



Bonneagar Iompair Éireann  
Transport Infrastructure Ireland

## TII Publications

GE PE DN CC OP AM RE

---

# Project Appraisal Guidelines for National Roads Unit 12.0 - Minor Projects (€5m to €20m)

**PE-PAG-02035**

March 2021

## 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.

<b>TII Publication Title</b>	<i>Project Appraisal Guidelines for National Roads Unit 12.0 - Minor Projects (€5m to €20m)</i>
<b>TII Publication Number</b>	<i>PE-PAG-02035</i>

<b>Activity</b>	<i>Planning &amp; Evaluation (PE)</i>	<b>Document Set</b>	<i>Technical</i>
<b>Stream</b>	<i>Project Appraisal Guidelines (PAG)</i>	<b>Publication Date</b>	<i>March 2021</i>
<b>Document Number</b>	<i>02035</i>	<b>Historical Reference</b>	<b>PAG Unit 12.0</b>

## 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](mailto:infoPUBS@tii.ie)

---

## TII Publications




---

<b>Activity:</b>	Planning & Evaluation (PE)
<b>Stream:</b>	Project Appraisal Guidelines (PAG)
<b>TII Publication Title:</b>	Project Appraisal Guidelines for National Roads Unit 12.0 - Minor Projects (€5m to €20m)
<b>TII Publication Number:</b>	PE-PAG-02035
<b>Publication Date:</b>	March 2021
<b>Set:</b>	Technical

---

## Contents Table

<b>1. Overview .....</b>	<b>1</b>
<b>2. Minor Projects (€5m to €20m) – Appraisal Deliverables .....</b>	<b>2</b>
<b>3. The Strategic Assessment Report for Minor Projects (€5m to €20m) .....</b>	<b>4</b>
<b>4. Project Complexity .....</b>	<b>5</b>
<b>5. Data Collection .....</b>	<b>6</b>
<b>6. Transport Modelling Methodology .....</b>	<b>7</b>
<b>7. Traffic Growth Projections .....</b>	<b>8</b>
<b>8. Scheme Appraisal .....</b>	<b>9</b>
8.1 Cost Benefit Analysis (Economy) .....	9
8.2 Cost Benefit Analysis (Safety) .....	9
8.3 Multi-Criteria Analysis .....	9
8.4 Project Appraisal Balance Sheet .....	10
<b>9. TII Simple Appraisal Tool .....</b>	<b>11</b>
9.1 Scheme Specific Inputs .....	11
9.2 Appraisal Period .....	11
<b>10. Content and Structure of the Project Appraisal Report .....</b>	<b>12</b>

**Updates to TII Publications resulting in changes to  
Project Appraisal Guidelines for National Roads Unit 12.0 - Minor Projects PE-PAG-02035**

**Date:** March 2021

**Page No:**

**Section No:**

**Amendment Details:**

Update to bring into compliance with the Public Spending Code (December 2019).

## Contents Table

<b>1. Overview .....</b>	<b>1</b>
<b>2. Minor Projects (€5m to €20m) – Appraisal Deliverables .....</b>	<b>2</b>
<b>3. The Strategic Assessment Report for Minor Projects (€5m to €20m) .....</b>	<b>4</b>
<b>4. Project Complexity .....</b>	<b>5</b>
<b>5. Data Collection .....</b>	<b>6</b>
<b>6. Transport Modelling Methodology .....</b>	<b>7</b>
<b>7. Traffic Growth Projections .....</b>	<b>8</b>
<b>8. Scheme Appraisal .....</b>	<b>9</b>
8.1 Cost Benefit Analysis (Economy).....	9
8.2 Cost Benefit Analysis (Safety) .....	9
8.3 Multi-Criteria Analysis .....	9
8.4 Project Appraisal Balance Sheet .....	10
<b>9. TII Simple Appraisal Tool .....</b>	<b>11</b>
9.1 Scheme Specific Inputs .....	11
9.2 Appraisal Period .....	11
<b>10. Content and Structure of the Project Appraisal Report.....</b>	<b>12</b>

# 1. Overview

This Unit provides guidance on the appraisal of National Road projects which are classified as Minor Projects costing between €5m and €20m. This category of project typically involves online/offline improvements (<3km), bypasses, junction/bridge improvements or a combination of link and junction improvements.

