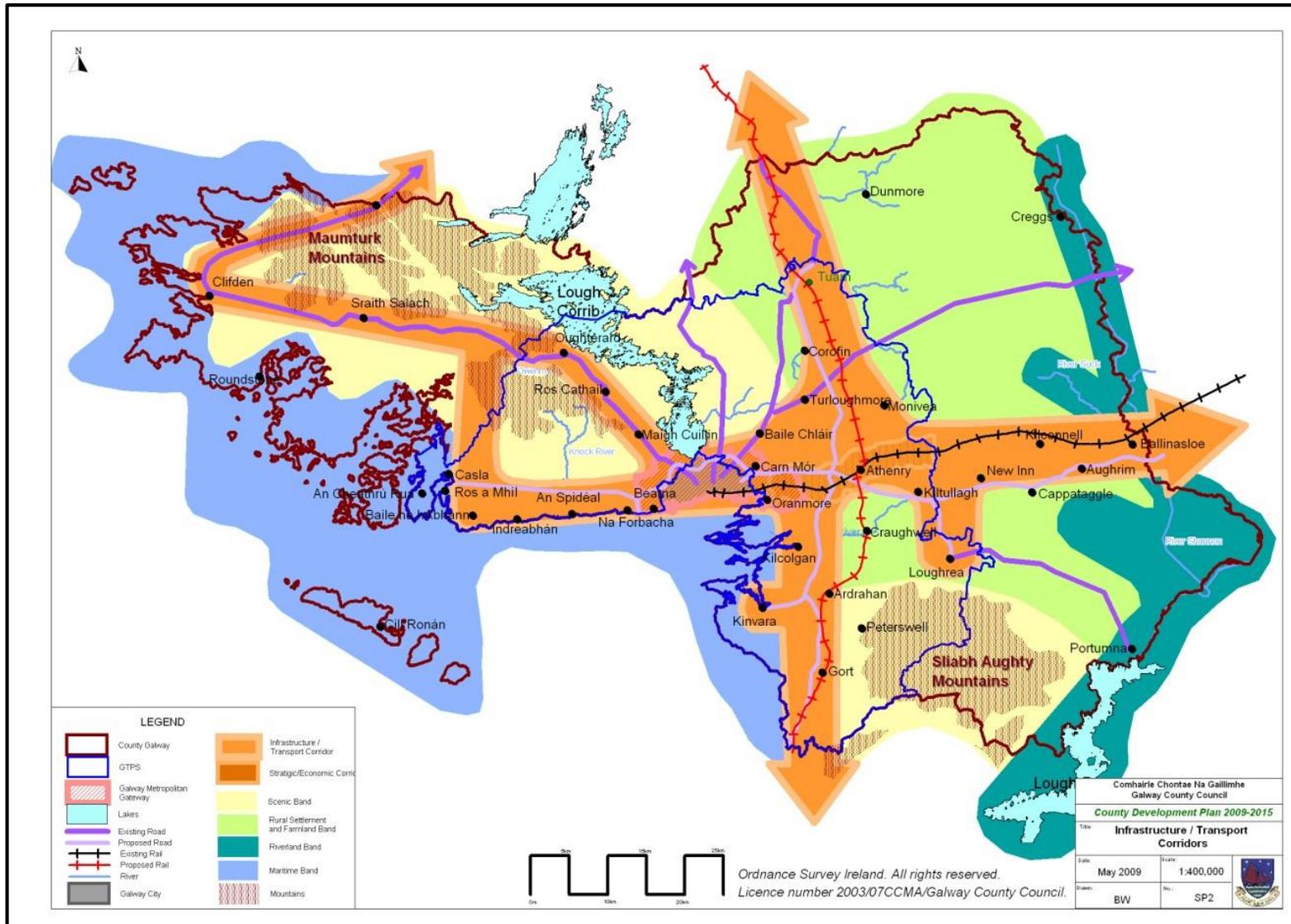


Figure 3.3: Infrastructure/Transport Corridors (Extract Map SP2: Galway County Development Plan 2009 to 2015)

3.5.2 Galway City Development Plan 2017-2023

The Galway City Development Plan 2017-2023 sets out Galway City Council's policies for the sustainable development of Galway City to 2023. It establishes the strategic vision for Galway City *"to be a successful, sustainable, competitive, regional centre that creates prosperity, supports a high quality of life and maintains its distinctive identity and supports a rich cultural experience."*

The Core Strategy notes that it is supported and informed by the Galway Transport Strategy (GTS), a strategy prepared by Galway City Council and Galway County Council in partnership with the National Transport Authority. The GTS comprises a range of strategy measures which relate to public transport, walking and cycling, modifications to the traffic network, improvements to the public realm and use of smarter mobility, and includes the N6 GCRR. These measures will be linked to a 20 year implementation programme.

The strategic goals for the city to realise this vision are set out as:

- Achieve a high quality of life for all citizens through the provision of a good quality, attractive, built environment, through the protection of the unique natural environment and through facilitation of key economic, cultural and social supports
- Enable the city to fulfil its role as a National Gateway, a Regional centre and contribute to the economic recovery through the provision of balanced and sustainable economic opportunities for growth, innovation and investment across all employment sectors and allow the role of the Gateway to harness the strengths and maximise the economic development for the whole West Region
- Promote the reduction of greenhouse gas emissions through proactive measures in line with EU commitments to tackle climate change and reduce vulnerability to the harmful effects of climate change, in particular sea level encroachment and extreme weather events, through specific adaptation measures
- Apply the principle of sustainability particularly where it relates to the uses of land, buildings, water, energy, waste and through the encouragement of sustainable modes of transport and the integration of transportation with land use
- Aspire to make Galway an equal and inclusive city, particularly through facilitating all forms of social inclusion in the built environment, including in the public realm, housing, community facilities, in access to employment opportunities and public transportation
- Protect the distinctive and diverse natural environment in the city and strengthen the green network and linkages, recognising the biodiversity value of the amenity, the range of recreational benefits this provides, the potential through facilitating active and healthy lifestyles, it can have on the quality of general health and well-being and the value it has for providing an attractive city setting
- Encourage a sense of collective identity and a shared vision through civic engagement on projects such as the development of a Local Economic and Community Plan for Galway and also on the promotion of specifically focused projects such as the Galway Bid for European Capital of Culture 2020, that will promote the unique form and character of the city, give opportunities for the development of cultural, community and other beneficial infrastructure and enhance and diversify the city economy (Galway City secured the European Capital of Culture 2020 designation in July 2016).

The Plan's Core Strategy sets out a future for Galway that coordinates between planned development and existing and planned investment in public transport and services, and strikes a balance between enabling the future urban development of the city and protection of the environment and natural assets.

