

Investment Lifecycle and High Value High Risk Guidelines

OVERVIEW AND GLOSSARY



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1. Introduction

1.1 What are the Investment Lifecycle and High Value High Risk Guidelines?

The process of planning, proposing and delivering investments is known as the investment lifecycle. The Investment Lifecycle and High Value High Risk (HVHR) Guidelines (the Guidelines) help shape proposals, inform investment decisions, monitor project delivery and track the benefits projects achieve throughout the investment lifecycle.

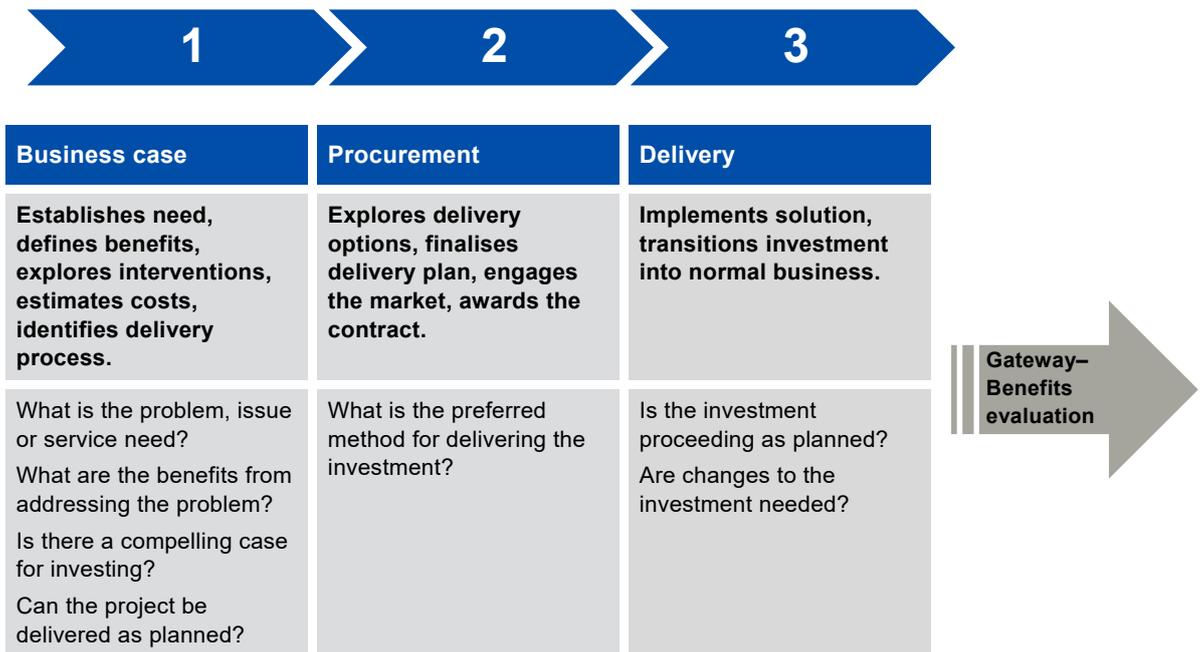
The Guidelines outline Government's processes for investment decision-making, and expectations for successfully delivering the intended benefits on time and on budget. Using the Guidelines helps to ensure that government investments provide maximum benefit to Victoria.

The Guidelines help ensure the Government:

- delivers investment objectives that are aligned with government and organisational priorities;
- clearly defines accountabilities and responsibilities for delivering projects and programs;
- realises the benefits it sets out to achieve by establishing clear and consistent processes for decision-making and delivery;
- provides a proportionate level of oversight of projects and programs in delivery; and
- captures and shares lessons and uses them to promote performance improvements.

The Guidelines are designed to help agencies improve the quality of analysis and information provided to Government. They do this by stepping agencies through the process from the investment concept through to the beneficial delivery of an investment.

Figure 1: The three stages of the investment management process

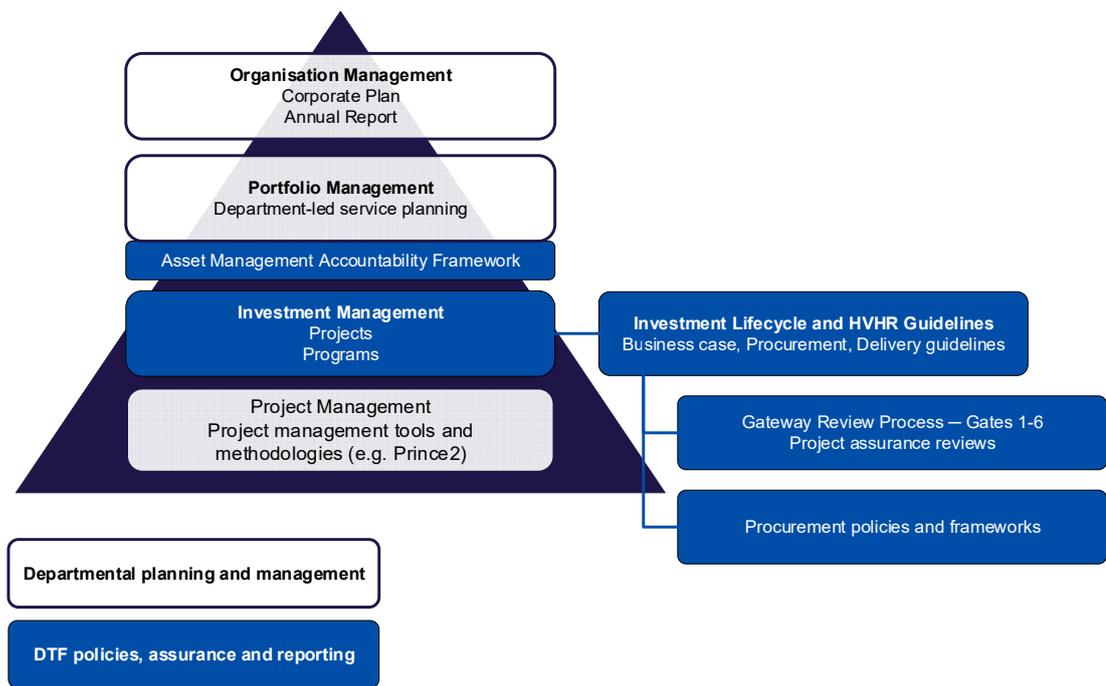


To assist the Government in this process, the information that government agencies provide throughout the lifecycle should constantly aspire to objectivity and the highest standards of probity when handling and presenting information and evidence.

The Guidelines are part of an integrated framework that includes government and departmental objectives (such as those in corporate plans and annual reports), and portfolio level service plans and asset management documents.

The Guidelines emphasise the need to align delivery objectives to government policy and organisational objectives and provide practical assistance to those proposing investment projects in Victoria.