This Unit is not applicable to the appraisal of Minor Projects costing between €0.5m and €5m. Minor Projects costing between €0.5m and €5m are generally those which are defined under DN-GEO-03030 Guidance on Minor Improvements to National Roads. Guidance on the appraisal of Minor Projects (€0.5m to €5m) is provided in PAG Unit 14.0 - Minor Projects (€0.5m to €5m).

TII have developed a template of a Minor Projects (€5m to €20m) Project Appraisal Report that can be downloaded from the "Downloads" section of the TII Publications website under section PE-PAG-02035\_Unit 12.

## 2. Minor Projects (€5m to €20m) – Appraisal Deliverables

For Minor Projects (€5m to €20m) the following PAG deliverables are required:

- Strategic Assessment Report (SAR)<sup>1</sup>;
- Project Brief (PB);
- Project Appraisal Report (PAR); and
- Post Project Review<sup>2</sup> (PPR).
  - Guidance on project appraisal deliverables is provided in PAG Unit 2.0 – Project Appraisal Deliverables. Table 12.1 outlines the PAG deliverables for Minor Projects (€5m to €20m) at each project phase.

**Table 12.1 Appraisal Deliverables for Minor Projects (€5m to €20m) by Project Phase**

National Roads Project Management Guidelines – Project Phase	PAG Deliverable			
	SAR	PB	PAR	PPR
Phase 0: Scope and Pre-Appraisal	Y			
Phase 1: Concept & Feasibility		Y		
Phase 2: Option Selection			Y	
Phase 3: Design and Environmental Evaluation			Y	
Phase 4: Statutory Processes			Y <sup>3</sup>	
Phase 5/6: Enabling and Procurement / Construction and Implementation			Y <sup>3</sup>	
Phase 7: Closeout and Review				Y

A **Strategic Assessment Report (SAR)** is required on all projects with a capital cost in excess of €10m (incl. VAT) in order to comply with the requirements of the Department of Public Expenditure and Reform (DPER) Public Spending Code (2019). Based on the limited available information at the outset of a project, the SAR sets out the rationale for the project, its alignment with government policy, its objectives, potential feasible options, a high level estimate of costs/affordability, key risks, an appraisal plan and governance plan. Full details of the requirements/structure of the SAR are provided in PAG Unit 2.1 – Strategic Assessment Report.

The **Project Brief (PB)** identifies the need for the scheme and sets out the project objectives.

<sup>1</sup> Only required for Minor Projects over €10m

<sup>2</sup> A Post Project Review is only required on a selection (5%) of all projects under €20m as per the requirements of the Public Spending Code

<sup>3</sup> Generally not applicable but if the scope of a project is significantly changed then the Business Case may need to be updated.

It considers the existing and likely future problems; and reports on the options that have been considered. It also provides a history of the development of the project. The Project Brief builds on the information set out in the SAR (for projects >€10m) and is updated at each project phase as new information becomes available and project decisions are made.

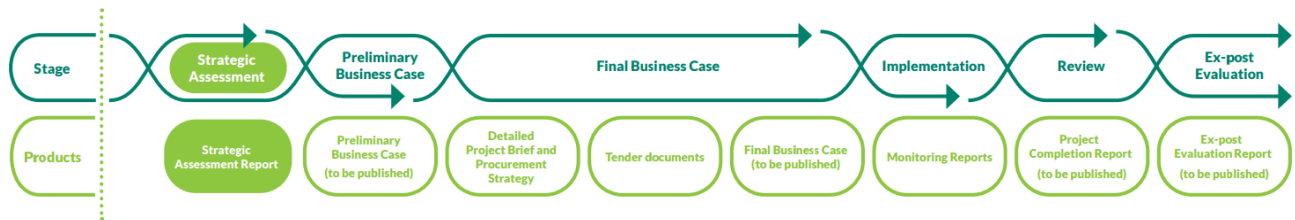
The **Project Appraisal Report (PAR)** is effectively a condensed form of the Business Case document required for Major Projects which summaries the appraisal deliverables (PB, TMR, CBA and PABS) for the proposed scheme. Details of what needs to be provided and addressed in the PAR are discussed in detail in PAG Unit 12.0 - Minor Projects (€5m to €20m).