The transport strategy for the city in the Plan aims “to integrate sustainable land use and transportation, facilitating access to a range of transport modes, accessible to all sections of the community that ensures safety and ease of movement to and within the city.” The Plan notes that while the implementation of various measures stemming from the previous Development Plan, and the Galway Transport Unit have made improvements to the transport network, serious traffic congestion still prevails which impacts on the quality of life and the economy of the city. The Plan states that this will be addressed as part of the Galway Transport Strategy (GTS) which has been developed by the City Council in conjunction with the NTA and Galway County Council. This GTS will complement the N6 Galway City Ring Road (N6 GCRR) being undertaken by Galway County Council on behalf of both authorities and Transport Infrastructure Ireland (TII), which is working towards reducing congestion and car dependency.

The GTS will bring together all transportation studies into one coherent long term programme. It will set out infrastructural policy measures to facilitate sustainable growth of the city. It will develop a programme of measures to reduce traffic congestion and car dependency through increased capacity and reliability of public transport and through promotion of cycling and walking.

The overall Transport Strategy of the Plan is to:

- Support and facilitate the integration of land use and transportation
- Support the implementation of the GTS which will facilitate an improved public transportation system and encourage the use of other sustainable modes of transport
- Support the development of a transportation solution to the existing congestion on the national and regional road network in Galway
- Support the reduction in greenhouse gas emissions through the promotion of sustainable land use and transportation

The N6 GCRR is among the measures included in the GTS to alleviate the congestion issues which are currently restricting the optimum delivery of the range of alternative modes of transport required to reduce city congestion, free up capacity for improvements to the public transport network and remove traffic from city streets. This will lead to the overall delivery of the Plan’s vision, strategic goals and core strategy.

The key strategy transport objectives as follows:

- *To “Support the Galway Transport Strategy (GTS) and the associated implementation programme which will deliver a high quality public transport network, provide and encourage the use of other sustainable modes of transport, and facilitate the efficient movement of private vehicles and freight”*
- *To “Support the N6 GCRR project in conjunction with Galway County Council and Transport Infrastructure Ireland in order to develop a transportation solution to address the existing congestion on the road network and reduce the negative impact of vehicular traffic on the functioning and experience of the city centre and to facilitate city bound, cross-city, cross-county and strategic east-west movements”*

The draft Galway City Plan 2017-2023 was adopted by Galway City Council on 1 December 2016 and became effective on 7 January 2017.

3.5.3 Bearna Local Area Plan 2007-2017 (as amended 2012)

The Bearna Local Area Plan (LAP) sets out a Strategic Vision for Bearna to be ‘... *an attractive, prosperous and sustainable settlement with a high quality built and natural environment, a range of supporting services, facilities and amenities and a high quality of life for the local community.*’ Once the Variation No. 1 to the Galway County Development Plan is complete, Galway County Council will address the Bearna Local Area Plan to ensure that it is consistent with the Variation to the County Development Plan in respect of the N6 Galway City Ring Road in the Plan.

The existing Bearna Local Area Plan promotes the creation of a settlement that, inter alia:

- Is well connected to, but has strong local identity separate from, nearby settlements, in particular Galway City to the east and Na Forbacha to the west
- Has an appropriate level of services and infrastructure to support existing and future development in a manner that protects and is complementary to the environment, heritage, character and amenities of the village, including: an adequate road network, traffic management and parking facilities; improved public transport with regular bus services; safe routes for pedestrians and cyclists; and adequate wastewater disposal, water supply and surface water drainage

The Bearna LAP at Section 2.7 supports the previous version of the proposed road development (N6 Galway City Outer Bypass), with the stated view that it would have ‘.....*a positive impact for Bearna in that it will facilitate easy access to and from Bearna while reducing the volume of through traffic in the village. This would have a positive impact on the village centre and would help to create a more cycle and pedestrian friendly environment.*’

The proposed road development accords with the stated Vision for Bearna and with the Transport Section of the LAP and associated objectives which welcome a road intervention which facilitates access to and from Galway, and reduces through traffic through the village.

3.5.4 Gaeltacht Local Area Plan, 2008 – 2018

Gaeltacht Na Gaillimhe is the most populous of the Country’s Gaeltacht areas. It stretches from Baile Chláir, which is east of the city of Galway to Cloch na Rón in west Connemara, a distance of approximately 100km, and from Oileáin Árann northwards to the Mayo border. The Gaeltacht Local Area Plan, 2008 – 2014 was prepared and adopted in February 2008. An Amendment and an Extension to the Plan was adopted on 25 March 2013, which effectively extended the Plan to 2018.

The purpose of the plan is to put in place controls and guidelines, consistent and compatible with the County Development Plan, to facilitate the provision of infrastructure so that the younger generations will be encouraged to remain in their native area, out of choice, and develop its economy in a way that is both language and culture friendly, thus halting the decline in population. The plan sets out the strategic development principles relating to the roads and transport infrastructure in Section 3.3.2 and identifies the N6 Galway City Outer Bypass as being of importance to advancing the development of the social and economic advantage of the Gaeltacht and developing an integrated approach to planning.

Once the Variation No. 1 to the Galway County Development Plan is complete, Galway County Council will address the Gaeltacht Local Area Plan to ensure that it is consistent with Variation No. 1 to the County Development Plan in respect of the N6 Galway City Ring Road in the Plan.



Figure 3.4: Gaeltacht Areas

3.5.5 Galway Transport Strategy (GTS) 2016

Galway City Council and Galway County Council, in partnership with the National Transport Authority, developed the Galway Transport Strategy which aims to address the current and future transport requirements of Galway City and its environs, including Bearna, Oranmore, Moycullen and Claregalway.

As Galway City and its environs continue to develop as the principal economic centre serving the West of Ireland, there is a critical need to address the transportation issues facing the city and surrounding areas, and to underpin future growth by establishing a long-term strategy for transport to, across, within and around the city.

While Galway has a compact walkable core, outside of the city centre, the suburbs have developed as a succession of low density residential and employment areas, which has led to a predominance of private car usage as a means of travel. As a result, the transport difficulties currently experienced across the city, particularly at peak travel times, are having a significant effect on the quality of life of residents, and are also impacting on the economic functionality of the city.

The Galway Transport Strategy (GTS) consists of a number of proposed measures combined under an overall vision “*to create a connected city region driven by smarter mobility*”. The GTS builds on previous transport studies carried out for the Galway Region, and sets out an overview of the proposed actions and measures for implementation, covering infrastructural, operational and policy elements (as an ‘Integrated Transport Management Programme’). These consolidated proposals will provide Galway City and its environs with a clear implementation framework over the next 20 years and will be used to secure funding to deliver projects in a phased manner based on priority needs. Ultimately, the GTS will underpin the objectives of the current and future Galway City and Galway County Development Plans.

