

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

274219-ARUP-02-OS-RP-YE-000023

P07 | 14 March 2023

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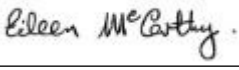
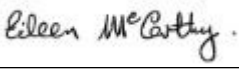
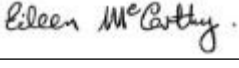
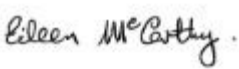
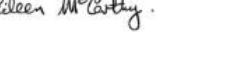
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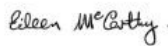
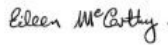
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5 Consideration of Alternatives and Options

5.1 Introduction

Multi Criteria Analysis (MCA) is a technique outlined in the Department of Transport, Tourism and Sports Common Appraisal Framework for Transport Projects and Programmes (CAF) as an appraisal tool to evaluate alternatives and options based on identified criteria and ranked on the basis of an aggregation procedure. The basis of the MCA for the N4 Carrick-on-Shannon to Dromod Project is an explicit set of objectives, namely the project objectives. MCA can be expressed in either qualitative or quantitative terms.

Once the problems that the project are seeking to solve have been identified and the project objectives are set, CAF states *“the need for an intervention should then be clearly set out and justified. If an intervention is appropriate, a number of options should be generated with a view to developing a range of alternative measures that look likely to achieve the specific objectives that the project is seeking to address. A Base Case must first be established and then options for investment should be identified and appraised in comparison to this. In line with the Public Spending Code, this requires the analyst to generate a range of realistic options so that benefits and costs can be compared relative to a scenario where very little or no change has taken place. A preliminary assessment of the costs and benefits should be undertaken of the options. The options are then sifted for the better performing options to be taken on to the detailed appraisal stage.”*

“A minimum of four options (i.e. Do-Nothing or Do-Minimum and at least 3 Do-Something options) should be subject to appraisal at preliminary appraisal stage. Where fewer than four options have been considered the project appraisal report and Business Case should include a rationale for the approach taken.”

The purpose of this chapter is to provide an overview of the methodology for the development and assessment of alternatives and options and to provide the detail of the initial sifting of the long list of alternatives and options to derive a range of alternatives and options that are likely to contribute to achieving the project objectives.

It should be noted that within the context of TII Project Appraisal Guidelines (PAG) Unit 4.0 (*Consideration of Alternatives and Options*)¹, an *alternative* refers to a specific transport mode (road, rail, bus, air etc.) or demand management proposal (fiscal, control, ITS measures etc.) which could address the need for an intervention. An *option* refers to a specific road based measure (road upgrade, new route, junction improvements etc.) that may be developed as part of the road alternative. Hereafter in this report, the term ‘alternative’ refers to the rail, bus, active travel or demand management proposals, whereas the term ‘option’ refers to the road based measures.

¹ Transport Infrastructure Ireland (TII), 2016. Project Appraisal Guidelines for National Roads Unit 4.0 – Consideration of Alternatives and Options PE-PAG-02013. Available at: <https://www.tiipublications.ie/library/PE-PAG-02013-01.pdf>

5.2 Methodology for Alternatives and Options Development

5.2.1 Overview

As outlined in PAG Unit 4.0, the initial step focussed on drafting a long list of potential alternatives and options that may address the need for intervention. The development of potential alternatives and options took cognisance of the mapped key constraints whilst also seeking to optimise the opportunities identified, such as the trip attractors in the study area and the possibility of integrating with or providing for public transport and active modes. Alternatives and options on this initial list were then subjected to a sifting process which comprised a qualitative assessment against the stated project objectives to establish, at a fundamental level, if these would respond, in whole or in part, to the transportation problems identified on the corridor.

