

Project Development and Due Diligence Guidelines

December 2019

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ISBN 978-1-925551-52-5
Published December 2019

If you would like to receive this publication in an accessible format please email information@dtf.vic.gov.au

This document is also available in Word and PDF format at dtf.vic.gov.au

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1. Introduction

An ambitious and diverse infrastructure program has been placed at the centre of Victoria's capital investment agenda. This program aims to give Victoria the world-class infrastructure and services needed to drive continued economic growth, cater for a growing population and secure the State's future prosperity.

The effective, timely and cost-efficient delivery of this program is critical, and its unprecedented magnitude requires a strong focus on ensuring that all major projects are planned, designed and executed carefully and appropriately from the outset. Many of the major projects identified for Victoria's infrastructure program are complex in their engineering scope and interface with other new projects and existing infrastructure and services, posing significant execution challenges.

Project development and due diligence (PDDD) encompasses the planning, engineering and design, exploration, survey, site investigation, environmental assessments, analysis and research, production of design and development proposals, and the development of reports of sufficient quality, breadth and depth to clearly define project scope, risks and critical requirements at various stages of the project lifecycle.

Through project assurance reviews, the Department of Treasury and Finance (DTF) and the Office of Projects Victoria (OPV) have observed that projects lacking in sufficient PDDD effort can result in a range of delivery issues, such as construction site issues, interface problems, operational deficiencies, start-up delays, and significant budget and schedule overruns.

By undertaking relevant PDDD activities at each stage of the project lifecycle, such issues can be identified and quantified as risks, earlier in the project lifecycle and appropriate mitigation or management strategies developed. This process is known in other industry sectors as Front-End Engineering Design (FEED) or Front-End Loading (FEL) and has proven successful in providing increased certainty of outcomes and allowance for better investment decisions, earlier in the project lifecycle.

An appropriate PDDD undertaking is a strong indicator of a project's likely success and is essential to optimising the quality and performance of a project, mitigating risk and capturing value.

2. Purpose

This technical supplement provides a guide for project proponents on how to integrate PDDD activities into Victoria's High Value High Risk Framework and the Gateway Review Process. The supplement recommends various activities to be undertaken during the project planning and development stages of Victorian Government sponsored infrastructure projects.

For proposed infrastructure projects, detailed investigations of the site to confirm its suitability for development, conducting appropriate levels of due diligence and defining clear design parameters are essential to develop the scope of the project. This ensures that a well-planned and well-designed project is presented to the Victorian Government and that procurement processes for the project are based on accurate and appropriate information. Of course, PDDD activities can apply to non-infrastructure projects as well.

It is intended that, where appropriate, the extent of completed and ongoing PDDD activity be articulated by the SRO at various stages, through the relevant existing Investment Lifecycle Guideline reports and templates, which have been updated to incorporate PDDD. These documents will be assessed in accordance with existing guidelines by independent Gateway review teams to form a view on the effectiveness of the ongoing development and active integration of due diligence activities of the project under review.

It is important to note that the PDDD process is not designed to add new activities to either the project or the investment lifecycle, but to provide guidance as to which activities should be considered by which stage of the project to increase the chances of project success. In the final project plan the project proponent will select the appropriate level of PDDD and across which elements.

3. Context

3.1 Victorian Government processes

3.1.1 Gateway Review Process

The Gateway Review Process (GRP) is administered by DTF and examines projects and programs at key decision points in the project lifecycle. The process uses an independent external reviewer team to provide timely and confidential advice to the Project Owner (the entity delivering the project) about the current progress of the project or program, and a rating of the risk of proceeding to the next Gate. Projects must proceed through six review Gates as they advance from initial concept through delivery and up to benefits realisation.

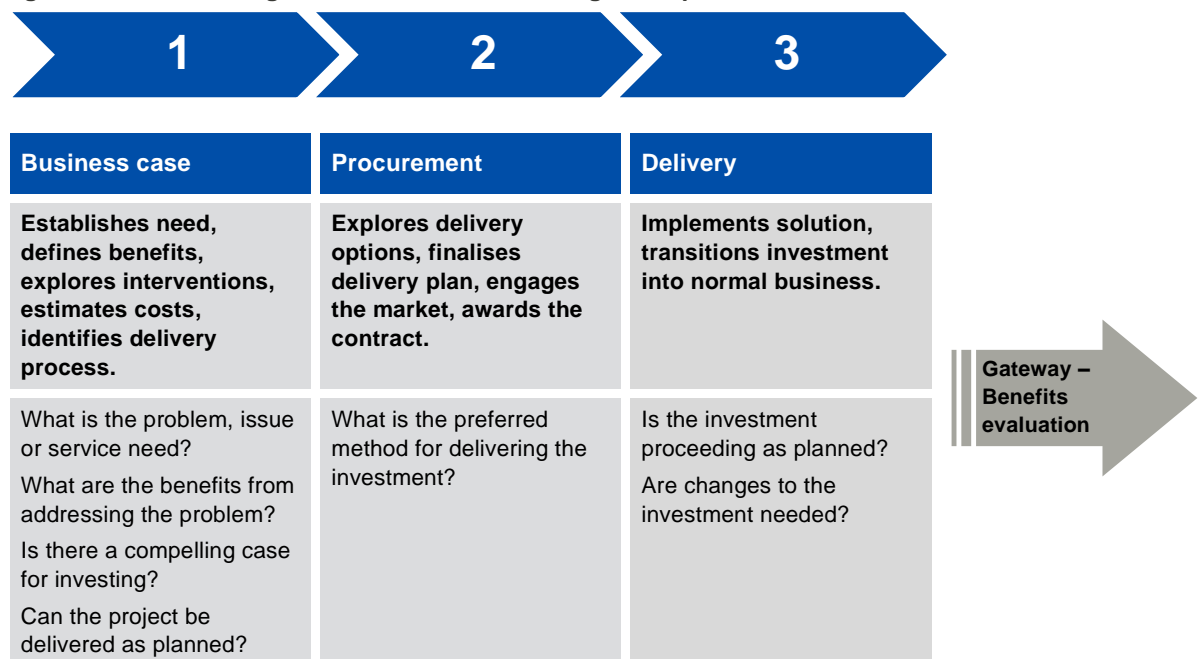
Figure 1: The Gateway Review Process



3.1.2 Investment Lifecycle Guidelines

DTF provides Investment Lifecycle Guidelines (ILG) to assist anyone developing investment projects in Victoria. These are designed to shape proposals, inform investment decisions, monitor project delivery and track the benefits of investments. The Guidelines cover the three phases of the investment lifecycle, as shown in Figure 2 below.

Figure 2: The three stages of the investment management process



This PDDD guideline recommends the PDDD activities to be undertaken at each stage of the ILG, which align with each stage of the GRP as outlined in section 3.1.3.

3.1.3 Alignment between GRP and ILG

The alignment of the Gateway Review Process with the ILG stages is shown below.

ILG phase	Stage 1 Business Case		Stage 2 Procurement		Stage 3 Delivery	
	Gate 1 Concept and feasibility	Gate 2 Business case	Gate 3 Readiness for market	Gate 4 Tender decision	Gate 5 Readiness for service	Gate 6 Benefits evaluation
Activities	<p>Project is formally initiated.</p> <p>Identifying and outlining the need or problem.</p> <p>Recommending the potential strategic assessment to resolve the problem.</p> <p>Development of project to a sufficient level that defines the project's objectives, high level deliverables, schedule, cost and benefits.</p>	<p>Developing and analysing a range of project options that will be discussed with key stakeholders and selecting the preferred option for further development.</p> <p>Developing a project brief that contains details of the preferred option including project scope, program/ schedule, preliminary cost estimate and risks.</p> <p>Preparing a business case with the necessary level of details and quality to provide a compelling case for the project</p> <p>Submitting the business case for government consideration.</p>	<p>Preparing a procurement plan, engaging the market and identifying the preferred procurement option.</p> <p>Finalising the development of technical specifications and contract documents.</p>	<p>The public interface commences with the Expression of Interest (EOI) or procurement notice (Request for Tender) and the procurement phase ends with contract award and execution. 'Contract award' refers to the process of formally notifying a tenderer of their selection as the supplier for a particular contract, following the selection process.</p>	<p>Executing the project (or implementing the solution), then making the transition to normal business.</p> <p>Ensuring the project is delivered to the agreed scope, schedule/ program, budget and functional requirements as defined in the project brief and business case.</p> <p>Managing any defects.</p> <p>Recording lessons learned.</p>	<p>Conducting a project performance review by tracking and measuring the project's success and benefits.</p> <p>Preparing a project closure report which identifies and records any residual risks.</p>

3.1.4 High Value High Risk Framework

The High Value High Risk (HVHR) Framework comprises a series of assurance checks and processes for HVHR projects to increase the likelihood that they will achieve their stated benefits and be delivered successfully, on time and to budget. The HVHR Framework seeks to:

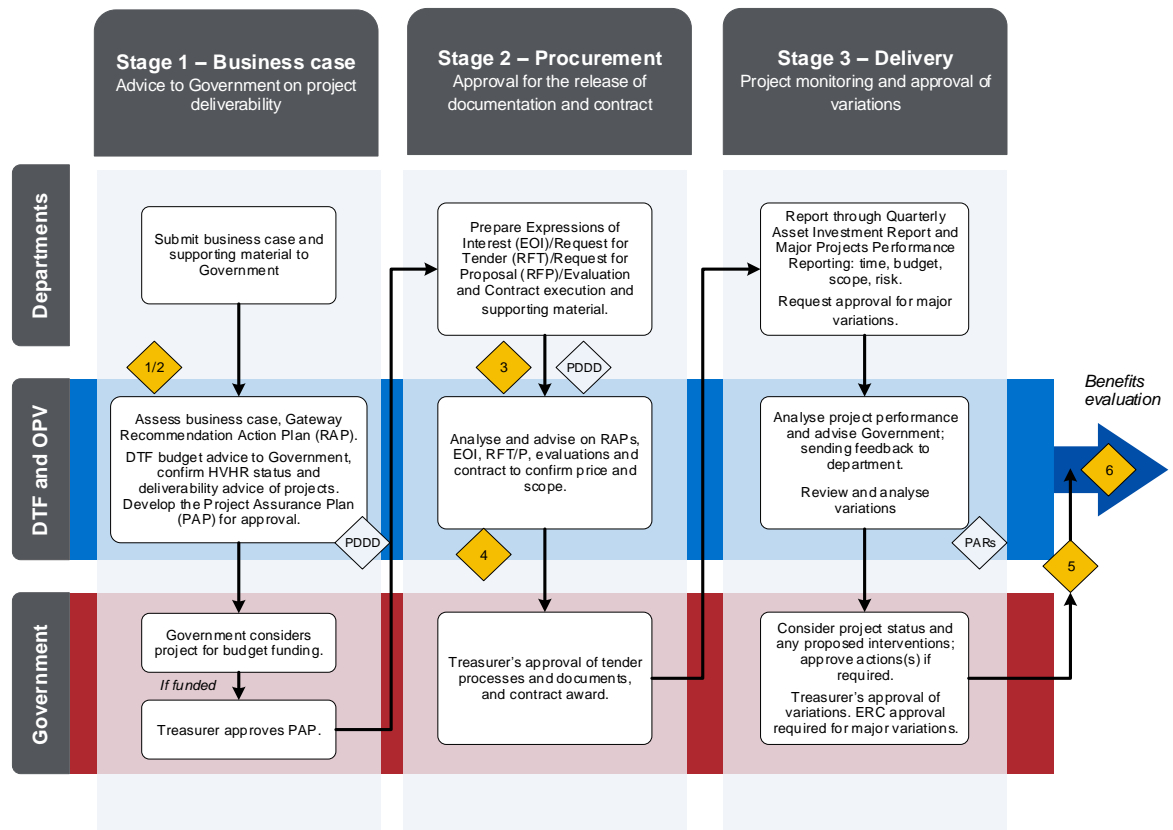
- verify that robust project planning and procurement processes have been followed to support quality project planning and procurement processes and documentation; and
- provide impartial and informed advice to government on deliverability risks.

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








- considered high risk using DTF's risk assessment tool, the Project Profile Model (PPM);
- considered medium risk using the PPM and has a total estimated investment (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.

All HVHR projects are required to complete Gateway Reviews in accordance with their Project Assurance Plans. HVHR projects are assessed against the ILGs and are subject to additional assurance reviews, extra scrutiny and ongoing involvement by the Treasurer and DTF. Figure 3 outlines the HVHR Project Assurance Framework.

Figure 3: The HVHR Project Assurance Framework



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

3.2 Role of project development and due diligence

PDDD plays a critical role in project development and delivery through:

- orderly and planned information gathering to test and qualify assumptions, risks and issues;
- eliciting specific technical and non-technical project requirements;
- early identification of critical information and technical decision points;
- extending considerations beyond the core delivery focus to include technical, contextual, planning and environmental matters;
- seeking to balance critical project decisions between State and contractors;
- informed risk shedding decisions; and
- structured consideration of critical success elements.

This process ultimately enables the risks of an investment to be identified, understood and more accurately quantified at each stage of the project.

No two projects are exactly alike and the extent of PDDD activities for each project will vary to reflect differences in the project's scope, stage, the nature and extent of existing conditions or infrastructure, environmental conditions (including physical and social attributes), stakeholder influence and commercial arrangements, amongst others.

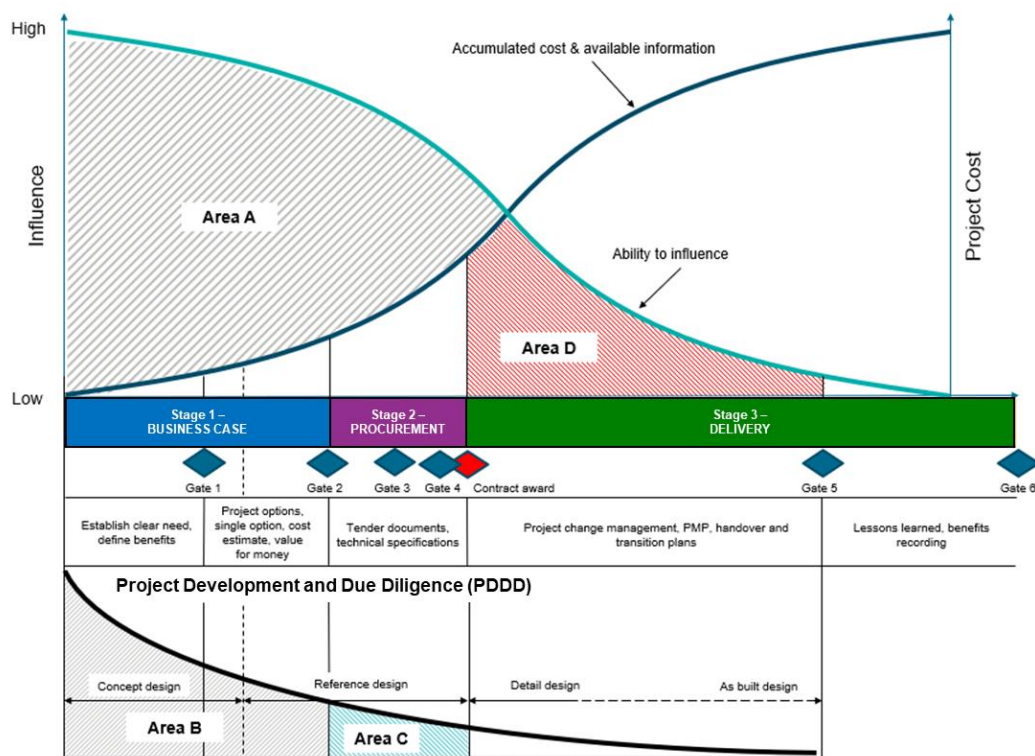
Where appropriate, particularly in circumstances where the State intends to complete substantial due diligence investigations, these PDDD activities could be informed by the intended contractor or supplier market. Through market engagement at relevant times in a project's lifecycle, substantial advantages may be gained by giving the market the opportunity to influence the quality, breadth and depth of these activities prior to major procurement processes being completed.

