

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

274219-ARUP-02-OS-RP-YE-000020

P07 | 14 March 2023

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Job number 274219

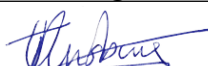
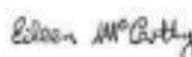
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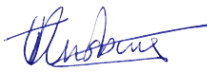
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Document verification

ARUP

Job title		N4 Carrick-on-Shannon to Dromod Project		Job number	
				274219	
Document title		Option Selection Report		File reference	
Document ref		274219-ARUP-02-OS-RP-YE-000020			
Revision	Date	Filename	274219-ARUP-02-OS-RP-YE-000020		
P01	11 Mar 2022	Description	TII Peer Review		
			Prepared by	Checked by	Approved by
		Name	Trevor Van Rensburg	Eileen McCarthy	Eileen McCarthy
		Signature			
P02	8 April 2022	Filename	274219-ARUP-02-OS-RP-YE-000020		
		Description	TII Peer Review		
			Prepared by	Checked by	Approved by
		Name	Trevor Van Rensburg	Eileen McCarthy	Eileen McCarthy
P03	20 July 2022	Filename	274219-ARUP-02-OS-RP-YE-000020		
		Description	Final OSR Draft with Changes Tracked		
			Prepared by	Checked by	Approved by
		Name	Trevor Van Rensburg	Eileen McCarthy	Eileen McCarthy
P04	22 July 2022	Filename	274219-ARUP-02-OS-RP-YE-000020		
		Description	Final OSR Draft		
			Prepared by	Checked by	Approved by
		Name	Trevor Van Rensburg	Eileen McCarthy	Eileen McCarthy
P05	14 March 2023	Filename	274219-ARUP-02-OS-RP-YE-000020		
		Description	Final OSR For Publication (With Tracked Changes)		
			Prepared by	Checked by	Approved by
		Name	Trevor Van Rensburg	Hazel King	Eileen McCarthy
					

P06	14 March 2023	Filename	274219-ARUP-02-OS-RP-YE-000020		
		Description	Final OSR For Publication		
			Prepared by	Checked by	Approved by
		Name	Trevor Van Rensburg	Hazel King	Eileen McCarthy
					
Issue Document verification with document ☒					

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9 Stage 3 Preferred Option and Preparation of Project Appraisal Balance Sheet (PABS)

Stage 3 of the Phase 2 Options Selection process consists of the final detailed appraisal of the emerging Preferred Transport Solution developed and analysed at Stage 2. A description of the Preferred Transport Solution (PTS) is provided in Section 9.1, and an overview of the public display is contained in Section 9.2. The cost estimate range of the PTS is provided in Section 9.3. The completion of a summary appraisal is presented in Section 9.4 with the recommendation of the PTS contained in Section 9.5.

9.1 Description of the Preferred Transport Solution

Upon completion of the project appraisal, the Preferred Transport Solution was developed as an amalgamation of different alternatives and options within the study area which includes the Carrick-on-Shannon/Cortober urban area west of Drumsna Junction and the existing N4 to the east Drumsna Junction which ties to the existing N4 Dromod Roosky Bypass at the eastern end of the project.

The Preferred Transport Solution comprises the Cyan Option Corridor and the Black Option Corridor to the west of Drumsna Junction plus the Green Option Corridor to the east of Drumsna Junction, plus a suite of active travel and demand management measures within the urban area consisting of the following components:

- 30km/h speed limit along the existing N4 as indicated by the red line on Figure 8.7.3.0
- New formal pedestrian crossings as part of signalisation of existing junctions
- Conversion of six at-grade roundabout junctions in Carrick-on-Shannon/Cortober to signalised junctions
- Extended signal timings at pedestrian crossings in town to facilitate longer pedestrian/cyclist crossing times

In the amalgamation of the individual option corridors to create the road component of the Preferred Transport Solution, cognisance was taken of the Stage 2 assessments. Minor modifications were made to reduce the impact of the combined solution as follows with further design to be completed at Phase 3 Design and Environmental Evaluation:

1. Cyan Option Corridor at the western tie-in to the N4 and at the tie-in to the N4 in the townland of Lisseeghan modified to minimise impacts on homes
2. Green Option Corridor at Aghamore modified to minimise impacts on homes