Figure 2: Investment planning and management framework



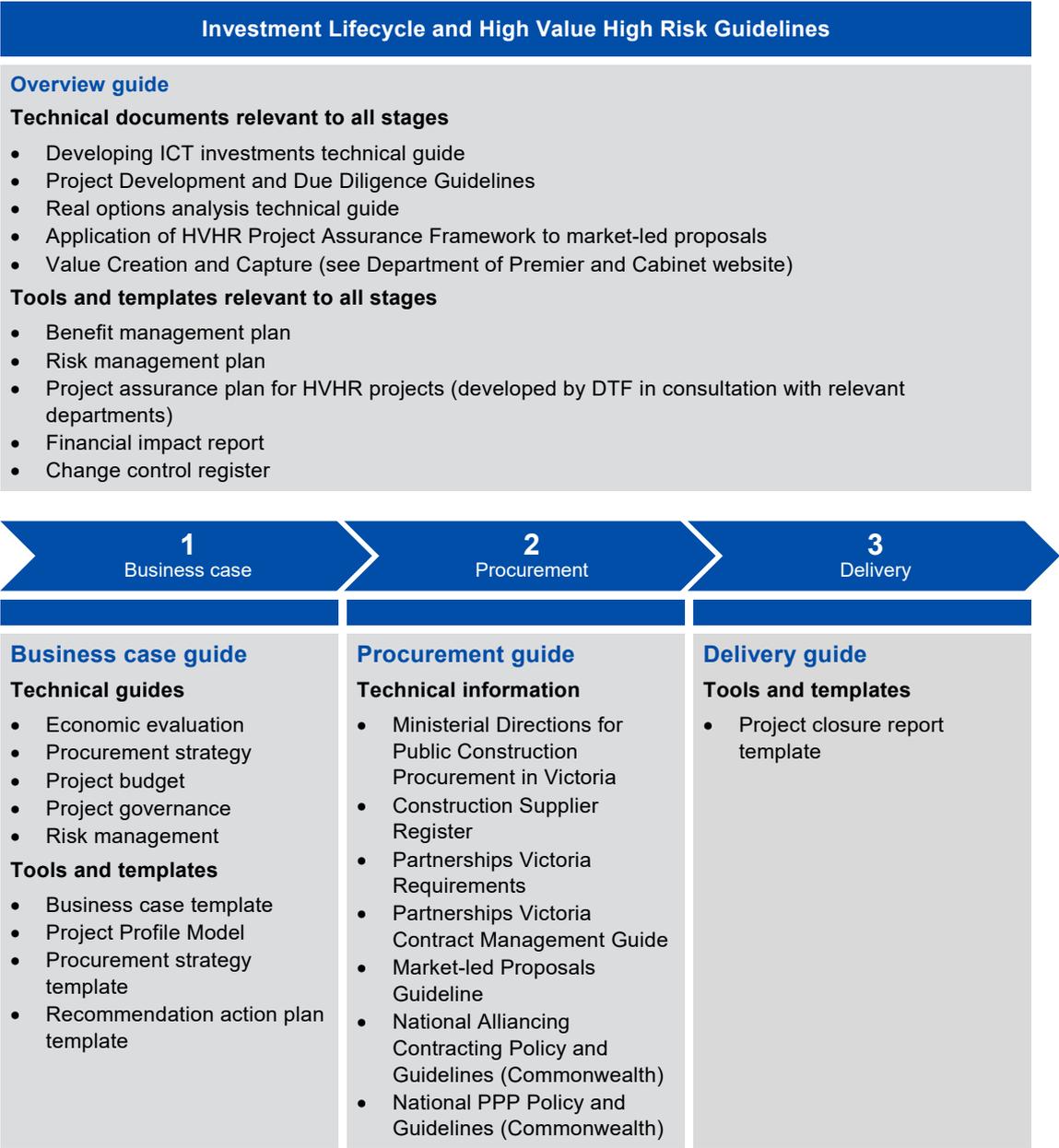
The Guidelines apply to all government departments, corporations, authorities and other bodies falling under the *Financial Management Act 1994*. The Guidelines are applicable to any investment proposal (asset or output), and support the development of business cases, which are mandatory for capital investments with a total estimated investment (TEI) of \$10 million or more. Further mandatory requirements exist for HVHR projects throughout the lifecycle of projects, which are outlined in the Guidelines.

1.2 Document structure of the Guidelines

The Guidelines are made up of several documents across three key lifecycle stages. A separate guide supports each stage. There are also further technical materials and tools and templates to support practitioners.

Figure 3 outlines the document structure of the Guidelines.

Figure 3: Investment Lifecycle and HVHR Guidelines – document structure



1.3 The recent history of Victorian investment guidelines

The Investment Evaluation Policy and Guidelines were introduced in 1996 to help ensure Victoria had the infrastructure in place to attract new business and contribute to a more productive economy.

The first business case guidelines incorporated documents covering strategic assessment, options analysis and business case development. This initiated a move towards consistent and better practice across a broad sector of government entities.

The 2008 Guidelines updated and extended the series to address tendering, implementation and benefit evaluation stages of the investment lifecycle. The Guidelines and supporting tools have evolved significantly since 2008.

In 2019 the Guidelines were updated to:

- merge the first two stages (Conceptualise and Prove) into one stage (Business case);
- remove Stage 5 (Realise) from the Guidelines;
- change the title of stages to better reflect the activities undertaken at each stage;
- reduce the number of documents to simplify navigation and strengthen guidance;
- reflect new best practice material including Project Development and Due Diligence, Value Creation and Capture; and
- introduce new requirements, including the attestation of the Senior Responsible Owner (SRO) in the business case submission process, submission of detailed project schedules with business cases, periodic financial impact reporting to be submitted to DTF quarterly (together with the Major Projects Performance Reporting), a change control register to be maintained throughout the project lifecycle and made available to steering committee members and submitted to DTF at key approval milestones, a project closure report to be completed at the point of handover, and strengthening the post-implementation review process.

1.4 Investment management versus project management

There are some important distinctions between investment management and project management.

Investment management focuses on the benefits government is buying to address the problem and on the delivery of those benefits. Investment management considers a proposal, program or project from the viewpoint of the investor rather than the project manager. The timescales are often longer given realising benefits from investment may not be achieved immediately after the project is delivered.

Project management focuses on managing the timelines and budget. Project management tools are commonly used to support investment management. Good project management is critical to the success of an investment and complements the investment management process.

Figure 4: The different focuses of investment management vs project management

Investment management	Project management
Is the logic for the planned investment clear?	Will the project be completed within budget?
Is there a sound business case to proceed?	Will it be delivered to its planned schedule?
Were the expected benefits delivered?	Were the expected products delivered?

1.5 Projects versus programs

Investment decisions are based on projects, or a program of projects. Projects are single investments with a discrete set of objectives. A project is typically stand-alone and may have its own dedicated resources including staffing for its delivery.

In some cases, there may be benefits to investing in a program, or a package of projects, that can be coordinated and delivered jointly, and where implementing the individual components achieves single delivery outcomes and benefits.

In both cases, projects and programs can be delivered in one or more phases, and can set out the expected benefits to be delivered by phase.

2. The investment assurance processes

2.1 Roles and responsibilities

Figure 5 outlines the relationships between roles of Government, government agencies, and central agencies.