The **Post Project Review (PPR)** is carried out 5 years after the opening of the scheme and its purpose, as set out in the PSC, is to determine if the intended benefits and outcomes materialised and to judge the impact of the project or intervention. The PPR includes an assessment of the project against its Key Performance Indicators (KPI) developed as part of the monitoring and evaluation plan. Details of the PPR process are set out in PAG Unit 9.0 – Post Project Review.



### 3. The Strategic Assessment Report for Minor Projects (€5m to €20m)

The Strategic Assessment Report (SAR) was introduced by the DPER as part of the update of their Public Spending Code (PSC) document in December 2019 and is now the first deliverable in the PSC Project Lifecycle sitting under the 'Strategic Assessment' stage as illustrated in Figure 12.1.



**Figure 12.1 DPER PSC Project Lifecycle (Stages & Products)**

A SAR is required on all projects/programmes in excess of €10m (total costs incl. VAT). For Minor Projects with a projected cost between €10m and €20m a SAR must be developed at Phase 0 (Scope & Feasibility) and approved by TII and the DoT before the project can proceed to the next project stage. Where a project is close to the €10m threshold a conservative approach should be taken and a SAR should be developed.

Full details of the requirements and contents of a SAR for National Road projects is provided in PAG Unit 2.1 – Strategic Assessment Report.

## 4. Project Complexity

The complexity of Minor Projects (€5m to €20m) will vary considerably. The upgrading of a short section of the National Road network may not require the same level of appraisal as the bypassing of a town or village. Therefore, the level of appraisal should be proportionate to the nature and complexity of the project.

Taking the above into consideration, TII has classified Minor Projects (€5m to €20m) into three broad categories to aid the appraisal process. The three categories are as follows:

- Online or offline improvements less than 3km;
- Bypasses; and
- Junction upgrades (including the optimisation of existing merge/diverge layouts).

## **5. Data Collection**

PAG Unit 5.2 - Data Collection includes guidance on the collection of traffic data for individual schemes which is not readily available. In addition the Unit provides guidance on the data available for use in the development of transport models which may reduce the need for data collection or traffic surveys.

In the context of Minor Projects (€5m to €20m), the quality and amount of data collected should be proportionate to the modelling task and be sufficient to inform the decision making process.

## 6. Transport Modelling Methodology

The nature of the scheme, e.g. junction improvement versus new road link, will provide the first indication of what type of modelling tool is required, although it will also be important to consider the location and the prevailing environment. As an example, a major junction improvement in a rural area with a sparse road network is likely to only require an isolated junction model. The same kind of scheme in a dense urban environment may cause significant re-routeing effects and even, potentially, impact on other modes or properties. As a consequence, an assignment model would be required to capture the impact of the diverted traffic on the surrounding road network.

Information on the various types of modelling tools available to inform the appraisal of national road schemes and the calibration and validation of same is provided in PAG Unit 5.1 – Construction of Transport Models.

Careful consideration should be given, before resources are committed to model building, to the project complexity referred to above, the nature of the options that are likely to be tested and the required level of detail of the analyses. The risks of using disproportionate time and resources can be minimised by specifying the model scope correctly from the outset.

## 7. Traffic Growth Projections

Guidance on the application of future traffic growth projections is provided in PAG Unit 5.3 - Travel Demand Projections.

PAG Unit 5.3 provides detailed guidance on the preparation of future travel demand projections for use in scheme modelling and appraisal. The type of methodology chosen, that is, zone based or link based projections, depends on the functionality of the models being used.

For Minor Projects (€5m to €20m) the likely modelling approaches are either Simple Models or Assignment Models. PAG Unit 5.3 describes the criteria for projecting future demand for these models. Essentially, Simple Model approaches rely on link-based projections while Assignment Models require zone-based projections.

PAG Unit 5.1 – Construction of Transport Models examines different methodologies for preparing future year traffic projections which reflect the functionality of the models being used.

## 8. Scheme Appraisal

This section provides an overview of the appraisal for Minor Projects (€5m to €20m), both from a quantitative and qualitative perspective based on the Common Appraisal Framework appraisal criteria headings:

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

### 8.1 Cost Benefit Analysis (Economy)

For online/offline improvements on rural sections of the National Road network, the economic benefits (travel time savings and vehicle operating cost changes) of a project can generally be calculated using the 'TII Simple Appraisal Tool' which is detailed further in Section 9.