Whilst Active Travel measures did not contribute significantly to mode shift, the Preferred Transport Solution will make provision for Active Travel taking

cognisance of the guidance provided in PE-PMG-02045 and the work carried out on the project to date noting the following:

- *“Where the development of feasible active travel options is being undertaken as part of the development and delivery of a major and minor national road project, the Designer will determine how best to integrate the national road with the existing or proposed active travel network within the study area”*
- *“For major and minor national road projects, the emerging preferred option will include the appropriate active travel intervention”*

The primary objective of such provision is to ensure that the infrastructure is provided to enable purposeful journeys to be completed by active means where demand for such exists.

The Preferred Transport Solution comprises an off-line alignment to the south of the existing N4 which commences at Node A at Cloongownagh and immediately deviates from the existing N4. It continues eastwards hugging the north of the railway line, crosses over the R368 to the east of the railway station and includes a new link road at Node C to connect south to the R368 (Elphin Road), before crossing the River Shannon at Cordrehid. It re-joins the existing N4 with a roundabout junction at Node D at Lissenghan. An on-line upgrade of the existing alignment is proposed between Node D at Lissenghan to Node J at Drumsna Junction and on to Node H at Faulties. This on-line alignment will include a rationalisation of the existing junctions and accesses to improve safety and the standard of the existing carriageway. Refer to Plate 9.1.1 and Figures 9.1.1.0 to 9.1.1.7. The level of intervention within this corridor will be determined at Phase 3 Design and Environmental Evaluation.

The Preferred Transport Solution also includes the Black Option Corridor which provides a necessary connection between the R280 and Summerhill and onto the Castletarra Road as it offered improvements to the overall transport solution when combined with the other elements.

In summary, the road component of the Preferred Transport Solution i.e., the Preferred Option Corridor, includes the following:

- An urban road to the northeast of the town of length 1km from the R280 Leitrim Road to Summerhill the Castletarra Road
- A southern off-line corridor from west of Cortober to east of Carrick-on-Shannon of length 5.5km
- An on-line corridor from east of Carrick-on-Shannon to join the existing N4 Dromod Roosky Bypass of length 12.5km

This Preferred Option Corridor for the N4 seeks to optimise and improve the existing infrastructure for approximately 70% of its length which is in line with current national and international policy in terms of sustainability and climate change.

Furthermore, this Preferred Option Corridor follows the same path as the previous Emerging Preferred Option Corridor (EPRC) developed in 2012 from the townland of Tully east of Carrick-on-Shannon along the N4 to west of Aghamore and, again, from east of Aghamore to the join the existing N4 Dromod Roosky Bypass, a total length of overlap of approximately 8km or 44%.