Figure 5: Roles and responsibilities

	1 Business case	2 Procurement	3 Delivery
Departments	<p>Sets departmental objectives.</p> <p>Leads departmental planning including corporate plans, service planning and asset management.</p> <p>Prepares and delivers business cases.</p>	<p>Undertakes tender process.</p> <p>Updates Major Projects Performance Reporting (MPPR) and Quarterly Asset Investment Report (QAIR).</p>	<p>Delivers investment.</p> <p>Updates MPPR and QAIR.</p>
DTF/OPV	<p>Determines HVHR status of asset proposals through Project Profile Model.</p> <p>Assesses business cases with DPC and advises Government on investment decisions.</p> <p>Develops Project Assurance Plans (PAP) for HVHR investments.</p> <p>Ongoing involvement for HVHR investments.</p> <p>Assesses Gateway and Project Assurance Review (PAR) recommendation action plans (RAP) if required.</p> <p>With OPV undertakes:</p> <ul style="list-style-type: none"> • Gate 1 (investment case); • Gate 2 (delivery case) (typically combined reviews with 1); and • PAR, as required. 	<p>Ongoing involvement for HVHR investments.</p> <p>Monitors projects through QAIR.</p> <p>Considers RAP from Gates 2 and 3 and PAR.</p> <p>With OPV undertakes:</p> <ul style="list-style-type: none"> • Gate 3 (readiness for market); • Gate 4 (tender decision); and • PAR, as required. <p>OPV reports to Government on MPPR for HVHR projects.</p>	<p>Ongoing involvement for HVHR investments.</p> <p>Monitors projects through QAIR.</p> <p>Considers RAP from PAR.</p> <p>With OPV undertakes PAR as required.</p> <p>OPV reports to Government on MPPR for HVHR projects.</p>
DPC	<p>Assesses business cases with DTF and advises Government.</p> <p>Ongoing involvement for some investments.</p> <p>Undertakes assessment of Value Creation and Capture (VCC) documentation for required investments.</p>	<p>Ongoing involvement for HVHR investments.</p> <p>Ongoing involvement for VCC as required.</p>	<p>Ongoing involvement for HVHR investments.</p> <p>Ongoing involvement for VCC as required.</p>
Government	<p>Sets government priorities and context.</p> <p>Undertakes early filtering of asset proposals, if required.</p> <p>Approves investments and funding.</p>	<p>Considers MPPR and QAIR.</p> <p>Approves material changes to projects, if required.</p>	<p>Considers MPPR and QAIR.</p> <p>Approves material changes to projects, if required.</p>



2.2 Service planning

Departmental long-term planning and strategic asset management should be considered a prequel to investment management, where investment needs are first identified and articulated.

Departments should consider any investments in new or existing assets within the context of overarching service delivery planning. Primarily, service delivery planning allows departments to consider and prioritise their service delivery needs and investment proposals. It can provide critical context to guide the department's short and medium-term budget deliberations and resource allocation decisions.

The long-term planning process anticipates future demand for services and supporting infrastructure and assets. It also promotes early identification of potential service delivery risks and challenges. Real options (discussed in section 3.6) can also be considered at a portfolio level where uncertainties such as population growth and change or new technologies may affect a range of service delivery outcomes or investments.

New investments should align with a department's long-term vision, facilitate ongoing service delivery objectives, and enable service challenges and risks to be managed in a planned, timely and affordable way.

An investment may be only part of a response to a service need or challenge. Response options to service delivery challenges may include:

- demand management;
- changing regulations or policies;
- increasing productivity;
- changes to service delivery models;
- re-purposing, improving performance or optimising operations of existing assets; and
- asset responses.

Investors will need to align existing and proposed service delivery mechanisms and supporting infrastructure. Departments must also consider the impacts of investments on current and future asset management responsibilities and requirements.

2.3 Asset Management Accountability Framework

The Government's Asset Management Accountability Framework (AMAF) establishes the requirements for how government assets should be managed across their lifecycle to meet service delivery objectives.

The AMAF was released in February 2016 and is improving the way Victoria's public assets are planned, used and maintained. The AMAF is improving asset management practices across Government and helps agencies to:

- better understand the assets they hold and the purpose they serve;
- get the best value from asset investments by understanding where to direct funding;
- optimise the use and lifespan of existing assets; and
- better understand asset risks.

The AMAF strengthens accountability for asset management by requiring departmental secretaries and agency boards to attest each year to compliance with a set of mandatory requirements. These are consistent with international good practice. However, the framework provides flexibility for public sector agencies to tailor their asset management processes to their operational needs.

One of the key requirements of the AMAF is to develop an asset management strategy. This should identify an organisation's service delivery and asset needs over time and plan for how assets will be managed throughout their lifecycle, individually and collectively.

Asset management strategies should be key inputs to inform the case for a new investment.

2.4 The High Value High Risk Project Assurance Framework

The HVHR process has been updated in 2019 and comprises a series of project assurance checks and processes that provide greater scrutiny of major infrastructure and information and communications technology (ICT) investments.

To this end, the HVHR Framework seeks to:

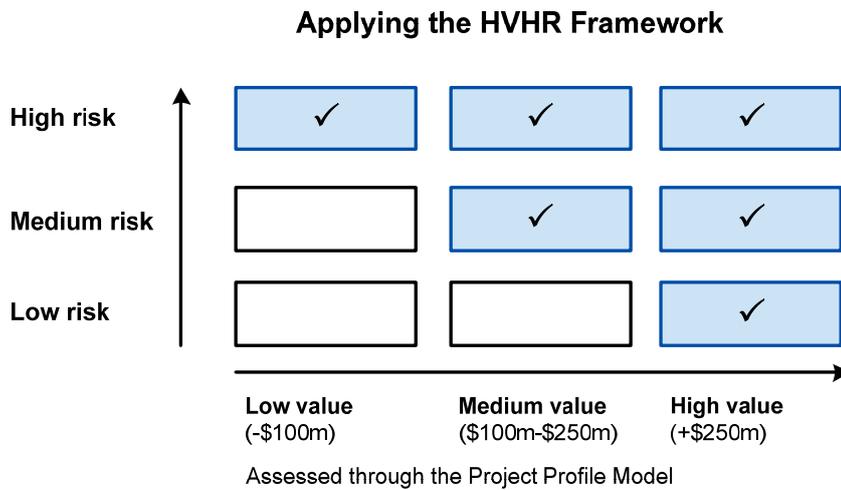
- increase the likelihood that projects will achieve their stated benefits and be delivered successfully, on time and on budget;
- verify that robust project planning and procurement processes have been followed to support quality project planning and procurement processes and documentation; and
- provide impartial and informed advice to Government on deliverability risks.

2.4.1 Which investments are HVHR?

A project will be classified HVHR if it is a budget-funded project that is:

- considered high risk using DTF's risk assessment tool, the Project Profile Model (PPM) (available on the DTF website);
- considered medium risk using the PPM and has a TEI of between \$100 million and \$250 million;
- considered low risk using the PPM, but has a TEI over \$250 million; or
- identified by Government as warranting the rigour applied to HVHR investments.

Figure 6: Determining the HVHR status of projects



All HVHR investments must:

- prepare a full business case;
- complete Gateway reviews and Project Assurance Reviews (where required);
- complete recommendation action plans (RAPs) for any red flag recommendations arising out of Gateway and Project Assurance Reviews; and
- provide quarterly updates as part of the QAIR and MPPR.