3.3 Integration of PDDD and GRP/ILG

While the concept of due diligence is often associated with early project phases, leading practice suggests the maturity of PDDD analysis should develop and different types of analysis should be undertaken, as a project progresses through its lifecycle.

The ability and degree of freedom to influence a project is typically high in the front end of the project and low at the back end as illustrated below. In contrast, accumulated cost and availability of information that is useful to a project tends to have a reverse trajectory, beginning at a low level and ending at a high level.

Figure 4: The influence of PDDD over a project's lifecycle



A project's flexibility to make key or influential decisions changes with the development and maturity of the project along its lifecycle, as depicted in Figure 4. There is a higher ability to influence and manoeuvre in the early phase of a project (Area A) without materially affecting defined cost, scope and schedule.

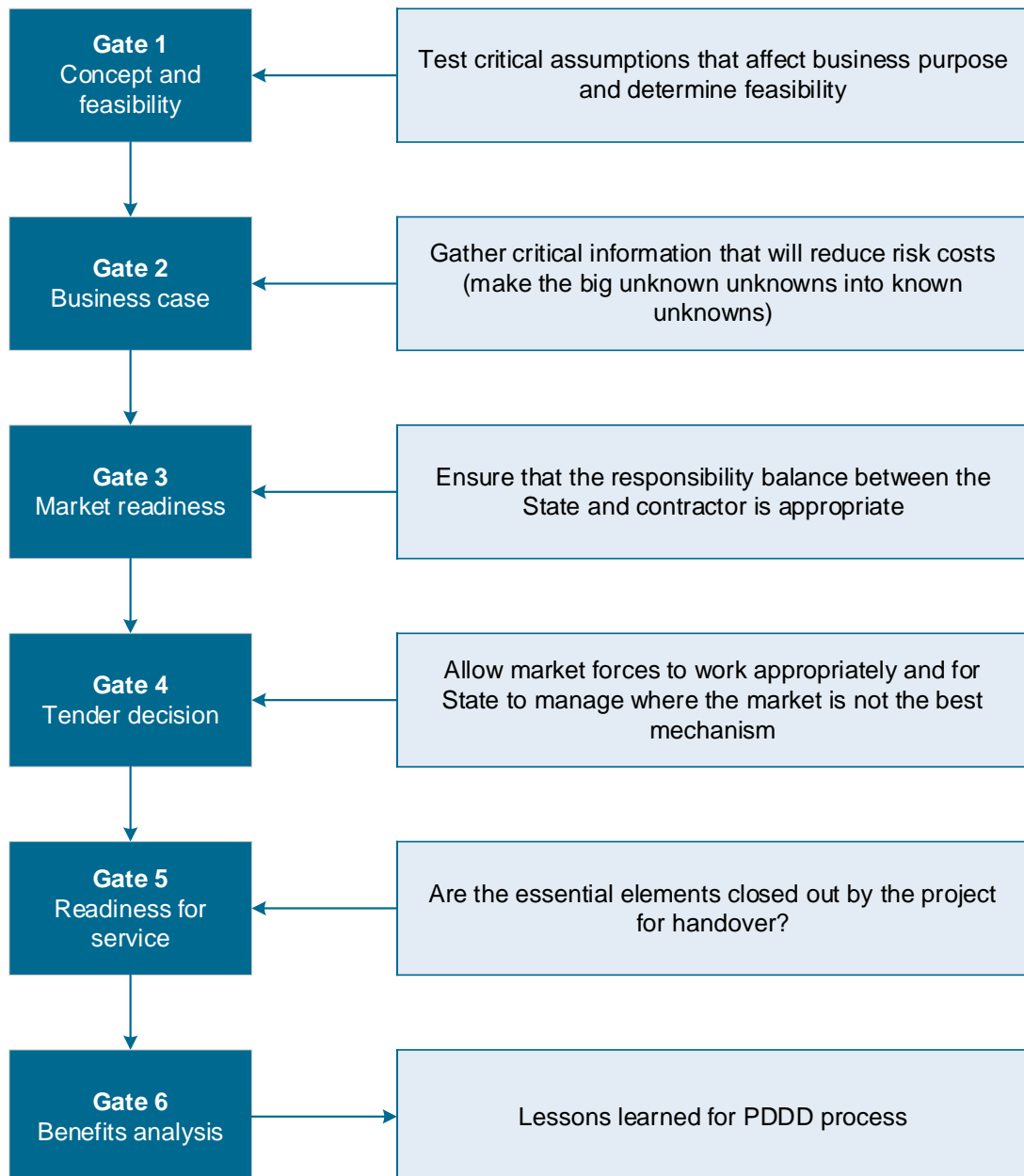
The value of PDDD is to undertake activities to elicit information that can be used to make key or influential decisions prior to committing to a project's scope, cost and program (Area B) and, depending on the delivery model, continuing to advance understanding without compromising investment decisions prior to each subsequent major decision (Area C).

The flexibility to make key or influential decisions decreases rapidly in Area D. Adjustments to project scope, cost and program in this phase can violate previous decisions, trigger scope creep or cost variations and put pressure on the committed program. PDDD activity becomes focussed in this area on remaining decisions and activity (e.g. handover and operationalisation).

In determining the appropriate extent of project development and due diligence activity for a specific project, project proponents need to consider the importance of integrating PDDD early in the investment lifecycle. They should also be aware of the value of flexibility in the front-end phase of projects and on the undesired consequences of too much flexibility in the execution phase.

The general integration of PDDD activities into the Gateway Review Process can be illustrated in Figure 5 below.

Figure 5: The integration of PDDD into the GRP



3.3.1 PDDD during project planning and feasibility

During the planning and feasibility phase, PDDD makes a vital contribution to minimising project risk. This early integration of PDDD into the investment lifecycle is critical in defining the project's core characteristics, increasing the certainty of project outcomes and minimising procurement risks.

Undertaking PDDD activities prior to locking in a reference or final design and going to market and/or awarding contracts typically reduces uncertainty for prospective bidders and for government. In addition, it means that government is usually more able to access information pertaining to site, context and project parameters, and is better placed to go to market.

As a general principle, the more information made available to bidders, the better their return submissions will be. Without adequate detail, bidders are forced to make pricing assumptions for a range of project elements and disciplines including existing asset conditions, site conditions, stakeholder requirements, and design and planning considerations. Poor pricing assumptions through the tender process typically translate into increased costs, poor project definition and cost allocation, and ineffective risk allocation. This will place the project budget and schedule under immense pressure and will negatively impact on project quality and performance. Improving the quality of pricing in tenders can thus provide real benefits to government.

3.3.2 PDDD prior to/during project delivery

While different delivery models will, to some extent, require different degrees of PDDD activity, there are fundamental PDDD activities that will drive successful project outcomes and therefore must be prioritised regardless of delivery model.

Project controls and management plans become particularly important in the delivery phase of a project to ensure contractual roles and obligations are accounted for in a disciplined manner. PDDD activity includes careful and accurate translation of project objectives, assumptions, risks and issues, scope, quality, cost and schedule requirements from earlier stages to ensure:

- accurate and adequate project scope;
- consideration of key interfaces;
- consideration of stakeholder insights and needs;
- realistic cost estimates and budgeting;
- achievable time schedules;
- clear project objectives;
- effective governance structures; and
- adequate consideration of value-for-money inherent in the project.

3.3.3 Impact of delivery model selection

Major delivery models usually vary in terms of:

- risk allocation;
- the point at which contract award occurs; and
- the scope of post-award design and innovation in the project solution.

The associated capacity to accommodate uncertainty in terms of the design solution, scope and responsibility for post-delivery asset maintenance, and government/contractor commercial and design risk appetite in different market conditions, typically reduces as delivery progresses.

One approach is to ensure a clear definition of risk allocation at contract award, with the assumption that it is unlikely the market will accept the allocated risk if the project definition is incomplete or ambiguous, in which case the allocated risk will come back to the State. However, this relies on the due diligence of consortia contracting with government, which is in itself a risk.

In all cases, irrespective of the delivery model selected, a core body of work must be undertaken as part of project development and due diligence. Beyond this, the effective alignment of the delivery model to suit the project's characteristics and support successful delivery of the project's objectives will influence the efficiency and quality of the project. A delivery model that is inappropriate for a project's characteristics will likely compromise value-for-money outcomes and expose government to unacceptable levels of commercial and design risk.

Within the context of each project, project proponents need to be aware that an appropriate project development and due diligence process should seek to define and prioritise core project characteristics regardless of the proposed delivery model. This approach reduces the likelihood of selecting an inappropriate model for the project and contributes to minimising risk to government.

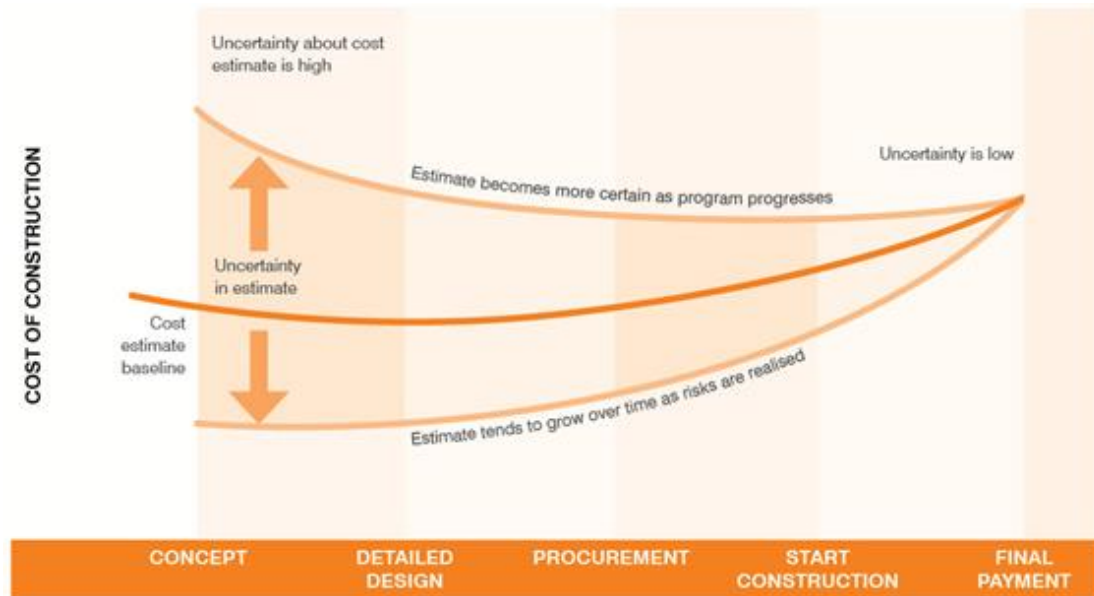
3.3.4 Project cost lifecycle and PDDD

Stakeholders expect accurate estimates of the total cost of a project from the outset, even when the project may have unclear or undefined scope, numerous assumptions, or unknown risks or issues. An approved project budget that is subsequently found to have significantly underestimated the actual outturn capital cost raises doubt about the basis of the original investment decision and could displace future funding of alternative projects or services.

To resolve this, cost estimates should include an estimate of uncertainty, often described as a percentile estimate (e.g. P10, P50, P90) that accounts for all knowns and unknowns related to the project. In conventional use, these numbers indicate the statistical probability of non-exceedance of the estimate. (e.g. P90 indicates that, in multiple simulations, the cost estimate is unlikely to be exceeded 90 per cent of the time. Note that this is often confused with the idea that the estimate has a 90 per cent chance of occurring – this is incorrect).

As a project progresses through its lifecycle, the accuracy of the associated cost estimate is expected to improve as the project takes account of new information: scope is better defined, assumptions are tested, risks or issues are identified and quantified, and the design evolves. Regardless of this natural evolution, stakeholders expect the estimated total project cost to remain inside the original uncertainty estimate.

Figure 6: The relationship between construction costs, project uncertainty and the project lifecycle



US Government Accountability Office

One of the primary objectives of the PDDD process is to better identify and quantify risks, earlier in the project lifecycle (but also at any given stage) to enable a more accurate estimate of the likely total project cost and degree of uncertainty. As such, it is anticipated that from undertaking PDDD activities, the project will have significantly increased chances of delivering within the initial uncertainty estimate and that the cost estimate would evolve.

While the project will always be under pressure by stakeholders to reduce uncertainty, it is of a greater benefit to stakeholders that the project retains an **accurate** sense of uncertainty.

ILG stage	Processes	Estimate accuracy (of P50 budget)	Indicative delta between P50 and P90	Milestones
Stage 1 Business case	Investment logic Problem, benefits identification, response, indicative solutions	Order of magnitude estimate type -40% to +70%	30%–100% of P50 estimate	Strategic assessment
	Project scoping Project option appraisal, define project scope (and options for further consideration) with concept design	Concept estimate -30% to +60%	30%–90% of stage P50 estimate	Gate 1 – Concept and feasibility Preliminary business case
	Pre-feasibility Assessment of project options, initial risk and environmental assessment	Developed concept estimate -20% to +40%	25%–60% of stage P50 estimate	Internal project agency review
	Feasibility Integration of risk assessment, preliminary design, financial model, whole of life costing and procurement strategy	Preliminary design estimate -15% to +25%	25%–30% of stage P50 estimate	Gate 2 – Full business case Full business case
Stage 2 Procurement	Procurement Staged tender process including tender preparation and evaluation	Tender estimate -10% to +15%	10%–30% of stage P50 estimate	Gate 3 – Readiness for market EOI RFT/P Preferred bid
	Negotiate contract price agreement	Tender price/contract -5% +10%	0%–15% of stage P50 estimate	Gate 4 – Tender decision Contract

Note, the *Technical Guide for Preparing Project Budgets for Business Cases* (see link in section 5.1) deliberately avoids the terminology of probabilistic estimating (e.g. P10, P50, P90) and specifically does not define the use of term ‘most likely value’. It is expected that agency practices will determine their preferred approach to costing risks, and that the costs proposed follow a methodology that is defensible and robust.

3.4 Risk sharing and transference

A critical aspect of the PDDD process is the translation of PDDD effort into quantified project risks. To gain the greatest benefit from this process, project owners should ensure PDDD findings and project risks are communicated through all project phases and shared with all project participants.

This approach promotes collaboration between owner, designers and contractors/suppliers throughout the project lifecycle to minimise any expectation gap, and specifically allows contractors/suppliers to seek further information to understand and quantify assumptions and risks more accurately.

