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Sheachadadh PFN agus Athchóirithe
Department of Public Expenditure
NDP Delivery and Reform

Infrastructure Guidelines: Strategic Assessment and Preliminary Business Case

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1. Strategic Assessment & Preliminary Business Case

The Strategic Assessment & Preliminary Business Case Stage is the first stage of the project lifecycle and is critical for developing the strategic case for the project, considering in detail the range of options available and identification of risks to decide whether a project has a case for proceeding. The Preliminary Business Case incorporates the Strategic Assessment, detailed options appraisal and when finalised will also incorporate assessments of risk along with the proposed approach to implementation of the proposal.

These recommendations reflect best practice in project development. It is the responsibility of the Accounting Officer of the Department funding the project to ensure that these guidelines are adopted.

1.1 Purpose of the Strategic Assessment & Preliminary Business Case

The purpose of the Strategic Assessment is to examine the rationale for potential policy interventions and ensure the strategic fit of potential investment proposals with government policy, in particular the National Planning Framework and National Development Plan.

A common cause of problems in projects in Ireland and internationally (and common to the private and public sectors) is a failure to clearly specify objectives and desired outcomes at the outset. The Strategic Assessment is designed to guard against this and ensure early engagement with and scrutiny of potential public investment proposals.

Where programmes of investment are composed of a high number of similar or replicable schemes – for instance social housing developments or urban regeneration initiatives - it may be appropriate to undertake the strategic assessment for the programme as a whole.

The Sponsoring Agency proceeds to developing a Preliminary Business Case if the rationale set out in the Strategic Assessment elements of the stage are sufficient to warrant a public policy intervention and are aligned with national and sectoral policy. The strategic assessment elements of this stage are submitted to the Approving Authority for consideration prior to the development of the Preliminary Business Case.

The Preliminary Business Case is critical in the assessment of potential investment proposals:

- For the Sponsoring Agency it provides a framework to assess costs, benefits, affordability, deliverability, risks and sensitivities associated with potential project or programme options.
- For the Accounting Officer and Approving Authority it provides the information required to inform decisions on the viability and desirability of public spending proposals.

The Preliminary Business Case process is iterative and should be viewed as both a process and a product. In the event that an investment proposal progresses through the lifecycle stages, the business case is updated continuously as new information becomes available.

1.2 The Strategic Assessment

For proposals with an estimated capital cost of less than €20 million, Approving Authorities may commence a project without need for the strategic assessment elements of the Preliminary Business Case¹.

Before the decision is taken to develop a Preliminary Business Case for a proposal, a Strategic Assessment of the proposal is carried out. This sets out:

- Investment rationale
- Objectives
- Strategic alignment with Government policy – in particular the National Planning Framework and National Development Plan
- Preliminary demand analysis
- The long-list of potential options

1.2.1 Project Rationale

Rationale is concerned with establishing why a public policy intervention is necessary in a given area. It requires consideration of the public policy objectives of an investment proposal and the reasons for public sector provision or involvement. It is closely linked to the economic concept of market failure. Market failure exists where private individuals or firms do not produce the optimal level of a good or service from a societal perspective. Where a programmatic approach is intended, the rationale outlined in the Strategic Assessment clearly supports the need to undertake the intervention as a programme of works for capital investment.

1.2.2 Objectives

Having established the specific rationale for a potential investment proposal, objectives are clearly set out. Objectives are rooted in the specific problem to be addressed as set out in the Strategic Assessment's rationale.

Among the leading causes of problems with public investment proposals is a failure to adequately specify objectives at the outset. Objectives are SMART – specific, measureable, attributable, realistic and time bound.

The objectives frame the assessing of options as described in Section 1.2.5.

The Strategic Assessment sets out the specific rationale for the proposal. It considers whether and to what extent a potential intervention could of itself create adverse incentives or other unintended consequences. Where a programmatic approach is intended, the Strategic Assessment objectives clearly outline and support the need for undertaking a programmatic approach.

1.2.3 Strategic Alignment

The strategic assessment clearly document the strategic fit of the proposal with public policy. This is tightly defined and considers the alignment of a proposal with:

¹ However, the Preliminary Business Case must clearly document the strategic case, rationale and objectives of the proposal.

- Public investment policy as set out in the National Development Plan or analogous policy document. In this regard it is not sufficient that a project be listed in a national investment programme, the Strategic Assessment clearly documents the linkages, consistencies and complementarities with national policy goals.
- National planning policy as set out in the National Planning Framework. Specifically, assumptions underpinning the Strategic Assessment are rooted in assumptions about future spatial development and population growth in affected cities, towns and rural areas.
- National Policy on climate action
- Specific and up-to-date sectoral policy including adoption of European policy measures.