The major components proposed under the GTS comprise:

- changes to the traffic network, including provision of a new cross-city link public transport corridor, and the N6 Galway City Ring Road (N6 GCRR), and reallocation of road space to prioritise walking, cycling, public transport
- an enhanced local public transport network and regional public transport service focused on an enhanced, integrated high quality bus service
- provision of the Bearna Greenway, the Galway City to Oranmore Cycleway (part of the Galway to Dublin Cycleway) and the Galway to Oughterard Greenway
- a range of other additional cycling, pedestrian and public realm improvements including increased options for cycling in and across the city centre, improved pedestrian facilities, pedestrian prioritisation and way finding and legibility
- complementary measures including education and behavioural change measures and continued investment in Intelligent Transport Solutions (ITS) to increase efficiency, safety and co-ordination across transport networks (Smarter Mobility), and further emphasis on land use and transport integration

The N6 GCRR represents a key element of the GTS in planning for the future transport requirements of Galway City and environs. It facilitates the reduction of congestion on city centre roads, and allows the reallocation of road space in the city network to non-private car modes of transport, thereby improving the attractiveness of non-car modes of transport in the city for short and medium distances.

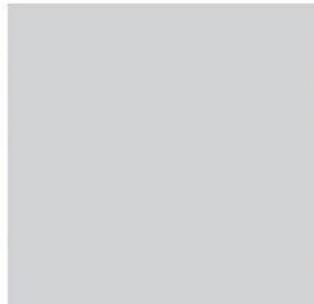
3.6 Conclusion

The relevant strategic and statutory land use and planning policy context, and strategic transport policy context for the N6 GCRR is presented herein. The N6 GCRR is congruent with current transport policy and planning policy as set out in the various policy documents over the past number of years.

In recent years, there has been a major shift towards sustainable transport which is reflected in the policies discussed earlier. The changing demographics in our society whereby population is migrating to the cities to avail of employment opportunities, education and improved living conditions facilitates the promotion of a wholly sustainable transportation network. Our cities are undergoing fundamental change as they strive to become living spaces for the increased population which is concentrated in a smaller tighter space. Key to a thriving urban experience is the ability to navigate a city at leisure without fear of traffic. Therefore, congestion relief through removal of the provision of space for cars in the city centre is key to creating more walkable environments, additional public space, and essentially better cities.

The N6 GCRR functions to relieve congestion. It is a component of the Galway Transport Strategy which seeks to create a vision for Galway whereby additional space is reallocated for public transport, cycling and walking in the city centre area, all of which fosters sustainable and healthy behaviours. The release of the congestion also allows the city to prosper and connect with markets to become a thriving economic centre, in which it is attractive to work, live and play. Such a city in turn supports the Western Region and provides balanced regional development.

Chapter 4
Scope, Constraints and Interfaces



4 Scope, Constraints and Interfaces

4.1 Overview

A constraints study was completed within the scheme study area shown in **Figure 1.1**. The scheme study area is bounded by the Lough Corrib to the north and Galway Bay to the south and extends from the R336 immediately west of Bearna to the N6 at Coolagh in the east. The scheme study area is divided in two by the River Corrib which flows between the Lough Corrib and Galway Bay. Four national roads namely the N6, N17, N84 and N59 are all located within the scheme study area.

The objective of undertaking a constraints study is to identify the international, national, county and local issues that must be taken into account when planning and designing the scheme so that its development and assessment can be properly informed.

Constraints of a physical, procedural, legal and environmental nature that may affect the development of a possible solution were identified within the scheme study area. The issues that were considered included:

- the existing infrastructure, land use, topography and physical features;
- identification of sites or areas of environmental significance or sensitivity;
- planning, development and socio-economic character; and
- technical constraints.

Key constraints include:

- Built environment of Galway, including well established communities, commercial and educational facilities;
- Natura 2000 designated sites and National Heritage Areas; and
- Sites of significant architectural, archaeological and cultural heritage significance.

As noted, Galway City is physically constrained by natural barriers which are natural barriers to free movement and development. The ability to move from the east side of the city to the west side of the city is totally reliant on the four bridges crossing the River Corrib, two of which date from the nineteenth century, Salmon Weir Bridge built in 1818 and William O'Brien Bridge built in 1880 respectively. The third bridge, Wolfe Tone Bridge, dates from 1934. The 'new' bridge, Quincentenary Bridge, was opened in 1988 and carries the bulk of the daily traffic across the River Corrib. Galway County and Connemara as far west as Clifden and onto Letterfrack are equally dependent on these bridges for access as access to this area is restricted by the extents of Lough Corrib heading north, the Twelve Bens mountains, the Maamturk mountains and the many smaller lakes.

A comprehensive constraints study was completed which addressed all constraints including human beings, archaeology, cultural heritage, material assets – agriculture and non-agriculture, landscape and visual, hydrology, hydrogeology, ecology, geology, planning policy, noise and vibration, air and climate.

The key challenges in identifying a new river crossing have been:

- The gap between Coolanillaun at Lough Corrib and Galway Bay is approximately 5km;
- The residential settlement pattern is dispersed making avoidance of homes difficult;
- Much of the area is designated as a candidate Special Area of Conservation under the European Habitats Directive; and

- All other environmental considerations with human beings among the most significant.

4.2 Scope of Project

The geographical scope of the project was defined during Phase 2: Route Selection and is presented as the scheme study area in **Figure 4.1**.

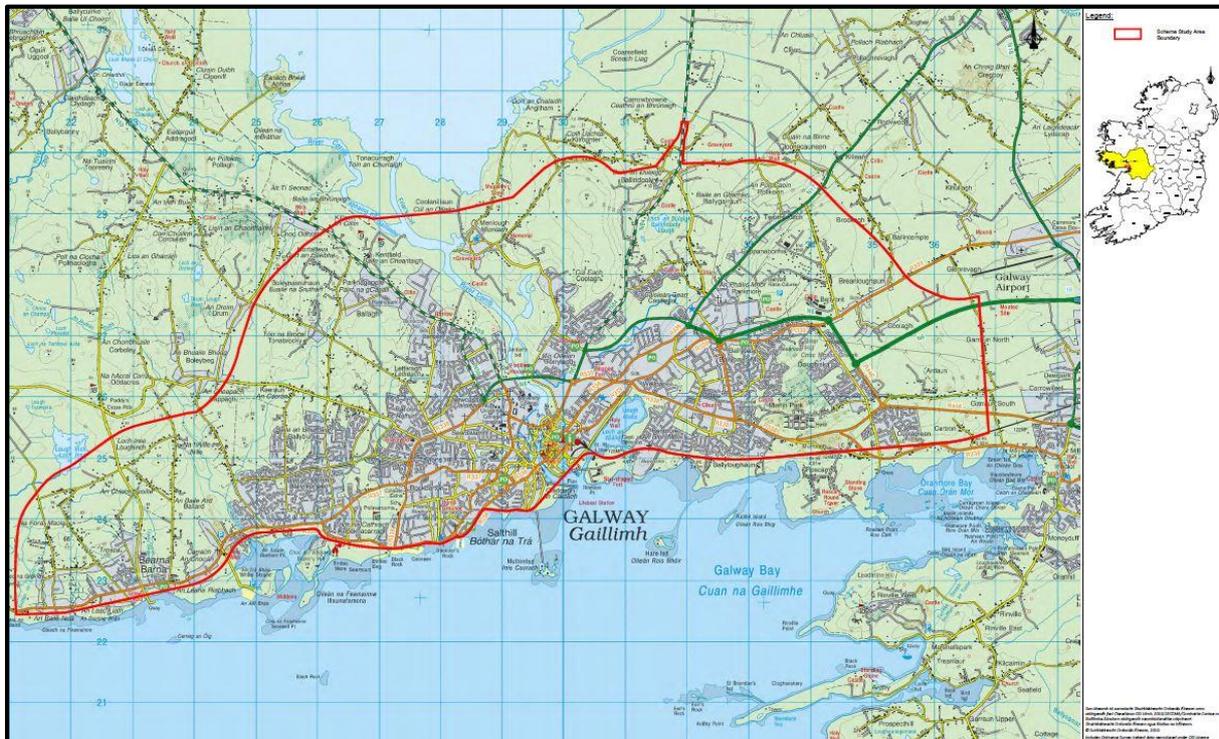


Figure 4.1 Project Location within Scheme Study Area

The multi-modal model was used to assess the relative transport merits of various transport options, which comprise a combination of public transport options with road based options, also allowing for pedestrian/cycling provision. These options included the following:

