



Bonneagar Iompair Éireann
Transport Infrastructure Ireland

TII Publications



Project Appraisal Guidelines Unit 3.0 - Feasibility Report

PE-PAG-02012
February 2024

About TII

Transport Infrastructure Ireland (TII) is responsible for managing and improving the country's national road and light rail networks.

About TII Publications

TII maintains an online suite of technical publications, which is managed through the TII Publications website. The contents of TII Publications is clearly split into 'Standards' and 'Technical' documentation. All documentation for implementation on TII schemes is collectively referred to as TII Publications (Standards), and all other documentation within the system is collectively referred to as TII Publications (Technical).

Document Attributes

Each document within TII Publications has a range of attributes associated with it, which allows for efficient access and retrieval of the document from the website. These attributes are also contained on the inside cover of each current document, for reference.

TII Publication Title	<i>Project Appraisal Guidelines Unit 3.0 - Feasibility Report</i>
TII Publication Number	<i>PE-PAG-02012</i>

Activity	<i>Planning & Evaluation (PE)</i>	Document Set	<i>Technical</i>
Stream	<i>Project Appraisal Guidelines (PAG)</i>	Publication Date	<i>February 2024</i>
Document Number	<i>02012</i>	Historical Reference	PAG Unit 3.0

TII Publications Website

This document is part of the TII publications system all of which is available free of charge at <http://www.tiipublications.ie>. For more information on the TII Publications system or to access further TII Publications documentation, please refer to the TII Publications website.

TII Authorisation and Contact Details

This document has been authorised by the Director of Professional Services, Transport Infrastructure Ireland. For any further guidance on the TII Publications system, please contact the following:

Contact: Standards and Research Section, Transport Infrastructure Ireland
Postal Address: Parkgate Business Centre, Parkgate Street, Dublin 8, D08 DK10
Telephone: +353 1 646 3600
Email: infoPUBS@tii.ie

TII Publications



Activity:	Planning & Evaluation (PE)
Stream:	Project Appraisal Guidelines (PAG)
TII Publication Title:	Project Appraisal Guidelines Unit 3.0 - Feasibility Report
TII Publication Number:	PE-PAG-02012
Publication Date:	February 2024
Set:	Technical

Contents Table

1. Context.....	1
2. Role of the Feasibility Report	5
3. Feasibility Report Structure and Content	7

**Updates to TII Publications resulting in changes to
Project Appraisal Guidelines Unit 3.0 - Feasibility Report PE-PAG-02012**

Date: February 2024

Page No:

Section No:

Amendment Details:

The PAG Unit 3.0 - Project Brief guidance has been replaced with a new PAG Unit 3.0 - Feasibility Report guidance. The Feasibility Report is the replacement Phase 1 deliverable for the PAG and PMGs. This unit describes the content and methods required to produce the Feasibility Report. This update was conducted to align the PAG Unit with the Transport Appraisal Framework (TAF) and the updates to PAG Units 2.1 and 4.0

Contents Table

1. Context	1
1.1 Introduction to the Feasibility Report	1
1.2 Relationship with TII Sustainable Implementation Plan Practical Guide	1
1.3 Definition of Option Types	1
1.4 Overview of Option Selection Process.....	2
1.5 Importance of NR2040 Commitments.....	3
2. Role of the Feasibility Report	5
2.1 TII Project Lifecycle & Deliverables	5
2.2 Purpose of the Feasibility Report.....	5
2.3 TAF - Longlist Assessment Report Requirement.....	5
3. Feasibility Report Structure and Content	7
3.1 Executive Summary	8
3.2 Introduction, Project Background and Description	8
3.3 Definition of Study Areas	8
3.4 Baseline Review of Study Area	9
3.5 Constraints, Risks and Opportunities Study	12
3.6 Project Need and Strategic Role	13
3.7 Project Objectives.....	13
3.8 Generation of Strategic Options.....	15
3.9 Strategic Options Assessment.....	18
3.10 Logic Path Modelling	19
3.11 Conclusions	20

1. Context

1.1 Introduction to the Feasibility Report

Project Appraisal Guidelines (PAG) Unit 3.0 provides guidance on the structure and content of the Phase 1 (Concept & Feasibility) Feasibility Report, which is a combined TII PAG and Project Management Guidelines (PMG) deliverable. The guidance in this unit applies to TII funded projects valued in excess of €30m, but the principles and methods can be used to assist with projects of any type and scale.

The Feasibility Report replaces the Project Brief as the Phase 1 PAG deliverable and the updated guidance within this Unit is designed to align with the requirements of the Department of Transport (DoT) National Investment Framework for Transport in Ireland (NIFTI) and Transport Appraisal Guidelines (TAF).

The guidance set out in this Unit is focused on the appraisal elements associated with a Feasibility Report. As a combined PAG/PMG Phase 1 deliverable the TII PMGs should also be referred out to in terms of the preparation of the Feasibility Report and the relevant guidance in the 'Project Manager's Manuals' for Major / Minor National Road Projects and for Greenways.

1.2 Relationship with TII Sustainable Implementation Plan Practical Guide

In parallel to the TII PAG/PMG, TII has also produced the Guide to the Implementation of Sustainability for TII Projects¹, which provides advice for project managers on how to better deliver projects from a sustainability perspective during Phases 0-7.

The Sustainability Implementation Plan (SIP) Practical Guide aims to prompt a sustainability review at the start of each TII project phase through a series of 'workflow' spreadsheets which project managers should complete to ensure sustainability concepts are integrated into their approach. Furthermore, the SIP Practical Guide provides valuable advice on the best use of public consultation in projects and the need for the baseline review.

However, it should be noted that the SIP Practical Guide only has an advisory role in the PAG process to improve the delivery of projects from a sustainability perspective. The SIP Practical Guide 'workflows' should be regarded as a project management tool to help integrate sustainability into projects at each phase, but the output spreadsheets from the workflows do not need to be included in the PAG deliverables.

1.3 Definition of Option Types

In the Option Selection process across Phases 1-2, there are generally four types of option for National Road projects valued in excess of €30m. Each type of option, the relevant PAG phase and an example wording are provided in Table 3.0.1.