3.4.1 Assessment of PDDD effort

The independent external reviewer team will assess the specific level of PDDD effort suggested for each PDDD element for that gate against documented evidence of PDDD effort provided by the Project Owner.

This will allow the reviewer team to form an overall view of the extent PDDD analysis and how well PDDD findings have been incorporated into the risk assessment and the development of the project.

The reviewer team will rate the extent of PDDD effort as shown below.

	There is evidence of effective PDDD effort for this stage of the project. Relevant issues have been incorporated into the project risk profile and mitigation or management strategies developed. There is little more that could reasonably be done at this stage of the project to provide certainty of project scope definition, risk allocation and benefits realisation.
	There is some evidence of PDDD effort for this stage of the project; however, some gaps in the analysis are evident or analysis has not been fully translated into the project risk profile. Mitigation or management strategies have not been fully developed, leaving some questions over certainty of project scope definition, risk allocation and benefits realisation.
	There is little to no evidence of PDDD effort for this stage of the project. The project risk profile does not reflect potential PDDD risks or issues.

4. PDDD elements

4.1 Types of PDDD elements

Within this document, the suggested areas of PDDD effort are classified as ‘PDDD Elements’. Some elements are applicable to a single industry, type of project or GRP stage, whereas others are more universal. A sample list of PDDD elements is provided below. These have been grouped into themes that most accurately reflect their intent; however, these groups are not ‘Gate’ specific.

This list of PDDD elements is not considered to be exhaustive, nor is each PDDD Element applicable to every project or every stage of the GRP. They are presented here in general terms to illustrate their application across different types of HVHR projects and across all sectors of the Victorian Government’s infrastructure program.

A definition of each element identified below is provided at Appendix A.

4.1.1 Project scope and design

- operational requirements
- functional requirements
- system requirements
- development brief
- project charter
- principal project requirements
- standards and specifications
- concept design and design reports
- digital engineering and information requirements
- urban design framework
- scope development plan
- reference design
- site layout

4.1.2 Feasibility, planning and approvals

- economic appraisal
- client and operator agreement
- investment logic map
- approvals documentation
- benefits logic map
- demand modelling
- approvals processes plan
- planning approval strategy
- land acquisition requirements
- land availability study
- legal and legislative framework
- project initiative summary
- project option assessment report

4.1.3 Project management

- constraints, risks and opportunities register
- cost estimation
- project schedule
- project assurance plan
- governance plan
- interfaces and interdependencies
- resource management plan
- stakeholder matrix
- asset handover plan
- commissioning plan
- interface and integration plan
- benefits realisation management

4.1.4 Investigations

- air quality assessment
- asset audit
- constructability assessment
- contamination and spoil management assessment
- cultural heritage assessment
- disruption identification
- ecological assessment
- ecological audits
- existing conditions assessment
- existing conditions plan
- geotechnical assessment
- hydrological, hydrogeological and hydraulic conditions
- land survey
- land use assessment
- landscape and visual assessment
- major utility locations and diversion strategies
- noise and vibration assessment
- water quality assessment

4.1.5 Procurement and delivery

- EOI/RFT management plan
- tender documents
- tender evaluation plan
- construction strategy
- traffic management and logistics
- handover of design, drawings and reports

4.1.6 Management plans

- project management plan
- design management plan
- procurement management plan
- change management plan
- community and stakeholder engagement plan
- construction environmental management plan
- construction management plan
- cost management plan
- fire and life safety plan
- information management plan
- quality assurance management plan
- risk and opportunity management plan
- decanting management plan

4.2 Levels of effort for PDDD elements across phases

As discussed earlier, many PDDD elements are applicable to a varying extent across multiple GRP/ILG phases. Within this document, the terms 'Initial', 'Preliminary' and 'Final' are used to classify potential levels of effort for each of the PDDD elements.

- **Initial:** High level or early analysis to determine the extent of applicability of a PDDD element, identify possible unknowns to be further investigated and quantify the type and cost of further investigation, if warranted.
- **Preliminary:** Further investigation, often with a physical or detailed analytical component to improve the level of understanding and level of certainty regarding unknowns to a level requisite with the expectations of the project at that stage (e.g. cost or schedule certainty).
- **Final:** Exhaustive, or as near to exhaustive as reasonably possible, investigation and analysis to identify and form solutions to all potential unknowns that could affect that element of the project, in keeping with the desired risk profile for the project.

Conceptually, each level of effort for each PDDD element may apply to each Gate as illustrated in the following example:

PDDD element	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5	Gate 6
Element 1	Initial	Preliminary	Final		Further effort conducted in detailed design and construction packages	
Element 2	Nil	Initial	Preliminary	Final		
Element 3	Preliminary	Final				

An important part of project initiation for HVHR projects is defining the GRP/PDDD element map for the specific project and Appendix B provides a more detailed example of how each PDDD element can map across each of the GRP/ILG phases.

This map is a requirement for Gate 1 and will subsequently be reviewed at each Gateway Review. Amendments to the map at subsequent gates should be identified and justified as part of the review process.

As an example, mapping for specific PDDD elements may be illustrated as follows.

FEED discipline	Gate 1	Gate 2	Gate 3	Gates 4/5/6
Geotechnical	<p>Initial</p> <ul style="list-style-type: none"> Geotechnical information can either be on a high-level desktop basis (e.g. state soil maps) or is determined not a risk to the viability of the concept. 	<p>Preliminary</p> <ul style="list-style-type: none"> Existing available boreholes, reports, etc have been obtained and reviewed. Field investigations conducted with a nominal number of boreholes/ sample pits enough to characterise the site's geotechnical conditions. Preliminary hydrogeological review completed. Preliminary seismic review completed. Key geotechnical risks identified for next phase of investigations. <p>Note: for projects with high geotechnical risk (e.g. dams, tunnels) additional work may be required at this stage.</p>	<p>Final</p> <ul style="list-style-type: none"> All existing data obtained and interpreted with results of field investigations. Comprehensive field investigations completed, with enough boreholes/ sample pits to provide minimal residual geotechnical risk. Testing conducted to characterise ground conditions and provide input for design (bearing strength, shear strength, plasticity, swell, etc.). Seismic review and hazard assessment completed. All geotechnical risks identified with appropriate mitigations. 	

FEED discipline	Gate 1	Gate 2	Gate 3	Gates 4/5/6
Execution plan	<p>Initial</p> <p>Brief synopsis of the intended execution strategy including:</p> <ul style="list-style-type: none"> • project proponents • overall schedule including when gates will be reached • initial contracting strategy 	<p>Preliminary</p> <p>Preliminary execution plan that includes:</p> <ul style="list-style-type: none"> • project proponents • Level II schedule on P50 confidence basis • organisation and resourcing • risk management including identification of key execution risks and mitigations • communications and external stakeholder plan • contracting and procurement strategy • preliminary design management plan • preliminary cost management plan • preliminary construction plan • draft commissioning strategy • execution plan should be sufficiently defined to demonstrate the soundness of the proponent's competency and planning to execute the project. At this stage, key execution issues should be identified, but not necessarily resolved. 	<p>Final</p> <p>Final execution plan that includes:</p> <ul style="list-style-type: none"> • project proponents • Level III schedule on P80 confidence basis • organisation and resourcing – confirmation of 'locked in' resources • risk management including identification of key execution risks and mitigations • communications and external stakeholder plan • final contracting and procurement strategy • final design management plan • final cost management plan • final construction plan • preliminary commissioning strategy • execution plan should be fully realised to bring the project planning to 'shovel ready' state 	

4.3 Undertaking PDDD effort

Where a project or program involves multiple physical sites or locations, it is generally expected that each type of investigation or assessment should be packaged together to achieve efficiencies, rather than being conducted separately – while noting that the staging of works or other aspects of the project might make a packaging approach ineffective.

5. Summary

Appropriate, well-conducted project development and due diligence is an indicator of a project's likely success and is critical to developing a high-quality project that delivers the desired outcomes. PDDD activity makes an important contribution to mitigating project risk.

For these reasons, PDDD activity needs to be integrated into the development of major projects in Victoria. In particular, PDDD elements may be integrated early into a project's concept and feasibility phase and continue to mature and expand in scope and detail across subsequent project design, development and delivery phases.

Undertaking the activities outlined in this Guideline will assist project proponents to plan and develop high quality projects that meet the requirements of Victoria's HVHR framework and Gateway Review Process. It will also contribute to the delivery of world-class infrastructure and services for Victorians as part of the State's 'big build' infrastructure program.

5.1 Key references and further reading

DTF HVHR Framework	www.dtf.vic.gov.au/infrastructure-investment/high-value-high-risk-framework
DTF Gateway Review governance process	www.dtf.vic.gov.au/infrastructure-investment/gateway-review-process
DTF Investment Lifecycle Guidelines	www.dtf.vic.gov.au/infrastructure-investment/investment-life-cycle-and-high-value-high-risk-guidelines
DTF recommended actions plan template	www.dtf.vic.gov.au/sites/default/files/2018-02/Recommendation-Action-Plan-Template.doc
DTF reporting Gateway red flags	www.dtf.vic.gov.au/sites/default/files/2018-02/Reporting-Gateway-Red-Flags.docx
DTF preparing project budgets for business cases – Technical guide	www.dtf.vic.gov.au/infrastructure-investment/investment-life-cycle-and-high-value-high-risk-guidelines

Appendix A PDDD element definitions

The following provides details regarding the suggested PDDD Elements that may be relevant for HVHR projects. They are generally in chronological order of when they would usually be undertaken in a project's lifecycle for ease of navigation. However, this order may change based on the GRP/PDDD Element mapping process discussed earlier.

For each of the elements, examples of evidence that can be used to demonstrate the PDDD activity or effort undertaken are provided.

A.1 Project scope and design

A.1.1 Client requirement documents

The client should define the overall project objective, which should then be distilled into specific client requirements. These documents set out all the client's requirements for the project to enable the project scope to be developed more accurately.

At the concept phase these can be considered preliminary but should be refined at subsequent phases. The project scope, budget, schedule, etc. should clearly demonstrate that the needs of the client are understood and will be met.

Examples of evidence

- Documentation of preliminary client requirements.
- Client approved scope statement.
- Updated client requirements document based on new information as the project evolves, and how that affects any core assumptions including but not limited to risks, cost, schedule, etc.
- Mapping of requirements into a single option scope statement.
- Variation register of client requirements.

A.1.2 Operational requirements

Operational needs of each of the projects' occupants/end users must be considered in the design and construction solution. These may be described through process flow diagrams, departmental relationship mapping, descriptions of movement patterns for various user cohorts, maintenance regimes, plant and equipment accessibility requirements, vehicle movement patterns and constraints.

At the concept phase these can be considered preliminary but should be refined at subsequent phases. The project scope, budget, schedule, etc. should clearly demonstrate that the needs of the occupants/end users are understood and will be met.

Examples of evidence

- Details of engagement efforts with occupants/end users to understand and agree requirements.
- Documentation of occupants'/end-users' requirements and how they have been mapped into scope statement and schedule.
- Documentation of requirements reviewed and updated throughout the project lifecycle that also defines any new information and impacts to existing requirements.
- Representatives of occupants'/end users' agreement that scope statement adequately addresses requirements.
- Risk analysis for any occupants/end user requirements that are not being considered, including consequences for both operator and the project.
- Documentation of requirement challenges and the project response, along with risk assessment and impact analysis for project objectives, scope, budget and schedule.
- Tender documents received accurately reflect requirements.

A.1.3 Functional requirements

The description of the functional needs such as spatial, sustainability, accessibility, safety, aesthetics, cost effectiveness, productivity and expansion flexibility, for each of the intended project occupants/users.

Examples of evidence

- Details of engagement efforts with key stakeholders to understand functional requirements.
- Documentation of functional requirements and how they have been mapped into scope statement.
- Evidence that key stakeholders agree that the scope statement adequately addresses functional requirements.
- Documentation of requirement challenges and the project response, along with risk assessment and impact analysis for project objectives, scope, budget and schedule.
- Tender documents received accurately reflect requirements.

A.1.4 System requirements

Where applicable to the project, system requirements set out system or network-wide requirements or standards with which the project design, construction and operation is required to consider and successfully integrate.

Examples include information technologies adopted by the procurement agency or other client entity with which either direct integration is required to meet the project objectives, or consideration given to their architecture when developing project-specific systems which may require integration in the future.

The method by which an extensive road network is controlled and managed may be another example of a system requirement with which tenders may be required to integrate or coordinate with in delivering the project.

Other examples include an asset management system, providing information on how existing assets are managed and integrated with the new works and project-specific requirements for existing assets. The quality management system will detail document control requirements, IT management, among other things.

These system requirements will generally necessitate the development of management plans to show how the requirements will be satisfied.

Examples of evidence

- Documentation of system requirements and how they have been mapped into single option scope statement.
- Documentation of requirement challenges and the project response, along with risk assessment and impact analysis for project objectives, scope, budget and schedule.
- Tender documents received accurately reflect requirements.

A.1.5 Development brief

A development brief provides planning guidance on how specific larger, complex or sensitive sites should be developed. They show high-level policies to apply to each site and contain detailed guidance on things like access, design, and landscaping.

Development briefs are prepared in consultation with a variety of stakeholders including the public, developers and delivery partners, and are used when assessing planning applications.

Examples of evidence

- Development brief.
- Mapping of key elements of the development brief to scope statement.
- Analysis of impacts.

A.1.6 Project charter

The project charter is a short reference document developed at the outset of a project concept that outlines the project in its entirety and defines several key points.

- What is the reason for the project?
- What are the project objectives?
- What are the major, known, project constraints?
- Who are the main stakeholders?
- What is the project scope?
- What are the key benefits of the project?
- What is the ballpark cost and delivery timeframe of the project?

The project charter provides the basis of alignment for the subsequent work to be undertaken: requirements development, cost estimates, schedule, design options, management plans etc. It will be referred to and reviewed throughout the project lifecycle and can serve as a roadmap providing a project overview to refer to with stakeholders or in meetings.

Examples of evidence

- A complete and comprehensive project charter document.

A.1.7 Principal project requirements

The principal project requirements (PPR), or sometimes the project scope and delivery requirements (PSDR), define the documents which form part of the contract and set out, amongst other things, the purpose for which the Works are intended. They establish the performance requirements and associated technical criteria to be achieved by the contractor in the delivery of the project.

The requirements and criteria in this document are minimum criteria and requirements, including technical, management, operational and performance requirements for the Works, which the Contractor must satisfy to fulfil its obligations under the contract. Unless, and to the extent that, this document expressly nominates the principal to carry out any work, the requirements and criteria set out in this document must be fulfilled by the contractor.

The PPR may include, for example, the following:

- Introduction
- Technical requirements
 - design life and residual life
 - existing assets (various kinds)
 - design
 - water management
 - environmental management
 - services
 - returned asset occupation and requirements
 - authorities standards
 - interfaces and interdependencies

- Handover/handback requirements
- Returned asset owners
- Systems
 - asset management system
 - quality assurance system
 - information management system
 - traffic management system
 - ITS requirements (Bluetooth monitoring, CCTV etc.)
- Property and land
- Programs
 - design program
 - construction program
- Site and survey
- Design process requirements
- Construction requirements
- Maintenance requirements
- Communications and community engagement
- Specific appendices
 - specific items
 - commercial milestones
 - future proofing
 - specifications
 - project documents
 - reference documents
 - agreed exceptions

There are times that the PPR will be early iterations for the EOI stage and the PSDR the final version for the delivery stage/s. The development of these documents is informed by the earlier phases of the PDDD process and should be well defined by the RFT stage.