- **Do Nothing Option:** This scenario does not provide for any additional spend other than maintain the existing infrastructure.
- **Do Minimum Option:** This is essentially maintaining the existing infrastructure and constructing schemes committed by local, regional and national authorities.
- **On-line Option:** Combination of an upgrade of existing road network by grade separation of existing junctions along the N6 and provision of additional public transport options where capacity is released. This option will seek to reuse the existing N6 Quincentenary Bridge across the River Corrib. This was known as the Red Route Option.
- **Partial On-line/Partial Off-line:** Combination of maximising reuse of the existing road network with the addition of another bridge crossing of the River Corrib and improved public transport options in the areas where the On-line Option has identified limited availability for same. The Orange Route Option and Yellow Route Options formed part of this suite of options.
- **Off-line Option:** Combination of public transport provisions on the existing network and provision of an outer bypass similar in nature to the original scheme. The Blue

Route Option, Pink Route Option and Green Route Options formed part of this suite of options.

Each of the above options represent a sequential step change in the level of provision as move from the wholly on-line to wholly off-line option, and were assessed in the traffic model as part of the route selection process. **Figure 4.2** shows the layout of the options developed during Phase 2 Route Selection.

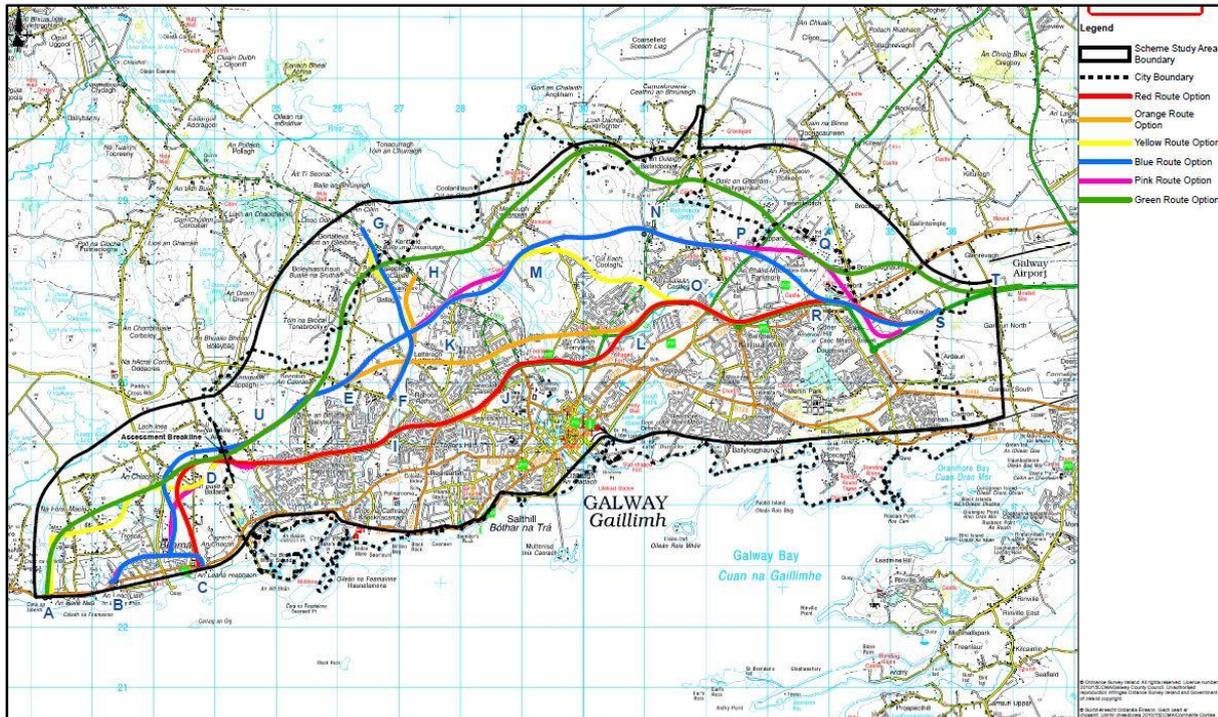


Figure 4.2 Phase 2 route options

The traffic model was used to identify any transport drivers that may influence the location of a bypass option to best fit with the public transport requirements should a bypass be a necessary component of the overall transportation solution.

The traffic model was used to identify from where people are travelling and to where people are going so that the existing desire lines were established. This also provided information on common origins and destinations so that such journeys could be accommodated via public transport.

During Phase 2, a preferred route option was determined which took cognisance of the constraints below and the traffic demand as presented by the traffic modelling, which resulted in the development of a ring road around the north side of Galway City with interconnecting links back to the city. The preferred route option is shown in **Figure 4.3**. Full details of the route selection process is contained in the Route Selection Report.

The project is currently at Phase 3 Design, the purpose of which is to develop the design to sufficient level of detail to establish landtake requirements and to progress the proposed road development through the statutory process. Phase 4 EIS/EAR and The Statutory Processes is also underway and includes an environmental assessment of the potential impacts of the proposed road development on the receiving environment and the establishment of mitigation measures. Legal documentation for land acquisition will also be prepared as part of the statutory processes.