¹ GE-GEN-01101 (tiipublications.ie)

Table 3.0.1 Definition of Option Types PMG Phase 1 & 2

PMG Phase	Stage	Option Name	Description of Option Type and Role
1 - Concept & Feasibility	N/A	Strategic Options	High-level options considered at Phase 1 that describe the modes of transport and very broad alignment/construction methods. <i>Example - Focused on the modes, intervention proposed and indicative location e.g. "An urban bypass combined with two-way bus lanes and continuous cycle lanes, built to the north of the existing National Road"</i>
2 – Option Selection	Stage 1 – Preliminary Options Assessment	Preliminary Options	An option considered at Phase 2 where a corridor or alignment is defined based on engineering feasibility design work. The design work will identify a set of alignments for each Strategic Option, in order to develop it into Preliminary Options. <i>Example - Focused on specific alignments / corridors and design details and accompanied by a map indicating the alignment / corridor in question.</i>
	Stage 2 – Project Appraisal Matrix	Preliminary Options	A detailed appraisal of the Preliminary Options brought forward from Phase 2 Stage 1.
	Stage 3 – Selection of Preferred Option	Preferred Option	The Preferred Option is the best performing Preliminary Option following the detailed appraisal undertaken at Phase 2 Stage 2.

1.4 Overview of Option Selection Process

An overview of the Option Selection process across TII PMG Phases 1 and 2 is provided in Figure 3.0.1. The Option Selection process takes place in a progression which starts with the identification of the most suitable transport modes and intervention types. This then focuses the development of Strategic Options incorporating the particular modes and interventions.

The Strategic Options are assessed in Phase 1 to ensure that they are feasible and meet the project objectives. The refined list of Strategic Options are then developed into Preliminary Options at the start of Phase 2, facilitating detailed appraisal and the selection of a Preferred Option.

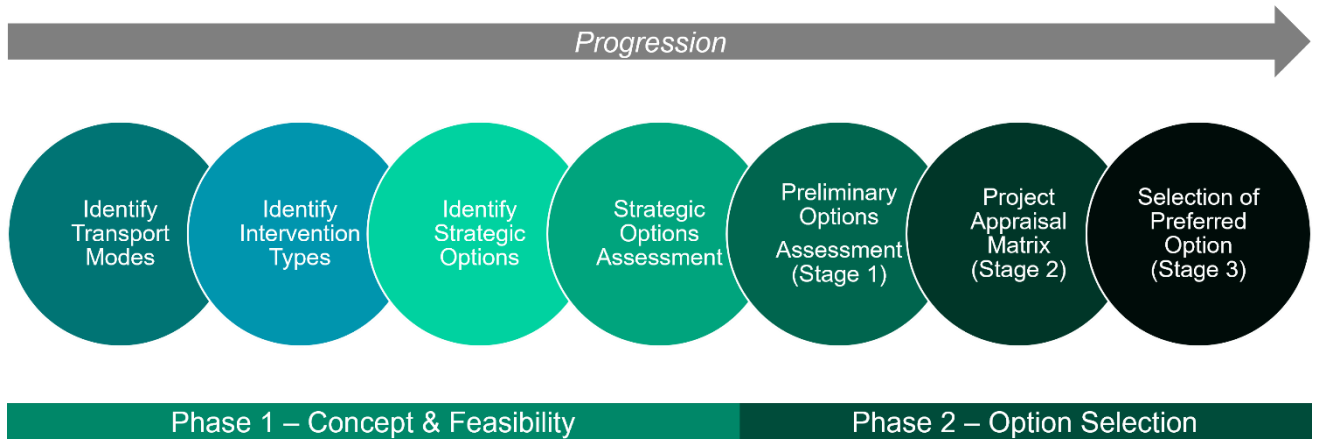


Figure 3.0.1 Option Selection Process in Phase 1 and 2

1.5 Importance of NR2040 Commitments

NR2040 is TII's strategy for the National Roads network, it identifies a number of key investment priorities for projects. NR2040 contains commitments which need to be integrated into the PAG process to ensure TII projects deliver on these goals. A number of NR2040 commitments have been identified as relevant to PAG Unit 3.0, these are documented in Table 3.0.2, along with the relevant sections of the Feasibility Report and advice on how the commitments should be considered.

The Phase 1 Feasibility Report will support the goals of NR2040 and NIFTI by introducing an unbiased evidence collection and assessment process, which acknowledges the need for multi-modal solutions.

Table 3.0.2 Relevant NR2040 Commitments and the Feasibility Report

NR2040 Commitment	Relevant Feasibility Report Section	Incorporating NR2040 Commitment into the Feasibility Report
<i>“To reduce emissions, TII will prioritise traffic management investment in freight corridors and where congestion results in high levels of GHG emissions.”</i>	<ul style="list-style-type: none"> • Intervention Hierarchy • Strategic Options Identification 	Important to consider this commitment in the intervention hierarchy assessment, which will strengthen the case for upgrading existing infrastructure rather than building new infrastructure, in line with NIFTI. Furthermore, the Strategic Options should incorporate solutions which will achieve this commitment.
<i>“TII will enhance the resilience of National Roads, in particular sections of the rural National Secondary Roads network, that provide lifeline links to individuals and communities.”</i>	<ul style="list-style-type: none"> • Modal Hierarchy • Strategic Options Assessment 	Important to consider the presence of, and importance of, ‘lifeline’ roads in the Appraisal Study Area as part of the mode-specific demand assessment and modal hierarchy identification. Furthermore, the Strategic Options Assessment should consider the important role of options as ‘lifelines’ where applicable.
<i>“TII will promote inter-modal solutions that maximise overall transport efficiency in terms of infrastructure and resource use. For example, facilitating safe active travel along national road corridors that connect with rail and bus stations.”</i>	<ul style="list-style-type: none"> • Modal Hierarchy • Developing Strategic Options • Strategic Options Assessment 	The Feasibility Report aims to create multi-modal options as standard, which will deliver on this commitment. The modal hierarchy identification should highlight the preferred combination of modes to meet the project objectives.
<i>“TII will provide/ consider prioritisation measures such as dedicated freight lanes where such prioritisation results in greater transport efficiency.”</i>	<ul style="list-style-type: none"> • Strategic Options Identification • Strategic Options Assessment 	Where feasible, the Strategic Options should seek to include at least one option on priority lanes to meet this commitment where roads have been identified as an appropriate mode. The Strategic Options should also have regard to the importance of providing priority lanes to deliver greater transport efficiency in line with this commitment, this could cover priority for buses, high occupancy vehicles or freight.