Examples of evidence

- A document setting out the full list of contract documents.
- The project requirements clearly defined.

A.1.8 Standards and specifications

'Standards' serves as a common language for defining the quality of and establishing safety criteria for products. Standards establish common engineering or technical requirements for products, practices, methods or operations that designers and contractors are expected to follow while developing and delivering the project. It should be possible to verify standards of products and workmanship by testing, inspection, mock-ups and samples, and documentation such as manufacturer's certificates.

Standards are typically dynamic documents and they are periodically reviewed, amended and updated by the relevant publishers. As with scope, cost and program, it is good practice for a project owner to establish a baseline for the standards adopted. The baseline would typically reflect the current standards version at the time when it's referred and the period during which they are effective, which is usually the contractual commencement and completion dates.

'Specifications' describe the materials and workmanship required for a project and need to be read alongside other information in a contract such as quantities, schedules and drawings. Specifications can be either prescriptive (closed) or performance (open), depending on the stage to which the design has been developed. There should be reference where possible to providing a hierarchy to these documents in order of precedence to prevent commercial disputes during the delivery phase. These disputes can arise not because of the individual interpretation of an individual document but when two documents conflict each other in some way. Often this means the dispute mechanism is relied upon to seek clarification rather than identifying the importance/priority hierarchy during the planning phases.

Having a prescriptive specification when a contract is tendered gives the project owner more certainty about the product, whereas a performance specification gives suppliers more scope to innovate and adopt cost-effective methods of work, potentially offering better value for money. Most projects will involve a combination of performance and prescriptive specifications and the developer needs to know which one will apply for different components of the project.

Examples of evidence

- A list showing the relevant specifications and standards including the applicable revisions/editions.

A.1.9 Concept design and design reports

Design concepts are prepared by expert engineers, architects, urban designers and other professionals in response to the project brief and requirements. These consultants may be engaged directly by the project owner or entity responsible for project delivery, on behalf of government or by private sector parties who have been contracted by government to provide the service. The procurement process adopted will determine who has responsibility for delivery of design solutions.

As outlined in earlier PDDD elements, certain elements will be required before design concepts can be finalised:

- site conditions must be understood;
- stakeholder engagement will have commenced;
- a clear brief that identifies project requirements will have been prepared;
- other project requirements, including relevant policy and technical standards, have been identified;
- key risks have been identified; and
- feasibilities, scoping and budget-setting have been completed.

The concept design represents the project team's initial response to the preferred option. Generally, it takes place after feasibility studies and options appraisals have been carried out and a project brief has been prepared. A mature concept design, prepared based on information obtained through PDDD activities, supports a project's business case.

In general, the concept design stage will result in:

- site, social and cultural context documentation and analysis;
- the development of technical solutions, which should be presented as integrated solutions along with urban design solutions;
- urban design concepts, comprising architectural and landscape design responses;
- outline specifications;
- a high-level program/ schedule;
- a planning strategy, suitable for the selected design concept (or options);
- a detailed cost plan, applicable to the level of design detail;
- program and phasing strategy for delivery;
- clearly identified interfaces and interdependencies with other projects, along with a strategy for managing these;
- constructability and construction logistics identified;
- a risk assessment, with mitigations identified;
- a value engineering exercise; and
- a Health and Safety in Design (HSiD) workshop and register created.

The project brief will continue to develop as the concept design is prepared. Findings from the concept design will directly impact time and cost assumptions will identify additional risks, requiring further updates to the project brief and further concept development work. This cycle may repeat numerous times.

Examples of evidence

- A comprehensive, compliant set of design drawings and reports which encompass all of the project requirements and clearly present the concept design.
- A comments register documenting outcomes of design reviews by the client(s), stakeholders and technical experts, and demonstrating comment resolution by matter of written responses and drawing updates.

A.1.10 Digital engineering and information requirements

Success in digital engineering (DE) and building information management (BIM) requires a clear understanding of project stakeholder needs to define the appropriate target maturity level and strategic application of each. Requirements are closely related to the information management plan, drawing on proven methodology from the Victorian Digital Asset Strategy (VDAS) and leading international BIM practices to ensure applicability and usability across the entire eco-system.

DE and BIM are utilised throughout the entire project and asset or system lifecycle, incorporating specific contract language, requirements for deliverables, standardised processes and management of data. Defined templates may be used to bridge information management across each phase to ensure project deliverables translate to value in facility operations and asset management.

A high-level DE (including BIM) execution plan should be developed in preliminary stages to propose strategies to achieve DE and BIM requirements. This plan should be developed further by the delivery agency, prior to commencement of project delivery.

The execution plan defines the DE and BIM implementation approach, process flow for BIM tasks, information exchanges between parties, and defines the required project and company infrastructure needed to support the implementation. This plan should be monitored during implementation and updated as additional stakeholders or requirements are added to the project.

Key principles for the development of the execution plan include:

- **Coordinate** – all information management, design, construction and operations plans should be cross-referenced to ensure seamless data management.
- **Collaborate** – a successful project ensures strong collaboration by all key stakeholders and project teams to define end to end data management processes.
- **End state** – understand the future use of information being captured to understand which model or platform to utilise and understand potential quality control issues.

Examples of evidence

- BIM target maturity level defined for the project and BIM strategy defined.
- Project and asset information requirements defined in the information management plan.
- BIM system/platform evaluation and determination of key roles undertaken.
- Required data sets defined for the project and mapped into contract requirement.
- Tenderer's documentation addresses BIM strategy and how it will deliver to the requirements.

A.1.11 Urban Design Framework

An Urban Design Framework (UDF) is a detailed planning and design document that sets a long-term vision to guide the future use and development of an area. It is a strategic document used for planning rather than a rigid master plan.

The UDF covers the design of buildings, public spaces, pedestrian and vehicle access, and landscape themes. It also details environmental, social, economic or cultural objectives.

The UDF is an important part of stakeholder engagement for communicating the project's purpose, vision and commitment to the community and will be subject to community consultation and feedback.

Examples of evidence

- Further development of urban requirements including planning and approvals.
- Details of engagement with relevant authorities to examine integration of project with Urban Design Framework.

A.1.12 Scope development plan

A scope development plan is a document that outlines a set of activities and processes to ensure a project scope will be accurately defined and mapped.

It outlines key tasks needed to elicit various stakeholder, functional, operational and system requirements, map those against project objectives and target benefits and develop this into a cohesive definition of what the project must achieve in order to be successful.

The scope development of a project is critical to ensuring the accurate assessment of time, cost, quality standards, resources, required procurement, etc., needed to successfully deliver the project.

'Project scope' should consider not only the core delivery scope, but also ancillary or enabling works that are necessary to deliver the core scope. The outcome of these processes and activities is defined in a 'scope statement' document.

Examples of evidence

- Defined scope statement that documents the core scope as well as ancillary or enabling works.
- Clear definition of works that are out of scope but might be related to or have interdependencies with this project.
- Development of budget and schedule that demonstrates achievability of scope within envelope and identifies budget and schedule capacity to manage potential issues arising from key site condition risks.
- Risk register includes site conditions.
- Mapping of baseline requirements to scope and WBS to demonstrate all requirements are met by a scope element, and that no scope elements are present without a supporting requirement.

A.1.13 Reference design

A reference design is not always required or appropriate. However, if identified through market sounding or strategic procurement assessment, the project owner's project team produce a reference design prior to going out to tender to help the bidders with the investigation of any key risk areas that have been identified.

When used, the reference design provides a 'master reference' for the project that establishes and defines the project owner's objectives, requirements and priorities, as well as identifying project benefits. The reference design establishes how much the owner knows about the project already and acts as a base document for the tenderers to develop a more detailed design capable of transforming this information into reality. It is also usually used to aid in establishing the project budget and to demonstrate the feasibility of option(s) to achieve the stated project objectives.

The reference design serves a number of purposes. It:

- establishes the feasibility of certain aspects of the design;
- assists in gaining a more accurate estimate of the overall cost of the project prior to going out to tender with the main works contracts; and
- helps to mitigate or minimise risk in areas of high risk relating to the design that may deter prospective bidders.

Details in a reference design may vary with the type of infrastructure, contractual arrangements (Design and Construct, Alliance or PPP) and complexity of the project. However, a good reference design should include detailed scope and objectives, technical specifications and constraints for a range of topics including design, quality of construction, user requirements, traffic management and safety.

Depending on the stage of development, the Project Owner should be able to demonstrate that the reference design has been informed by appropriate technical advice and reports covering areas such as:

- functional and operational requirements;
- client and operator agreements;
- urban design requirements and frameworks;
- planning approval strategy and documentation;
- land acquisition requirements;
- civil, structural, mechanical, electrical, HVAC and architectural design;
- architectural design requirements;
- high level technical and material specifications; and
- PDDD report.

Inclusion of a reference design as part of the documentation provided in the tender package will provide valuable information to bidders. However, it may create contractual issues during the detailed design stage and/or delivery stage. The contract will need to include sufficient protection for the project owner by noting that the reference design is supplied for the convenience of the contractor and for information purposes only, and the owner is not responsible for, and does not warrant, the accuracy, contents or the completeness of the reference design.

Examples of evidence

- Consideration of all completed design work, business case, risk assessment, specifications and PDDD findings and analysis.
- All requests for information by tenderer have been resolved.

A.1.14 Site layout

A site layout plan should be prepared which shows the proposed project overlaid onto the existing site. This process helps optimise the proposed project by avoiding constraints, navigating existing vegetation, considering interfaces with existing infrastructure and identifying potential land use issues.

Attention should be paid to existing features such as utilities, property boundaries, vegetation and environmentally sensitive areas.

The site layout should demonstrate how the proposed project integrates into the existing infrastructure, including major utility connections. A high-level temporary works facilities plan should demonstrate that there is sufficient land during construction. The layout may identify different options and the constraints, risks and opportunities associated with each.

Examples of evidence

- Site layout plan with a legend providing information on what is shown on the plan.

A.2 Feasibility, planning and approvals

A.2.1 Economic appraisal

Economic appraisals help determine whether investment in a project is warranted. There are different levels and forms of appraisal such as a cost-benefit analysis (CBA). The relevant DTF guidelines should be followed when undertaking economic appraisals.

The economic appraisal should:

- consider the point of view of a society either as a whole or a subset (e.g. a state or region); and
- prove that the project will generate benefit for the end-users and wider community and that these benefits cover the overall cost of the project (i.e. a positive net present value).

Examples of evidence

- Cost-benefit analysis.
- Summary and outcome of economic appraisals undertaken (i.e. is further investment warranted?).

A.2.2 Client and operator agreement

Operationalisation of a project requires clear agreements and delineation of roles and responsibilities, service provisions, ongoing snagging or problem resolution, support and maintenance.

This process should commence early in project definition to ensure the project scope is adequately defined and accounts for client and operator requirements and evolves throughout the project to form clear and unambiguous agreements between project developer, client or project owner and operator. Where an operator is not defined early in the project lifecycle, the project owner should act and make decisions on behalf of a future operator and transfer outcomes of those decisions into contract agreements as appropriate.

Examples of evidence

- Details of client and operator engagement during reference design.
- Document management system developed for management of comments and revisions.
- Details of client and operator engagement during reference design.
- Document management system logs for comments and revisions.

A.2.3 Investment logic map

An investment logic map (ILM) is a single-page depiction of the logic that underpins an investment. It should be logical, evidence-based and able to be understood by a layperson. It is a technique to ensure that robust discussion and thinking is done upfront, resulting in a sound problem definition before solutions are identified and any investment decision is made.

The logic-mapping process concludes with the identification of potential initiatives, rather than progressing to the design of specific options for solutions. This is designed to support a high-level, strategic focus for the mapping and avoid specific solution-based options.

The ILM comprises several linked components to help tell a logical investment story:

- **Title** – the title articulates the overarching desired business outcome, i.e. what in a nutshell we want to see achieved. The sub-title is sometimes used to describe the solution.
- **Problems** – the problems articulate what is broken and what the consequence of that is for the organisation. The key here is that it must be of significance – it must really matter to the organisation.
- **Benefits** – the benefits are the (strategic) value that will be delivered by responding to the problem. The KPIs then detail the actual contribution this investment will make to these high-level benefits.
- **Strategic responses** – the strategic responses are the best possible high level and outcome focused ways to address the problems. They represent what needs to be achieved and they need to be at a high enough level so as to not lock us into a particular solution/project option.
- **Solutions** – the solutions (initiative level ILM only) are the business changes and supporting assets required to achieve the strategic responses.

A.2.4 Benefits logic map

A benefits logic map (BLM) is a method of presenting visually the relationship between project outputs and business outcomes. Benefits mapping should be undertaken with stakeholders that are likely to be impacted by the project as well as those who have the capacity to make decisions e.g. senior executives. By getting stakeholder buy-in at the early stage of the process, there will be a common understanding of the project aims and what the likely benefits for stakeholders will be.

This interactive process of creating the BLM drives stakeholders towards a consensus definition of project success and contributes to a well-defined business case. The BLM can also be used throughout the life of initiatives to analyse any impacts on benefits caused by changes in direction or changes to the strategy.

Benefits mapping is a process that:

- identifies benefits that can be realised from a project;
- visually depicts how an organisation can link benefits to its objectives;
- identifies what business changes need to be put in place in order to realise the benefits; and
- identifies which benefits can be quantified and hence which benefits to measure in order to determine how successful a project has been.

Examples of evidence

- Benefits logic map.
- Benefits management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.2.5 Demand modelling

Demand modelling plays an important role in the early justification of a project and the development of the concept design and business case. Through testing of the forecasted demand, the risk of developing a project which isn't fit-for-purpose is reduced and a more optimum solution may be found.

The underlying assumptions of any demand model are key to any investment decision and should be tested or validated, where possible, prior to major investment in project delivery. Assumptions should also be carried forward into the project benefits management plan to ensure assumptions can be realistically tracked and measured.

Demand modelling is applicable for different industries in varying forms: traffic modelling for roads, patronage modelling for rail, demand forecasting for schools, health and social infrastructure.

Examples of evidence

- Demand modelling results.

A.2.6 Approvals processes plan

Planning schemes are administered by local governments and most planning permits are issued by councils for changes to use of the land, building and works, and other development proposals.

In some circumstances, the Minister for Planning may be the planning authority for a project, determined on a case by case basis. The Minister could issue a single planning permit, a series of planning permits or alternatively, amend one or a series of planning scheme permits to allow for a project-specific control. Planning permits and planning schemes are legal documents giving permission for a land use or development.

In Victoria, private and public projects with potentially significant environmental impacts may require an environmental impact assessment through the preparation of an Environment Effects Statement (EES). An EES has been prepared for many major projects in Victoria including Metro Tunnel, Westgate Tunnel and North East Link.

The Minister may declare that an EES is required for a project under Section 3 of the Act as 'public works'. Alternatively, a project can be assessed against the criteria in the Ministerial Guidelines for the assessment of environmental effects under the *Environment Effects Act 1978* (DSE 2006) and the Minister determines whether an EES is required to be prepared.