1.2.4 Preliminary Demand Analysis

The preliminary demand analysis sets out – at a high level - current demand and forecast future demand for the services resulting from an investment proposal. Preliminary demand analysis is evidence based and draws on quantitative data to the maximum extent possible.

1.2.5 Establishing and Assessing the Long-List of Options

The Strategic Assessment sets out the long-list of potential options which could address the needs to be met. The long-list includes all the feasible options which can achieve the desired outcomes and this include options which may not involve capital investment.

Potential options are given wide consideration and the process of developing the long-list could include workshops with stakeholders and consultation with experts. At this point in the process it is important to avoid ‘picking winners’ or ‘pet projects’. While some approaches may be ruled out at this point for reasons of feasibility, it is important that the long-list be made up of a wide range of potential solutions. Over specification of any option is avoided.

Where relevant, climate mitigation and adaptation options for investment proposals are assessed in terms of counterfactual investments by Sponsoring Agencies as part of their long list of options. These are assessed as alternatives rather than only assessing against a ‘do nothing’ scenario. In an extreme example, an intervention generating a welfare loss may be considered acceptable if the welfare loss is lower than the future societal trend loss under a “do-nothing scenario”.

Where a programmatic approach is planned, Sponsoring Agencies appraise a range of programme level options, which examine different prioritisations and combinations of constituent projects where possible. Where constituent projects add only marginal value to the overall programme or do not contribute to achieving the strategic aims of the programme, these are deselected as appropriate.

Sponsoring Agencies demonstrate the likely projects that will constitute a capital programme and that different options were considered for each of these projects. The longlist of options identify each of the likely constituent projects proposed as part of the programme, and the options for each of the constituent project.

The long-list of options are described and assessed through a consistent framework, for instance a multi-criteria model, a logic path model or a balanced scorecard.

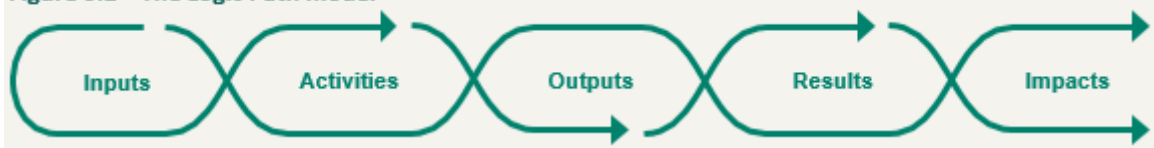
Box 1.1 provides further discussion of potential approaches

Box 1.1 Frameworks for considering the long-list and gathering metrics

The Logic Path Model

This is a framework for considering the inputs, outputs, performance and impacts of proposed interventions. It can provide a common lens through which to understand options and assess the relative performance of options in achieving the desired objectives.

Figure 3.1 The Logic Path model



The Logic Path Model maps out the shape and logical linkages of a programme or project and provides a systematic and visual way to present and share understanding of the cause-effect relationships between inputs, activities, outputs and outcomes (results and impacts). It is used in planning, implementation, monitoring and evaluation of investment proposals. Adoption of the Logic Path Model can enable options to be described and analysed in terms of inputs, activities or processes, outputs, and outcomes that are arranged to achieve specific strategic objectives.

Through the Logic Path Model, the Sponsoring Agency will identify at a high level the key performance indicators for the inputs, outputs, performance and impacts required for and from the proposal. These will form the basis for the monitoring and evaluation plan that will be developed as part of the business case and rolled out during project implementation. Where a programme level approach is undertaken, it is important for the Sponsoring Agency to consider the overall Key Performance Indicators at a programme level in addition to the projects likely to be included in the programme.

The Balanced Scorecard

The balanced scorecard approach is a tool to assist in gathering metrics and understanding performance across a number of dimensions. Areas of focus may include economic, financial, social and environmental.

The type of model facilitates the consideration of options and gathering of data across a number of dimensions of performance.

Multi-Criteria Framework

A multi-criteria framework can also be used to assist in gathering data on project options and comparing the long-list. The approach considers options by reference to an explicit set of criteria derived from the objectives of the proposal and factoring affordability and value for money. The approach uses weighting and scoring of the relevant criteria reflecting their relative importance to the objectives and the performance of each option against each criterion. In some cases, detailed multi-criteria analysis (MCAs) is an important element of the options appraisal as part of the business case.

1.3 Content of the Preliminary Business Case

If the Approving Authority is satisfied that the rationale set out in the Strategic Assessment elements of the stage are sufficient to warrant a public policy intervention and are aligned with national and sectoral policy, the Sponsoring Agency proceeds to the Preliminary Business Case elements of the stage.

The Preliminary Business Case incorporates the Strategic Assessment already carried out and serves as a detailed appraisal of available options. It leads to the clear articulation of a preferred option for the proposed project, enumerates associated risks and sets out a proposed implementation strategy for the investment proposal.