The conclusion of the sifting process is to advance a number of reasonable and feasible alternatives and options to the Options Selection Process. The Options Selection process is a three-stage process as outlined within TII PAG Unit: 4.0 namely:

- Stage 1 – Preliminary Options Assessment, develop a number of feasible options and carry out a Multi-Criteria Analysis (MCA) under the assessment criteria of Engineering, Environment and Economy. This will result in a refined number of options (minimum of four, Do-Nothing or Do-Minimum and a least three Do-Something Options).
- Stage 2 – Project Appraisal Matrix, carry out a full Cost Benefit Analysis (CBA) and MCA of the quantifiable and non-quantifiable impacts of these options (under the six CAF Criteria of Economy, Safety, Environment, Accessibility & Social Inclusion, Integration and Physical Activity).
- Stage 3 – Preferred Option after the completion of Stage 2, select a Preferred Option for the Scheme. Following this, prepare a Project Appraisal Balance Sheet (PABS) to summarise the impact of the Preferred Option.

The assessments for each of these three stages are described in detail in subsequent Chapters 6, 7, 8 and 9. The focus of this chapter is to detail the development of the alternatives and options which are subsequently subjected to these assessments.

5.2.2 Sifting Process

5.2.2.1 Alternatives Sifting Methodology

A range of Do-Something Alternatives were developed incrementally in accordance with the intervention hierarchy, as set out in the NIFTI policy, of prioritising active modes ahead of private car. Alternatives were identified and grouped under the headings of active travel, public transport measures and demand management measures. The alternatives generally can deliver on many of the project objectives in respect of climate resilience and sustainable development but may not be capable,

if considered in isolation, of solving the problems identified on the N4 corridor. Therefore, all the potential alternatives which were identified were advanced past this sifting exercise for consideration at Stage 1 Preliminary Assessment so that their merits can be established, and they then can be combined with other options to provide a holistic solution.

5.2.2.2 Options Sifting Methodology

Options which serve key trip attractors such as Carrick-on-Shannon/Cortober at the local level and the Dublin/Sligo strategic route at the national level were identified. These options may also provide opportunity for interchange with other transport modes or active travel modes as part of developing an integrated transport solution which meets the project objectives.

The steps below were followed for the Options Sifting Process:

1. Identify a long list of geometrically feasible options which connected the N4 at the western end of the study area to the N4 at the eastern end of the study area.
2. Assess these options at a high level to screen them depending on their ability to meet the project objectives and the level of potential impacts associated with them.

The road based options which were considered as part of the previous studies on this N4 corridor were included in the long list of geometrically feasible options. However, it should be noted that there have been significant changes to policy and legislation both at a national and European level in the interim since the previous studies, such as the 2016 Catchment Flood Risk Assessment and Management (CFRAM) Programme and associated flood risk mapping, the 2017 EIA Directive, the 2019 National Planning Framework, the 2019 Climate Action Plan (CAP) and 2023 updated CAP and the publication of NIFTI in December 2021 to mention but a few. The Climate Action Plan states *‘the accelerating impact of greenhouse gas emissions on climate disruption must be arrested... Decarbonisation is now a must if the world is to contain the damage and build resilience in the face of such a profound challenge’*. Current policies and legislation were taken into account in the sifting process.

An option was not screened out if it did not deliver on every project objective. However, particular consideration is given to the level of demand on an option as this determines how effective it will be in relieving the traffic congestion in Carrick-on-Shannon/Cortober, whilst also considering constraints of international importance, which include biodiversity and climate change. Options which are not feasible and practical from the perspective of delivering on the over-riding project objectives of solving the problems identified, whilst also adhering to the essential shift towards climate resilient and sustainable development, are removed from further consideration in the sifting process.

An incremental approach should be adopted when considering potential options with options ranging from a Do-Nothing and a Do-Minimum option (i.e. ‘Base Case’ option) to include a range of Do-Something options. Plate 5.2.1 below sets out the process that will be followed during the option selection process of the

project and how it aligns with the principles of modal hierarchy and intervention hierarchy as set out in NIFTI.