The process under this Act is not an approval process itself; rather, it enables statutory decision-makers to make decisions about whether a project with potentially significant environmental effects should proceed.

In addition, approval may be required under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. The Commonwealth Minister for Environment can accredit the State environmental assessment process under the bilateral agreement that exists between the Commonwealth and State of Victoria. The Commonwealth Minister would use the outputs of this process to inform a decision under the EPBC Act.

In most cases, the output of the assessment process will inform, at a minimum, the amendment of a planning scheme or a planning permit. It will also inform, but not be limited to:

- permits under the *Heritage Act 2017*;
- works approvals under the *Environment Protection Act 1970*;
- work authorities under the *Ministerial Resources (Sustainable Development) Act 1990*; and
- works on waters permits under the *Water Act 1989*.

Examples of evidence

- Details on regulator engagement for environmental impact assessments and regulatory approvals (local, state and Commonwealth).
- A list of the local, state and Commonwealth legislation considered and the implications for the project.
- List of a demonstrated understanding of the process associated with the undertaking of environmental referrals, impact assessments and approvals required (local, state and Commonwealth).

A.2.7 Planning approval strategy

Obtaining planning for a project is crucial and can be a time-consuming and complicated part of the planning and development phase. A strategy for the undertaking of environmental assessments, obtaining planning and other approvals and complying with the conditions of the approval is key to ensuring preliminary and planning stages progress smoothly. It is critical that any schedule, scope and budget assumptions are robust and give full consideration to the planning and environmental approvals strategy, as changes to any of these may necessitate a change in the approach to obtaining approvals.

After planning and environmental approvals are obtained, all conditions of the approval must be captured accurately in development and delivery documentation to ensure the project complies with these conditions throughout its lifecycle.

Different design options will have different environmental impacts, risks and required approvals. During the consideration of preliminary options, analysis of costs and benefits should consider environmental impacts, risks and approvals processes. Elements identified below will help to identify viable options, as well as informing the range of issues that need to be addressed as part of environmental approvals processes.

Examples of evidence

- Details on regulator engagement for environmental impact assessments and regulatory approvals (local, state and Commonwealth).
- A list of the local, state and Commonwealth legislation considered and the implications for the project.
- Consideration of expected time, cost and effort to pass through the referral and/or impact assessment phase and to obtain the relevant regulatory approvals.
- Risk register includes risks from the referral and/or impact assessment phase and to obtain the relevant regulatory approvals.
- Understanding of the implications of conditions approval including an analysis of lessons learnt from other projects.

A.2.8 Land acquisition requirements

Land may need to be acquired for project. Different authorities have different right to access land under their operation legislation.

If land has been previously reserved for the project, an assessment needs to be made as to the adequacy of this land because, if required, additional land may need to be reserved. Alternatively, the land may have been reserved; however, it needs to be acquired using the provision of the Land Acquisition and Compensation Act.

If insufficient land is required, this may be subject to the environmental impact assessment and/or planning scheme amendment process to assess the impact of this acquisition and to apply to the Public Acquisition Overlay.

If the land is to be used for the purposes of a major transport project and it has been declared by the Premier under the *Major Transport Projects Facilitation Act 2009*, the powers under the Act can be used to gain access to this land.

Examples of evidence

- Land acquisition requirements assessment.
- Completed register of required land acquisition.

A.2.9 Land availability study

Land required for the project should be identified and the reason for use outlined. This should include land required for both the final configuration and any temporary works such as construction compounds. Any requirements for change of land use or land acquisition should be detailed.

The tenure of the land required for the project should be identified, including the land owner, and what this means in terms of the mechanisms by which the land will be obtained. Consideration should be given to land that may be unavailable and how this will be dealt with.

Examples of evidence

- A plan showing the available land and any unknown availability.
- The plan should show the proposed project footprint, including construction footprint, to demonstrate that the project fits within the available land.

A.2.10 Legal and legislative framework

Each project must understand the legal and legislative framework in which it operates. This includes state and federal regulations as well environmental, labour, construction, contract, laws, design standards, etc. Many of the PDDD elements outlined have specific governing legislation, and different commercial models will similarly have unique legal frameworks that need to be considered at each stage of the project.

Examples of evidence

- Assessment of legislative requirements and definition of potential risks and constraints that will require special focus or exemption.
- Risk register updated with potential legislative risks.

A.2.11 Approvals documentation

Approval documentation should contain a suite of documents to be issued with all deliverables that acknowledges the suitability of any submission for approval. Each project participant should be recognised as the relevant delegated signature on the document as having reviewed the suitability of the submission.

The approvals documentation recognises each submission is being submitted in accordance with the PSDR or PPR and meets with relevant standards.

Examples of evidence

- Stakeholder engagement matrix identifying relevant governance bodies and approval pathways.
- Approval from relevant governance bodies.
- Confirmation of funding sources and availability.

A.2.12 Project initiative summary

The purpose of the project initiative summary is to demonstrate that a number of project options have been investigated as a response for a given problem. These should include both policy and capital responses and must align to the project objectives set out in the project charter, along with aligning to the client, operator, functional and system requirements. Generally, this will feed into the strategic business case.

Examples of evidence

- A summary of all initiatives considered and their appropriateness as responses to the defined problem.

A.2.13 Project option assessment report

The assessment of strategic options should be refined into the final business case confirming the preferred option and providing evidence to support it. The options assessment report should include the following elements:

- definition of the objectives and outcomes and requirements that the project is seeking to achieve;
- description of the options and the rationale for the identification and selection of those options for further evaluation. This may include nomination of a 'longlist' and refinement to a 'shortlist' of options;
- definition of the assessment method employed (criteria and weighting). In most instances this will take the form of a Multi Criteria Analysis (MCA). The MCA should be from a recognised industry method where applicable;
- assessment of the options in accordance with the established criteria; and
- recommendation of the preferred option(s) with key risks identified.

The project maturity and cost estimate accuracy used in the assessment should be of sufficient definition and accuracy to allow for meaningful relevant comparison of options. As good practice, the set of options assessed should include the 'do nothing' option for comparative purposes and as a benchmark for assessing the benefits and costs of the competing options.

Examples of evidence

- Documentation of options assessments.
- Stakeholder engagement matrix identifying relevant governance bodies and approval pathways for each option.
- Approval from relevant governance bodies.

A.3 Project management

A.3.1 Constraints, risks and opportunities register

It is important to understand factors that will dictate a project's success and ability to meet the project requirements. Any known constraints should be detailed, and it should be ensured that these do not prevent the project from meeting the requirements. In addition, there is potential for opportunities to provide, for example, better value for money, better alignment with similar projects or other policies.

A risk and opportunity register provides a list of risks and opportunities supported with a probability and cost estimate for each, aggregated into a collective risk dollar amount for the project. It allows risks and opportunities to be identified and assessed early and allows the team to apply intellectual capital rather than financial capital to mitigate or avoid risks.

Examples of evidence

- Initial risk assessment with documentation of project assumptions, constraints, risks and opportunities, developed over each subsequent phase into a fully defined and costed risk register.

A.3.2 Cost estimation

A cost estimation is an estimation of a project's cost to complete, including an estimate of uncertainty, which evolves over the course of the project life.

During the early stages of a project's development, the purpose of this estimate is to provide the information necessary to make an investment decision based on industry specific benchmarked rates.

As a project progresses through its lifecycle, the accuracy of the associated cost estimate is expected to improve as the project takes account of new information: scope is better defined, assumptions are tested, risks or issues are identified and quantified, and the design evolves. Regardless of this natural evolution, stakeholders expect the estimated total project cost to remain inside the original uncertainty estimate.

The cost estimate should be comprehensive and robust. All aspects of the project should be considered and quantified, and a quantity surveyor should provide input and validate the cost estimate. The cost estimation process should be undertaken in accordance with the relevant DTF guidelines.

Examples of evidence

- Details of QS engagement.
- Initial (high-level) cost estimate with reasonable uncertainty.
- Preliminary cost estimate with moderate uncertainty
- Detailed cost estimate with 100% defined scope and low uncertainty.
- Alignment of Cost Breakdown Structure (CBS) and Work Breakdown Structure (WBS).

A.3.3 Project schedule

The project schedule gives an overview of a project's timeframe. It usually includes an intended start and finish date and lists all project-related milestones, activities and deliverables. In order to develop a project schedule, project managers will estimate the time it will take to complete the individual action items. Scheduling therefore requires a good amount of project management experience.

When estimating the duration of an action item, it is crucial to take into consideration limiting factors like available resources and budget – including how availability might change by the time the project reaches delivery phase, based on growth in market activity.

Another decisive factor in creating a project schedule are the action items' dependencies. It is important to maintain the order in which the individual action items should be completed in order to fulfil any existing delivery cycles.

A schedule should cover all prestart activities and completion activities for each phase. It should be developed in accordance with the project scope and not overlook approval processes, auditing and review timeframes.

A project schedule is most commonly visualised in a Gantt chart. Not only do they show all important milestones and dependencies, the Gantt chart includes a progress bar that allows team members and project managers alike to fix a baseline from which they can track their project's overall progress.

Examples of evidence

- Details of preliminary or detailed schedule depending on gate.
- Approvals strategy to ensure inclusion of regulatory processes.
- High-level schedule with critical path has been developed into further detail based on business case, PDDD findings, operator requirements, planning approvals, etc. and baseline defined.
- Final project schedule with critical path and baseline compared with actual delivery schedule.
- Updated preliminary schedule with critical path identified.
- WBS dictionary defined.
- List of waivers.

A.3.4 Project assurance plan

Project assurance is an independent process that assesses the health and viability of a project, outlined in the project assurance plan (PAP). It is designed to provide you and executive management with a clear sense of whether a project will accomplish its objectives and if there are significant risks. The objectives of a project assurance function can include:

- assessing the risks and strengths of new or existing projects;
- ensuring known requirements for project success are present skills, processes, structures and culture;
- providing unbiased, independent evaluation of the project's prospects for success;
- keeping you firmly in control as the project matures; and
- working closely with project teams and stakeholders to ensure that risks are collected, prioritised, and mitigated.

Project assurance is broader than quality assurance in that it spans the three areas that can impact your project (e.g., business environment, project framework, project execution). Quality assurance typically focuses on the processes and products within the project team.

Examples of evidence

- An explanation of how the project aligns with the scope, how it will achieve its objectives and any risks to the project delivery.

A.3.5 Governance plan

Project governance is the management framework within which project decisions are made. Project governance is a critical element of any project, since the accountabilities and responsibilities associated with an organisation's business-as-usual activities are laid down in their organisational governance arrangements.

The primary objective of the documented governance plan is to specify and approve actionable procedures as needed to manage and administer a given project. An effective governance plan is prepared using both procedural and documentation templates, providing consistent steps and tools for production and processing.

Project governance frameworks should be based around a number of core principles in order to ensure their effectiveness, for example:

- ensure a single point of accountability for the success of the project;
- project ownership independent of asset ownership, service ownership or other stakeholder group;
- ensure separation of stakeholder management and project decision making activities; and
- ensure separation of project governance and organisational governance structures.

Examples of evidence

- Stakeholder engagement matrix identifying relevant governance bodies and approval pathways.
- Approvals from relevant governance bodies.

A.3.6 Interfaces and interdependencies

Interfaces are areas where two or more aspects of a project intersect or interact. Interfaces can be of a commercial or physical nature, such as where different contractors are engaged on the same project or separate projects are being delivered by separate contractors and are time dependent on each other. Interface risk, and the failure to manage it effectively, is a common cause for problems on major construction projects and can result in significant negative cost, time and quality impacts.

Managing interface risks between the contracting parties typically involves contractual provisions that may include collaboration and cooperation clauses, clear and complete scope and design documents, specifications, project specific and fit for purpose clauses, insurances and warranties, and variation clauses.

Interdependencies occur where a project interfaces with other projects and relies on completion of components in those other projects in order to proceed. A project experiencing schedule overruns can result in cascading delays as other projects are unable to move forward. For example, a new train project may require level crossings to be removed and power and signalling upgrades to reach practical completion before testing of the new trains could occur.

Project owners need to have a thorough understanding of other related projects in advance of commencing project planning. As the project progresses and construction proceeds, owners also need to understand how the risk of delays on related projects may impact their own project. These risks apply not only to a project's schedule but also its budget, quality and performance, as unforeseen delays caused by other projects, and outside of the control of the project team, will likely trigger compensation clauses in contracts that would not otherwise have occurred if the project was able to be built in isolation.

Examples of evidence

- Project interdependencies are mapped in schedule.
- Interface management plan and action register developed.

A.3.7 Resource management plan

A resource management plan is a document that describes how people and physical resources will be estimated, acquired, developed, managed, and controlled throughout the length of the project. It allows for efficient maximisation of resources, by increasing productivity in labour and materials and reducing wastage.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.3.8 Stakeholder matrix

A stakeholder matrix is a visual tool that allows for systematic identification, evaluation and prioritisation of everyone who can influence or has interest within a project. This tool assists with the development of an effective stakeholder communication and engagement strategy, ultimately providing the basis for a robust stakeholder management plan.

Examples of evidence

- Updated stakeholder engagement matrix identifying key influencers, approval authorities, impacted groups and relevant governance bodies.

A.3.9 Asset handover plan

The asset handover plan documents all project assets as the end of project delivery, who owns each asset and the process by which the asset will be handed back to the owner or operator. Included in this will be the relevant operation and maintenance (O&M) manuals detailing defects periods, design lives, warranty information, safety information relating to both operations and maintenance and any other information relevant to the project assets. Note that this could also relate to temporary assets required during construction that are being handed back.

Examples of evidence

- Asset handover plan.
- Asset management system.
- O&M manuals including warranties and O&M safety plans.
- Training management plans.

A.3.10 Commissioning plan

A commissioning plan defines and documents the objectives, management systems, processes, and resources to be implemented to effect the safe and efficient commissioning of the project. Elements of the commissioning plan include, where applicable:

- safe work management systems including permitting, lock-out/tag-out, 'livening up' procedures, handover from construction to commissioning team;
- roles, responsibilities and organisational structure for all parties involved in commissioning including construction, commissioning, engineering, operations and other stakeholders;
- schedule of commissioning activities including key milestones and interfaces;
- off-site factory acceptance testing and pre-commissioning;
- processes for commissioning documentation including development of test procedures, check sheets, certificates, punch lists, acceptance notices, etc.;
- tools to be implemented for commissioning (e.g. databases);
- breakdown of project into elements for completion and commissioning;
- establishment of key performance criteria to ensure project outcomes are verified during commissioning;
- regulatory requirements for testing (e.g. pressure testing), livening-up equipment, certificates of occupancy, etc.; and
- resources, equipment and special tools required to affect commissioning.

Examples of evidence

- Testing and commissioning plan.

A.3.11 Interface and integration plan

The interface and integration plan sets out the procedure for handling potential impacts to adjacent properties, businesses, other projects and stakeholders. It should detail what these interfaces could be and the resultant impacts. If there will be any long-lasting impacts that cannot be avoided, the integration of the project with the relevant stakeholder should be planned.

Examples of evidence

- Interface management plan.
- Plan reviewed and updated as required throughout the project cycle
- Project change register that reflects any changes since business case approval.