Key Elements

1. Connection to the west of County Galway and the Gaeltacht region
2. Reduction of through traffic in Beama Village
3. Provision of connection to Knocknacarra
4. New bridge crossing of the River Corrib connecting west to east
5. Provision of connections between the national roads
6. Provision of access to Parkmore and Ballybrit industrial areas
7. Free-flow junction providing connection to existing N6

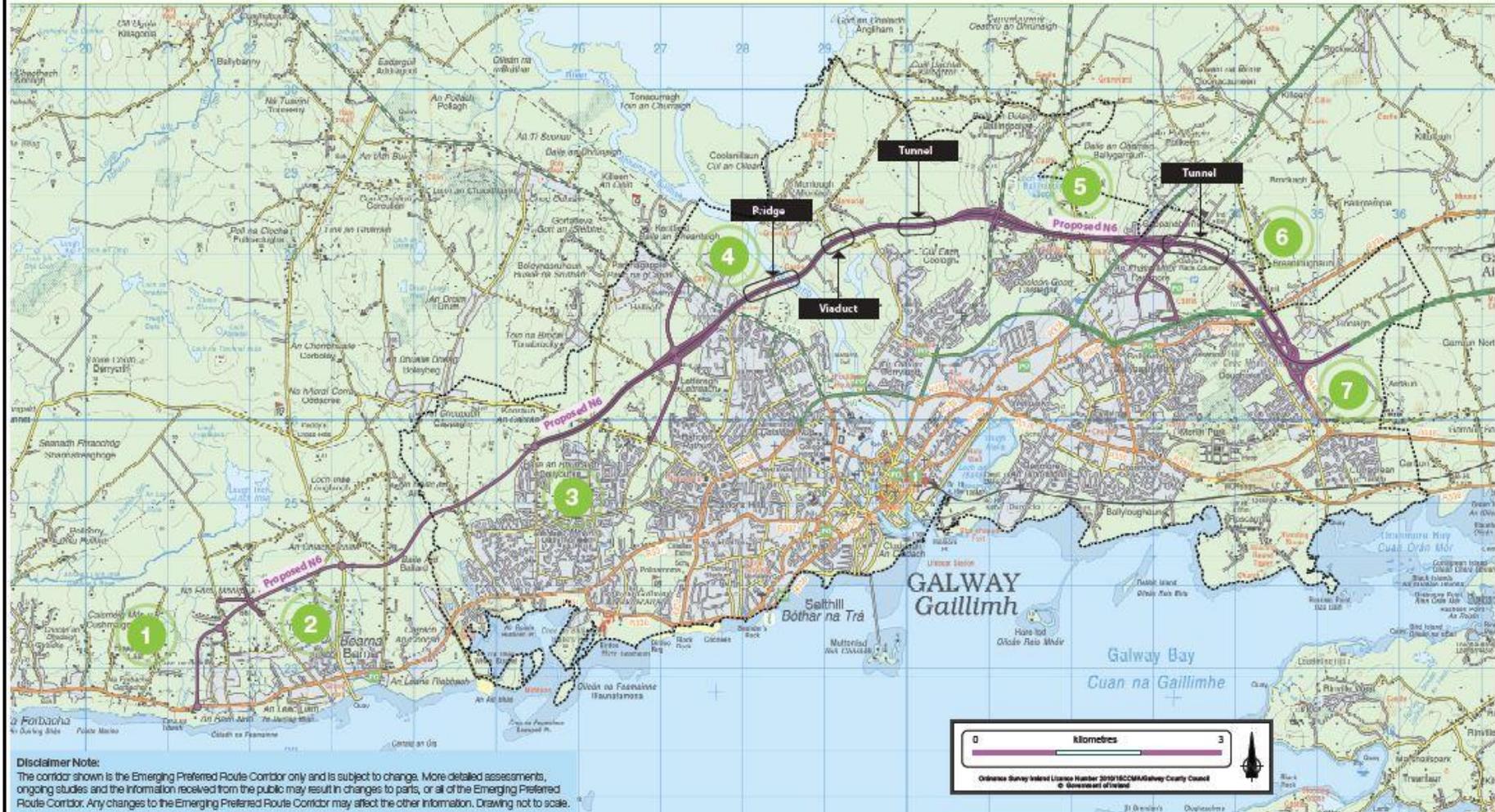


Figure 4.3 Emerging Preferred Route Corridor

4.3 Constraints

4.3.1 Natural Constraints

Natural constraints are those which are naturally occurring landscapes and features namely ecology, soils and geology, hydrogeology, hydrology and landscape and visual. During Phase 3 Design and Phase 4 EIA/EAR & the Statutory Processes the impact on these constraints is examined in detail and minimised.

4.3.2 Ecology

There are 40 designated areas for nature conservation within 15km of the proposed scheme; fourteen candidate Special Areas of Conservation (cSACs), five Special Protection Areas (SPAs), three Natural Heritage Areas (NHAs) and eighteen proposed Natural Heritage Areas (pNHAs).

Two of the cSACs are located within the scheme study area (Lough Corrib cSAC and Galway Bay Complex cSAC). Two SPAs are located within the scheme study area (Lough Corrib SPA and Inner Galway Bay SPA). One NHA is located within the scheme study area (Moycullen Bogs NHA) and two pNHAs are located within the scheme study area (Lough Corrib pNHA and Galway Bay Complex pNHA).

Habitats and species within the study were identified and recorded as part of the development of the scheme. These include flora, fauna, terrestrial habitats, aquatic, rare and protected species, bats, white clawed crayfish, freshwater pearl mussel, other molluscan species, marsh fritillary, red grouse, barn owl and wintering birds. Detailed information on these constraints is included within the Route Selection Report

4.3.2.1 Soils and Geology

Soils and geology constraints within the study area were identified and recorded as part of the scheme development. These include geomorphological constraints, solid geology, soils and superficial deposits and man-made features. Detailed information on these constraints is included within the Route Selection Report.

4.3.2.2 Hydrogeology

Hydrogeological constraints within the study area were identified and recorded as part of the scheme development. These include aquifers, hydroecology, groundwater resources and karst features. Detailed information on these constraints is included within the Route Selection Report.

4.3.2.3 Hydrology

Hydrology constraints within the study area were identified and recorded as part of the scheme development. These include watercourses, coastal waters, lakes and standing waters, flood risk areas, surface water abstraction and hydroecology interactions. Detailed information on these constraints is included within the Route Selection Report.

4.3.2.4 Landscape and Visual

Landscape and visual constraints were identified and recorded as part of the scheme development. These include landscapes (trees, woodlands, natural landscapes, sports, recreational and amenity areas) and visual receptors (residential and community land uses and properties, designated views and prospects, scenic walks, cultural features etc.). Detailed information on these constraints is included within the Route Selection Report.

4.3.3 Artificial Constraints

Artificial constraints are those which form part of the built environment namely land use and planning, engineering, archaeology, architectural and cultural heritage, material assets, air quality, climate, noise and vibration and human beings. During Phase 3 Design and Phase 4 EIA/EAR & the Statutory Processes the impact on these constraints was examined in detail and minimised.

4.3.3.1 Land Use and Planning

Land use and planning constraints were identified and recorded as part of the scheme development. These include existing land use and planning, population and travel patterns, proposed developments, planning aspirations and urban design principles. Detailed information on these constraints is included within the Route Selection Report.

4.3.3.2 Engineering

Engineering constraints were examined and recorded as part of the scheme development. These include topography and landscape, rivers and coastal domain, existing road network, road safety characteristics and the existing network, other transport modes and quarries. Detailed information on these constraints is included within the Route Selection Report.

4.3.3.3 Archaeological, Architectural and Cultural Heritage

Archaeological, architectural and cultural heritage constraints were identified and recorded as part of the scheme development. These include all recorded archaeological, architectural and cultural heritage sites and areas of archaeological or architectural potential within the scheme study area. Detailed information on these constraints is included within the Route Selection Report.