The Preliminary Business Case includes the following elements²:

- Confirmation of the strategic relevance of the proposal and detailed specification of the objective of the proposal
- Description of the short-list of potential options to deliver objectives set out
- Detailed demand analysis and description of underlying assumptions
- Options appraisal, including:
 - Financial appraisal
 - Economic appraisal
 - Sensitivity analysis
- Assessment of climate and environmental performance
- Assessment of affordability within existing resources
- Risk assessment, allowance for optimism bias and full risk management strategy
- Proposed approach to procurement
- Proposed approaches to implementation and operation
- Assessment of delivery risk
- Plan for monitoring and evaluation including key performance indicators
- Recommendation for the Approving Authority

In certain instances, there may be allowances at Preliminary Business Case stage, for the submission of a single programme level approach provided it captures all the necessary and required information of all the constituent projects. This approach will help to streamline the project lifecycle process at Approval Gate 1, given constituent projects within a programme may progress at different rates, and may result in a number of Preliminary Business Cases otherwise being prepared.

1.4 Principles to be followed

1.4.1 Optimism Bias and Behavioural Influences

The Preliminary Business Case factors the potential impact of biases on forecasts of demand, costs, delivery programme and risks. Optimism bias occurs when project analysts overestimate the benefits and/or underestimate the costs and timings for a project or programme.

² This list is designed to show the required elements rather than represent a prescriptive table of contents for the Preliminary Business Case.

Standard examples of optimism bias include forecasts of demand which far exceed actual usage levels, unrealistically short delivery schedules and under estimates of project costs.

Investment proposals appraisals include a comprehensive approach to addressing optimism bias. Forecasts draw on outturn data for similar projects in Ireland or elsewhere and the evidence base for assumptions such as demand forecasts, cost estimates and delivery schedules.

Where programme appraisals are being conducted, it is recommended that Sponsoring Agencies avoid issues where possible, such as double counting benefits where constituent projects of a programme are interdependent. Assessing projects individually, where they are interdependent and at programme level would help minimize these issues. Box 1.6 discusses techniques which can assist in debiasing cost estimates of investment projects.

Appraisals systematically test low benefit outturns against highest cost outturns for the critical variables as part of the sensitivity analysis.

1.4.2 Additionality and the Investment Counterfactual

The business case is based on the principle of additionality. This means that only the specific costs and benefits that are directly attributable to the proposal can inform the decision. To understand the net additional impact of a project, the Infrastructure Guidelines recommends the careful consideration of what would happen without the proposal – the investment counterfactual.

The counterfactual requires assumptions about the outcomes that will arise in the absence of the proposal. Counterfactuals include ‘do-nothing’ or ‘do-minimum’ options. In many cases, counterfactuals based on the do nothing scenario are often unrealistic as there are generally certain costs or risks associated with current arrangements which must be incurred in any case (See Box 1.2) However the impact of the do nothing option is always understood and interrogated as part of the appraisal.

Box 1.2 The ‘Catastrophic Do-Nothing’

Under certain circumstances, the do-nothing scenario will lead to adverse policy outcomes which are not acceptable to the Government. For example, in the case of a contaminated drinking water source, the do-nothing option may lead to unavailability of drinking water or threats to public health.

Choosing this scenario as the counterfactual may mean that the net impact of the proposed project will be artificially improved in the appraisal process. In such a scenario, a more realistic counterfactual is the do-minimum, which might involve a basic level of remediation of water supply.

While the impact of the do-nothing must always be understood and interrogated as part of the appraisal process, it is recommended that unrealistic do-nothing scenarios are not used as the project counterfactual as it will artificially inflate the incremental benefit of undertaking more ambitious projects.

1.4.3 The Appraisal Time Horizon

The appropriate time horizon used for the appraisal of elements of the business case is set at the useful economic life of the asset being proposed. This may vary according to the sector under consideration and be set in sector specific guidance.

For illustrative purposes, Table 1.1 sets out the EU Commission's proposed time horizons or reference periods by sector³. Applying these time horizons is strongly recommended by the Department of Public Expenditure, National Development Plan Delivery and Reform as part of any investment proposal. It is recommended that any deviation from the recommended reference periods be agreed with the Accounting Officer and Approving Authority prior to progressing the investment proposal.

Table 1.1 European Commission's reference periods by sector

Sector	Reference period (years)
Railways	30
Roads	25-30
Ports and airports	25
Urban Transport	25-30
Water supply/sanitation	30
Waste management	25-30
Energy	15-25
Broadband	15-20
Research and innovation	15-25
Business Infrastructure	10-15
Other sectors	10-15

Longer time horizons may be considered to incorporate the long-term impacts and costs of particular projects, for example, to reflect climate impacts. It is recommended that this approach be agreed as part of the appraisal plan with the Accounting Officer and Approving Authority.