A.3.12 Benefits realisation management

Effective benefits realisation is critical to the achievement of the outcomes desired from investments. Benefits realisation is an important contributor of key information to the development of business cases, portfolio management, governance and decision making by government.

The objectives of benefits realisation management (BRM) are to:

- ensure benefits are identified and defined clearly at the outset, and linked to strategic outcomes;
- ensure business areas are committed to realising their defined benefits with assigned ownership and responsibility for adding value through the realisation process;
- drive the process of realising benefits, including benefit measurement, tracking and recording benefits as they are realised;
- use the defined, intended benefits as a roadmap for the program, providing a focus for delivering change; and
- provide alignment and clear links between the program (its vision and desired benefits) and the strategic objectives of the agency involved.

The benefits realisation plan (BRP) is a document that maps project objectives to real world benefits, via project deliverables. The BRP incorporates unique benefits profiles drawn from initial project objectives and assumptions that are developed into specific performance measures to understand how the benefit will be realised (measured). Benefits may be classified variously as:

- tangible financial;
- tangible non-financial;
- intangible; and
- disbenefits.

Benefits profiles should be specific, measurable and map directly to both a project objective and a project deliverable. The BRP then provides a strategy for how the project will track and measure those benefits, including from which data sources information will be drawn and how it will be displayed (e.g. live dashboards).

The process by which the BRP may be developed should include:

- map the outcomes and benefits with stakeholders:
 - map and estimate scale of benefits;
 - define the intermediate and final outcomes required to realise the benefits;
 - analyse the impact of the change on different stakeholders;
 - review how the impact of the program could be measured, considering the program maturity;
 - identify any enablers; and
 - identify any dis-benefits;
- develop a benefits realisation strategy:
 - identify which benefits are considered strategic and align these with the strategic goals;
 - identify any potential risks associated with either the forecasting or delivery of the benefits;
 - review any interdependencies with other programs that may be claiming the same benefits;
 - define the governance requirements to support benefits realisation; and
 - assess the resources required to identify and manage benefits;
- obtain sponsorship buy-in and ownership of benefits:
 - identify benefit owners; and
 - validate benefits realisation strategy with stakeholders.

Examples of evidence

- Benefits realisation plan.
- Lessons learned register.
- Project change register.

A.4 Investigations

A.4.1 Air quality assessment

An air quality assessment evaluates the impact of a proposed project on local air quality. This includes both direct pollution from the project, as well as indirect impacts such as pollution from increased traffic flow either during or after construction.

A baseline assessment should be conducted, as well as an assessment of the impact the project will have on local air quality. An approvals strategy will also need to be developed to address any air quality impacts.

Examples of evidence

- Air quality modelling accompanied by an assessment of this modelling.

A.4.2 Asset audit

Projects will often interface directly or indirectly with third party assets within or adjacent to a defined project boundary. These assets should be identified and investigated for potential impacts with the proposed project.

Before commencing any activity on a construction site, a preconstruction survey should be undertaken to establish the presence of any existing assets on and adjacent to the project site. The project proponent should have a sound understanding of key assets on site and whether they are to be retained, improved or demolished, as well as those assets on adjacent sites that are likely to impact how construction activities are planned and carried out. This includes conducting site inspections and obtaining GIS datasets, and considering whether further information may be available from other sources.

An asset condition assessment should be carried out for assets that are to remain or that are needed for the success of the project. This assessment should also outline how capital assets are managed and maintained to optimise operations. Condition assessments are most commonly associated with physical assets, such as bridges, roads, track and equipment, and are used to initiate preventative maintenance or remedial work to preserve their value and extend their useful life. Projects that interface with ageing infrastructure should consider the potential need for improvement or replacement works and the accuracy of the information provided.

Examples of evidence

- Asset audit report.

A.4.3 Constructability assessment

Assessment of the constructability of a project is an important and continuous feature during the planning and development stage. It is carried out to identify constraints and assess buildability with the available information. The assessment process flows from site investigation reports and concept design developments, including iterations as required.

Constructability assessments facilitate the optimum integration of design and construction principles and improve communication among various parties involved in the planning stage, including designers, cost estimators, schedulers and construction advisors.

Constructability assessment generally takes the form of:

- experienced engineers, architects, designers and construction professionals using their inherent knowledge and experience to influence the design and execution strategy; and
- detailed assessments (e.g. lifting plans, transport studies, fabrication studies) undertaken to address specific constructability concerns, options or opportunities.

Formalised constructability reviews follow a structured process (e.g. CHAIR) to identify constructability issues, opportunities and associated mitigations. The assembled constructability team should include design and construction professionals knowledgeable in the industry and specific construction issues.

Examples of evidence

- A constructability assessment of the most current design with input from the design, construction, Workplace Health and Safety and stakeholder teams.

A.4.4 Contamination and spoil management assessment

A contamination assessment tests for the presence of contaminants in the soil and any current structures on a site. Many contaminants (e.g. asbestos, industrial waste, petrochemicals, solvents, etc.) pose significant health and safety risks to workers and the discovery of contamination after project works have begun can create significant cost and schedule delays.

An initial or preliminary assessment may trigger the need for a detailed investigation or confirm that further investigation is unwarranted. Previous and current site uses will be reviewed and the presence of underground storage tanks, chemical stores and surface staining will be investigated and considered in the context of the environmental setting and project objectives. External contamination – the potential migration of existing contaminants to offsite areas or the potential that contaminants may have migrated from adjoining sites, should be considered.

In many cases, remediation of contaminated land will form enabling or ancillary works to the overall project scope. In rare cases, contaminated land may be re-purposed without remediation. Complex sites may necessitate the development of mitigation plans and EPA or approvals processes may impact cost and schedule.

Examples of evidence

- A report documenting evidence of contamination investigations and the outcomes of this, including any further actions or considerations required.
- An assessment of spoil generated by the project and the management of this spoil.

A.4.5 Cultural heritage assessment

A cultural heritage assessment examines any possible impacts a project may have on Aboriginal cultural heritage and determines if there is a requirement for a cultural heritage management plan (CHMP) to be produced for a project. A CHMP is required when high impact activities are planned in an area of cultural heritage sensitivity, as defined by the Aboriginal Heritage Regulations 2018.

In such an area, planning permits, licenses and work authorities can't be issued unless a CHMP has been approved for the activity. Areas of cultural heritage sensitivity are registered Aboriginal cultural heritage places, as well as landforms and land categories that are generally regarded as more likely to contain Aboriginal cultural heritage.

If a CHMP is required, project proponents should ensure that there is ongoing engagement with the registered Aboriginal party (RAP), or Aboriginal Victoria if there is no RAP, and that a suitably qualified heritage advisor has been engaged to undertake the assessment and develop an appropriate management plan.

Examples of evidence

- Analysis of potential cultural heritage risks or issues.
- Cultural heritage risks defined in risk register.

A.4.6 Disruption identification

HVHR projects, by their nature, are often delivered in complex technical, environmental, community and political landscapes. Decisions taken and activities undertaken by the project often have significant impact on surrounding communities and businesses during each of the project planning, delivery and subsequent operation stages.

Understanding, planning for and mitigating these consequences is important for project success. Planned disruption, though unwelcome, is often considered acceptable with sufficient notice and mitigation. Unplanned disruption, however, is often seen as a major indicator of project failure, and disruptions to community and business may be transferred to the project in terms of financial loss.

Disruption may take many forms, at each stage of the planning, delivery and operational phases, including:

- perceived privacy or trespass;
- congestion and traffic, including changes to public transport demand;
- noise, vibration or other pollution;
- telecommunications;
- geo-stability;
- visual obstructions or changes to visual landscape;
- changes to the natural environment; and
- changes to the built environment.

In preliminary stages, projects should seek broad stakeholder engagement to communicate project intent and objectives and understand stakeholder concerns.

As a project evolves and potential impacts to stakeholders are better understood, detailed consideration should be given to understanding how the project may cause disruption, including risks of unplanned outages and disruption. Comprehensive stakeholder engagement and change management strategies should be implemented to ensure any disruption is planned and carefully managed.

Examples of evidence

- A register of surrounding communities and businesses.
- An assessment of potential impacts on the surrounding communities and businesses and mitigations for these.

A.4.7 Ecological assessment

An ecological assessment can be used to assess a variety of biodiversity values, but commonly details what terrestrial and aquatic flora and fauna (including native vegetation) can be found on the site, the value of any habitat types and any potential constraints this information may pose for the project. Assessments are largely focused on threatened species and communities, as scheduled under relevant commonwealth and state environmental statutes (EPBC Act and *Flora and Fauna Guarantee (FFG) Act 1988*). It is used for the development of documentation for environmental approvals, as well as in the planning stage to inform the design of the project to have the least environmental impact possible.

If threatened flora or fauna are identified on or as using the site, relevant steps must be taken in accordance with the relevant legislation to minimise the impact of the project. Ways of avoiding or minimising impacts can include altering designs or construction sequencing or, in the case of seasonal impacts, changing the scheduling of various construction activities. Where further avoidance or minimisation measures cannot be taken for native vegetation, offsetting measures should be explored. Habitat 'offsets' can also be applied to compensate for the loss of habitat to a species through securing additional habitat elsewhere.

Examples of evidence

- Analysis of ecological assessment including scope, time and cost impacts for mitigation of adverse findings from a state and Commonwealth perspective.
- Risk register includes risks from ecological assessment.

A.4.8 Ecological audits

Flora and fauna assessments provide an understanding of the biodiversity values associated with a site, focusing on the presence of native vegetation (vegetation communities) and habitat availability for flora and fauna species that may utilise the area.

The assessment relates to the overall sustainability of project, in general to avoid areas of biodiversity value in terms of sustainable development objectives. More specifically, flora and fauna (ecological) assessments are undertaken to:

- manage planning permit requirements around native vegetation removal;
- manage requirements in relation to threatened species/threatened community management; and
- manage approvals requirements.

A variety of legislation is in place to protect and manage biodiversity from a local, state and commonwealth perspective, with assessments required to provide a scientifically robust consideration of impacts specifically in relation to the governing policy objectives under state and federal law to the satisfaction of approval regulators.

Other applications of flora and fauna survey may be undertaken in relation to site management, including:

- weed and biosecurity management requirements;
- bushfire management;
- site improvement/restoration objectives;
- threatened species recovery plans; and
- quality assignment for offset evaluation purposes.

Examples of evidence

- Ecological audit reports.

A.4.9 Existing conditions assessment

Thorough site investigation and documentation reveals and records information that will be used to: inform design and project planning, establish site access options and site management during and post-construction and minimise reliance on assumptions.

The approach to existing conditions and site investigations should be determined on a risk-based approach and consider many factors, considering questions such as:

- How complex is the adjacent and surrounding built environment (physically, environmentally and socially), within which the works are to be designed and delivered?
- How comprehensive and reliable is available desktop information (if in doubt, check)?
- How sensitive are the proposed works to 'unforeseen site conditions' or to social impacts?
- How recent is any available site information (such as existing conditions drawings)?
- Have any environmental assessments been undertaken on the site and surrounds previously?
- Is a referral required under the Commonwealth EPBC Act? Is further assessment required?
- Is a referral required under the Environment Effects Act? Is an EES required to be prepared?
- Has land been reserved for the project? Is land required to be reserved? Does the Project have the benefit of the *Major Transport Projects Facilitation Act 2009*?
- Is any planning approval required for the project and what is the proposed form?
- Is a Cultural Heritage Management Plan required?

Examples of evidence

Existing conditions report and dilapidated survey including photographs with sign-off from any relevant stakeholders.

A.4.10 Existing conditions plan

Existing conditions drawings and plans document the existing use and occupation of the site, including title boundaries, easements, services and other encumbrances. These also integrate technical information, including measured drawings of any existing buildings or other structures, and features such as trees (collected via the land survey).

A comprehensive understanding of existing conditions is particularly relevant when a project involves the retention or redevelopment of assets. However, where structures are to be demolished, an existing conditions plan will also indicate whether aspects of the demolition may prove difficult.

Project proponents should mitigate risks arising from the extent and latent attributes of the development site and site conditions to the greatest extent reasonably practicable, prior to finalising the design and the procurement plan.

Examples of evidence

- Existing conditions plan.
- Documentation of specific conditions and modifications and how they have been mapped into scope statement.

A.4.11 Geotechnical assessment

A geotechnical assessment is required to establish the existing ground conditions at each site. This assessment will typically require a suitable number of boreholes and test pits in selected locations across the site, with the location, number and depth to be established according to project type, characteristics and extent. For instance, if it is anticipated that the project will involve a tunnel, the depth of investigation will be much greater (and require further specialist assessment). Soil types will impact directly on the project's footing design and concept solutions. It may be necessary to include geotechnical investigations for underground structures, and consideration should be given to existing information, including previous geotechnical assessments, available desktop information and local geotechnical knowledge.

Comprehensive accumulation of information on and under the ground facilitates an appropriate footing design and enables a practical, safe and economic construction process to be planned.

One of the challenges during the early stages of project development is for the proponent to determine the required scale of geotechnical work, and have the work undertaken in a timely manner. This applies not only to the number and depth of exploratory pits and boreholes, but also to the number of samples, in-situ tests and degree of geological content. Permits, approvals and stakeholder engagement are typically required to break ground, and it may be necessary to stagger investigations in multiple stages, with locations more critical to the design targeted first.

The scope of the geotechnical assessment should be sufficient that the project proponent will have reasonable information and knowledge about the subsurface conditions, the site's risk presented by these subsurface conditions, and understand how these subsurface conditions will influence the design or schedule for the project. A poor understanding of the subsurface conditions often leads to costly delays due to rework of designs, or ground works during construction taking much longer than anticipated.

Examples of evidence

- Geotechnical investigation plan.
- Geotechnical assessment report.

A.4.12 Hydrological, hydrogeological and hydraulic conditions

A hydrological assessment examines the flows of surface and groundwater on the site, while a hydraulic assessment examines the impact of the project on water and sewer systems. As with a geotechnical assessment, an assessment of hydrological and hydraulic conditions is necessary for understanding how the project should best be designed and constructed.

These assessments should provide a thorough understanding of considerations such as flood risk, runoff and infiltration into the soil, and be informed by whether the nature of the work is particularly sensitive to hydrogeological risk. They should also provide an indication as to whether initial designs require excavation below the water table, potentially triggering the need for ground water management while initial works are completed. This understanding can be achieved through appropriate tests and relevant numerical groundwater models.

Examples of evidence

- Hydrological and hydraulic conditions report.

A.4.13 Land survey

For infrastructure-based project development, land surveyors perform two separate functions: feature survey and cadastral boundary definition.

A feature survey is essential to any construction or infrastructure project as it accurately maps the existing topography – the natural and man-made features of an area. It provides the foundation of the design and is vital in helping determine what design options are possible based on their unique features and terrain. This involves taking 3D measurements features and accurately mapping their spatial location. Typical features include, but are not limited to, ground and building levels, roads, paths and kerbing, utility pits and poles, street furniture, fences, trees, vegetation and any essentially any visible feature.

An appropriate survey control network shall be established at the commencement of a feature survey with connections to the Victorian survey control network (SCN). The establishment of a control network will facilitate the location of reference marks that can be used as part of future works, if necessary. The feature survey and control network shall be relative to the relevant geodetic network for Horizontal and Vertical position. The horizontal network shall be in accordance with the map grid of Australia (MGA) 2020 and the vertical network shall be in accordance with the Australian height datum (AHD).