2.4.2 Heightened DTF involvement

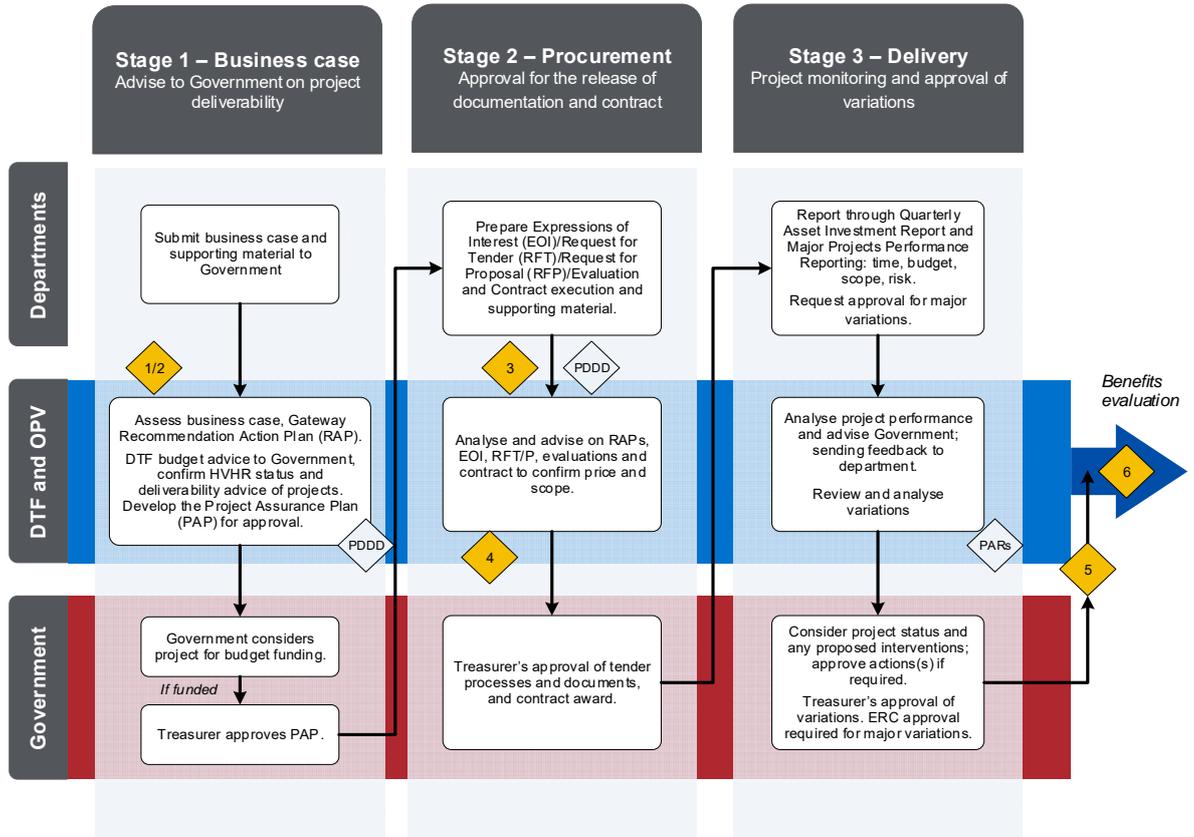
HVHR investments are subject to greater and ongoing DTF and Office of Projects Victoria (OPV) involvement across the investment lifecycle, with more rigorous assessment at each stage:

- project concept, feasibility and validation – business case development and assessments;
- project tendering – Expression Of Interest (EOI) (if the EOI is deemed by DTF to be high risk), Request For Tender (RFT), evaluation and contract award; and
- project implementation – schedule, budget, scope, governance and risk assessments.

The HVHR Project Assurance Framework in Figure 7 outlines the project assurance process for HVHR investments.

The level of DTF or OPV involvement will vary for each project. The Project Assurance Plan (PAP) requires DTF, in consultation with departments, to assess project risks at each stage and determine whether there is a case for exemption from certain project assurance functions or whether there are additional functions (above the standard set) that should apply.

Figure 7: HVHR project assurance



Gateway reviews, Project Assurance Reviews, and Project Development and Due Diligence

- Strategic assessment business case (often combined)
- Readiness for market
- Tender decision
- Readiness for service
- Benefits evaluation
- OPV Project Development and Due Diligence
- OPV Project Assurance Review

2.4.3 Project governance for HVHR projects

A Senior Responsible Owner (SRO) must be appointed for all HVHR projects and is the person responsible for the project or program. Appointed SROs have appropriate responsibility for overseeing the delivery of the project and transitioning the project into operation. This is also important where an asset is handed back from an agency to the department upon completion of the project or program, and where the delivery SRO is no longer responsible for monitoring and evaluating the benefits.

The department can identify an additional departmental SRO with an appropriate level of responsibility for delivery outcomes.

It is expected that departments will involve DTF in its business case preparation, for example through workshops to complete the investment logic map and Benefit Management Plan, and in any ongoing meetings, such as project steering committee meetings.

Further guidance is provided in the [Project Governance](#) technical guide.

2.4.4 Information and communications technology

The Guidelines support the development of robust business cases and delivery of projects with an ICT component. However, there are some specific considerations for ICT projects, as they are a special-case HVHR category.

Many ICT-enabled projects experience significant cost overruns and time delays. These issues are commonly driven by:

- underdeveloped business cases;
- poorly scoped projects, resulting in difficulties in estimating cost and insufficient specification of business requirements;
- poor project governance and project management;
- insufficient engagement with, and commitment from, stakeholders and users in developing or implementing technology solutions and business changes; and
- lack of contingency planning, identification of exit strategies or alternative options and failure to evaluate or exercise these options once a project has commenced.

Departments are required to quantify the total or full lifecycle cost and timelines years in advance. This may include deciding between commercial off-the-shelf (COTS) and custom-built products before products are tested, evaluated and compared.

However, traditional budgeting approaches place pressure on departments to make final decisions on ICT-enabled solutions before sufficient detail is available to reliably estimate costs and timelines.

The fast pace of change in the ICT market also makes estimating reliable total lifecycle cost difficult, as the detailed understanding and scoping of solutions has not been tested. Often agencies are only able to make informed decisions on technology solutions following detailed engagement with suppliers and as stages of an ICT project are being tested and implemented, rather than years in advance.

Refer to the [Developing ICT Investments](#) and the [Procure ICT Projects](#) technical guides for more information on addressing the additional issues and considerations for HVHR ICT projects.

2.4.5 Gateway review process

The Gateway review process delivers peer reviews to the project's SRO at key decision points throughout the investment lifecycle.

The review provides advice on current progress of an investment and assurance that it can proceed successfully to the next stage. The review team also provides an indication regarding its confidence as to the likelihood for successful delivery of the project or program to time, cost and quality parameters.

Gateway reviews should be considered complementary to internal assurance processes, and not a substitute or replacement. The review is not an 'audit' and should not be regarded as an alternative to appropriate project and program management. Each review is short and focused on the work that is complete at the time, and is performed shortly before key decisions are made to allow sufficient time for any recommendations to be implemented.