1.4.4 Alignment with Capital Works Management Framework

To aid informed decision making at this stage of the project lifecycle, key elements required such as the costings, and the economic and financial appraisal are based on a clearly set out preferred option, with evidence of an outline design put forward for this option.

In order to achieve this, some elements of the Stage 1 (initial planning) and Stage 2 (developed planning) of the Capital Works Management Framework are undertaken at this stage of the project lifecycle.

³ European Commission, Guide to Cost-Benefit Analysis of Investment Projects Economic Appraisal Tool for Cohesion Policy 2014-2020, December 2014

Box 1.3 The Office of Government Procurement (OGP) and the Capital Works Management Framework (CWMF)

Office of Government Procurement

The Office of Government Procurement (OGP) operates under the aegis of the Department of Public Expenditure, National Development Plan Delivery and Reform. The OGP commenced operations in 2014 and along with four key sectors (Health, Defence, Education and Local Government), has responsibility for sourcing all goods and services on behalf of the Public Service.

The functions of the OGP are to:

- Integrate procurement policy, strategy and operations in one office;
- Strengthen spend analytics and data management;
- Secure sustainable savings.

The OGP has responsibility for procurement policy and procedures (including the Capital Works Management Framework).

Capital Work Management Framework

The Capital Works Management Framework is the national framework for procuring capital works in Ireland. It consists of a suite of best practice guidance, standard contracts and generic template documents. It is maintained by the Construction Policy Unit of the Office of Government Procurement in consultation with the Government Contracts Committee for Construction.

The public works contract and the standard conditions of engagement (for works-related consultancy) are key components of the CWMF and are typically lump sum, fixed-price contracts. In addition to forms of contract, the CWMF also contains template documents for the prequalification and tender stages of the procurement process as well as extensive guidance material in relation to the management of public works and services contracts.

The CWMF is designed to support the Infrastructure Guidelines. As the Code evolves, the CWMF will be updated to ensure consistency. In the event that inconsistencies arise owing to the sequencing of updates, the Code has primacy.

1.4.5 Aid to Good Decision Making

The business case is an aid to inform decision making. It does not constitute a final decision in and of itself. Its purpose is to gather and analyse the relevant data to support better investment decisions.

1.5 Updating the Strategic Relevance

The overall strategic relevance, rationale and objectives of the proposal are considered at this point.

The Preliminary Business Case assesses the consistency of the proposal with:

- National and regional planning policy
- National public investment policy
- Specific sectoral policy
- Climate action policy

The Preliminary Business Case assesses the objectives of the proposal as set out in the Strategic Assessment.

1.6 Detailed Demand Analysis

The demand analysis is evidence based and subject to independent, expert validation where necessary. It focuses on incremental demand and reflects projected actual demand as opposed to potential demand. Demand is analysed separately for distinct user groups. Demand analysis is undertaken in the context of available capacity.

The pattern and pace of demand take up may vary over time depending on a variety of circumstances including the business cycle, employment levels, population growth, etc. Demand forecasting techniques include among others multiple regression models, extrapolation methods, and consultation with experts. The choice of technique(s) will depend on the sector, available data, and the nature of the investment. All underlying assumptions are clearly set out in the analysis with reference to the supporting evidence base.

1.7 Establishing the short-list of options

Building on the analysis set out in the Strategic Assessment, the Preliminary Business Case arrives at a short-list of options which can deliver the objectives of the proposal. This is done in a structured way drawing on frameworks such as multi-criteria analysis, balanced scorecards, or SWOT analysis. The short-listing process takes account of factors including affordability, scope and deliverability. The short-list of options can then be subject to a detailed financial and economic appraisal.

1.8 Climate and Environmental Performance

It is important that within the PBC investment projects and programmes demonstrate consistency with a range of key policies, such as national and regional planning, national public investment and climate action policies and targets.

As part of the Preliminary Business Case, each specific project or programme is assessed from a climate perspective. Within the PBC, the Sponsoring Agency sets out all relevant climate and environmental related information under a specific section, titled 'Climate and Environmental Performance.' This includes an assessment of the impact of the project/programme on greenhouse gas emissions and the resilience of a project/programme to the impacts of climate change. Information can be presented qualitatively where it is not feasible to quantify the impact.

The information is presented in a manner that assists the Accounting Officers and Approving Authorities in evaluating climate related outcomes and allows them to be ranked, if appropriate. This may include high priority policy outcomes for example reducing greenhouse gases (GHG), reducing traffic volumes, or increasing the level of renewable energy produced etc. Sponsoring Agencies may also wish to set out any other relevant information, such as the options or programme of options considered which affected environmental and climate related outcomes, climate related risks that the project is exposed to and how climate aspects are incorporated into the economic appraisal.