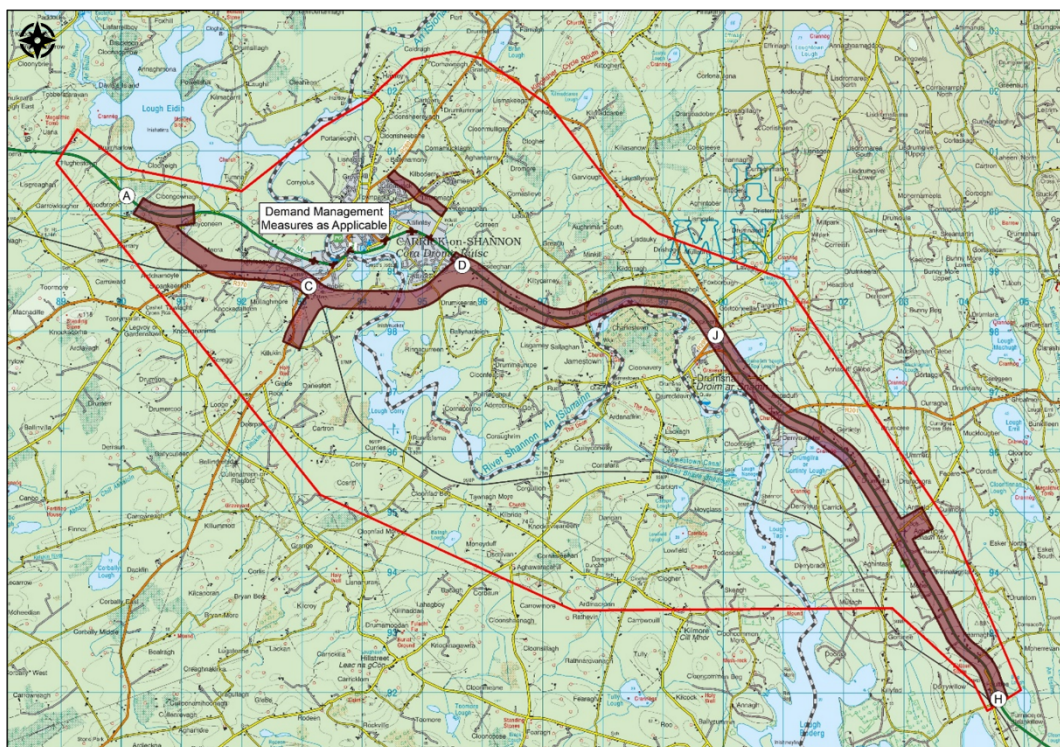


Plate 9.1.1 Preferred Transport Solution

9.2 Public Display of Preferred Transport Solution

The Preferred Transport Solution for the project went on public display at an in-person event on 18 and 19 May 2022 in the Landmark Hotel, Carrick-on-Shannon, Co. Leitrim to inform the public of the Preferred Transport Solution. A report detailing the outcomes from the display is contained in Appendix A.9.1.1.

9.3 Cost Estimate of the Preferred Transport Solution

The Preferred Transport Solution, namely the Black, Cyan and Green Option Corridors plus demand management measures, demonstrates the best value for money.

The cost estimate range for the Preferred Transport Solution, which is a combination of demand management measures including provision for active travel, the Black Option Corridor, the Cyan Option Corridor and the Green Option Corridor is in the Category D cost range i.e. €250M to €500M.

9.4 Project Appraisal Balance Sheet of the Preferred Transport Solution

The Project Appraisal Balance Sheet (PABS) is a summary appraisal of the impacts of the project; and is based on the results of the numerous assessments carried out during the foregoing stages of the project. The PABS is utilised as a tool to summarise the expected impacts of the proposed capital investment. The PABS is completed at the end of the Option Selection phase on the Preferred Transport Solution and is updated again during the ensuing stages of the project.

The PABS is based on both a qualitative and quantitative evaluation of a range of criteria and elements as outlined in the Department of Transport Common Appraisal Framework namely, Environment, Safety, Economy, Accessibility and Social Inclusion, Integration and Physical Activity. A detailed multi-criteria analysis of each criterion was completed on the various alternatives and options under consideration in Chapter 8. This summary assessment is now completed using the PABS template on the Preferred Transport Solution.

The PABS is comprised of four sections as follows:

1. Part A: This contains general information on the project
2. Part B: This section deals only with the environmental appraisal of the project. A summary rating of the scale of impact on each of the environmental elements is proposed. At the end of the spreadsheet, a summary ranking for the environment section is automatically generated based on the individual scales presented for each element
3. Part C: This section includes an assessment of each of the remaining five appraisal criteria namely, Safety, Economy, Accessibility and Social Inclusion, Integration and Physical Activity
4. Part D: This is the PABS Summary Sheet which is automatically populated based on Part A, B and C inputs

A copy of the completed Project Appraisal Balance Sheet is included in Appendix A.9.4.1.

9.4.1 PABS Part A

This section contains some general background on the project being assessed, including a brief project description, funding possibilities, project cost and project management information.

9.4.2 PABS Part B

This section deals only with the environmental impacts of the project. The environmental assessments included in Chapters 6, 7 and 8 are used to inform the compilation of Part B. The Environment criterion is an accumulation of many disciplines with the emphasis and importance of the different disciplines varying depending on the particular association and interaction with the receiving environment.

At the conclusion of Phase 2, the overall qualitative scale of impact of the Preferred Transport Solution as extracted from the PABS Part B for Environment is as follows:

- Highly Negative

The following paragraphs identify the key environmental receptors potentially impacted.