For more complex projects that require the development of an assignment model, the economic benefits of the project should, in general, be calculated using TUBA. However, it is worth noting that it may also be possible (depending on the project complexity) to utilise bespoke spreadsheet based methods for this analysis. However, these methods should be agreed with TII's Strategic & Transport Planning Section before the appraisal is undertaken (the SAR is the appropriate method for this).

TUBA is a computer program used for undertaking transport economic appraisals. TUBA draws information directly from transport models and applies standard economic parameters to calculate benefits and costs associated with travel time, vehicle operating cost and emissions changes.

Guidance on using the TUBA programme is provided in PAG Unit 6.3 - Guidance on Using TUBA.

### 8.2 Cost Benefit Analysis (Safety)

COBALT (Cost and Benefit to Accidents – Light Touch) is a computer program developed by the UK Department for Transport (DfT) to undertake the analysis of the impact on collisions as part of the economic and safety appraisal for a road scheme. An Irish specific version of the COBALT program has been developed by TII for use on road schemes in the Republic of Ireland and is referred to as COBALT – Ireland.

Guidance on using the COBALT programme is provided in PAG Unit 6.4 - Guidance on Using COBALT.

### 8.3 Multi-Criteria Analysis

The Environment, Accessibility & Social Inclusion, Integration and Physical Activity elements of the appraisal process should be carried out in line with the requirements for Multi-Criteria Analysis (MCA) as set out in PAG Unit 7.1 – Multi-Criteria Analysis.

## **8.4 Project Appraisal Balance Sheet**

The Project Appraisal Balance Sheet (PABS) is a summary appraisal of a project impacts based on the outputs of various forms of assessment carried out during the planning and design stages of project development. The PABS acts as a tool in summarising the expected impacts of proposed investment and provides a mechanism for prioritising schemes for investment. The Minor Projects (€5m to €20m) PABS template is available for download from the “Downloads” section of the TII Publications website under section PE-PAG-02035\_Unit 12 and is also included as an appendix to this Unit.

## 9. TII Simple Appraisal Tool

TII have developed an automated spreadsheet based appraisal tool to allow analysts to undertake an economic appraisal for online and/or offline improvements to sections of the National Road network, in areas where the reassignment of traffic due to the scheme is unlikely. This appraisal tool can be downloaded from the “Downloads” section of the TII Publications website under section PE-PAG-02035\_Unit 12.

The Simple Appraisal Tool calculates the change in journey time and vehicle operating cost as a result of the online and/or offline improvement and calculates the expected monetary benefits. Scheme benefits are compared against scheme costs to generate a Net Present Value (NPV) and Benefit to Cost Ratio (BCR) for the proposed scheme.

The automated spreadsheet specifies a number of questions to quantify the impact of the proposed upgrade in terms of economy and is made up of four sections as follows:

- **Part A (Overview):** This section requests some general background on the project being assessed such as a brief project description and project management information;
- **Part B (Scheme Information):** This section deals with the specific scheme information for inclusion as part of the economic appraisal;
- **Part C (Target Performance):** In this section the analyst inputs either/both the average (daily) journey time (minutes) and average speed (kilometres/hour) for both the existing conditions and target projections from the implementation of the scheme; and
- **Part D (Projected Benefits):** This section generates the outputs of the spreadsheet tool including the NPV and BCR of the proposed minor project.

### 9.1 Scheme Specific Inputs

The scheme cost entered into the economic appraisal tool needs to be adjusted using the applicable TII Input Cost Spreadsheet prior to use. The TII Input Cost Spreadsheets adjust scheme costs to account for VAT, inflation and shadow pricing prior to use in Cost Benefit Analysis. These cost spreadsheets are provided as appendices to PAG Unit 6.2 - Preparation of Scheme Costs.

### 9.2 Appraisal Period

In Part B, the appraisal period is in general specified to be a 30 year period (in line with the Common Appraisal Framework), however, for certain Minor Projects (€5m to €20m), such as the optimisation of merge/diverge layouts, the appraisal period may be considerably less. This may reflect the potential short term nature of a Minor Project. For appraisal periods chosen to be less than 30 years the spreadsheet does not consider there to be any residual benefits (again in line with the CAF requirement that for short lived assets of less than 30 years, the project is only evaluated over the life of the asset).