All Gateway reviews are conducted on a confidential basis for the SRO, except for Gate 6 (Benefits Evaluation) reviews, which can be made available to Government.

The Gateway confidentiality guideline is intended to ensure project owners and their teams can be frank and honest with reviewers without fear of consequence. However, the purpose of Gate 6 reviews is to evaluate the effectiveness of projects when delivered – a retrospective look at how the actual project benefits compare to those in the business case. Therefore, the confidentiality requirements for other Gates are not applied for Gate 6 reviews and the reports are presented to DTF.

The SRO has ownership of the Gateway review reports and is accountable for the implementation of any recommended remedial action and the progress of the program or project. It is important that the SRO is involved throughout the entire review process to ensure a collaborative, measured outcome.

2.4.6 Project Assurance Review

Project Assurance Reviews (PARs) are undertaken by a team of public and private sector reviewers and provide timely advice to Government, departments or agencies and DTF on a project or program's progress, objectives, governance and readiness. PARs are designed to improve delivery confidence, reduce 'scope creep' and allow a wider stakeholder engagement than other processes may allow.

PARs follow bespoke terms of reference developed by DTF, in consultation with the Office of Projects Victoria and individual project teams. PARs will usually be conducted shortly before a decision point or key milestone is reached or during construction when there is a long period between Gates 4 (Tender Decision) and 5 (Readiness for Service). PARs can also be requested by the Treasurer, the responsible minister, department or agency.

All HVHR ICT projects are required to complete PARs due to the unique risks associated with ICT projects.

2.5 Design advice and review

2.5.1 Office of the Victorian Government Architect

The Office of the Victorian Government Architect (OVGA) provides independent advice to Government on architecture and urban design, and champions quality of design in the built environment. The OVGA supports public sector clients to embed design quality in their projects from project inception and feasibility stage, including providing assistance with writing the brief, defining the best procurement route, and selecting the right design team to match the brief.

The OVGA also provides support throughout the design development process, offering design review. This is offered by the OVGA in three ways: through the Victorian Design Review Panel; through Design Quality Teams (DQT); and through internal peer review, undertaken by the OVGA team.

2.5.2 Victorian Design Review Panel

The Victorian Design Review Panel (VDRP) has been established by the OVGA to offer design advice at key stages of the design process through formal independent peer review undertaken by a panel of highly experienced design and development professionals, a specialist technical panel and Government design specialists. The VDRP, the panel members and the terms of reference have been endorsed by the Government. The aim of the VDRP is to raise the design quality of proposals, achieve best value and ensure that all opportunities are realised for all Victorians in public projects.

The VDRP offers design review of significant projects that are seeking or have funding from Government. It offers a structured design review process at the earliest stage of the project, during the feasibility and concept phase and then progressively as the design develops. The VDRP is directed and managed through the OVGA and is offered as a free service for Government clients and departments to support the delivery of high-quality projects. It is advisory only and undertaken in a confidential environment.

3. Issues to consider across stages

3.1 Investment development funding

For some projects, including HVHR projects, agencies may require assistance to fund proposal development.

Agencies may develop an investment development funding submission based on a preliminary business case outlining the investment case, with indicative costs (an order of magnitude estimate of the project funding for the indicative solution), tasks and staging of the proposal development.

To allow for more timely progression of proposal development, the Government may provide funding for development of a full business case or project development and due diligence (discussed further in section 3.3).

The project development funding process is intended to be flexible. It avoids the delays inherent in the annual budget process while retaining the option for Government to determine that the proposal should not progress, in which case the balance of funding would revert to Government.

3.2 Cost accuracy

The accuracy of cost estimates change as the project develops. Risk-adjusted costs are expected to be developed for different phases of the project's development. Figure 8 provides broad guidance on cost accuracy that might be expected through the project development.

Figure 8: Expected cost accuracy for projects at different stages

Stage	Processes	Estimate	Description and design accuracy
1. Business case (investment case)	Investment logic Problem, benefits identification, response options, indicative solutions	Order of magnitude estimate type -40% to +60%	This estimate is used for screening and is based on historical information. Order of magnitude estimates are developed when a quick estimate is needed and few details are available. It is typically developed to support 'what if' analyses. It is helpful for examining differences in high-level alternatives to see which are the most feasible. Because it is developed from limited data and in a short time, a rough order of magnitude analysis should never be considered a budget-quality cost estimate.
	Project scoping Project option appraisal, define project scope (and options for further consideration) with concept design	Concept estimate -30% to +60%	This estimate is based on concept design data. For less complex projects, this level of estimate accuracy is sufficient to robustly compare project options. Project definition is likely to be in the order of 1 per cent to 10 per cent complete. In many cases there will be benchmark project data that will considerably reduce uncertainty (increase accuracy). For example, if the project were a new school, then there is extensive industry benchmark data from previous school developments.

Stage	Processes	Estimate	Description and design accuracy
1. Business Case (delivery case)	Pre-feasibility Assessment of project options, initial risk and environmental assessment	Developed concept estimate -20% to +25%	For more complex projects, more design information would be expected to reasonably compare project options. Project design is likely to be in the order of 5 per cent to 15 per cent. These levels are probably more suitable for the 'one off', 'never been done before' type schemes.
	Feasibility Integration of risk assessment, preliminary design, functional model, whole of life costing and procurement strategy	Preliminary design estimate -15% to +25%	This estimate is used to provide the approved budget estimate for the project, i.e. the business case budget estimate. Project design is likely to be in the order of 10 per cent to 40 per cent. Costing at this stage is expected to be a robust, defensible, risk-adjusted estimate with an appropriate contingency allowance. The estimate should be based on a well-defined project scope, a breakdown of project costs (e.g. using elemental estimating techniques) supported by reference to relevant benchmark project examples, and adjusted for risk and uncertainty.
2. Procurement	Procurement Staged tender process including tender preparation and evaluation	Tender estimate -10% to +15%	Prior to going to tender, design specifications will be developed in more detail in order to obtain tender bids. The estimate at this stage is based on the specification and design development leading up to the tender process. Project design is likely to be in the order of 30 per cent to 70 per cent depending on the nature of the procurement approach.
	Negotiate contract price agreement	Tender price/ contract (excluding agency administration cost) -5% to +10%	The tender price or contract estimate is based on the agreed contract price following the tender process. Note that the project should maintain a contingency allowance that exceeds this contract sum in order to manage uncertainty and unallocated risks.

Proposals that are unable to comply with the indicated ranges of accuracy should explicitly identify the process adopted and the range of accuracy applicable. This may arise where a project is being fast-tracked for government consideration. In this event it is important to convey the uncertainty in the estimates that may, for example, reflect lack of clarity in scope or design.

Costs for the stages leading up to the business case phase of project development will necessarily have an element of uncertainty about them, but are useful to evaluate the investment and test the overall suitability and viability of a proposal.

A range of issues – including the asset class, the uniqueness of the project or facility, the level of building and construction activity in the market and the buoyancy of the broader economy – may influence the reliability of a proposal's cost estimate.