Where a programmatic approach is undertaken, information on the environmental, mitigation and climate impacts of the constituent projects is presented separately, in addition to the impacts from

the overall programme. This will help determine the general environmental outcomes of the investment.

1.9 Financial Appraisal

1.9.1 Focus of the Financial Appraisal

All projects – irrespective of scale or cost – are subject to financial appraisal.

Sponsoring Agencies, Accounting Officers and Approving Authorities consider both value for money and affordability. In the case of some proposals, the strategic assessment and the economic appraisal may show a strong case for change on account of positive wider economic and social benefits. Such analysis is accompanied by a clear exposition of the financial impacts of a proposal. There is little point in pursuing a worthy project if it cannot be paid for.

Throughout the project lifecycle, Sponsoring Agencies pay careful attention to forecasting all costs of a proposal and taking account of the spectrum of potential risks which may impact viability and deliverability.

Box 1.4 Public Private Partnerships

Public Private Partnerships are an alternative way of financing a project. A PPP is an arrangement between the public and private sectors (consistent with a broad range of possible partnership structures) with clear agreement on shared objectives for the delivery of public infrastructure and/or services by the private sector that would otherwise have been provided through traditional public sector procurement.

A PPP has the potential to offer value for money and timely delivery of infrastructure when applied to projects of the right scale, risk and operational profile. For investment proposals with particular characteristics, Sponsoring Agencies may wish to explore the potential to progress the project as a public private partnership with the National Development Finance Agency (NDFA).

The NDFA is the financial advisor to state authorities, agencies, and departments. The NDFA's advice should, in general, be sought out at an early stage on a) All PPP projects, and, b) all projects with a capital value exceeding €75 million. The NDFA's functions include advising public bodies on the optimum means of financing the cost of public investment projects to achieve value for money and providing advice in relation to all aspects of financing, as well as the provision of technical, design and construction advice. The NDFA is also available to provide financial advice on projects below €75 million as appropriate.

The separate guidelines on Public Private Partnerships should be followed when considering the PPP option.

1.9.2 Content of the Financial Appraisal

Detailed guidance and requirements for carrying out a financial analysis is published separately here⁴

The following are clearly set out in the Preliminary Business Case:

- The total investment costs
- Total operating costs
- Future maintenance and renewal costs
- Forecast revenue streams arising

1.9.3 Estimating Project Costs

Particular care is taken to ensure the accuracy of investment costs. Estimates adequately account for risks to the scope and delivery programme and inflation. To the maximum extent possible, estimates are based on outturn costs of comparable projects.

Box 1.6 discusses this in further detail. The PBC gives early consideration to costs of undertaking investment proposals. While it is recommended that anchoring around one option be avoided, the proposal nonetheless assesses the range of potential costs associated with meeting the identified objectives and solving the problem identified include section on costs.

To the extent costs are known, they are presented as indicative and subject to considerable variation as proposals are developed and progress through the stages of the lifecycle. Under no circumstances are funding commitments made on the basis of early indications of cost ranges. Care must also be taken in communicating early estimates of investment proposal costs and it is recommended the level of uncertainty attaching be explicitly highlighted.

Careful consideration of the potential cost implications for programme level approaches are set out. These cost implications are reflected within the programmes affordability assessment, and identify the potential costs of different constituent projects within the wider programme.

For major projects, established cost forecasting techniques, such as reference class forecasting, are utilised to provide a fuller picture of the likely costs involved in a project or programme. Where possible, it is recommended that independent reviews of the projects base costs by two separate reviewers should take place, and where possible cost ranges be included. A summary page outlining the updated cost forecasts should be attached to the PBC submitted to the EAP and the MPAG, as well as setting out details such as base cost, risk analysis, sensitivity, benefit to cost ratios etc.

⁴ <https://www.gov.ie/en/publication/public-spending-code/>

Box 1.5 International Cost Management Standard (ICMS)

The International Cost Management Standard 3rd Edition (ICMS3) provides a common reporting framework showing the interrelationship between construction costs, life cycle costs and embodied carbon emissions to be explored. ICMS3 provides the opportunity to make decisions about design, construction, operation and measurement of the built environment that optimise environmental sustainability.

ICMS3 enables practitioners to classify cost and carbon values across the whole life cycle, eliminating inconsistency and discrepancies when accounting, comparing and predicting project finances.