4.3.3.4 Material Assets - Agriculture

Agriculture constraints were identified and recorded as part of the scheme development. These include farm holdings, farm activities and farming potential. Detailed information on these constraints is included within the Route Selection Report.

4.3.3.5 Material Assets – Non Agriculture

Non-agricultural material asset constraints were identified and recorded as part of the scheme development. These include amenities, residential properties, commercial properties, industrial properties, utilities and services and waste facilities. Detailed information on these constraints is included within the Route Selection Report.

4.3.3.6 Air Quality and Climate

Air quality constraints were identified and recorded as part of the scheme development. Detailed information on these constraints is included within the Route Selection Report.

4.3.3.7 Noise and Vibration

Noise and vibration constraints were identified and recorded as part of the scheme development. Receptors such as schools, hospitals, places of worship, heritage buildings, habitats and amenity areas etc. Detailed information on these constraints is included within the Route Selection Report.

4.3.3.8 Human Beings

Constraints relating to human beings were identified and recorded as part of the scheme development. This section is closely related to Material Assets Non-Agriculture (housing, amenities) and Noise and Vibration. Detailed information on these constraints is included within the Route Selection Report.

4.4 Interfaces

4.4.1 Galway Transport Strategy

The Galway Transport Strategy (GTS) consists of a number of proposed measures combined under an overall vision “*to create a connected city region driven by smarter mobility*”. The GTS builds on previous transport studies carried out for the Galway Region, and sets out an overview of the proposed actions and measures for implementation, covering infrastructural, operational and policy elements (as an ‘Integrated Transport Management Programme’). These consolidated proposals will provide Galway City and its environs with a clear implementation framework over the next 20 years and will be used to secure funding to deliver projects in a phased manner based on priority needs. Ultimately, the GTS will underpin the objectives of the current and future Galway City and Galway County Development Plans.

The major components proposed under the GTS comprise:

- changes to the traffic network, including provision of a new cross-city link public transport corridor, and the N6 Galway City Ring Road (N6 GCRR), and reallocation of road space to prioritise walking, cycling, public transport
- an enhanced local public transport network and regional public transport service focused on an enhanced, integrated high quality bus service
- provision of the Bearna Greenway, the Galway City to Oranmore Cycleway (part of the Galway to Dublin Cycleway) and the Galway to Oughterard Greenway
- a range of other additional cycling, pedestrian and public realm improvements including increased options for cycling in and across the city centre, improved pedestrian facilities, pedestrian prioritisation and way finding and legibility
- complementary measures including education and behavioural change measures and continued investment in Intelligent Transport Solutions (ITS) to increase efficiency, safety and co-ordination across transport networks (Smarter Mobility), and further emphasis on land use and transport integration

The N6 GCRR represents a key element of the GTS in planning for the future transport requirements of Galway City and environs. It facilitates the reduction of congestion on city centre roads, and allows the reallocation of road space in the city network to non-private car modes of transport, thereby improving the attractiveness of non-car modes of transport in the city for short and medium distances.

4.4.2 M17/M18 Gort to Tuam

The N17/M18 Gort to Tuam scheme, which forms part of the Atlantic Road Corridor, consists of 57 km of motorway/dual carriageway. The scheme commences at the northern extremity of the N18 Gort Crusheen scheme and extends in a northerly direction with junctions at Kiltiernan connecting to the N67, at Rathmorrissy connecting to the new M6 Dublin Galway route, at Annagh Hill connecting to N63, and at Tuam connecting to the existing N17. The Authority has procured, by way of PPP, the design, construction, operation and financing of the scheme. The contract was signed in April 2014 and it is anticipated that this road will be open to traffic within the next year.

Traffic travelling north on the M17/M18 wishing to access Galway will be able to choose to remain on the motorway to the M6 to avoid the traffic congestion of the villages of Ardrahan, Kilcolgan and Clarinbridge. This would mean that the majority of the traffic accessing Galway from the south and the east would enter Galway via the M6 motorway, and would arrive at the

N6 Coolagh Junction. This will likely result in a significant alteration to the traffic patterns in the east of the city.

The M17/M18 Gort to Tuam scheme is within the buffer network of the Western Regional Model, which should be sufficient to model the impact of the new motorway on route choice into Galway.

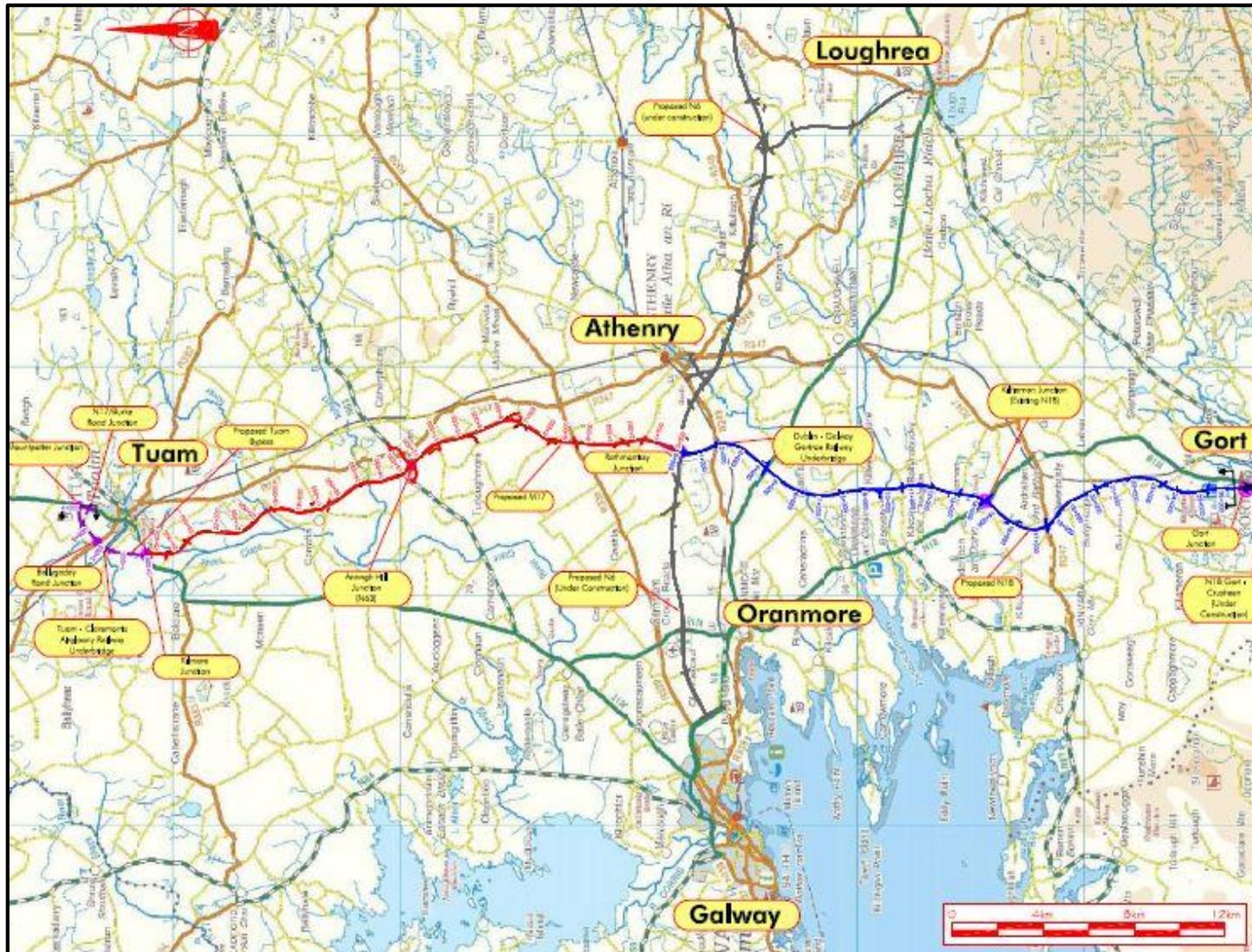
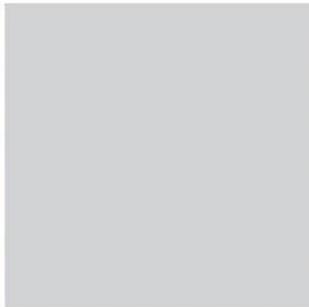
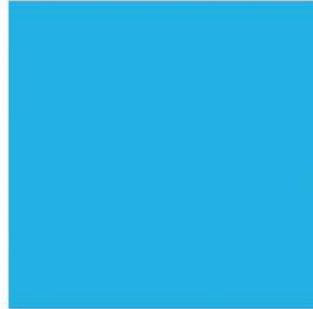