Based on the existing baseline and in the absence of considering mitigation measures, the following receptors could potentially be impacted by the Preferred Transport Solution:

- Archaeology, Architectural and Cultural Heritage – There is one profound impact which is a mound located south of the existing N4 in Tully, 37 very significant impacts, 10 moderately negative impacts and 29 slightly negative impacts to a range of heritage assets including archaeological and built heritage sites on the Preferred Transport Solution. The on-line upgrade requires the least amount of previously undisturbed greenfield.
- Hydrology – The key criteria in the selection of the southern bypass option as part of the Preferred Transport Solution is the impact on flood risk associated with the loss of the River Shannon floodplain and the impact on the Carrick-on-Shannon public water supply abstraction source from the River Shannon. The abstraction location is 1km upstream of the existing River Shannon Bridge in Carrick-on-Shannon and therefore driving the decision to cross the River Shannon downstream of Carrick-on-Shannon. The southern option will therefore provide limited risk of water quality impact on the source.
- Climate – The northern options generate more emissions than the southern options. The Cyan Option Corridor was preferred over the Orange Option Corridor due to less operational emissions being generated. The recommended on-line corridor to the east is strongly preferred from a climate perspective, with a significantly lower quantity of embodied carbon associated with its construction.
- Material Assets Non-Agriculture – 10 no. residential properties and 1 no. commercial properties are potentially impacted with 4 no. residential acquisitions from Nodes A-D, 2 no. residential acquisitions from Nodes D to J and 4 no. residential acquisitions from Node J to H. There are potentially five impacts to 110kV electrical lines, and two impacts to high voltage underground lines.
- Biodiversity – Given the protection currently afforded to pNHAs under planning objectives contained within the Leitrim County Development Plan and the high impact on internationally important sites, the northern options were less preferred than the southern options.

In making this recommendation, it is acknowledged that the Preferred Transport Solution to the west of Drumsna has residential and commercial impacts. The Stage 2 indicative designs remain relatively conservative at this stage, with scope to refine the design and lessen the potential environmental impact during Phase 3. The project also offers opportunities to enhance the receiving environment and deliver

mutual gains which may serve to mitigate the potential negative impacts that such a project may cause, and this will be developed during Phase 3.

9.4.3 PABS Part C

Part C of the PABS deals with the remaining five criteria for the assessment, namely, Safety, Economy, Accessibility and Social Inclusion, Integration and Physical Activity. Each of these is discussed in the following sections.

9.4.3.1 Safety

The speed reductions in the urban area proposed as part of the demand management measures in the Preferred Transport Solution and the reduction in congestion through the urban area will reduce both the likelihood and severity of collisions. A substantial number of direct accesses off the existing N4, in particular between Nodes D and H are typically sub-standard. Many of these accesses are inconsistent in layout and exhibit sub-standard design elements, including restricted visibility and inadequate provision for safe movements onto the existing N4.

The rationalisation of accesses and junctions between Nodes D and H along the existing N4 is expected to contribute to a safer environment for active travel as a result of the proposed scheme. It is proposed that active travel facilities provided as part of the scheme will, in conjunction with other Local Authority schemes, contribute to the provision of an integrated active travel network which is safe, inclusive and connected.

The provision of the urban street to the north of Carrick-on-Shannon removes additional traffic from the north-eastern area of the town further increasing the safety of all users.

The value of accident reduction as output from COBALT, and reflected in the Part C and D of the PABS is represented as close to zero. The marginally negative benefits can be attributed to how COBALT calculates benefits i.e. it uses a simplistic approach whereby collisions are calculated on the basis of an assumed collision rate which varies across a very minimal range of link types, and does not include for the expected lower collision risk in the section of 30km/h through Carrick-on-Shannon and Cortober arising from the implementation of the demand management measures.

At the conclusion of Phase 2, the overall qualitative scale of impact for Safety is Highly Positive.

9.4.3.2 Economy

The specific road based interventions will better manage congestion by improving the national, regional and local road infrastructure to better support the strategic N4 route by reallocating many local vehicle trips and catering for these trips utilising a more efficient and appropriate mode.