The key benefits include:

- ICMS can be used in all stages of the Asset Life Cycle (Conception – construction – Economic life – Demolition – Reuse). This allows options to be assessed in the early stages of the preliminary business case.
- ICMS will allow parity with benchmark costs and reference class forecasting as referred to in **Box 1.6 Considerations in forecasting project costs**. Utilising ICMS will allow for the development of a cross government database of cost and carbon benchmarking data which will aid in the preparation and assessment of business cases.
- The new CWMF Cost and Carbon reporting templates will allow for the uniform presentation of this data which will be collected via a central Building Information Modelling portal.
- ICMS is also used to monitor outturn CapEx values, value management and value engineering during the construction phase.
- The ICMS “Cost Groups” allow for the identification of value hotspots. This includes embodied carbon hotspots. This allows CWMF and PPP projects to align with the EU Level(s) for Sustainable Building. Level(s) focuses on Global Warming Potential (GWP) through Life Cycle Analysis and Sustainability through Life Cycle Costing.
- ICMS is also linked to property measurement (IPMS) and land measurement (ILMS) standards which also allow parity in measurement and definition across the globe.

Further guidance on the use of ICMS will be published by the OGP.

1.9.4 Affordability

The Financial Appraisal includes an assessment of affordability in gross terms. This sets out:

- The envelope of total investment required (irrespective of the investment counterfactual)
- The timing of costs
- Costs relating to ongoing operation and maintenance
- Impact on the general government balance

Box 1.6 Considerations in forecasting project costs

The cost of a proposal is forecast throughout the project lifecycle. At strategic assessment, this is a high level range of costs based on what is known about the long-list of options to meet the stated objectives. As the scope of the proposal and the assumptions underpinning it become clearer through business cases, project brief development and preparation for tender, the forecasts of costs become more definitive.

Costing information is based on market costs, the most recent costs from similar projects, and informed by estimates of inflation and risks that have manifested in similar projects in the past. A number of tools are considered and used throughout the project lifecycle, as appropriate, to improve the accuracy of estimated costs for capital projects. These tools include external peer review, benchmarking and reference class forecasting. Deployment of these approaches can assist in mitigating the risks of optimism bias.

At various point in the process, sponsors for investment proposals indicate the confidence attaching to estimates by using a probabilistic cost forecast, with a clear distinction of the risk that is to be borne by the Sponsoring Agency, Accounting Officer and Approving Authority respectively. Cost ranges based on probabilities are optimal for approval at key approval gates.

External Peer Review

External Peer Review involves an objective external review of the investment proposal by an appropriately qualified expert. The extent of external peer review can range from an external expert checking one element of the project such as cost to a range of external experts working together to replicate the business case prepared for the proposal as part of a project challenge function to ensure that the assumptions, data and methodologies used in project appraisal and implementation are robust and independent.

Benchmarking

Benchmarking is the process of comparing projected or actual project cost and performance information against information from similar investment proposals. Two types of benchmarking can be undertaken – top down and bottom up. Different types of benchmarks can be used throughout the project lifecycle.

Top down benchmarking starts with an estimated cost for a proposal which is broken down into its components which are then compared with similar components in other projects. It is useful for strategic decision making and looking at the overall benefit of the project. Bottom up benchmarking uses information which references units or elements of the project such as labour costs, materials costing, etc. An existing design is need to provide a bottom up benchmark.

Top down and bottom up benchmarks can be used in a complementary way at later stages in the project lifecycle to quality assure cost estimates.

Reference Class Forecasting

Reference Class Forecasting is a methodology to estimate investment proposal costs which attempts to mitigate optimism bias. It predicts the outcome of a planned action based on actual outcomes in a reference class of similar interventions to that being forecast.

It involves identifying a reference class of past similar projects or programmes, establishing a probability distribution for the selected reference class for the parameter that is being forecast, and then comparing the specific investment proposal with the reference class distribution. It is increasingly used in estimating costs for large scale capital projects.

1.10 Economic Appraisal

All proposals are to be financially appraised. For proposals with an estimated capital cost less than €20 million, Approving Authorities should engage with Sponsoring Agencies as to whether an economic appraisal is required and the appropriate type of economic appraisal. This is set out in sector-specific guidance where relevant.

The economic appraisal assesses the desirability of a proposal from the societal perspective. This form of appraisal differs from financial appraisal because financial appraisal is generally done from the perspective of a particular stakeholder e.g. an investor, Sponsoring Agency or the Exchequer. Economic appraisal takes a wider view and considers non market impacts. The economic appraisal takes account of the level of deadweight and displacement associated with a proposal.

Sponsoring Agencies, Accounting Officers and Approving Authorities engage on the choice of appropriate appraisal methodology as part of the discussion on the appraisal plan during the Strategic Assessment. Choice and application of methodology are in line with sectoral guidance and with the Infrastructure Guidelines.

Wherever possible, cost benefit analysis is used. In some cases, this may not be possible or desirable and cost effectiveness or multi-criteria analysis can be used. In these instances, the analyses is rigorous, adheres to best practice and is supported by a deep evidence base. Where CBA is clearly not feasible, the Sponsoring Agency sets out the reasons why and the appropriateness of using another form of appraisal. Combinations of methodologies can often be the most appropriate way to robustly assess a project. MCA can be used effectively in conjunction with other methodologies such as CBA to give full consideration to the quantitative and qualitative elements of the project. For major project proposals, it is recommended that a CBA is carried out in all cases.