Figure 4.4: N17 N18 Gort to Tuam PPP Scheme

Chapter 5
Scheme Objectives



5 Scheme Objectives

5.1 Overview

The objectives of the proposed scheme are outlined in this section of the Project Brief. The objectives are assessed based on multiple criteria outlined by the Department of Transport in their report “Common Appraisal Framework for Transport Projects and Programmes” (Department of Transport, Tourism and Sport, March 2016).

The multi-criteria heading are as follows:

- Economy;
- Safety;
- Physical Activity;
- Environment;
- Accessibility & Social Inclusion; and
- Integration.

5.2 Economy

Recent global and national developments mean that, more than ever, each region of the country has a crucial role to play in returning Ireland’s economy to enterprise driven growth. The delivery of dynamic competitive regions that provide quality and sustainable employment opportunities is essential to strengthen the competitive environment of the West Region.

The proposed project would serve to reduce journey times thus bringing markets closer together which would in time bring considerable benefits to the local economies, which in turn would translate into benefits to the national economy.

The proposed project would increase journey time certainty by removing traffic congestion and remedying capacity deficiencies. This all serves to reduce absolute journey time and journey time variance for commercial vehicles, public transport and private car users.

It is expected that the proposed project would have a positive long term affect by efficiently channelling national traffic away from the Galway City centre while retaining sufficient access to Galway thus improving road transport infrastructure between regions and within regions. This would reduce the imbalance in regional development. This is of national importance to reduce the dominance of the eastern region.

As outlined earlier, the linking of our major cities through an effective and efficient road network is a basic element of balanced economic and regional development throughout the country. National competitiveness is dependent on an efficient use of resources, including labour, time, location and land. Accessibility to markets is critical for the economic development of our more peripheral locations. Therefore, improving regional accessibility is required to improve the economic performance for the region.

Improving the road network to meet all the objectives outlined above is not at any cost. The total financial cost of the proposed project must be realistic and not prohibitively expensive, so that the project is deliverable in an appropriate timescale to prevent the collapse of the existing transport network.

In summary the specific ‘Economy’ Objectives of the project are:

- *Encourage local, regional, national and international development*
- *Reduce journey times*
- *Increase journey time certainty*

- *Support the economic performance of the Gateway of Galway as the only large employer in the region*
- *Provide benefits to the transport infrastructure*
- *Improve connectivity to the Gateway of Galway*
- *Improve linkages between the west and east sides of the county*
- *Deliver a cost effective project*
- *Maximise the economic efficiency of the transport network in Galway by reducing journey times and improving journey time reliability;*

5.3 Safety

The existing N6 is a four lane carriageway with at-grade junctions along its entire length. The existing assessment of the journey time reliability has shown that delay is experienced at these junctions. Grade separation of junctions provides an increased capacity at the junctions as it removes through traffic and thus reduces delay and ultimately congestion. The proposed transportation solution includes grade separated junctions. Grade separated junctions would have the added safety benefit of eliminating head-on collisions and many collision types which are associated with at-grade junctions.

The existing traffic volumes through Galway City centre leads to congestion and collisions. The transfer of this large volume of traffic, especially HGVs, from the existing town centre seeks to eliminate congestion in the town centre and thus lower collision rates which in turn will reduce the impact on human resources resulting in long-term benefit to the national economy.

In summary the specific 'Safety' Objectives of the project are:

- *Segregate the interface of through traffic from urban traffic*
- *Reduce road traffic collisions*
- *Provide safer urban streets*

5.4 Environment

Galway City and County comprise large areas of areas designated for environmental protection. Much of the area in the vicinity of Lough Corrib, River Corrib and Galway Bay is designated as a Special Area of Conservation. Such sites are designated and the Natura 2000 network and the Habitats Directive applies to such areas. The project will seek to minimise impacts on the Natura 2000 sites.

Galway City and County has a rich and diverse cultural heritage with over twenty recorded archaeological sites located in the study area that have statutory protection under the National Monuments Act. This project will seek to avoid and minimise impacts on the cultural heritage of the area.

Galway is seen as an attractive place to live and work. As a result, the population of the county including the city has experienced significant population growth over the past twenty years, growing from a population of 180,300 approximately in 1991 to 250,600 approximately in 2011, a forty per cent increase. Galway City attracts many residents from outside of Ireland. Census 2011 showed that fewer than half of people in Galway city were born in County Galway, while one in four residents were born outside the State making Galway the most international of the five major cities. The population density of Galway City is much lower than in the Greater Dublin Area, which means that there are many residential communities emanating from the

centre, all of which have an identity and sense of community in their own right. The proposed scheme will seek to minimise impacts on such communities.

In respect of emissions traffic travelling efficiently on a well-designed road will clearly have more potential to reduce greenhouse gas emissions than when travelling on congested roads where driving is of its nature less efficient. At present Galway City experiences the full effects of noise and air quality pollution as a result of congestion on the existing road network. Significant benefits can be achieved from the removal of through traffic from the city area.

The landscape of Galway City and County is scenic with a high amenity value, which in turn results in tourism providing a significant contribution to the economy of the area. The impact of landscape and visual intrusion of the proposed project will be carefully considered particularly in the elements of vertical and horizontal design and the location of long lengths of the route on embankments.