2. Role of the Feasibility Report

2.1 TII Project Lifecycle & Deliverables

Figure 3.0.2 shows the PAG/PMG process from Phase 0 (Scope & Strategic Assessment) to Phase 7 (Close Out & Review). The Feasibility Report is the deliverable created in the process at Phase 1 (Concept & Feasibility) as a combined PAG and PMG document, which meets the requirements of both processes without duplication.

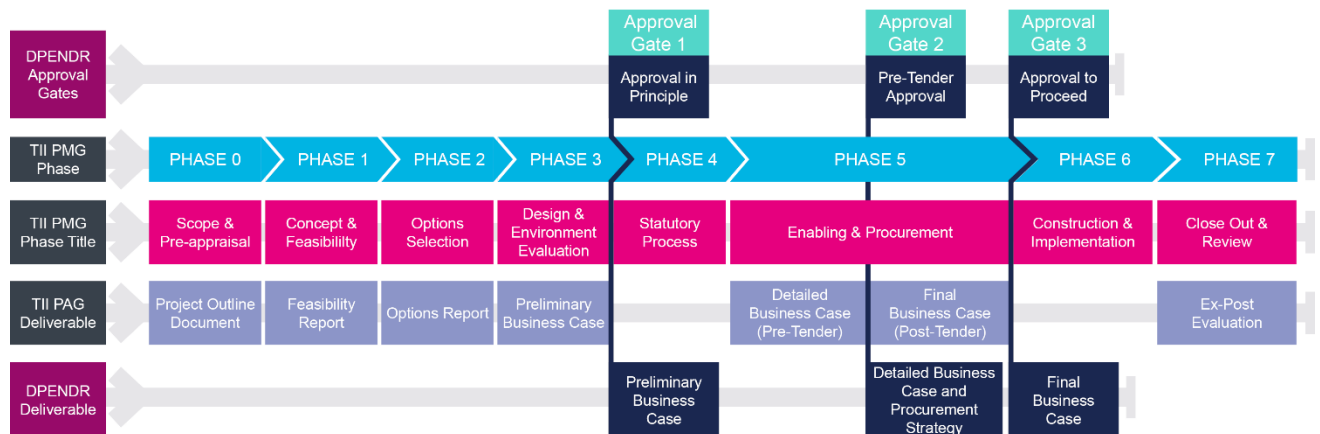


Figure 3.0.2 PAG/PMG Project Lifecycle & Deliverables

2.2 Purpose of the Feasibility Report

The purpose of the Feasibility Report is to confirm that a feasible project exists by verifying the project need and strategic alignment established at Phase 0 (Scope & Strategic Assessment) and to determine a set of Strategic Options.

It is the intention at Phase 1 to take all possible Strategic Options and assess them against the Project Objectives. These Strategic Options will also be subject to a feasibility assessment, taking into consideration relevant constraints, risks and opportunities. Strategic Options that both align with the Project Objectives and are considered feasible will be taken forward to Phase 2 (Option Selection) for further refinement and detailed analysis.

The Feasibility Report is produced at Phase 1, but the content from the Feasibility Report will be updated and refined in future phases of the project to inform the Options Report (Phase 2) and subsequently the Preliminary (Phase 3), Detailed (Phase 5 Pre-Tender) and Final (Phase 5 Post Tender) Business Cases.

The Feasibility Report should be submitted to TII for review as the combined PAG/PMG deliverable for Phase 1.

2.3 TAF - Longlist Assessment Report Requirement

For projects over €200 million, the TAF requires that the Sponsoring Agency submit a 'Longlist Assessment Report' (LAR). The purpose of the LAR is to demonstrate that the options are evaluated in a structured and transparent manner, ensuring that the refined list of options put forward for Phase 2 (Options Selection) are aligned with NIFTI.

For TII funded projects, a “longlist” traditionally refers to a range of potential corridor alignments identified at the early stages of a project. However, the assessment of multiple corridor alignments (which can often be quite similar) against project objectives alone (as required in the TAF LAR) may not adequately refine these alignments. It is more appropriate to assess the Strategic Options against the project objectives and identify the most appropriate transport modes and intervention types that can meet these objectives at Phase 1.

These Phase 1 Strategic Options can then be further refined and developed as part of the Stage 1 - Preliminary Options Assessment at Phase 2 (Options Selection). Therefore, for projects over €200 million, the Phase 1 Feasibility Report fulfils the requirements of the TAF ‘Longlist Assessment Report’.

3. Feasibility Report Structure and Content

This section provides guidance on the content required in each section of the Feasibility Report. As previously outlined, the Phase 1 Feasibility Report document is a combined PAG/PMG deliverable and guidance on the appraisal elements of the report is provided within this Unit, while the TII 'Project Manager's Manuals for Major Roads' provides guidance on the non-appraisal elements.

Table 3.0.3 provides a breakdown of the Feasibility Report sections and relevant sub-sections for TII funded projects valued in excess of €30m², and the relevant PAG/PMG reference.

Table 3.0.3 Feasibility Report Sections and Reference to PAG/PMG Guidance

Section	Sub-Section	PAG/PMG Guidance
Executive Summary		PAG Unit 3.0 – Feasibility Report
Introduction, Project Background and Description		
Definition of Study Areas		PAG Unit 3.0 – Feasibility Report (Appraisal Area) PMG Project Manager Manual for Major Roads (Constraints Area)
Baseline Review of Study Area	Detailed Baseline Review	PAG Unit 3.0 – Feasibility Report
Constraints, Risks and Opportunities Study		PMG Project Manager Manual for Major Roads
Project Need and Strategic Role	Policy Review	PAG Unit 3.0 – Feasibility Report
	Project Need	
Project Objectives		
Generation of Strategic Options	Identify Transport Modes	
	Identify Intervention Types	
	Strategic Options ³	PMG Project Manager Manual for Major Roads PAG Unit 3.0 – Feasibility Report
Strategic Options Assessment	Alignment with Project Objectives	PAG Unit 3.0 – Feasibility Report PAG Unit 7.0 - MCA
	Feasibility Assessment	PMG Project Manager Manual for Major Roads
Logic Path Modelling		PAG Unit 2.3 – Logic Path Modelling
Conclusions	Appraisal Pathway	PAG Unit 3.0 – Feasibility Report
	Phase 2 Strategic Options	

² There is no requirement for a Feasibility Report for projects under €5 million. Please refer to PAG Unit 14 – Minor Projects (€0.5 - €5m) for guidance on projects of this scale. For projects with an estimated budget between €5m - €30m please refer to PAG Unit 12 – Minor Projects (€5m - €30m).