Separate guidance exists on a number of aspects of economic appraisal including:

- Standard analytical techniques
- Cost benefit analysis
- Technical parameters for use in economic appraisal

Where applicable, information related to climate mitigation is embedded within the proposed economic framework, such as in the CBA, of the investment proposal or within other methodologies (e.g. MCA). This considers the environmental and climate impacts of both capital and operating expenditure, and the results are discussed explicitly within the PBC by the Accounting Officer and Approving Authority at Approval Gate 1.

The results of the Economic Appraisal are presented through a set of standard Key Performance Indicators (KPIs) including:

- Economic Rate of Return (ERR)
- Economic Net Present Value (ENPV)
- Economic Benefit: Cost Ratio (EBCR)
- Economic Payback Period (EPP)

1.11 Risk and Uncertainty in the financial and economic appraisal

Project and programme appraisal involves forecasting the values of costs and benefits using the best information available. The estimated values of costs, benefits or delivery schedules may not materialise as expected due to uncertainty and risk. The risks of adverse conditions and the potential uncertainty associated with each option are identified and factored in to the decision making process.

1.11.1 Risk

Risk is initially identified in the Strategic Assessment and assessed in the Preliminary Business Case. The assessment of risk forms an integral part of the proposed intervention as it moves through the project lifecycle. There are a number of key steps which are to be taken in the Preliminary Business Case:

- Ensuring the data and assumptions underlying the estimation of costs and benefits are reliable and realistic
- Developing the identification of risks e.g. examining each variable to assess the likelihood of the risk materialising
- Using risk assessment techniques to assess the level of risk and the impact of risk on project performance including such techniques as:
 - Expected values
 - Monte Carlo analysis
- Devising a risk management strategy including measures to contain, avoid and mitigate risks, as appropriate
- Communicating the risk management strategy to relevant stakeholders

In all cases, Sponsoring Agencies seek an 'outside view' of proposals. This can help anticipate the likely risks and uncertainties that may arise. This will be most useful if informed by experience with a selection of similar projects already completed.

Long run environmental and climate risks are clearly identified and evaluated qualitatively and coherently. Information presented is distinctive analysis in terms of net benefits and cash flows volatility, ideally, in a separate section or subsection, so the Accounting Officer and Approving Authority can evaluate the strength of an investment proposal in terms of future climate scenarios and extreme events.

Where appraising programmes with a number of constituent projects, it is important to consider the risks associated with each constituent project individually, where constituent projects are interdependent, and the risks overall to the entire programme of works.

1.11.2 Uncertainty

The appraisal also includes detailed sensitivity analysis. Sensitivity testing shows the variability of potential outcomes based on changes in key assumptions such as costs, growth rates, demographics, etc. Sensitivity testing assesses how vulnerable delivery options are to unavoidable future uncertainties and tests the robustness of the ranking of options in the appraisal.

Scenarios are useful in considering how options may be affected by future uncertainty and are developed to illustrate the impact of changes in combination of inputs. In particular, it shows negative swings in combinations of outputs which could impact on project delivery and operations for the

different options being appraised. The inputs chosen and the extent of the change tested in the scenario analysis are informed by the most likely increases and decreases in input factors.

1.12 Procurement and Implementation

Evidence shows that early consideration of potential procurement strategies, approaches to construction and implementation management and issues relating to operation can lead to better outcomes in the event that a proposal proceeds.

The Preliminary Business Case give early consideration to:

- Options for procurement
- Implementation timescales
- Capacity of the Sponsoring Agency to deliver the project and the capacity of the industry to supply the project
- Arrangements for governance of the project
- Arrangements for commercial management of contracts

The Preliminary Business Case provides early stage options for implementation (including governance structures) and operation of investment proposals, should it progress to that stage.

1.13 Plan for Monitoring, Evaluating and Governance

1.13.1 Governance Plan

The Preliminary Business Case outlines a governance plan, identifying the Sponsoring Agency, Accounting Officer and Approving Authority for developing the proposal further and setting out, the key structures should the project proceed. The outline governance plan gives detailed consideration to project roles and responsibilities and how these would operate for different delivery options.

Where a programmatic approach is implemented, there is a need for increased emphasis on the governance plan within the Strategic Assessment/Preliminary Business Case. This is necessary to reflect the extensive and complex governance arrangements likely required to deliver the proposal successfully. Where multiple public bodies are likely to have inputs or contribute to a programme, the Governance arrangement clearly identifies a Sponsoring Agency who is responsible for overseeing the programme. This is based on financial or strategic considerations, and the Governance structure allows for the creation of a specialised governance arrangement to include the relevant stakeholders.