The accuracy and scope of the survey is critical. All project survey work shall be undertaken by an appropriately qualified land surveyor using well established field practices and documented QA procedures, ensuring work provided is in accordance with recognised best practices.

Surveyors also mark and define cadastral land boundaries – the lines that run between properties. They confirm existing boundaries, create new ones when land is subdivided, a development is being planned or land is to be acquired, and they provide advice on boundary issues. The definition of land boundaries and legal ownership must be undertaken by a licensed land surveyor registered with the Surveyors Registrations Board of Victoria.

Periodic site surveys may also be required at each stage of the project to ensure project proponents understand and respond to changes in the site and its features as works progress or as design areas change.

Examples of evidence

- Land survey files in the appropriate format.
- Regular survey updates, as required.

A.4.14 Land use assessment

A land use assessment examines what activities are currently occurring and have previously occurred on the site. The results of a land use assessment can be used to inform the need for or depth of other investigations, such as a contamination assessment.

Project proponents should have a thorough understanding of the history of a site and how the project will impact the site, and site boundaries should be known to a high level of confidence. Based on the land use assessment, an approvals strategy should be developed, including – for example – the potential need for rezoning.

The land use assessment will need to consider the Certificates of Title for each parcel of land and any encumbrances or restrictions which may be present. Encumbrances or restrictions may restrict the use of the land in some way or inform the planning approvals strategy. For instance, a Trust for Nature Covenant may prevent the removal of native vegetation, a S173 may require a particular development outcome on a site to be achieved or a covenant may prevent a site being subdivided or used for a particular activity.

Examples of evidence

- Details of the personnel engaged to undertake the land use assessment.
- Analysis of the land use assessment required.
- Consideration of expected time, cost and effort and likelihood for achieving changes required.
- Risk register includes risks from the land use assessment.

A.4.15 Landscape and visual assessment

A landscape and visual assessment reviews the impact the project will have on views and the surrounding landscape. Some projects may have visual effects, but do not impact on the landscape as a whole and vice versa. The assessment provides the basis for further consideration and development of the project's design to minimise negative landscape and visual impacts, and to maximise opportunities to positively contribute to urban design quality to enhance public amenity and open space.

All projects should consider and respond well to their context through high quality urban design proposals that are integrated with technical solutions. Depending on the nature of the project, this may mean that a visually recessive design is appropriate, or that more distinctive elements and interventions are warranted. All projects will impact on urban design quality in some way, so even the most modest should consider and address urban design quality through expert advice.

For major investments such as those represented by HVHR projects, consultation with the Office of the Victorian Government Architect (OVGA) should be undertaken early to assist in optimising urban design outcomes. Project proponents should be familiar with local council requirements and strategies covering matters such as built form requirements, landscaping, open spaces and the protection of existing vegetation and trees.

Examples of evidence

- Landscape and visual impact assessment including scope, time and cost impacts for mitigation of adverse findings.
- Risk register includes risks from landscape and visual impact assessment.

A.4.16 Major utility locations and diversion strategies

Often projects require working in close vicinity to existing utilities in the area. Underground and overground utilities investigations should be carried out in liaison with service utility owners to clearly identify the services present in the area, and their existing condition. Rigorous consideration is required to establish the type, extent and timing of the work to be undertaken with utilities so that the project schedule and cost are not affected.

In some cases, existing services must be removed or diverted to enable the project's construction and/or operation and early engagement with utility owners is critical to avoid delays to the project. Where utilities cannot be diverted, utility agreements and contracts for joint use of the land/space may be required. It is important to ensure the review and approval processes are coordinated in a timely and efficient manner and are built into the project schedule.

Consideration should be given as to whether early works packages might be appropriate for the project, as well as the application of any federal legislation such as the Pipelines Act or Telecommunications Act.

A high-level utility strategy should be developed to outline the strategy for the management of existing and new utilities during each stage of project delivery and asset lifecycle. It should provide appropriate information to identify and mitigate against delays due to, for example, utility clashes, unidentified utilities, delayed design approvals. This strategy should be evolved in later stages to address operations, maintenance and disposal requirements for each stage of the asset lifecycle.

- During planning, the strategy will include identification of utility authorities, specific authority requirements, design constraints and approval processes.
- During delivery, the strategy will detail requirements for utility relocation, temporary utilities and new utility installation.
- During operations and maintenance, the strategy will include information pertaining to design life, asset management, procedures for maintenance and replacement of assets specific to each authority and other operating requirements.

Examples of evidence

- Identified utilities and diversion strategy report.
- Plans outlining proposed relocations, new utilities and temporary utility requirements.
- Utility strategy plan.

A.4.17 Noise and vibration assessment

A noise and vibration assessment is used to determine the impact a project will have on local noise levels. It involves undertaking background noise and vibration measurements, estimating how much additional noise and vibration a project will generate during construction and operation and ensuring that through design these levels remain within acceptable limits.

Noise and vibration levels during construction and operational phases can be quite different, and it is important to consider both ground-borne and airborne risks. Specific locations and receptors (such as schools and hospitals) sensitive to noise and vibration around the site area should be identified and management plans put in place to minimise disruption.

Examples of evidence

- Noise and vibration assessment and plan, reviewed and updated as required throughout the project cycle

A.4.18 Water quality assessment

A water quality assessment evaluates the impact of a proposed project on local and regional groundwater and surface water bodies.

Project proponents should undertake a baseline assessment of water quality, ensuring that monitoring includes appropriate water quality parameters that are relevant and compliant with guidelines and statutory requirements. Existing water quality for the project area and receiving waterways should also be reviewed. This includes data available through the Victorian Water Measurement Information System (VWMIS) administered by DELWP.

The VWMIS is an online data source for surface water and groundwater data collected through the Regional Water Monitoring Partnerships and is the primary access point to search and download surface water (water level, flow and water quality) and groundwater (water level and water quality) monitoring data. If relevant data is available for a proposed project area it should be reviewed and summarised to characterise existing baseline conditions and to complement any other baseline monitoring programs being undertaken by the proponent.

Relevant water quality legislation and policy should be considered. These include the recently amended *Environment Protection Act 2017* and the 2018 Amendments, the existing State Environment Protection Policy (Waters) 2018, and the proposed Regulations and Environmental Reference Standards to be introduced under the amended Environment Protection Act in July 2020. These set out environmental values to be protected in waterways, and the water quality objectives and indicators required to protect these values. The appropriate environmental values and water quality objectives for protection need to be identified at this stage. Baseline and background water quality is important to understand when setting water quality objectives.

The potential impacts of a project on local and regional waterways during the construction and operation phases should be considered. Aspects to be considered include planned or unexpected discharges to waterways, pollution and spill prevention, sediment management, water extraction, waterway crossings or barriers, flow alterations, and the presence of important aquatic species. The nature of the project and the potential pathways for impact should be reviewed so that prevention and mitigation measures can be appropriately applied.

An assessment of the impact of the project on local and regional water quality (including the water quality objectives identified from background data review and relevant regulatory instruments) should be undertaken and as appropriate, an ongoing monitoring should be developed.

Examples of evidence

- Water quality modelling outputs.
- An assessment of the water quality following the modelling, reviewed and updated as required throughout the project cycle.

A.5 Procurement and delivery

A.5.1 EOI/RFT management plan

An EOI/RFT management plan needs to address incorporating the needs of the project and its stakeholders, owners, the principal and participants by outlining the steps to be taken toward finding a shortlist of preferred bidders who can demonstrate their capabilities and capacities.

It should outline in detail the provision of information between the parties and the expected timelines for access to information, distribution of tender documents, process to deal with requests or information gaps at each step. It should be prepared in a manner to promote open and innovative communication to deliver to the outcomes that have been sought.

Often tender documentation is written for the tender phase and seen as serving its purpose purely for this phase however a robust management plan can pre-empt the use of this documentation during the delivery phase and outline the purposeful intent for these documents to assist in the project delivery.

It should be written to outline and address requirements for any stages, separable portions phases, early works or known remediation activities required. The purpose, use and limitations of the tender documents should be outlined in the management plan to ensure the appropriate presentation and use of documentation throughout the tender and delivery phases.

Examples of evidence

- EOI/RFT management plan, reviewed and updated as required throughout the project cycle.

A.5.2 Tender documents

Tender documents are prepared by the procurement agency at the EOI phase for the purpose of engaging with the marketplace to identify suitably qualified providers and then at the RFT phases after a shortlist of tenders has been selected.

The tender documents should be as clear as possible and set firmly the expectations of the parties. The suite of documents will vary dependent upon the project and project type.

There should be a clear order of precedence, especially for when it is relied upon during the delivery phase. Standards and specifications should be checked to ensure that they don't contradict or challenge the scope and allow for minimum viable product to be delivered. The objectives and application of the standards through the delivery phase should be clearly documented in the tender documents.

The developed documents should include, but not necessarily be limited to, the following:

- reference design;
- commercial requirements;
- principal project requirements (PPR);
- project scope and delivery requirements (PSDR);
- returnable schedules;
- functional requirements;
- operational requirements; and
- legal and legislative requirements.

More specifically, EOI tender documents set out the project background, procurement timelines, evaluation criteria, probity requirements and required deliverables.

RFT tender documents are made up of four sections but may vary with the procurement method and nature of the Project:

1. **Request for Tender instructions:** including the project background, objectives, tender timelines, tender deliverables, evaluation criteria, probity requirements.
2. **Technical specifications:** the design, construction and (if applicable) operations and maintenance specifications for the project.
3. **Contract documents:** the proposed form of contract between the procurement agency and the successful tenderer.
4. **Supporting information:** the due diligence information commissioned by the procurement agency, mandatory standards and supporting information.

The tender documents will require review by the nominated legal adviser.

Examples of evidence

- Tenderer's schedule reflects appropriate baseline.
- Details of waiver resolution.
- Tenderer's documentation addresses interdependency management strategy.

A.5.3 Tender evaluation plan

The tender evaluation plan is an internal document setting out the methodology for undertaking the tender evaluation. It is developed by the procurement agency with input from the probity and legal advisers.

The tender evaluation plan should detail the roles and responsibilities of the evaluation panel and the process that will be followed by each.

Financial and/or statutory delegations should be included where appropriate as well as the timelines for the collection and processing of submissions.

Key considerations such as probity, conflicts of interests, confidentiality, fairness and relevant procurement policies should be referenced.

Details of how the tender deliverables are to be stored and accessed by the evaluation team should be included.

Examples of evidence

- Define tender methodology which has been reviewed and approved by probity and legal advisers, among others.

A.5.4 Construction strategy

A construction strategy sets out the key objectives, strategies and enablers for the successful construction project. The purpose of the construction strategy is to set out these elements, and to ensure that they are consistent with the project objectives and design. The construction strategy demonstrates that the construction of the project is feasible in regard to safety, cost, schedule and execution. Elements of the construction strategy include:

- safety approach, key risks and enablers;
- selection of contractors and subcontractors with appropriate capabilities;
- identification of key work packages and sub-projects;
- labour availability, strategy and relations;
- extent of off-site fabrication and modularisation versus on-site construction;
- availability of specialist equipment and commodity materials;
- provisions for site facilities and laydown; and
- constraints around seasonal construction windows.

The construction strategy should set the direction for these elements, to be fully developed and described later in the construction management plan.

Examples of evidence

- A safe, compliant and efficient construction strategy which aligns with the project objectives, reviewed and approved by the client.

A.5.5 Traffic management and logistics

Traffic management and logistics must be considered for all projects. The extent of planning and management required will be dependent on the nature and location of the project. Logistics concerns the movement of personnel, materials and equipment to support the project and traffic management refers to management of traffic impacts to the safety and convenience of the general public and the project.

Elements of a logistics and/or traffic management plan may include:

- identification of personnel, materials and equipment to be moved, from point of origin to destination;
- specific routes and modes of transport to be used;
- traffic volumes associated with movement of these items;
- identification of risks both to the general public (off-site) and construction personnel (on-site) associated with traffic movements and associated mitigations;
- plans for traffic controls (e.g. signage, control points, restricted movement hours);
- special vehicle movements (i.e. over-size/weight loads) including route assessments, modifications to routes, restrictions on movements and permitting;
- regulatory requirements, notification and management of stakeholders, alternative traffic/transport arrangements;
- staging plans for projects with significant traffic impacts (e.g. road projects); and
- permanent or long-term traffic restrictions proposed by the project.

Examples of evidence

- Traffic management plan (TMP) and associated traffic control plans (TCP).
- Plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.5.6 Handover of design drawings and reports

A project owner's requirements can be provided to contractors via technical specifications and design drawings. Design drawings are prepared by the owner's designers and passed to the construction team to enable a project to be constructed. Design drawings provide dimensioned, graphical information that can be used by a contractor to construct the works, or by suppliers to fabricate components of the works or to assemble or install components. They may include architectural drawings, structural drawings, civil drawings, mechanical drawings, electrical drawings and so on.

Traditionally, working drawings consist of two-dimensional orthogonal projections of the building or component they are describing, such as plans, sections and elevations. However, increasingly, building information modelling (BIM) is being used to create three-dimensional representations of buildings and their components for construction. The Victorian Digital Asset Strategy aims to coordinate many of the elements critical in planning, delivering, operating and maintaining Victoria's critical state infrastructure.

Examples of evidence

- Drawing management system and acquittals log.
- Approved as-built drawings and drawing register that reflects any changes since business case approval.

A.6 Management plans

A.6.1 Project management plan

The project management plan (PMP), sometimes referred to as a 'project execution plan' sets out the strategy for managing a project. Although the PMP is developed during the project's concept and feasibility phase, it is a living document that evolves as the project progresses and is updated with the latest relevant information as required, particularly during the delivery stage.

The purpose of the PMP is to provide a comprehensive baseline of what has to be achieved by the project, how it is to be achieved, who will be involved, how outcomes and progress will be reported and measured, and how information will be communicated. It should be used as a reference for any decision that is made on the project and for clarification of unclear areas.

The PMP should be available to all project members, as it can provide essential project information and can be used to introduce project members to the project. The PMP is probably the main communication document for the project during the delivery phase. The PMP should further reference the other management plans and the relationship of each.

Generally, the PMP will be prepared based on information contained in the approved project business case and the project brief, but might then be developed further to include:

- project definition and a summary of the approved project brief;
- general business rules;
- project resources and staffing structure;
- roles and accountability matrix;
- a list of drawings (to the extent to which they have been developed at this stage of the project);
- project program and key milestones;
- project budget, cost management and progress payment procedures;
- sub-contracting and procurement strategy;
- project governance including roles, responsibilities and authorities (which might be set out in a responsibility matrix);
- monitoring and reporting strategies;
- potential consultations and stakeholder management;
- communications strategy and standards;
- risk assessment and risk allocation;
- strategy for obtaining planning permits and other approvals;
- occupational health and safety strategy;
- project and quality assurance strategy;
- operational and handing over strategy; and
- unusual or long-lead items.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.2 Design management plan

A design management plan (DMP) describes the systems to be put in place for effective execution of the design. Its specific purpose may be for:

- the principal to describe its approach to the overall design management including procurement strategy, internal design execution, design oversight and surveillance;
- internal to the party performing the design, describing resourcing, work packaging and internal workflows and quality systems; and
- to coordinate design activities between the parties (usually between the contractor and the principal/owner for a D&C contracting model). It provides a basis for the parties to monitor and control the project's design activities and process.