The Preferred Transport Solution represents good value for money by providing benefits to both road based public transport vehicles and private/commercial

vehicles. It also provides an opportunity to enhance the social value of Carrick-on-Shannon and Cortober that will benefit from reduced congestion and enhanced walking, cycling and public transport. An improvement in AM and PM peak period journey times is anticipated by virtue of the proposed transport solution.

A measure of economic efficiency is the Benefit to Cost Ratio, which shows how projects could increase overall welfare after allowing for the cost of implementation of the project. The total benefits of the Preferred Transport Solution derived from the assessment indicate a return for investment.

At the conclusion of Phase 2, the overall qualitative scale of impact for Economy is Slightly Positive.

9.4.3.3 Accessibility and Social Inclusion

The components of the Preferred Transport Solution, including the road based and demand management measures, will improve accessibility between the northwest and east, with the inclusion of new parallel linkages between Lisseeghan and Drumsna Junction. It is expected to provide greater opportunity to enhance the fragmented regional and local road network along the N4. Moreover, these parallel links should generate significant positive effects for certain vulnerable groups, including pedestrians and cyclists whilst also improving the connectivity to public transport within the study area.

The implementation of the demand management measures within Carrick-on-Shannon will alleviate congestion by removing up to 10% of the current traffic volumes from the town centre. The rationalisation of parking within Carrick-on-Shannon town centre will encourage a modal shift and generate a more inclusive and vibrant community. The introduction of the new urban street to the north of Carrick-on-Shannon will also remove traffic from the town further improving access and connectivity within Carrick-on-Shannon and Cortober.

At the conclusion of Phase 2, the overall qualitative scale of impact for Accessibility and Social Inclusion is Slightly Positive.

9.4.3.4 Integration

The Preferred Transport Solution supports the objectives of national, regional and local planning policy and is compatible with adopted land-use objectives. The enhancements proposed within the Preferred Transport Solution meets the objectives of the TEN-T network by delivering greater efficiency through the removal of bottlenecks, the bridging of missing links within the strategic transport network and by ensuring safe, secure and high-quality standards for both passenger and freight transport. The project will further strengthen access to key ports in line with the objectives of the Regional Spatial and Economic Strategy

The Preferred Transport Solution will ultimately facilitate the delivery of a project which addresses an existing deficiency gap in the national primary network which greatly improves connectivity of the strategic road network. The improved N4 link also provides a vital link from Dublin and the east of the country to the northwest region. The Preferred Transport Solution will provide improved transport

infrastructure for use by public transport bus routes which serves to integrate transport modes. The provision of supporting facilities for active travel modes also offers benefits to the overall integration of the ultimate transport solution.

Overall, the Preferred Transport Solution is considered highly positive in terms of realising the goals of the NPF, particularly in relation to the key policy objective of “Enhanced Regional Accessibility”.

At the conclusion of Phase 2, the overall qualitative scale of impact for Integration is Highly Positive.

9.4.3.5 Physical Activity

The Preferred Transport Solution achieves a significant reduction in traffic levels in the town centre area of Carrick-on-Shannon and Cortober, where there is a high prevalence of recreation activities along the River Shannon, and in doing so improves access to such facilities and encourage road users to make trips by walking and/or cycling.

The Preferred Transport Solution also offers opportunity to improve on physical activity by improving safety for cyclists over the section of the proposed online upgrade to the existing N4.

At the conclusion of Phase 2, the overall scale of impact for Physical Activity is considered Moderately Positive.

9.4.4 PABS Part D

Part D of the PABS is a summary statement of the assessment which is compiled on the basis of the input to Parts A, B and C. The summary provides an overall scale of impact for the six CAF criteria of Economy, Safety, Accessibility and Social Inclusion, Integration and Physical Activity .

A copy of the completed Project Appraisal Balance Sheet is included in Appendix A.9.4.1.