³ Generation of strategic options will be led by design/environmental teams and supported by appraisal team.

The development of the project appraisal elements of the Feasibility Report involves a range of skills across data analysis, spatial analysis, transport modelling, assessment and reporting. Greater diversity in the project team during Phase 1, such as involving town/transport planners as well as traffic engineers, will help to strengthen the Feasibility Report and its conclusions.

3.1 Executive Summary

An executive summary should be provided at the start of the report. This should summarise the conclusions of the Feasibility Report across all sections and the implications for Phase 2.

3.2 Introduction, Project Background and Description

The first main section of the Feasibility Report introduces the project and summarises relevant background information, such as the project history and description. In some circumstances, the proposal for the project will have been identified as part of a transport strategy or policy. In such cases, reference to the transport strategy and the underlying rationale should be provided as context.

3.3 Definition of Study Areas

The next section of the Feasibility Report involves defining the Study Areas. There are two types of study area that are used in the project appraisal and design process. The two types of study area are:

- **Appraisal Study Area:** The Appraisal Study Area is used in the Phase 1 process to analyse travel demand, transport conditions, develop the Strategic Options and assess them to identify the Preliminary Options for detailed appraisal. This study area will be based on the project objectives, the start and end points of the transport route for which a solution/intervention is being sought, and the area of influence that could reasonably be expected to be influenced by proposed interventions.
- **Constraints Study Area:** The Constraints Study Area is initially defined in Phase 1 for the purposes of identifying all the physical / artificial / engineering / natural constraints within an area within which it is expected that options will be developed and examined⁴. The development of the study area is cyclical in nature and its extent is influenced by the findings of the constraints, risks and opportunities study and design development. The Constraints Study Area can evolve as necessary throughout all stages of the project lifecycle⁵.

For the appraisal process, the Appraisal Study Area of the project is of particular relevance and will be used for:

- The baseline review
- Strengthening of the project need and strategic alignment
- Identification of modes and intervention types
- Generation of Strategic Options and assessment⁶
- Development of Preliminary Options in Phase 2

⁴ Further guidance on the Constraints Study Area is available in PE-PMG-02042 Project Manager's Manual for Major National Road Projects

⁵ During the constraints study the environmental constraints study area will vary by environmental discipline (or factor).

⁶ The Constraints Study Area will also have an influence on this.

The Appraisal Study Area should cover the geographic area which could be significantly impacted by the intervention e.g. the area which will experience major traffic reassignment or modal shift. The Appraisal Study Area should include nearby settlements and employment areas so allow identification of key desire lines and evaluate travel demand.

The use of a larger Appraisal Study Area will allow for a more flexible approach where solutions can be proposed across the Appraisal Study Area, rather than restricting them to a narrow corridor. For example, when considering a project that could potentially involve a bypass solution, the Appraisal Study Area should include the urban extent of the town. This will facilitate the consideration of multi-modal solutions which improve sustainable travel infrastructure in the town as part of an integrated approach, as opposed to just a particular corridor through or around the town.

3.4 Baseline Review of Study Area

A baseline review of the Appraisal Study Area should be conducted. The baseline review gathers valuable evidence to inform the Feasibility Report and provides context for the appraisal process as a whole. The baseline review guidance recommends using data which is publicly available (e.g. the Census) or freely available to transport practitioners working on public projects (e.g. GeoDirectory).

In each section of the baseline review, the reporting should discuss the results and highlight the implications for transport across different travel modes. The following sub-sections outline the required contents for the Baseline Review.

The PAG guidance for the baseline review should be regarded as the minimum standard for a Feasibility Report to achieve. The practitioner should expand the baseline review as required to capture local-specific issues not covered by the guidance or other topics of relevance.

Demographic & Social

This section should contain a demographic and social review. The demographic breakdown of residents should cover; age profile, gender, employment type by industry, ethnicity, unemployment and people with disabilities. This information can be extracted from the CSO Small Area Population Statistics (SAPS) and presented in a simple summary table.

The social review should also consider the levels of deprivation using the Pobal Deprivation Index and highlight any unique social groups present (e.g. Gaeltacht populations). When discussing the results, the practitioner should focus on the transport implications of the results and the potential role of transport improvements in promoting social inclusion and equality.

Social impacts are an assessment criteria in TAF, which will be used to assess the Preliminary Options in Phase 2. The social baseline will inform practitioners about the social characteristics of the area under consideration and allow them to infer the potential social impact of a project.

Housing

This section should contain a review of housing characteristics. This could include a breakdown of CSO Census SAPS for housing density and access to broadband. It will be particularly important to map the housing density due to the role of density in promoting public transport patronage, with reference to the Sustainable Residential Development in Urban Areas (2009) density thresholds where appropriate.

When discussing the results, the practitioner should focus on the transport implications of the housing characteristics. For instance, a lack of broadband would reduce the proportion of people working from home, while lower housing density will mean high frequency public transport is less viable.

Job Location

This section should identify the main employment destinations and can be informed by data from CSO Census Workplace Zones to calculate job density. Furthermore, data sources such as GeoDirectory could be explored to show residential and commercial building locations in order to understand the major commuting desire lines.

When discussing the results, the practitioner should focus on the distribution of job locations and the potential for different transport modes to cater for trips. For example, concentrated jobs in central areas will be easier to access by active modes than job locations which are dispersed across the region.

Transport Infrastructure

This section should be a comprehensive review of transport infrastructure across all modes of transport (walk, cycle, bus, rail, road). This review should cover infrastructure such as; the public transport network (stops, stations, routes and frequencies), the road network, existing cycle infrastructure and the location of greenways or other active travel facilities, green spaces and water based transport where it exists.

If data is available on the location of pedestrian footpaths and crossing points, this can also be included. High level severance issues should also be identified e.g. severance caused by a motorway or railway line. Information should be provided on the location and type of road collisions which have taken place over time, as safety issues may be related to the quality of transport infrastructure provided.

When discussing the results in this section, the practitioner should focus on the gaps in existing infrastructure provision for different transport modes, to identify the areas where project could make a positive impact by improving transport infrastructure.