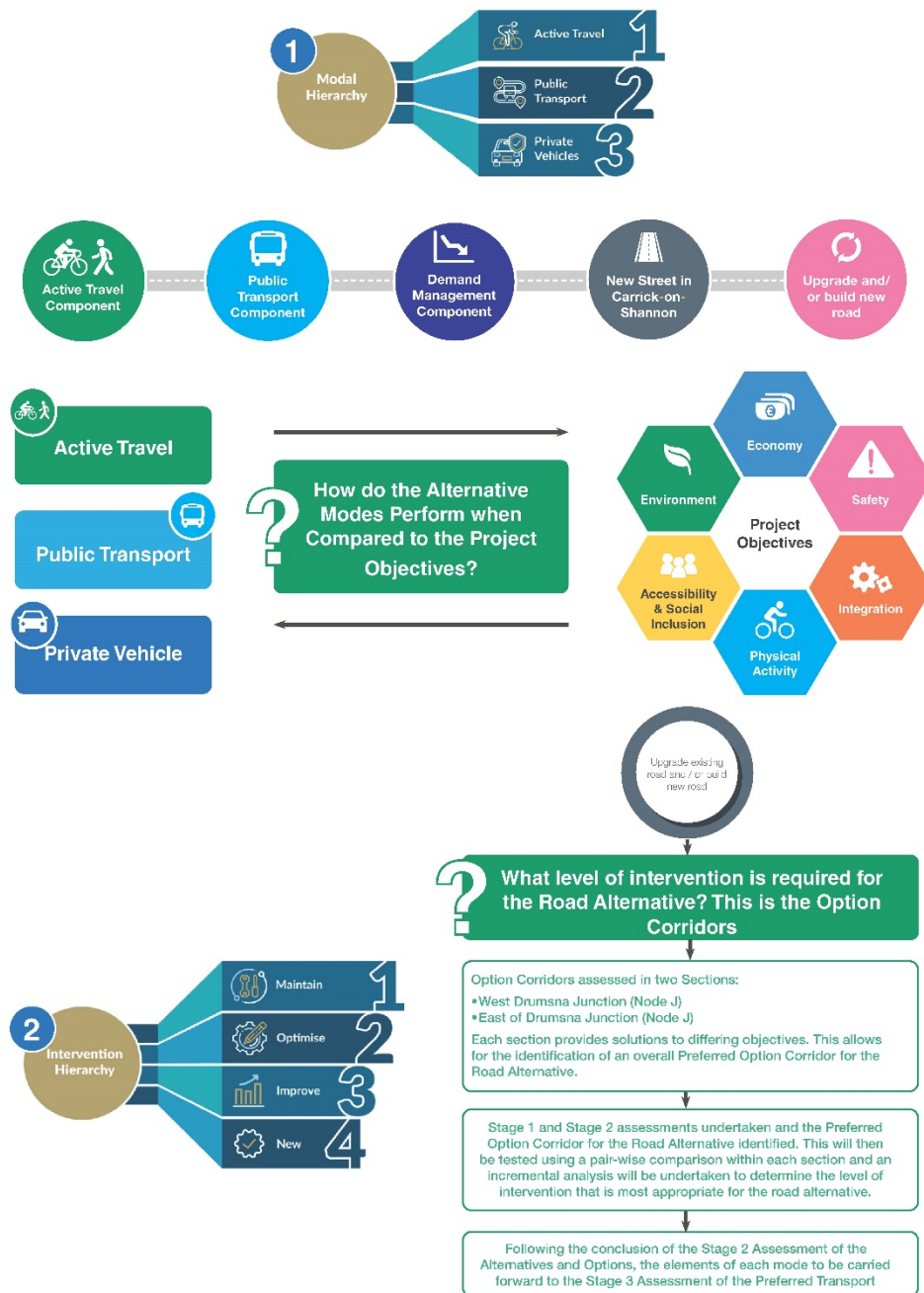


Plate 5.2.1 The Option Selection Process

5.2.2.3 Do-Nothing Option

The Do-Nothing Option is the scenario whereby there is no intervention on the proposed network. This option does not exist in the case of the N4 Carrick-on-

Shannon to Dromod Project as there are already planned and committed projects in the locality. Hence it is not considered further.