9.5 Recommendation of Preferred Transport Solution

As detailed in Chapter 2, NIFTI is the Department of Transport's high-level, strategic framework for future investment in the land transport network in Ireland. The purpose of the NIFTI is to support the delivery of the National Planning Framework (NPF). It aligns with the *Common Appraisal Framework for Transport Projects and Programmes* (CAF), with TII Project Management Guidelines, and TII Project Appraisal Guidance. Therefore, the starting point in terms of transport infrastructure provision was to determine what can be achieved by the alternatives (modal hierarchy) to meet the project objectives. Thereafter, optimisation of the existing infrastructure was considered before advancing to the provision of new infrastructure (intervention hierarchy).

As detailed in Chapter 8, the alternatives i.e. active travel measures, public transport improvement measures (bus and rail) and demand management measures in isolation do not meet the project objectives. Therefore, consideration was next given as to what level of intervention for the road alternative is necessary to meet the project objectives.

The initial step in the intervention hierarchy is reutilise as much of the existing road as possible. The Preferred Transport Solution incorporates 12.5km of upgrades to existing road infrastructure to the east of Carrick-on-Shannon. A new urban street (1km) in the northeast of the town forms part of the Preferred Transport Solution to relieve congestion in that quadrant of the town. Finally, new road infrastructure (5.5km) is included in the Preferred Transport Solution to bypass the town to the south.

Project appraisal of the N4 Carrick-on-Shannon to Dromod Project has demonstrated that the Preferred Transport Solution has a positive scaling statement on five of the six assessment criteria, and a negative scaling statement on one criterion. The economic assessment has demonstrated that, based on the scheme costs developed to date and the associated forecast performance of the transport network, the Preferred Transport Solution represents value for money. During Phase 3 (Design and Environmental Evaluation), work will focus on undertaking further assessments to ascertain risks to key constraints and where such risks manifest, to refine and develop the design such that impacts to sensitive receptors can be avoided or minimised.

The recommendation of this Phase 2 Option Selection Report is to advance the Preferred Transport Solution shown in Figures 9.1.1.0 to 9.1.1.7 and demand management measures in Figure 8.7.3.0 as the optimum option to meet the project objectives outlined in Chapter 1 of this report. Table 9.1 outlines in summary how the Preferred Transport Solution for the N4 project delivers on the project objectives.

Table 9.1 Preferred Transport Solution and Project Objectives

Objective Criteria	Project Specific Objectives	Preferred Transport Solution
	- To provide a reliable transport system over the N4 corridor extents under consideration and to contribute to efficient connectivity between the Northern and Western Regions with Dublin and the Eastern and Midland Regions to balance regional development - To provide a solution that offers good value for money and reduces the cost of travel - To provide opportunities to enhance the future tourism and economic prospects of Carrick-on-Shannon and the wider northwest regions of Roscommon, Leitrim, Sligo and Donegal	The specific road based interventions will better manage congestion by improving the national, regional and local road infrastructure to better support the strategic N4 route by removing many local trips and catering for these in a more efficient and appropriate mode. The preferred transport solution achieves a value for money scheme, which provides benefits to road users and public transport users alike. An improvement in AM and PM peak period journey times is anticipated by virtue of the interventions proposed.
	- To reduce the potential for collisions and severity of collisions by providing a safer travelling environment for all road users over the N4 corridor extents under consideration supporting the RSA Road Safety Strategy 2013-2020 - To reduce the potential for conflict with vulnerable road users within built-up areas of Carrick-on-Shannon, Cortober and Aghamore	The safety of road users is expected to be significantly improved as a result of the interventions proposed along the corridor. An intrinsic element of the Preferred Transport Solution is the rationalisation of the existing junctions and accesses along the N4, many of which are non-standard and presently inhibit the safe operation of this strategic route. The relocation of strategic traffic onto the proposed off-line bypass significantly reduces the number of conflict points on the strategic route. The introduction of the new urban street to the north of Carrick-on-Shannon removes additional traffic from the north-eastern area of the town further increasing the safety of all users. The inclusion of the new urban street to the north of Carrick-on-Shannon and parallel roads as part of the measures along with the application of signalised junctions further reduce conflict with vulnerable road users.