In summary the specific 'Environmental' Objectives of the project are:

- *The proposed scheme will minimise impacts on the integrity of all designated Natura 2000 sites.*
- *The proposed scheme will seek to avoid impacts to National Monuments.*
- *The proposed scheme will not be unduly detrimental to the architectural, cultural or linguistic heritage of the area.*
- *The proposed scheme will take due cognisance of the importance of the existing landscape.*
- *The proposed scheme will seek to preserve existing well established communities.*
- *The proposed scheme will seek to reduce noise and air impacts on sensitive receptors.*

5.5 Accessibility & Social Inclusion

Access through and around Galway is difficult at present due to the congestion which restricts accessibility to community and business facilities in these locations. The proposed scheme will seek to address congestion by providing an overall transportation solution which facilitates increased capacity on the road infrastructure. As a result journey times of road users would reduce as they would not be subject to the time delays associated with daily congestion.

This would facilitate the creation of a public transport system which is inclusive and accessible and would also allow Galway City to focus on sustainable transport policies for shorter commutes, and to develop safe pleasant pedestrian routes within the city for the benefit of both locals and tourists.

The proposed scheme will facilitate the public transport corridor linking the Gateway of Galway to other destinations thus significantly improving accessibility via public transport to Galway.

Gaeltacht Na Gaillimhe is the most populous of the Country's Gaeltacht areas. A Local Area Plan for the Gaeltacht was prepared and adopted in February 2008 in order to facilitate the provision of infrastructure so that the younger generation would be encouraged to remain in their native area thus halting the decline in population and reduce the level of unemployment. The proposed scheme will facilitate connectivity of the Gaeltacht area and social inclusion of such areas so that they contribute to the economy and remain a vibrant part of the county.

In summary the specific 'Accessibility and Social Inclusion' Objectives of the project are:

- *Improve accessibility to Galway City*
- *Interconnection of the Galway City and environs road network to the national motorway network*
- *Improve accessibility of Galway urban area to its main markets*

- *Improve accessibility of the Gaeltacht areas to the remainder of the county and country*
- *Reduce disadvantage of the Gaeltacht areas*
- *Implement sustainable transport policies for shorter commutes*
- *Improve urban environment of Galway City centre*
- *Support the improvement of the public transport hub linking Galway to other Gateways*
- *Support the current development strategy and settlement strategy*

5.6 Integration

The proposed scheme would represent a significant contribution towards the Government's objective of developing critical-mass of regional population centres capable of competing with the Greater Dublin Region for future investment and furthering achievement of an appropriate balance in the delivery of jobs, services and opportunities. The proposed scheme is consistent with National, Regional and Local Development Plans and other Government Policy Documents as outlined earlier.

In summary the specific 'Integration' Objectives of the project are:

- *Support the development of critical-mass of regional population centres*
- *Integration of Galway City and environs (including western parts of Galway County) into the national economic development agenda*
- *Support balanced social and economic development at a national level*
- *Support balanced social and economic development at a city-region level*
- *Understanding of the development, land use and transportation pressures in the Galway urban area and their impact on the delivery of a successful city region at Galway.*
- *To deliver on Galway's potential as Ireland's fourth largest city and an important residential, educational, employment and service centre for a wide regional hinterland, contributing to the national urban hierarchy*
- *Recognition of the role of Galway City as a gateway to the west and Connemara, and the consequent socio-economic benefits of enhanced connectivity of Galway City to national markets, enhanced tourism accessibility, and the national transport system*
- *Improvement of the TEN-T network to ensure connectivity of the west of Ireland to the single European market.*

5.7 Physical Activity

The latest revision to CAF has seen the introduction of Physical Activity as an assessment criterion as it is recognised that physical inactivity, which is a significant public health problem, will be reduced through an increase in active modes of transport. The topic of Physical Activity therefore relates to the health benefits derived from using alternative transport modes, other than the private vehicle. This includes promotion of the use of public transport as this mode usually interfaces with sustainable modes such as walking and cycling.

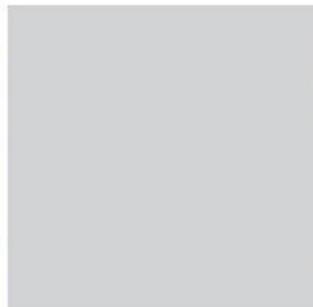
The delivery of an overall solution which alleviates the current congestion will in turn improve the streetscapes to enable workers / school children to commute by walking and cycling, thereby reducing the very high percentage of short commutes by providing a safe environment for such a change in behaviour. Reallocation of the existing road space which will be created once traffic moves to the new road space is necessary to deliver this high quality safe environment within which vulnerable road users can move safely.

The GTS, of which the N6 GCRR is a component, will reduce traffic congestion and car dependency through increased capacity and reliability of public transport and through promotion of cycling and walking.

In summary the specific 'Physical Activity' Objectives of the project are:

- Improve accessibility to Galway City via active transport modes for persons of all ability;
- Improve accessibility of public transport to persons of all ability;
- Improve opportunities for walking in the core city centre area by creating more walkable environments; and
- Reallocation of road space for the provision of additional cycling facilities on less congested urban streets.

Chapter 6
Functional & Operational Outcomes



6 Function & Operational Outcomes

6.1 Design Standards

The design of the national road component of the project has been undertaken in accordance with Transport Infrastructure Ireland's current design standards contained in the Design Manual for Roads and Bridges (DMRB) and Manual of Contract Documents for Road Works (MCDRW).

In particular, adherence to the following standards formed the basis of the design:

- DN-GEO-03031 – Road Link Design (TD 9);
- DN-GEO-03036 - Cross Sections and Headroom (TD 27);
- UK DMRB TD 22/06 and TII standard DN-GEO-03035 – Layout of Grade Separated Junctions;
- UK DMRB TD 16/07 and TII standard DN-GEO-03033 – Geometric Design of Roundabouts;
- DN-PAV-03021 – Pavement & Foundation Design (HD 25-26/10);
- DN-GEO-03057 – Geometric Design to Improve Surface Drainage (IAN 09/13);
- DN-GEO-03051 - Provision for Cyclists and Pedestrians on Type 2 and Type 3 single carriageway National Road in rural areas (IAN 03/12); and
- DN-DNG-03022 – Drainage Systems for National Roads (HD33).

In addition to the above design documents further guidance was obtained and utilised as necessary from relevant published data.

The Design Manual for Urban Roads and Streets (DMURS) as published by the Department for Transport, Tourism and Sport (DTTAS) was utilised within the urban area.

6.2 Performance Targets

The specific performance targets of the project include:

- *Reduction in journey times*
- *Increase journey time certainty*
- *Journey time reliability*
- *Reduction in road traffic collisions*
- *Improve connectivity to the Gateway of Galway*
- *High capacity linkages connecting east and west sides of the county, (target Level of Service C)*
- *Connectivity of high capacity to existing national and regional roads*
- *Improve accessibility of the Galway urban area to its main markets*
- *Improve the interconnection of the Galway City and environs road network to the national motorway network*
- *Support sustainable transport policies for shorter commutes*
- *Protection of existing residential communities; and*
- *Minimise environmental impacts.*