5.2.2.4 Do-Minimum Option

The first potential option to be identified is the Do-Minimum Option as it forms the base case against which all other options are assessed. The Do-Minimum Option will include those transportation projects and services that are committed within the appraisal period of the project. This includes road schemes, public transport improvements, smart mobility and demand management measures and the provision of pedestrian and cyclist facilities; but does not include the delivery of the project itself. All elements of the Do-Minimum Option are included as part of each Do-Something option such that the only difference between the two is the project solution being proposed. This approach ensures that the true impact of the project solution can be isolated and objectively assessed.

When deciding the appropriate components of the Do-Minimum Option, there are often two possible definitions of complementary projects that should be considered in the appraisal of the scheme in question, namely:

1. “*Planned*” improvements that are included in the fiscally constrained long-range plan for which the need, commitment, financing and public and political support are identified and may be reasonably expected to be implemented
2. “*Committed*” improvements that have been progressed through the planning and are either under construction or are programmed into the capital expenditure budget

Consultation with the local authorities in the study area identified the various components to be included in the Do-Minimum Option which was based on the degree of certainty that such interventions may occur and the likely impact such interventions may have on future travel demand. The components of the Do-Minimum Option are included in Appendix A.5.2.1.

5.2.2.5 Do-Something Road Based Options

In response to the transportation problems identified in Chapter 2 Identification of Need, a wide array of road improvement measures can be considered as offering potential solutions along the N4 corridor and an incremental approach should be adopted when considering potential road based solutions.

As with all potential transport solutions, road based interventions should not focus solely on addressing existing road capacity shortfall, but rather need to sit in the context of wider transportation policy and mobility within the corridor and study area. For example, the scale of road based intervention necessary is inextricably linked to the concurrent delivery of an improved public transport system, improved active travel measures and additional demand management measures in the study area, as these will encourage modal shift and potentially reduce road demand. It is imperative that road based interventions do not undermine the future need for investment in more sustainable transport solutions.

The first Do-Something road based option is an option which seeks to maximise the use of the existing asset and is referred to as the Management Option. The development of the Management Option included an assessment of the N4 in the context of the following:

- i. Sustainable use of infrastructure
- ii. Technological innovation
- iii. Provision for all modes of transport including non motorised users such as pedestrians and cyclists encouraging more active travel and sustainable trips utilising safer crossing infrastructure
- iv. Private access control
- v. Proximity of junctions and consistency of junction types
- vi. Sections of poor safety using global targets and TII Publications Design Guidelines

Therefore, the existing N4 was assessed and a range of management measures, where feasible, were agglomerated to form the Management Option. Detail of the development of the Management Option and associated figures are provided in Appendix A.5.2.2.

Further Do-Something options were developed incrementally from an option to wholly reuse the existing N4 to an option including small scale improvements to address specific issues on the existing N4 to more significant investments comprising new off-line construction. Options must be significantly different and take account of potential differences in alignment, design standard and junction strategy. Significant differences in the likely costs and benefits of options would require the alignments to be treated as separate options.

5.2.2.6 Output of Sifting Matrix

The initial long list of alternatives and options together with the outcome of their assessment is included in Appendix A.5.2.3. The alternatives and options which were assessed against the project objectives are set out below, noting that those with a strikethrough were sifted out and did not progress to Stage 1 Preliminary Assessment:

~~Do-Nothing~~

Do-Something Alternatives

- Active Travel Initiatives
- Public Transport Alternatives including bus and rail
- Demand Management Alternative

Do-Something Options

- Do-Minimum Option
- Management Option

- Do-Something Road Based Options – West of Drumsna
 - Dark Green Option
 - Purple Option
 - ⊖ ~~Option 3~~
 - Black Option
 - Orange Option
 - Cyan Option
 - ⊖ ~~Option 7~~
 - ⊖ ~~Option 8~~
 - ⊖ ~~Option 9~~
- Do-Something Road Based Options – East of Drumsna
 - Option 10
 - Purple Option
 - Green Option
 - Yellow Option
 - Option 14

5.3 Consultation

5.3.1 Environmental Workshop No. 2

Environmental Workshop No. 2 took place via Microsoft Teams on 25 February 2021. Each of the environmental specialists provided a summary and description of their key constraints within the project study area based on additional studies and surveys carried out post Environmental Workshop No. 1.