3.3 Project Development and Due Diligence (PDDD)

Due diligence activities are expected to be undertaken during project planning and development stages for State infrastructure projects. Detailed investigations of the site are essential to confirm its suitability for development and to define the design parameters in order to develop the scope of the project to put to Government and to inform procurement processes.

The maturity of these activities at the investment decision point will depend across projects and will increase as the project develops.

Refer to the [Project Development and Due Diligence](#) Guidelines for more information.

3.4 Value Creation and Capture Framework

The Value Creation and Capture (VCC) Framework aims to encourage government sponsors of capital investments, projects to develop public land, and precinct projects to maximise environmental, social and economic value of government investments.

Value creation refers to actions, activities or policies that deliver enhanced public value above and beyond what would ordinarily be achieved as a direct consequence of a government investment.

Value capture refers to actions, activities or policies by which government captures a portion of the incremental value created by a project.

The Framework requires projects to consider VCC opportunities that maximise public value beyond the core scope of the project, while also ensuring that the selected opportunities remain secondary to project need.

For some precincts, development of public land and capital investments, VCC outputs will be required at different stages of the investment lifecycle.

Further information on the Value Creation and Capture Framework is available on the Department of Premier and Cabinet's website at www.dpc.vic.gov.au/index.php/news-publications/value-creation-and-capture-framework.

3.5 **Climate Change Act 2017 and related climate change initiatives**

The Victorian Government's new *Climate Change Act 2017* commenced operation on 1 November 2017. The Act sets out a clear policy framework and a pathway to 2050 that is consistent with the Paris Agreement to keep global temperature rise below 2 degrees Celsius above pre-industrial levels. The Act sits alongside other key Victorian Government energy and climate change initiatives, including Victoria's Climate Change Framework, Victoria's Climate Change Adaptation Plan 2017-2020 and Victoria's Renewable Energy Action Plan.

There are two primary aspects of these climate change initiatives that agencies should consider when developing infrastructure investments:

- greenhouse gas emission reduction: the *Climate Change Act 2017* sets a target of net zero greenhouse gas emissions by 2050. When delivering new, or renewing/replacing existing, infrastructure, Government should think about actions it can take to reduce Victoria's emissions footprint; and
- climate change adaptation: climate change is a key uncertainty that can impact our investments. Victoria is already experiencing the impacts of climate change, with increases to average temperature and decreases to average rainfall impacting all parts of the State. When developing and delivering investment proposals, agencies should consider whether service delivery functions are vulnerable to changing climatic conditions. Practitioners should also contemplate strategies or actions that could be taken to prepare for, and adapt to, these changes, and increase the resilience of our service delivery capability and supporting assets.

Further information on the Victorian Government's climate change legislation, policies and initiatives is available on the Department of Environment, Land, Water and Planning's website at www.climatechange.vic.gov.au/

3.6 **Managing risks**

Risks are defined in ISO 31000 as the effect of uncertainty on objectives, whether positive or negative. Risk management is the identification, assessment, and prioritisation of risks, followed by coordinated and economical application of resources to minimise, monitor and control the probability and/or impact of unfortunate event or to maximise the realisation of opportunities.

From a project management perspective, risk management seeks to identify, prevent, contain and reduce negative impacts and maximise opportunities and positive outcomes in the interests of projects and stakeholders.

Risk management applies to all projects and should be viewed as an ongoing process throughout a project that begins at Stage 1: Business case and continues throughout its entire lifecycle.

3.7 Uncertainties

Project uncertainties can have a profound impact on an investment strategy. An investment approach that is considered appropriate under one set of market conditions may become infeasible or undeliverable if circumstances change.

Factors that can impact our decision to commit to, and deliver, a preferred investment strategy are called uncertainties.

Uncertainties differ from risks in that, if they have not been considered in framing a proposal, they cannot be effectively mitigated or ameliorated after committing to the project. They can impact our ability to achieve the intended investment benefits, and therefore influence the preferred investment strategy.

All projects should consider the type and degree to which uncertainties may affect a project throughout its lifecycle. Examples of uncertainties are listed in Figure 9 below.

Figure 9: Examples of types of uncertainties

Drivers of uncertainty	Examples
Demographic change	Population growth and decline, ageing population, increasing multi-culturalism, changing levels of inequality, changing workforce.
Economic change	Changes in global economic conditions, fluctuations in Australian dollar, economic structure changes, industry sector trends, labour movement, changing socio-economic profiles of communities.
Environmental	Climate change, increased frequency of extreme weather, changes to water availability, drive for sustainability, changing land use.
Government, policy, legislative and legal	Changes to national and State policy agenda and priorities, changes to free trade agreements, asset failure risk.
Technological	Evolving information and communication technology, shift from face-to-face to online service provision, autonomous vehicles, 3D printing.

3.7.1 Flexible approaches to dealing with uncertainty

Real options are one approach to managing uncertainty. They enable investors to recognise the value of flexibility in project design and to incorporate flexible approaches to better manage projects that are significantly impacted by uncertainty.

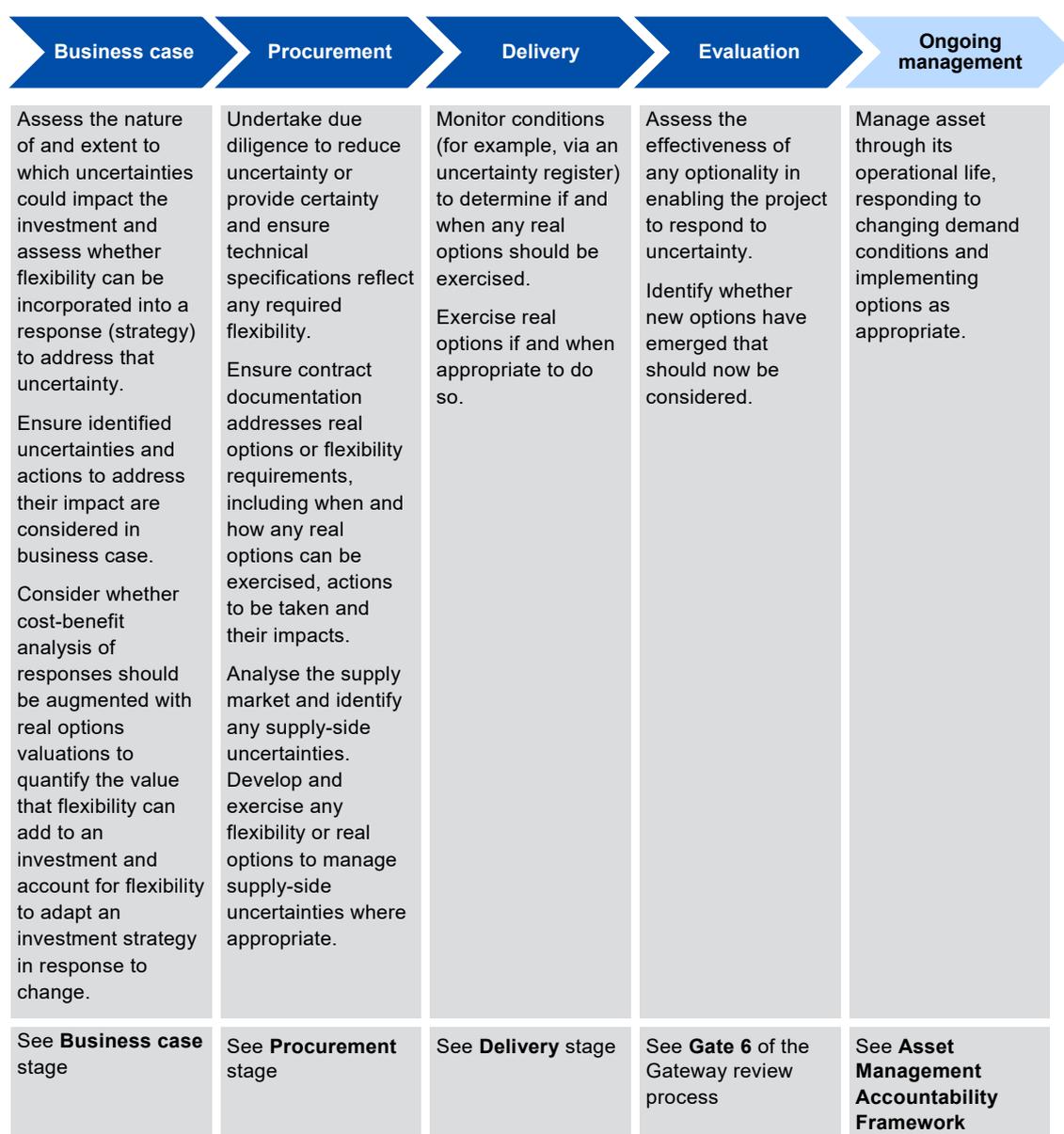
Real options are the right, but not the obligation, for an investor to undertake certain actions in the future to alter a project pathway (scope) when uncertainty impacts current project scope. They are called 'real' options because they generally relate to physical assets. Real options are distinguished from 'choices' or 'alternatives' by being defined in advance (often via a contract). Real options analysis is an investment evaluation and decision-making framework.