Objective Criteria	Project Specific Objectives	Preferred Transport Solution
	- To provide opportunities to enhance the local amenity and heritage value of the area - To ensure consideration of sustainable development principles and measures to minimise the effects on the environment to support the government's Climate Action Plan - To minimise impacts on designated Natura 2000 sites in the vicinity of the study area - To minimise the impact to local watercourses and associated flood plains, in particular the River Shannon - The proposed scheme will seek to reduce noise and air impacts in the various settlements along the corridor	The Preferred Transport Solution remains close to Carrick-on-Shannon and Cortober environs providing connectivity to the local amenities, whilst the eastern section predominantly utilises the existing N4 corridor for the most, thus maximising the value and sustainable use of existing infrastructure. The recommended on-line corridor is strongly preferred from a climate perspective, with a significantly lower quantity of embodied carbon associated with its construction. Detailed assessments of predicted noise impacts will be undertaken during Phase 3 (Design & Environmental Evaluation). Opportunities exist along the corridor to incorporate noise mitigation measures as part of the improvement works which have the potential to result in positive impacts to existing properties and receptors. Impacts on watercourses and floodplains have been limited where possible with the highest risk of potential contamination during the construction phase. The preferred transport solution does not impact on any heritage sites of national importance.
	- Improve accessibility to key facilities, such as employment, education, transport and healthcare to satisfy transport demand for all trip types for all modes of transport on the national road transport network - To provide opportunities to enable the successful creation of place making and generation of a vibrant community in Carrick-on-Shannon - Facilitate the enhancement of sustainable travel and improved connectivity to public transport opportunities - To improve connectivity across the River Shannon and in turn support social and economic development within this regional strategic town and its hinterland	The components of the Preferred Transport Solution, including road based and demand management measures will improve accessibility between the northwest and east, with the inclusion of new parallel linkages between nodes D and J, expected to provide greater opportunity to enhance the fragmented regional and local road network along the N4. Moreover, these parallel links should generate significant positive effects for certain vulnerable groups, including pedestrians and cyclists whilst also improving the connectivity to public transport within the study area. The implementation of the demand management measures within Carrick-on-Shannon will alleviate congestion by removing up to 10% of the current traffic volumes from the town centre. The rationalisation of parking within Carrick-on-Shannon town centre will encourage a modal shift and generate a more inclusive and vibrant community. The introduction of the new urban street to the north of Carrick-on-Shannon will also remove traffic from the town further improving access and connectivity within Carrick-on-Shannon.

Objective Criteria	Project Specific Objectives	Preferred Transport Solution
 Integration	- To support sustainable growth in Carrick-on-Shannon through the creation of an attractive environment to encourage sustainable trips - To achieve the goals of the TEN-T comprehensive network by providing high quality links which will contribute to enhancing social cohesion within Ireland and across the EU, further supporting the integration of all transport modes within the wider region, integrating with regional public transport facilities - To support the integration objectives to balance the social and economic development in the Northwest Region as set out in national and regional policies	The Preferred Transport Solution will ultimately facilitate the delivery of a project which addresses an existing deficiency gap in the national primary network which greatly improves connectivity of the strategic road network. The improved N4 link also provides a vital link from Dublin and the east of the country to the northwest region. The Preferred Transport Solution will provide improved transport infrastructure for use by public transport bus routes which serves to integrate transport modes. The provision of supporting facilities for active travel modes also offers benefits to the overall integration of the ultimate transport solution. The enhancements proposed within the Preferred Transport Solution meets the objectives of the TEN-T network by delivering greater efficiency through the removal of bottlenecks, the bridging of missing links within the strategic transport network and by ensuring safe, secure and high-quality standards for both passenger and freight transport. The scheme will further strengthen access to key ports in line with the objectives of the Regional Spatial and Economic Strategy. The Preferred Transport Solution supports the objectives of national, regional and local planning policy and is compatible with adopted land-use objectives.
 Physical Activity	- To enable walking and cycling opportunities in a safer environment for the communities along the corridor - To create a healthy environment conducive to active travel for the communities along the corridor	The Preferred Transport Solution achieves a significant reduction in traffic levels in the town centre area, where there is a high prevalence of recreation activities along the River Shannon, and in doing so improves access to such facilities and encourages road users to make trips by walking and/or cycling. It also offers an opportunity to improve on physical activity by improving safety for cyclists over the existing N4