## 10. Content and Structure of the Project Appraisal Report

The Project Appraisal Report should be structured based on the sections presented in Table 12.2.


**Table 12.2 Structure of Project Appraisal Report**

Section	Title	Content
1	Introduction	<p>The first section of the PAR provides the background to the project, including its origins, previous relevant studies and their findings. Where relevant this can build on the information provided in the Strategic Assessment Report.</p> <p>A statement should be provided in relation to the assumptions and parameters used in the appraisal of the project to confirm they are in line with central guidance as per the requirements of the CAF.</p> <p>A programme logic model (diagram) showing the linkages between the project inputs, activities, outputs and outcomes is required.</p>
2	Project Context	<ul style="list-style-type: none"> <li>The alignment of the transport intervention with government policy should be clearly set out in this section. This includes alignment in relation to the National Planning Framework (NPF) and its National Strategic Outcomes (NSO), the National Development Plan (NDP), the DoT Strategic Investment Framework for Land Transport, the relevant Regional Spatial and Economic Strategy (RSES) and National Policy on climate action. In addition, any European, national, regional or local policy context that supports the investment rationale should be highlighted and discussed in this section.</li> </ul> <p>A set of project objectives should be defined based on the need for the scheme and the known constraints. They should be classed as follows:</p> <ul style="list-style-type: none"> <li>Economy</li> <li>Safety</li> <li>Environment</li> <li>Accessibility and Social Inclusion</li> <li>Integration; and</li> <li>Physical Activity</li> </ul>
3	Analysis Tools	<p>A description of the analysis tools used in support of the preparation of the PAR. Such tools may include traffic models and economic models. The development and validation of models should be described.</p>
4	Consideration of Alternatives & Options	<p>A description of the structured process undertaken to identify the preferred option for the project should be provided in this section and should cover the following:</p> <ul style="list-style-type: none"> <li>Identification of Long List of Options (Phase 0 – Strategic Assessment Report – where applicable)</li> <li>Narrowing of Options (Phase 2 Option Selection Stage 1); and</li> <li>Appraisal of Options (Phase 2 Option Selection Stage 2).</li> </ul> <p>Reference should be made to PAG Unit 4.0 - Consideration of Alternatives &amp; Options for guidance.</p>

Section	Title	Content
		<p>A Multi-Criteria Analysis (MCA) approach should be adopted as per the guidance set out in PAG Unit 7.0 - Multi-Criteria Analysis.</p> <p>Details of the cost of each option at Phase 2 Stage 2 should be provided in the PAR alongside expenditure profiles and funding sources. Any incremental analysis undertaken as part of the appraisal of options should be provided.</p>
5	The Preferred Option	<p>Introduction of the preferred option emerging from the Phase 2 Option Selection process. This section should provide information on the design standards used, and present demand projections for the preferred option. The chapter should also set out the detailed composition of scheme costs for the preferred option.</p>
6	Scheme Appraisal	<p>An overview of the detailed appraisal of the preferred scheme, including the following:</p> <ul style="list-style-type: none"> <li>• Economic Appraisal</li> <li>• Cost Benefit Analysis</li> <li>• Multi-Criteria Analysis</li> <li>• Financial Appraisal</li> <li>• Sensitivity Analysis (project costs, transport demand, benefits etc.)</li> </ul> <p>Project Appraisal Balance Sheet (PABS) for Minor Project (€5m to €20m)</p>
7	Risk Assessment	<p>Identification of the key risks associated with the project that require consideration in any decision making process, and in subsequent stages of the project. Risks should include cost risks, programme risks, funding risks, affordability risks and acceptability risks. A risk mitigation strategy should be provided which outlines how risks were identified, evaluated, monitored and tracked.</p>
8	Conclusion	<p>A concluding chapter summarising the case for the scheme in terms of the anticipated monetised and non-monetised benefits likely to be achieved.</p>





 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](http://www.tii.ie)

 [info@tii.ie](mailto:info@tii.ie)

 +353 (01) 646 3600

 +353 (01) 646 3601