Key elements of a real option include:

- **option costs:** costs associated with creating the flexibility to change the investment strategy and then maintaining effective access to the option;
- **exercise cost:** the cost to exercise the option;
- **life of an option:** the time until the option is no longer valid or available; and
- **exercise trigger (or exercise signal):** the conditions that define or signal when a real option should be exercised.

Actions that could be taken at different stages of a project’s lifecycle are set out in Figure 10.

Figure 10: Actions that could be taken to manage uncertainties



3.8 Resourcing

The Guidelines emphasise the importance of considering broad, whole of government or cross-agency approaches where appropriate to ensure that common problems are being addressed in a coordinated and efficient way. However, lead responsibilities and accountabilities must be clearly set out and not assumed.

Competencies and skills required through investment management include capabilities in:

- high-level roles such as public policy development, long-term planning (e.g. transport and urban design) and governance;
- broad-based areas surrounding commercial and legal acumen, service delivery and stakeholder management, and the integration of these aspects in the policy context; and
- more specific application of technical skills in areas such as contract development and management, engineering and design, financial analysis, probity adviser, project costing, project and risk management and communications.

All these skills are required to varying degrees in different stages to ensure the investment achieves the optimal value-for-money outcome in the public interest. The public interest is also served by balancing the requirement for in-house skill development and knowledge management with the efficiency of engaging appropriate private sector expertise. In this context it is worth noting that government cannot transfer the risks surrounding protecting the public interest.

In order to ensure that lifecycle guidelines outputs are developed to high standards, organisations should ensure staff are appropriately skilled at each step of the investment management process.

4. Glossary

Appraisal: The process of defining objectives, examining options and weighing up the costs, benefits, risks and uncertainties of those options before a decision is made.

Asset Management Accountability Framework: Establishes the asset management requirements for government departments and agencies. It is premised on a non-prescriptive, devolved accountability model of asset management.

Asset option: A means of satisfying service needs by investing in existing assets or creating new assets.

Assets: Any physical asset that must be acquired to enable the identified changes to occur. Examples of these are hospitals, pipelines, plants or computer systems.

Base case: The base case is a realistic option that involves the minimum expenditure to sustain existing standards of service delivery or to achieve previously agreed service standards. Therefore, the base case does not always mean 'do nothing'; rather, it is the minimum essential expenditure option (e.g. carrying out obligatory works to meet safety and health regulations).

Benefit: The value that resolving the problem will provide to the organisation or its customers and consequently to government. Benefits are normally a positive consequence of responding to the identified problem. Each claimed benefit must be supported by key performance indicators (KPIs) that demonstrate the specific contribution of an investment to the benefits sought by the organisation. The practical application of this can be seen in the Benefit Framework.

Benefit management plan: A short document that specifies the benefits an investment will need to deliver to successfully address an identified problem. It includes the measures to be used as evidence that the benefits have been delivered. These measures are initially used to select the most suitable response to the problem. The benefit management plan also defines the dates the benefits are expected to be delivered, who is responsible for their delivery and how they will be reported.

Capital expenditure: Expenditure involved in creating or upgrading assets.

Cost: An expense incurred in the production of outputs.

Cost-benefit analysis: A technique that can express in a comparable (monetary) way the net effect of the costs and benefits associated with an investment proposal.

Demand management: A management technique used to identify and control demand for services.

Depreciation: The allocation of the cost of an asset over the years of its useful life.

Disposal: The process in which an asset is disposed of or decommissioned – resulting in removal from an entity's balance sheet.

Dis-benefit: A negative impact that might occur as a direct consequence of implementing a particular solution.

Economic cost (or opportunity cost): The value of the most valuable of alternative uses.

Enabling asset: Any physical asset that must be built or purchased for the identified changes to occur. This may be, for example, a hospital, a pipeline or an ICT system.

Evaluation: The process of defining objectives, examining options and weighing up the costs and benefits before a decision is made to proceed.

Financial analysis: An investment evaluation technique that is confined to the cash flow implications of alternative options and is undertaken from the perspective of the individual department or agency or government as a whole.

Full business case: A document that forms the basis of advice for executive decision-making for an investment. It is a documented proposal to meet a clearly established service requirement and the proposed delivery approach.

Gateway review process: A review of a procurement project or a program of works/activities carried out at critical points of a project/program's development by a team of experienced people, independent of the project team. These critical points are known as Gateways or Gates. There are six Gateways during the lifecycle of a project and reoccurring program reviews for programs of works/activities.

High Value High Risk: A project will be classified as HVHR if it is a budget-funded project that is:

- considered high risk using an updated PPM;
- considered medium risk using an updated PPM and has a TEI of between \$100 million and \$250 million;
- considered low risk using an updated PPM, but has a TEI over \$250 million; or
- identified by Government as warranting the rigour applied to HVHR investments.

Impact: The cost, benefit or risk (either financial or socioeconomic) arising from an investment option.

Investment: The commitment of the resources of an organisation with the expectation of receiving a benefit.

Investment decision-maker's checklist: A tool that assists in shaping a robust business case. It is also used by DTF and DPC to assess business cases.

Investment logic map: A simple single-page depiction of the logic that underpins an investment. It provides the core focus for an investment and is modified to reflect any changes to the investment logic throughout its lifecycle.