Analysis should be completed which identifies the residents who do not have access to quality public transport services. This should include a map and table showing the population who do, or do not have, access to quality public transport to identify network deficiencies. The 'quality' aspect refers to the usefulness and frequency of the public transport service to residents. A quality public transport service is one which allows residents to travel to and from local employment centres, access other services like healthcare, via frequencies which are regular enough to be realistic alternatives to the private car. It is acknowledged that a lower frequency threshold may be acceptable in a rural areas to meet the 'quality' criteria if it still provides a viable alternative for residents.

Travel Behaviour

This section should review key travel behaviour indicators to understand the level of car dependency and the potential for modal shift to sustainable travel modes. This review could be informed by CSO Census SAPS data, such as; household car ownership, modal split (work and education assessed separately), the time residents depart for work and the duration of their journey. If a train station or Luas station is present, then boarding and alighting patterns for the stations should be considered, which could use data from the NTA Heavy Rail Census or the TII Luas Census. When discussing the results, the practitioner should evaluate the reasons for the observed travel behaviour and the changes which could be considered to promote greater use of sustainable travel.

In addition, analysis should be completed using data sources such as the CSO POWSCAR to provide a breakdown of modal split statistics by gender and broad age group. The NTA National Household Travel Survey may potential be used to provide insight on non-commuting / non-education journeys within a particular appraisal study area.

If the study is focused on providing access to schools or university facilities, then the modal split data from POWSCAR could be focused on the relevant school level (e.g. primary, secondary or college).

This additional analysis will identify gender-specific or age-specific differences in travel behaviour which will have implications for the assessment of physical activity and other transport benefits. For example, there are significant differences in the number of boys or girls who cycle to secondary school, which this analysis will highlight as an issue for consideration.

Consultation Results

The baseline review should provide a summary of any informal stakeholder consultation, if available, focused on the transport issues which could contribute to the baseline conclusions. At this early stage, the focus of consultation will be on stakeholder groups, such as transport companies or agencies (e.g. NTA, Irish Rail, etc.), large employers, universities, schools, businesses, or local authorities. Early engagement with stakeholders can help to strengthen the baseline review and identify key local issues to consider in the rationale for investment.

The SIP Practical Guide for Projects provides useful advice about best practice for TII stakeholder engagement and consultation from a sustainability perspective. However, it is acknowledged that consultation is not always required in Phase 1 and consultation at this stage is an optional requirement. This section is provided in the baseline review to report on consultation data if it exists at this early stage.

In addition to the basic reporting of stakeholder transport issues, consultation information can be useful to explore 'why' particular travel behaviour results are observed in the baseline review. Additional context for travel behaviour decisions can inform the type of intervention which is most likely to succeed in resolving existing transport issues and maximise benefits.

The first public consultation is usually conducted in Phase 2. The transport and demographic baseline information from Phase 1 should be used to target the Phase 2 consultation questions on the key transport issues and opportunities identified across the Appraisal Study Area.

Freight

A review of the freight relevant destinations should be conducted and can be informed by data sources such as GeoDirectory and NACE code classifications. The location of the closest large airports or ports should also be identified. If base transport model data is available, then information on HGV flows on roads should be provided. If rail freight takes place, then the type of goods and destinations served should be documented.

When discussing the results, the practitioner should discuss the level of freight activity and the key desire lines which will need to be facilitated to support economic activity.

Transport Surveys

If survey data is available, this section should contain a summary of transport survey analysis which is relevant to understand travel. In relation to roads, this could include traffic count surveys using Junction Turning Counters (JTC), Automatic Traffic Counters (ATC) or Automatic Number Plate Recognition (ANPR) technology. Annual Average Daily Traffic (AADT) figures for the TII Traffic Monitoring Units (TMUs) in the Appraisal Study Area should be documented in addition to traffic surveys.

Furthermore, survey data on pedestrian, public transport user or cyclist counts should also be reported if it is available. As well as these sources, project transport surveys can be supplemented by reaching out to local stakeholders to access their own count or survey data e.g. bus company occupancy surveys. The data reported in the transport survey baseline does not have to be limited to data collected as part of the project, it can draw upon local data sources or older surveys if they add value.

It is understood that survey data will often be collected as part of transport model development or earlier in the project and can be analysed in this section. It is advised that the requirements for a high quality baseline review should be considered when scoping the extent of transport surveys required for the project. However, it is not a requirement to conduct transport surveys to complete this section of the baseline review. The reporting of survey data is optional in Phase 1.

Base Transport Model Data

If a transport model is available, this section should provide a review of key outputs from the base transport model. This could include AADT, volume/capacity and distribution analysis (e.g. flow bundles) on main roads. If the available model is multi-modal, then similar results should be provided across public transport and active modes.

It is not necessary to create a transport model to complete this section of the baseline review. Transport model outputs can be reported if they exist in Phase 1, but their inclusion is optional in the Feasibility Report.

High Level Review of Key Environmental & Physical Constraints and Risks

A high-level review of key environmental and physical constraints and risks can be included in the baseline review if there are clear constraints in the study area which will impact the number of realistic Strategic Options that can be developed. Constraints could include geographic features (e.g. rivers, lakes, mountain), flooding, protected areas (e.g. Special Areas of Conservation), heritage or historical sites.

This section is not intended to duplicate the detailed analysis of constraints required under the PMG. Instead, this should be a high-level summary of key constraints relevant to the development of Strategic Options. This is intended to avoid situations where Strategic Options are developed that could never be implemented e.g. a greenway with severe inclines through a mountain range.

Additional Content

The PAG Unit describes the content required in the baseline review to establish a minimum standard, but the guidance does not restrict the use of additional data. Additional data can be included in the baseline review if it will strengthen the conclusions of the Feasibility Report or project need. Additional data could include project-specific data (e.g. toll or ticketing information), environmental review data, social impact data or other relevant themes of evidence.

Baseline Review Summary

The baseline review should conclude with a table documenting the key transport issues in the Appraisal Study Area.

3.5 Constraints, Risks and Opportunities Study

As outlined in the TII PMG, prior to the consideration of options, it is necessary to identify the nature and extent of constraints, risks and opportunities, at an appropriate level of detail, within the Constraints Study area. These constraints will be documented and mapped such that options under consideration can be designed taking cognisance of such constraints.

Guidance on conducting these studies is available in the TII PMG and appropriate Environmental guidelines. The findings of the Constraints, Risks and Opportunities Study will be documented, mapped and summarised in the Feasibility Report.