Each of the Stage 1 Alternatives and Options were reviewed in detail and provided an opportunity for all present to recommend modifications in order to minimise impacts on the receiving environment.

5.3.2 Public Consultation

Public consultation on the Stage 1 Alternatives and Options was undertaken from 19 May to 25 June 2021. As part of this consultation, key stakeholders were consulted and invited to make submissions.

During the course of the consultation, additional options were identified by members of the public for consideration. Refer to Appendix A.6.2.1 for further details. These additional options were assessed using the sifting methodology as set out above to determine if such options merit inclusion as a Stage 1 Option.

The additional options identified for sifting are as follows and shown on Plate 5.3.1:

- Do-Something Road Based Option – North of study area crossing of Lough Eidin and River Shannon crossing via new bridge at Hartley Bridge – Option 15

- Do-Something Road Based Option – Extend Black Option Corridor via Keenaghan Industrial Estate and tie back into existing N4 at Lisseeeeghan – Option 16
- Do-Something Road Based Option via R368 – R368 via Elphin from Killukin to Strokestown – Option 17
- Do-Something Road Based Option via N5 Longford and N61 to Boyle – Upgrade the existing N5 and tie into and upgrade N61 – Option 18
- Do-Something Road Based Option – Double Railway Crossing south of Cortober – Option 19
- Do-Something Road Based Option – Upgrade to existing L7414 – Option 20
- Do-Something Road Based Option – Southern off-line bypass continuously adjacent to railway line – Option 21
- Do-Something Road Based Option – Northern off-line bypass along the boundary of study area (or beyond) – Option 22
- Do-Something Road Based Option – Introduce a roundabout at Faulties/Fearnaught and run a parallel road up to Aghamore – Option 23
- Do-Something Road Based Option – Upgrade to existing R299 – Option 24
- Do-Something Road Based Option – Add a connection from the R368, Elphin Road, to the southern Option – Option 25. Note also that the Draft Roscommon Development Plan includes an objective to upgrade the Elphin Road from the train station to the town.

The additional options identified by the public for consideration above have been assessed against the project objectives and the outcome of their assessment is included in Appendix A.5.2.3. Two of these additional options namely, Option 23 and Option 25, were retained as modifications and additions to the Phase 2 – Stage 1 Options which were then incorporated into the Stage 2 Options.