1.13.2 Monitoring and Evaluation

The Preliminary Business Case also sets out the appraisal plan for monitoring and evaluation of the proposal. The plan sets out the key performance indicators by which the impact of the proposal will be measured against its stated objectives. The Logic Path Model discussed in Box 1.2 is a useful tool for understanding the linkages between objectives, outputs and impacts and for determining appropriate key performance indicators.

The Strategic Assessment and Preliminary Business Case sets out how the project will be appraised including the proposed methodology for:

- Deriving a short-list from the long-list of options
- Financial appraisal
- Economic appraisal

- Sensitivity and scenario analysis
- Approach to pricing risk and factoring in optimism bias

The rationale for the choice of appraisal methodology is clearly set out. The appraisal plan details:

- Data to be used
- Assumptions underpinning the analysis to be conducted
- Technical parameters to be used in the analysis

The Appraisal Plan details the methodology to be used as part of the economic appraisal.

Where significant resources will be involved in developing the business case, this is outlined in the Appraisal Plan.

Table 1.2 highlights sectors for which different approaches can be considered. In all cases however, the specific approach is agreed with the Accounting Officer and Approving Authority.

Table 1.2 Economic Appraisal Methodologies and Investment Sectors

Sectors for which CBA <u>may</u> be more suitable:	Sectors for which CEA and/or MCA <u>may</u> be more suitable:
• Energy • Transport • Enterprise & Innovation • Health (new capacity) • Environmental infrastructure (including flood defence) • Agri-food • Communications • Tourism • Higher Education	• Housing* • Health (replacement and refurbishment) • Urban and regional development • Public Buildings • Culture • Schools • Further education *Including PSBA

Where a programme level approach is undertaken, the Preliminary Business Case establishes a monitoring and evaluation plan to account for assessments needed for both constituent projects and the overall programme. Where monitoring the implementation of a capital investment programme, this may require substantially more resources relative to a single capital investment project. The Preliminary Business Case reflects any additional resources required to adequately monitor a capital programmes implementation and evaluation.

This programme level monitoring plan also includes updates on the progress of individual constituent projects within the programme, and outlines where and how a constituent projects progress will impact on other constituent projects and the overall delivery of the programme. It is also important that an appraisal is undertaken on both the programme and its constituent projects to assess the individual benefits of each constituent project and the overall benefits as a programme of works.

1.14 Reviewing the Preliminary Business Case and Approval Gate 1

The Preliminary Business Case is sent to the Approving Authority for review. The Accounting Officer and Approving Authority check the completeness of the Preliminary Business Case in terms of the required elements set out in the sections above.

At this point in the project lifecycle, the proposal presents a clearly set out preferred option and approach to delivery, with evidence of preliminary design on which costings, economic and financial appraisals are based.

If the Accounting Officer and Approving Authority are satisfied that the Strategic Assessment and Preliminary Business Case meets the required standard, that there is a justification for the proposed project, it can approve the preferred option to proceed to Pre-tender - Project Design, Planning and Procurement Strategy. This is Approval in Principle and represents Approval Gate 1 in the lifecycle.

In some sectors, Approval in Principle may occur later in the project lifecycle, for instance, in the case of major transport infrastructure it can occur at the point of entering the statutory planning process.

Accordingly, the actions available to the Approving Authority at this point are:

- Abandon the proposal
- Seek refinement or further development of the Preliminary Business Case
- Approve the proposal in principle to proceed to the Pre-tender - Project Design, Planning and Procurement Strategy stage.

Approval Requirements for Major Projects

By the time a major project is considered by Government at Approval Gate 1, it has achieved a level of development that:

- Is clear on the objectives and benefits sought to be achieved by the project.
- Has a robust demand analysis with appropriate horizons, showing policy alignment (sectoral, planning, climate, social and economic).
- Documents an objective options appraisal with outline design of the viable options leading to a 'preferred solution' that supports a credible cost estimate to include:
 - Broad stakeholder and public engagement (including consideration of likely objection levels with the planning process)
 - An assessment of construction productivity requirements, such as modularity etc.
- Outlines the procurement strategy with reference to supply chain capacity and appetite, approach to risk management and achieving value for money.
- Outlines project team, leadership, resources and experience relevant to the project.

The requirements necessary for approval of a major projects proposal at Approval gate 1 is:

- EAP Process - the proposal is required to go through the standardized process of review by independent experts prior to government consideration.
- MPAG - Project proposals and external reviews are scrutinised by MPAG as a prerequisite to seeking Government consent for approval in principle to proceed with the proposal.
- Government Consent - Government consent must be sought at Approval Gate 1 to approve the investment proposal in principle