Investor: The person who has an identified business problem (or opportunity), will be responsible for making (or advocating) a decision to investment, and who will be responsible for delivering the expected benefits. This person is often referred to as the 'Senior Responsible Owner'.

Long-term planning: Outlines an agency's long-term strategic vision and objectives for service delivery. It considers evolving demand and supply inputs for services and impacts of change on service delivery requirements. It also outlines the agency's preferred responses to manage and adapt to change.

Key performance indicator (KPI): An indicator that, with its associated measures and targets, will provide evidence that expected benefits have been delivered. The KPI selection criteria is used to determine the most suitable KPIs.

New asset option: Acquisition, transfer or commissioning of an existing asset, or creation of a new asset.

Non-asset option: Under this option, service capacity is met without creating additional assets. This could be done through reconfiguration of the way the services are provided (contracting out, increased use of existing or private assets, or reduction of demand through selective targeting).

Optimism bias: This describes the tendency for base capital and operating costs, works duration and risks to be systematically underestimated during the business case development phase. This results in project budgets based on an optimistic outcome rather than on a rational weighting of gains, losses and the considered likelihood that adverse hazard events may impact on the project.

Preliminary business case: A precursor to the full business case applying to some projects. The preliminary business case focuses on the investment rationale and can be a useful way for Government to determine whether the investment is a priority and provide a high-level cost estimate.

Problem: The reason a new investment needs to be considered. It is effectively the 'call to action' for the investment. A lost opportunity or service need is considered to be a problem. Each problem statement is written in plain English and must communicate both what is broken or needed, and associated implications. In other words, the 'problem' should include both cause and effect.

Project alliancing: A form of procurement where the State or another government entity collaborates with one or more service providers to share the risks and responsibilities in delivering the capital phase of a project. It seeks to provide better value for money and improved project outcomes through a more integrated approach between the public and private sectors in the delivery of infrastructure. Project alliancing should generally only be considered in the delivery of complex and high-risk infrastructure projects, where risks are unpredictable and best managed collectively.

Project Development and Due Diligence: Due diligence planning and development activities including site investigation and documentation, analysis and research, production of design and development proposals and reports of sufficient quality, breadth and depth to clearly define project scope, risks and critical requirements to facilitate detailed design, effective procurement, delivery and successful operation.

Project lifecycle: The stages of an asset between the identification of the need and the delivery and handover of an initiative.

Project option: These explore how the preferred response option might be implemented. They might be business changes that could be made or assets that could be acquired as a way of delivering the benefits expected from an investment (as specified in a benefit management plan). These must be consistent with the identified response option.

Project options analysis: Aims to explore a range of project options consistent with the preferred response option that will deliver the best result and provide a shortlist for detailed evaluation in the business case. A process in which a range of project options (both asset and non-asset) are evaluated. The most cost-effective options are then selected for more detailed evaluation through a business case.

Project Profile Model (PPM): DTF's risk-based matrix used to inform whether or not a project should be subject to the High Value High Risk Project Assurance Framework.

Project solution: The set of business changes and assets (project or program) that have been identified as the best option for responding to the identified problem based on value for money and the benefits that will be delivered.

Proposal: An idea for a policy, program or project that is under development and appraisal.

Real options: The right, but not the obligation, for an investor to undertake certain actions in the future to alter a project pathway (scope) when uncertainty impacts current project scope.

Recommendation action plan: Enables red flag recommendations from the Gateway report to be presented in a separate document for distribution to the Treasurer (via DTF), thus maintaining the overall confidentiality of the Gateway report. The RAP is used by projects to report risk mitigation responses to any red rated individual recommendations without disclosing the overall assessment of the project and all recommendations.

Residual value: The net value applied to the asset at the end of the investment lifecycle or evaluation period. This may result in either a positive or a negative value.

Resources: Labour, materials and other inputs used to produce outputs.

Response option: Comprises either one or a mix of strategic interventions.

Response option development: Aims to identify and explore a range of possible strategic interventions to the problem and determine the response option best suited to the need.

Revenue: Inflows or other enhancements, or savings in outflows, of service potential or future economic benefits in the form of increases in assets or reductions in liabilities of the entity (other than those relating to contributions by owners) that result in an increase in equity during the reporting period.

Risk: Risk is often characterised by reference to potential events, consequences or a combination of these, and how they can affect the successful delivery of the benefits expected of the investment. Risk is often expressed in terms of a combination of the consequences of an event or a change in circumstances, and the associated likelihood of occurrence.

Scenario analysis: Scenario analysis is a procedure for providing the decision-maker with some information about the effect of risks and uncertainties on an investment. In a scenario analysis, a set of critical parameters and assumptions that define a particular scenario are identified and varied to reflect a best-case and a worst-case scenario.

Senior Responsible Owner (or project sponsor): The SRO is has accountability and responsibility for a project. The SRO is the effective link between the organisation's senior executive body and the management of a project. The sponsor is also a core member of the project steering committee, usually the Chair. In addition to being an experienced executive well versed in the details of organisational stakeholder and client requirements and relationships, the sponsor needs to have experience in project management.

Social benefit: The estimated direct increase in the welfare of society from an economic action. It is the sum of the benefit to the agent performing the action, plus the benefit accruing to society as a result of the action.

Social cost: The estimated direct total cost to society of an economic activity. It is the sum of the opportunity costs of the resources used by the agent carrying out the activity, plus any additional costs imposed on society from the activity.

Strategic intervention: The high-level strategic action that could be taken as a response to the identified problem. A valid strategic intervention must have the potential to deliver some or all of the identified KPIs and their target measures. To ensure it is sufficiently high level, its implementation must also allow for more than one possible solution.

Uncertainties: External factors or changing conditions that can impact the decision to commit to and deliver the intended investment outcomes. They differ from risks in that they are beyond the investor's control to mitigate or manage to limit their impacts on the investment. Instead, Government may need to modify the investment strategy to proactively respond to the changing conditions.

Value for money: is a balanced benefit measure covering quality levels, performance standards, risk exposure, other policy effects and other considerations such as social and environmental impacts as well as cost. For capital assets, value for money should be assessed on a 'whole of life' or 'total cost of ownership' basis.

Value management: A technique that seeks to achieve optimum value for money using a systematic review process. The essence of value management is a methodical study of all parts of the product or system to ensure that essential functional requirements are achieved at the lowest total cost. Value management examines the functions required from a product, functions actually performed, and roles of the product's components in achieving the required level of performance. Creative alternatives that will provide the desired functions better or at a lower cost can also be explored.

Weighting and scoring: A technique that assigns weights to criteria and then scores options in terms of how well they perform against those weighted criteria. Weighted scores are summed and then used to rank options.

Whole of life costs: Whole of life costs are all additional costs required to achieve the investment outcomes over the life of the asset or service delivery. This includes all costs (and revenues) needed to design, develop (construct and/or install) and operate any new asset, along with the costs and revenues associated with any service provision. All costs can be discounted to a net present value to enable fair financial comparison of one investment proposition with another. A whole of life cost appraisal is especially important in ensuring project teams consider the long-term operational costs of a project and consequently provide a new capital asset (if required), which optimises these investment outcomes.