3.6 Project Need and Strategic Role

Between the creation of the POD at Phase 0 and the Feasibility Report at Phase 1, policies or procedures may have changed. A review of transport policy and guidance should be undertaken to re-establish the strategic role and policy context for the project. This may incorporate new policy compliance requirements arising from the baseline review e.g. adding a review of relevant cycle policies if cycling is highlighted as an area which the project could focus on.

The POD will have established an initial project need and in this section of the Feasibility Report, the POD rationale should be updated on the basis of the evidence presented in the baseline review. The project need should respond to the constraints, risks and opportunities identified, but it should avoid case-making for particular solutions and remain neutral in respect to the transport modes involved.

3.7 Project Objectives

This section describes how the project objectives should be refined, presented and linked to key performance indicators.

Logic Path Modelling and Objective Setting

Drawing on the conclusions of the baseline review and project need, it will be necessary to refine the project objectives from the Phase 0 POD to ensure they are rooted in the problems and opportunities to be addressed as well as the rationale for investment. The use of a structured framework, such as Logic Path Modelling (LPM) described in PAG Unit 2.3, may be beneficial in bringing clarity to objective setting and enhancing the robustness of evaluation.

Role of Project Objectives

Role of Objectives in the PAG Process

The creation of effective objectives is critical to successful project appraisal and delivery. They have the following role throughout the development of a project:

- Objectives ensure the project remains focused on the key issues and establish a mechanism to assess potential scope creep
- Objectives provide stakeholders with clear direction on the goals which the project seeks to accomplish
- Objectives introduce clarity, which is particularly important when there may be strong vested interests or entrenched views on priorities across different stakeholders
- Objectives are the basis for guiding the project through the appraisal process, providing assessment criteria on which the merits of the project can be assessed
- Objectives are the foundation for assessing Strategic Options in Phase 1
- Objectives facilitate accountability during the transport planning, appraisal, implementation, and post-evaluation stages of the project

Role of Objectives in the Feasibility Report

In the Feasibility Report, the objectives are used to assess the Strategic Options and they must be robust enough to allow for the elimination of weaker Strategic Options and identify the refined list for Phase 2. In this respect, the objectives should be diverse enough to allow for the assessment of a wide variety of Strategic Options across all transport modes and intervention types.

Unbiased Objectives

The Feasibility Report should contain objectives which do not favour a specific mode of transport or type of intervention. Unbiased objectives are important to ensure that a wide range of different options, across all modes of transport, are considered at an early stage in the project.

Later in the project lifecycle when there is an Emerging Preferred Option (EPO), the objectives will be refined further to improve their relevance and assist in the development of more detailed KPI's.

Outcome Focused Objectives

The project objectives should be focused on the outcomes sought by the project. This will be achieved by linking the project objectives to the problems and opportunities defined in the rationale for investment (and SWOT where relevant). Creating project objectives that are outcome focused will help to ensure that they remain unbiased regarding 'how' the objectives should be achieved.

SMART Objectives

The project objectives should be Specific, Measurable, Accurate, Realistic and Timely (SMART) where possible. It is acknowledged that it may not be possible for all objectives to meet every SMART requirement, for instance with qualitative objectives, but the SMART standard should be aspired to where possible. Objectives will primarily be measured through their associated SMART KPI's. Each element of the SMART approach is explained in Table 3.0.4.

Table 3.0.4 Explanation of SMART Elements in Objective Development

SMART	Definition
Specific	<ul style="list-style-type: none"> State in precise terms what is sought Relate directly to the identified problems and opportunities Sufficiently detailed / specific to enable comparative assessment of different options
Measurable	<ul style="list-style-type: none"> Defined to ensure they can be tested in a consistent manner Ensure means exist to establish whether the objective has been achieved (post-evaluation)
Accurate	<ul style="list-style-type: none"> General agreement that the objective can be reached
Realistic	<ul style="list-style-type: none"> Sensible indicator or proxy for the change which is sought
Timely	<ul style="list-style-type: none"> Linked to an agreed future point by which the objective is to be met

In respect to approach, it is acceptable to introduce a hierarchy of scheme objectives, consisting of; a small number of high-level objectives, which each have several sub-objectives which help to achieve the SMART requirement. For example, having the high-level objective to improve network performance, where the sub-objectives divide into specific goals in respect to journey time, reliability and safety which are more specific and easier to measure.

The project objectives will have been first developed in the Phase 0 POD where it was not a requirement for them to be SMART. The key aspect of the Phase 1 objectives is that they are refined further to integrate the SMART elements.

Capturing Local Environmental Issues in Project Objectives

As outlined above, the setting of project objectives should evolve from the understanding of the project need and the identified constraint, risks and opportunities. For the majority of TII funded projects, these will predominantly relate to transport accessibility, transport efficiency, safety, engineering, local environment and climate action.

If environmental objectives have been defined in Phase 0 or the need for their inclusion identified at Phase 1 then these objectives will be required to be SMART. It is possible that environmental issues can be captured in other project objectives by integrating transport themes which will benefit the local environment e.g. reducing demand, modal shift, reducing trip distances or lowering emissions. However, if for example there is specific need to improve Air Quality or provide a biodiversity net gain then these could be included as SMART environmental objectives.

Key Performance Indicators

In the Feasibility Report, SMART project objectives will be developed for the first time and KPIs should be assigned to allow the measurement of each objective. Due to the non-biased nature of the objectives in the Feasibility Report, the KPIs may remain quite broad at this stage as they will cover multiple modes of transport. Later at the Phase 2 Option Selection stage, the KPIs will be refined further once a Preferred Option has been selected for the project.

The Feasibility Report should contain a table which shows the KPIs used to measure each objective. In determining whether the objectives meet the SMART requirements, the complete package of objectives and their associated KPIs should be considered.

3.8 Generation of Strategic Options

The generation of Strategic Options is an opportunity for the practitioner to ensure the options cover the issues and opportunities identified earlier in the Feasibility Report.

The generation of Strategic Options should ensure the following:

- Strategic Options are focused on the modes and associated intervention types required to be considered under NIFTI
- Strategic Options are included which consider interventions across the Appraisal Study Area
- Strategic Options consider a broad potential location rather than being restricted to a narrow corridor e.g. to the east of the existing National Road corridor.
- Strategic Options are included which respond to the content in the baseline review and capitalise on opportunities or respond to problems.
- Strategic Options are multi-modal e.g. road improvement with new walking and cycling infrastructure.