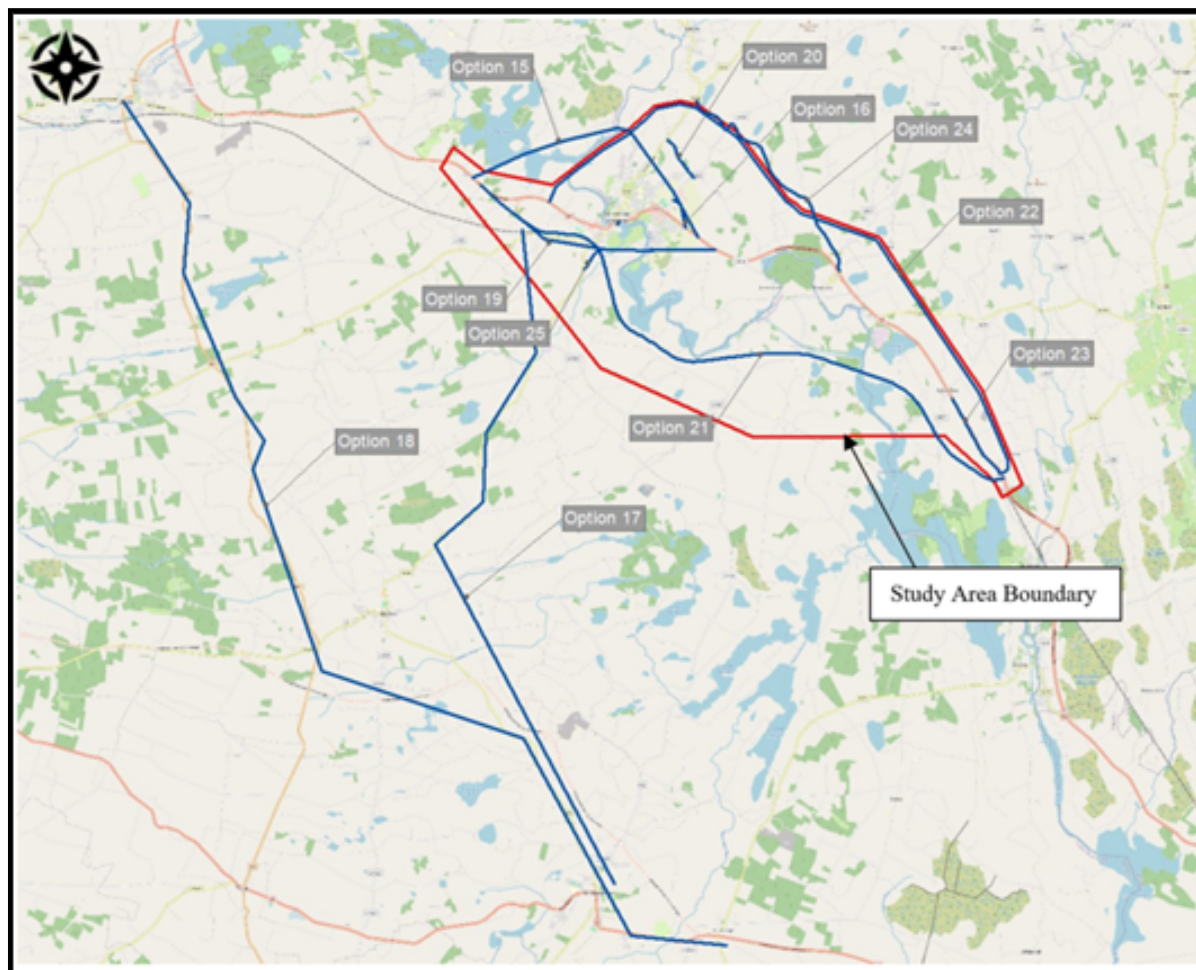


Plate 5.3.1 Additional Options Post Public Consultation No. 2

5.4 Summary

The following alternatives and options have been brought through to Phase 2 – Stage 1 Alternatives and Options to undergo the Preliminary Assessment:

Do-Something Alternatives

- Active Travel Initiatives
- Public Transport Alternatives including bus and rail
- Demand Management Alternative

Do-Something Options

- Do-Minimum – This is the Base Case and will be kept for comparison purposes
- Management Option (Blue West and Blue East)
- Do-Something Road Based Options

The Do-Something Road Based Options were split into two sections (i.e. West of Drumsna Junction (Node J) and East of Drumsna Junction (Node J) as that is the point at which all bypass options for Carrick-on-Shannon could be brought to a convergence so that they could be assessed from a common point.

- West of Drumsna Junction (Node J)

- Dark Green Option
- Purple West Option
- Black Option
- Orange Option
- Cyan Option

- East of Drumsna Junction (Node J)

- Purple East Option
- Green Option
- Yellow Option

Following Public Consultation No. 2, additional options were identified by members of the public for consideration. These additional options were assessed using the sifting methodology outlined in Section 5.2.2.2 to determine if such options merit inclusion as a Stage 1 Option. Whilst no additional new Stage 1 Options warranted inclusion from the suggestions, two modifications to existing Stage 1 Options were retained for consideration as Stage 2 Options.