The Strategic Options should be provided in a table which clearly describes the transport modes involved in each option, the intervention type for each mode and information on the broad location of the intervention.

At Phase 1, the initial step in developing strategic options focuses on their alignment with the DoT NIFTI. The following sections describe the identification of transport modes and interventions to guide the creation of Strategic Options taking into NIFTI into consideration.

3.8.1 NIFTI Modal Hierarchy

NIFTI contains a modal hierarchy (Figure 3.0.4) which prioritises investment in active travel and public transport over further investment in private motor vehicles. Depending on the scale and complexity of the TII project, it may need to be a multi-modal solution in order to meet the project need. Undertaking a modal hierarchy identification process will help to align project with NIFTI and the requirements of NR2040 and help to inform the identification of the Strategic Options for Phase 1.



Figure 3.0.4 NIFTI Modal Hierarchy

This section of the Feasibility Report should contain the 'Identification of Transport Modes' for the Appraisal Study Area to identify the most suitable modes of transport for the project to focus on when developing the Strategic Options.

This can be informed by using the travel demand data from the baseline review (e.g. POWSCAR or existing transport model data) to evaluate the distribution of travel demand, to explore the potential for each mode of transport. This demand analysis should consider total travel demand as well as separately evaluating the trip distribution for active travel modes, bus travel, rail travel and road travel.

The identification process should consider the potential for each mode of transport to address the project need in relation to the movement of people and goods. For active modes, the focus will primarily be on the potential for short-medium distance trips to address local issues, whereas the evaluation of public or private motorised modes will mainly consider longer/strategic trips. In relation to sustainable travel and freight, cargo bikes or couriers can be considered for deliveries in urban areas and rail freight is an alternative for certain goods over longer distances.

The conclusion should be a recommendation for the most suitable multi-modal solution for the project. This recommendation should be supported by a written explanation/summary table, which justifies the conclusions, based on the evidence from the baseline review or mode-specific demand analysis.

Greater detail will be required in the justification when transport modes lower on the modal hierarchy are prioritised ahead of active modes or public transport. This is to ensure the modes identified are compliant with NIFTI and clear justifications are provided to explain the results. Active travel and public transport elements may play important parts of an overall multi-modal solution.

3.8.2 NIFTI Intervention Hierarchy

NIFTI contains an intervention hierarchy (Figure 3.0.5) which prioritises investment in maintaining, optimising or improving existing infrastructure before investing in new infrastructure. This also aligns with the TII commitments in NR2040 for the future national road network.

The intervention hierarchy identification process will build on the modal hierarchy process, to identify the type of interventions which could be considered in respect to maintaining, optimising, improving or creating new infrastructure across the transport modes identified for the project.



Figure 3.0.4 NIFTI Intervention Hierarchy

The focus should be on the potential for each intervention type to address the issues/opportunities for transport users of each mode, in order to determine whether the focus should be on the construction of new infrastructure or upgrades to existing infrastructure. TAF defines the four NIFTI intervention categories as follows:

- **‘Maintain’** refers specifically to measures which protect the existing transport network and keep it at the standard or capability at which it was designed. This includes all protection and renewal investments and investments targeted at climate resilience.
- **‘Optimise’** refers to measures which are targeted at increasing levels of service of transport infrastructure through enabling and encouraging more efficient behaviour and sustainable use of the network.
- **‘Improve’** refers to measures which increase the capability of existing infrastructure, by increasing the standard of that infrastructure, or measures which shift existing capacity to more sustainable modes.
- **‘New’** encompasses all measures which entail significant increases to transport infrastructure capacity.

Given the historic variances in transport investment across different modes of transport, it is likely that sustainable travel modes will require more substantial investment in new or improved infrastructure, while road infrastructure may potentially focus on maintaining and optimising the existing infrastructure. The commentary column should justify the scoring used across the intervention hierarchy categories.

The Identification of Intervention Types should be informed by the evidence presented earlier in the Feasibility Report, such as the baseline review or the summary of constraints, risks and opportunities, as well as the conclusions of the identification of transport modes. The goal is to identify the most appropriate intervention type for each mode of transport. The conclusion of this process will inform the creation and assessment of the Strategic Options.

3.8.3 Strategic Options

The Strategic Options to be taken forward to the Strategic Options Assessment stage should be summarised following the Generation of Strategic Options stage.

3.9 Strategic Options Assessment

3.9.1 Overview

The assessment of Strategic Options at Phase 1 is a two-step approach as outlined in the following sections:

- **Step 1** - the first step in the process is to assess the Strategic Options on the basis of their ability to achieve the Project Objectives
- **Step 2** – a feasibility assessment of the Strategic Options brought forward from Step 1 is then undertaken

Strategic Options which both align with the Project Objectives and are considered feasible will then be taken forward to Phase 2 (Options Selection) for further refinement and consideration as part of the Phase 2 Stage 1 Preliminary Options Assessment.

3.9.2 Alignment with Project Objectives

The focus of this section will be the MCA to assess the Strategic Options, on the basis of their ability to achieve the project objectives. This MCA should draw on the extensive evidence and conclusions presented earlier in the Feasibility Report, such as; the baseline review, multi-modal demand analysis and the modal/intervention identification work.

The MCA should be conducted using a template such as the example presented in Table 3.0.5, with columns added as required for project objectives, and the cells scored using the process explained in PAG Unit 7.0.

In the righthand columns, the decision whether to retain the Strategic Option should be clearly defined and justified. The written justification should explain the scoring in the MCA columns and justify the decision to retain or remove the Strategic Option.

The aim of the initial step of the Strategic Options Assessment should be to consider sufficient options to create a concise list of Strategic Options to take forward to the Feasibility Assessment.

Table 3.0.5 Strategic Options Assessment Sifting Table (Example Only)

Strategic Options	Project Objectives				Proceed to Feasibility Assessment?	Justification
	Objective #1	Objective #2	Objective #3	Objective #4		
#1						
#2						
#3						
#4						

3.9.3 Feasibility Assessment

Section 3.9.2 describes the process of analysing Strategic Options to determine their ability to achieve the project objectives. For a Strategic Option to be taken forward to Phase 2, it should both align with the project objectives and be considered feasible.

To ensure the project as a whole is feasible and has considered a range of reasonable alternatives in line with the EU Environmental Impact Assessment (EIA) Directive⁷, it is important that options are not ruled out too early in the appraisal process.

Based on the findings of the completed Constraints, Risks and Opportunities Study, an option that meets the project objectives may be considered infeasible as part of the subsequent feasibility assessment step. For each such option, the Project Manager shall, in accordance with the EIA Directives, document the reason(s) why the option was found to be infeasible.

Guidance on assessing the feasibility of Strategic Options is available in the TII PMG and appropriate Environmental guidelines.

3.10 Logic Path Modelling

Logic Path Modelling (LPM) is a concise articulation of the issues identified, the scheme objectives, and the desired scheme outcomes. LPM can assist in setting out how the project team can achieve the scheme outcomes.

It is also a useful tool to develop and organise KPIs to measure performance of different options, project benefits and to demonstrate how they link to the overall project objectives. Figure 3.0.6 provides a diagram of a LPM causal pathway with transport related examples for each element. PAG Unit 2.3 – Logic Path Modelling provides details and guidance on the development and use of LPM.

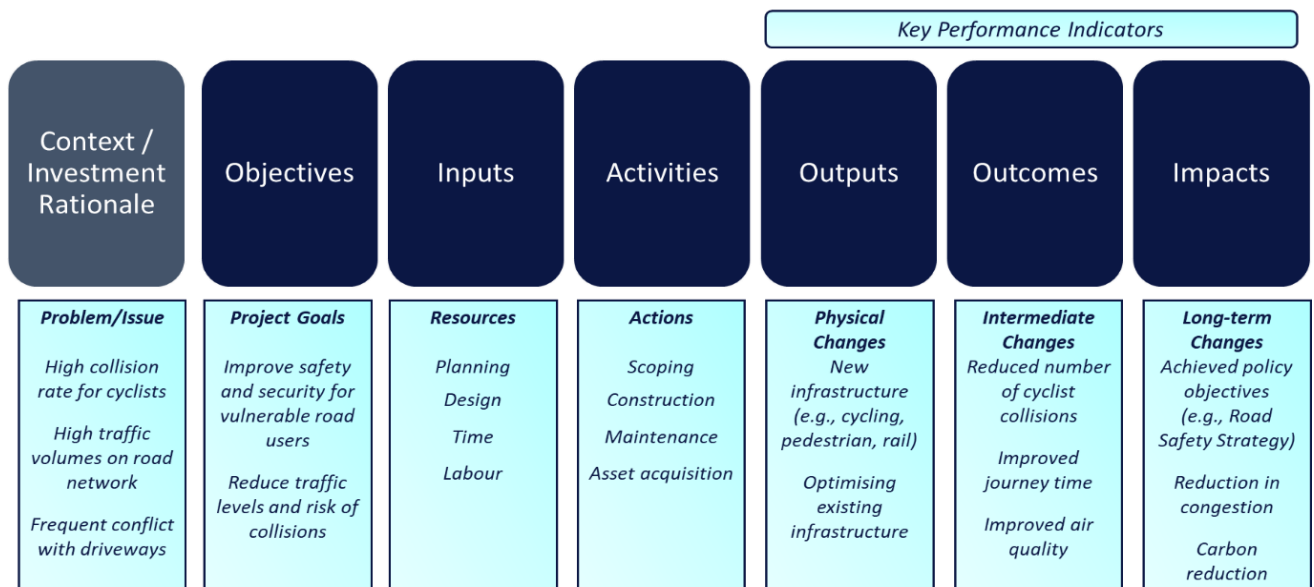


Figure 3.0.6 Logic Path Model and Examples

⁷ EU EIA Directive (2011/92/EU as amended by 2014/52/EU).

The benefits of LPMs within a Feasibility Report include:

- A LPM presents to TII the trajectory of the project granted it gains approval to progress through Phases 2-4
- A LPM can support TII in the Go/No-Go decision process that is required at each phase of the project planning process by informing the viability of the project dependent on the findings

3.11 Conclusions

3.11.1 Appraisal Pathway

An Appraisal Plan is required as part of the Phase 0 Project/Programme Outline Document (POD), which outlines at a high level the approach to the modelling and appraisal of the project. Following the identification of the Strategic Options to bring forward to Phase 2, an Appraisal Pathway should be set out in the Feasibility Report.

An Appraisal Pathway simply outlines if an updated approach to the modelling and appraisal of the options that will apply at Phase 2 taking into consideration the type of Strategic Options that have been identified. The purpose of this exercise is to base the modelling and appraisal approach on the complexity and the potential challenges that may be faced as opposed to just the potential cost of the scheme.

For example, a rural online upgrade of a National Road with active travel improvements may potentially cost in excess of €30m, but the approach to the modelling of the scheme may be undertaken using the TII Simple Appraisal Tool without the need for an assignment model to be developed. Alternatively, an urban scheme may cost less than €30m but may require the use of assignment models or micro-simulation models due to its complexity and potential impact on different modes and re-routing of traffic.

The Appraisal Pathway should set out the approach to modelling/appraisal at Phase 2 with reference to PAG Units in relation to Modelling (Unit 5.0), Cost Benefit Analysis (Unit 6.0) Multi-Criteria Analysis (Unit 7.0) etc. and the justification for the approach should be set out in the conclusion section of the Feasibility Report.

3.11.2 Phase 2 Strategic Options

The final section of the Feasibility Report should summarise the Strategic Options chosen to progress to Phase 2. This will provide a clear indication of the scope of the proposed project and the expertise and assessment required through the following Phases 2-4 to progress to an Approval In Principle for investment.

The Feasibility Report will be provided to TII as the Approving Authority as part of the PMG Project Gate 1 process. The Feasibility Report will be issued to DoT (where required for projects valued over €200m) as the TAF Longlist Assessment Report deliverable. It is important to note that there is no associated DPENDR decision gate at the end of Phase 1, the Feasibility Report is provided to the Approving Authority (and Department for feedback) only.



 Ionad Ghnó Gheata na Páirce,
Stráid Gheata na Páirce,
Baile Átha Cliath 8, D08 DK10, Éire

 Parkgate Business Centre,
Parkgate Street,
Dublin 8, D08 DK10, Ireland

 www.tii.ie

 info@tii.ie

 +353 (01) 646 3600

 +353 (01) 646 3601