Elements of the DMP may include:

- design responsibilities and roles (which might be set out in a responsibility matrix);
- deliverables to be produced, either in a typical or detailed manner;
- design program, including key dates for reviews and information exchanges;
- schedules of information required/release dates;
- deliverable requirements (e.g. the size and format of drawing types, electronic file formats);
- estimate of staff hours to be spent by designers on each element or drawing;
- technical management of change processes;
- key design development processes including:
 - safety in design;
 - constructability reviews;
 - design reviews/model walkthroughs;
 - risk assessments (HAZOP, HAZID, CHAIR, etc.);
 - inter-discipline design reviews;
- technology management (implementation of new technology);
- design review processes including responsibilities, tools, workflows and authorisation to release deliverables;
- standards and specifications to be adopted, methods for ensuring compliance;
- engineering surveillance processes; and
- management of sub-consultants.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.3 Procurement management plan

The procurement management plan is a key part of the overall project management plan and will likely be developed by the contractor delivering the project. The document describes how items will be procured during the project and the approach to be used for managing vendors on the project. The preliminary procurement management plan should provide a high-level overview of this to support the project planning and development process and should evolve into a detailed procurement management plan as a key PDDD activity to demonstrate readiness for market.

Specific areas to describe include:

- **Procurement process** – This section provides a brief overview of the process requirements necessary to manage procurement of the identified needs.
- **Roles and responsibilities** – This section describes the various roles on the project and their responsibilities to the procurement process.
- **Identified procurement needs** – This section details the material, products or services identified for procurement.
- **Timing** – This section will describe the timeframe that resources are needed. This will provide a better sense for when the procurement process needs to be started for each item.
- **Change review and approval process** – Describe how changes are made to procurement documents to ensure the changes are valid, understood and approved by the appropriate people.
- **Vendor processes** – Describe the processes that the vendors should use for timesheet approval, invoice processing, contract renegotiation, status reporting, scope change requests, etc.

There may be additional information in the plan as well to ensure the procurement process is understood and managed effectively.

Examples of evidence

- Details of engagement with procurement.
- Approved procurement plan.
- Consistent review of the management plan
- Project change register that reflects any changes since business case approval.

A.6.4 Change management plan

Changes are inevitable when a major or complex project evolves through the development phases and proceeds to delivery. Change management is a continuous process that involves identifying any changes in approved scope, budget, schedule, communications or quality and then assessing, approving and controlling the impact of these changes to the project and to its key stakeholders.

A change management plan is usually developed by the project owner to help the project team to manage the change process. The plan describes the key steps, activities and governance arrangements involved in approving changes to the project. It also documents all approved changes.

A change request is a key aspect of the change management process and should generally consist of:

- strategic demonstration of the reasons for the change;
- complete details of the change;
- risks identified and their considerations;
- identification of stakeholders and the change management team;
- clarification of the expected benefits from the change;
- cost, schedule and other impacts; and
- change management communication strategy.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.5 Community and stakeholder engagement plan

Early identification of stakeholders and a strategy to engage effectively with them from the concept phase and throughout the project lifecycle is critical. Insights gained from early and meaningful engagement will improve project outcomes and assist with environmental and other approvals processes. Determining the communication needs of each stakeholder or stakeholder group should be carefully considered as a combination of what they want to know and what the project team needs to inform them to achieve the project objectives. Different approaches are typically utilised depending on the level of impact to each group.

A first step in considering how to interact with stakeholders can be the preparation of a stakeholder map or stakeholder matrix. A stakeholder map might assess:

- the likely impact of the development on the stakeholder;
- the issues in which they have an interest and their likely position on these issues and the project more broadly;
- their ability to influence the development and progress of the project;
- their potential impact on the project; and
- potential mitigating actions that may be taken to address their concerns.

A stakeholder map allows a plan to be developed for managing the involvement of different stakeholder groups. Clearly, a stakeholder who will be significantly affected by the project, who has a strong ability to influence its development and who is likely to be against it proceeding will require a great deal of attention. This may require the preparation of a stakeholder management plan outlining strategies for stakeholder communication and consultation.

The stakeholder and community engagement plan will be a roadmap for guiding the engagement of the projects and will need to:

- consider the existing socio-political environment, including community concerns, opportunities for engagement, stakeholder needs, legacy issues, concurrent projects or planning processes and sentiment towards the department and the sitting government of the day;
- clarify key stakeholders and their potential interests and issues including the level of influence in decision-making by the community and key stakeholders, and the process for feeding this information into the project timeframes;
- define appropriate and effective engagement methods using a risk evaluation scenario, to identify how to best address risks early in the process;
- establish a framework for media and communication management, including key project messages, strategies for consistency and working with any corporate branding and current engagement frameworks;
- define internal communication protocols including an approvals process for communication materials, clarified roles and responsibilities; and
- prepare an action plan for delivery of engagement and communication activities to assist achieving the timeframe including a resource schedule.

Examples of evidence

- Community engagement plan defining the stakeholders, their roles and interest in the project and communication methods.
- Media management training plan.
- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.6 Construction environmental management plan

The construction environmental management plan (CEMP) is a document which outlines how a project will avoid, minimise or mitigate effects on the environment and surrounding area during construction.

The CEMP details measures in accordance with the relevant environmental specifications and guidelines and legislative documents. It is a living document which should be reviewed and updated at regular intervals during the project lifecycle.

The CEMP will:

- highlight stakeholder requirements;
- ensure that the development is compliant with current environmental legislation;
- outline environmental management system requirements (in accordance with ISO 14001);
- detail the mitigation committed to within the environmental statement and how it will be implemented on site;
- minimise adverse impacts during construction; and
- describe any site-specific method statements required.

The basic scope of a plan should consider the following subject areas, as applicable to the individual project:

- air quality;
- water quality and drainage;
- noise and vibration;
- geology and soils;
- landscape and visual impact;
- nature conservation;
- archaeology and cultural heritage;
- people and communities;
- waste;
- energy;
- transport; and
- materials.

A typical CEMP will be outlined as follows:

- **Introduction:** General purpose, scope and structure of the document.
- **Scope of work and project description:** An overview of the proposed project and associated works.
- **Environmental requirements and controls:** Policy and planning, environmental impacts, risks and mitigation, procedures for monitoring construction processes against environmental objectives, pollution control measures, environmental risk register.
- **Consents, commitments and permissions:** Appropriate environmental legislation, planning conditions and any other consents or licensing.
- **Management plans:** Specific management plans such as; ecology, noise and vibration, and so on.
- **Communication:** External and internal consultations.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.7 Construction management plan

A construction management plan is a detailed, comprehensive plan that gives the project manager a clear step-by-step process to follow, ensuring that each phase of the project is executed in the proper order. The construction management plan can be used by the project owner's project manager or by the contractor depending on their needs and management procedures.

The owner's construction management plan usually maps out high-level information about the project from initial project objectives to the realisation of benefits following delivery. It explains the 'what' and 'where' of the project, why it is being done (the expected benefits), how it will be done and who will do it and by when. A project owner's construction management plan of this type might include:

- owner's business rules and plans;
- project description, objectives and benefits;
- feasibility/planning requirements;
- owner's project management team;
- project design concepts;
- procurement, tender and contract process;
- project schedule, cost, risk and quality management;
- stakeholder engagement matrix; and
- handing over and project transition requirements.

The contractor's construction management plan is a detailed document that maps out a holistic approach for the project manager. The construction management plan:

- describes how the project management team should comply with the requirements of the contract relating to construction;
- defines the project objectives and targets of particular relevance to the delivery phase;
- describes constraints specific to the delivery phase and the project in general;
- describes the process for identifying and controlling risks specific to the project's construction;
- details the proposed strategy for the delivery phase, with particular regard to establishing and organising the project site, selecting resources and materials, deploying plant and equipment and implementing construction controls; and
- provides details of the individual construction tasks and breakdowns of their projected costs.

Examples of evidence

- Construction management plan.
- Defect register and management process.
- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.8 Cost management plan

A cost management plan is a formal document that describes how the project will estimate, track (report) and manage project costs. The cost management plan is central to the financial performance of the project and ensures a structured and systematic approach to cost management.

The cost management plan should define for the project:

- project budget and contingency;
- cost management philosophy and approach;
- project cost control process including end of month reporting process;
- cost capture and cost recovery process;
- cost estimation, including units of measure and levels of precision;
- project performance measurement process (e.g. earned value);
- cost breakdown structure (CBS) which should tie into the work breakdown structure (WBS);
- cost variation process; and
- cost reporting process.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.9 Fire and life safety plan

The fire and life safety plan sets out the fire engineering requirements and principles to be followed to ensure compliance with the functional requirements of the relevant regulations. Information in the plan includes, but is not limited to:

- use and occupancy classification;
- occupancy load;
- means of egress;
- construction type;
- materials;
- fire compartmentation;
- fire protection system requirements; and
- emergency services access.

Examples of evidence

- Health and safety management plan.
- Incident management system and process.
- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.10 Information management plan

Information management is a critical element of successful project management and delivery. Timely access to accurate information will positively impact project outcomes, just as a lack of it will negatively impact project outcomes.

An information management plan is a document that defines information management requirements, activities and accountabilities throughout the project lifecycle. The information management plan describes how the project defines, acquires, operates, stores and ultimately disposes of information.

The aim of the information management plan is to mitigate risk by providing the relevant information to the right person, in the right format, at the right time, following the principles of the information management standard, ISO19650.

There are five key aspects of information management which should be considered by an information management plan:

- **Governance** – the controls necessary to ensure the plan is working effectively.
- **People** – the roles, responsibilities, and qualifications required to execute the plan effectively.
- **Process** – the methods and ways of working which will be engaged to implement the plan, including the implementation and use of a common data environment.
- **Data** – the scope and lifecycle of project and asset information required to deliver the project effectively.
- **Technology** – the IT infrastructure, applications and tools required to deliver the project effectively.

Information management is critical from project inception through to benefits assessment. The information management plan should be reviewed and revised in a timely manner in order to satisfy the requirements of each project lifecycle stage.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.11 Quality assurance management plan

The quality assurance management plan is a formal framework which defines the project management processes to be applied to ensure the project is compliant with relevant standards, guidelines and methodologies so that the project is delivered as 'fit for purpose'.

Effective planning and management of quality procedures can reduce the risk of a project failing to meet defined and agreed standards due to inadequate project management.

A typical quality assurance management plan will provide:

- a comprehensive overview of the quality methodologies and standards to be adopted in managing the project and in the production of the outputs;
- agreed processes for the management of changes, problems, issues and incidents that emerge during the production of the outputs;
- confirmation of the roles and responsibilities of relevant parties in the project's governance structure in the production of the outputs; and
- the project's steering committee with a documented framework to ensure the production of quality project outputs and the application of quality project management processes

Quality management has three main points of focus:

- **Quality assurance** – covering the processes in place to ensure project compliance.
- **Quality control** – covering the standards to be met by the project outputs.
- **Quality improvement** – reviewing the outputs for areas of improvement.

This plan is a living document and should be reviewed throughout the project lifecycle and updated as required.

Examples of evidence

- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.12 Risk and opportunity management plan

A risk and opportunity management plan (R&OMP) for a project is a formal document that describes how to minimise threats and maximise opportunities to optimise project success by delivering the project objectives.

The plan provides the governance for the project team in managing risks and opportunities proactively in a structured manner. It describes the risk management process to be adopted so that managing risk is efficient, effective and consistent.

Examples of evidence

- Risk and opportunity management plan.
- Time phased risk register with costed (time and money) risks.
- Budget incorporates costed risks as well as unknown risks.
- Updated project risk register and exceptions noted in project delivery report.
- Management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

A.6.13 Decanting management plan

The majority of HVHR projects will at some point result in occupation or utilisation of the asset or system which involves migration and demobilisation from existing assets or systems. In some cases, interim solutions are necessary and may be in place for substantial periods of time.

A decanting management plan is a document that defines, for each group or impacted area, how the group will manage the migration from occupation of one asset (or utilisation of one system) to the next. This migration may be required to happen in stages, but the process of migration may form enabling or ancillary scope for the overall project.

Given the transition tends to occur at the tail end of a project, requirements are often overlooked. A poor transition will often result in the perception of overall project failure, and poor accounting of transition requirements may in actuality cause the project to fail in achieving planned benefits.

Examples of evidence

- Decanting management plan reviewed and updated as required throughout the project cycle.
- Project change register that reflects any changes since business case approval.

Appendix B Example PDDD elements/GRP map

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Project scope and design						
Client requirement documents Has the client set the scope and preliminary requirements? Has the client updated the preliminary requirements based on latest information?	Initial	Preliminary	Final			
Operational requirements Have operator needs and their concept of requirements been identified and noted? Have final operational requirements been identified and agreed with operators?	Initial	Preliminary	Final			
Functional requirements Have final functional requirements been identified and agreed with key stakeholders?	Initial	Preliminary	Final			
System requirements Have all system requirements been identified?	Initial	Preliminary	Final			
Development brief Is the development brief in line with scope and impacts identified? Has an overall existing conditions plan been developed?	Initial	Final				

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Project charter Has the sponsor (SRO) endorsed the project charter to begin the process? Is development budget available?	Final					
Principal project requirements Are the requirements spelled out clearly and in line with the recommended single option?	Initial	Preliminary	Final			
Standards and specifications Has a standard baseline been established? Is there a list of waivers identified?		Initial	Preliminary	Final		
Concept design and design reports Is the scope of work consistent with baseline requirements identified?	Preliminary	Final				
Digital engineering and information requirements Have Building Information Modelling requirements been taken into consideration?	Initial	Preliminary	Final			
Urban design framework Does the project fit into the local urban design framework? How and who needs to approve?		Preliminary		Final		
Scope development plan Is there a sound understanding of the scope of the project?	Preliminary	Final				

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Reference design Is all the necessary information available to commence the reference design?		Initial	Preliminary	Final		
Site layout Has a site layout plan been prepared and drafted?		Preliminary		Final		
Feasibility, planning and approvals						
Economic appraisals Does the appraisal demonstrate further investment is warranted?	Preliminary	Final				
Client and operator agreement Have the client and operator been consulted while reference design progresses?		Initial	Preliminary		Final	
Investment logic map Have problems or needs clearly been identified?	Initial	Final				
Benefits logic map Are benefits clearly mapped to objectives and noted?	Initial	Final				
Demand modelling Is there evidence that adequate demand modelling has been undertaken and the results analysed?	Initial	Final				
Approvals processes plan Has the planning approval process document been updated?	Initial	Preliminary	Final			

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Planning approval strategy Has a planning officer been engaged and assessed planning and other approvals required?	Initial	Preliminary	Final			
Land acquisition requirements Have all processes related to land acquisition been completed?	Initial	Preliminary		Final		
Land availability study Have land acquisition requirements been identified and a plan developed?	Initial	Final				
Legal and legislative framework How does the project fit into the legislative framework? Has a legal review been obtained on the tender conditions?	Initial	Preliminary	Final			
Approvals documentation Are all necessary approvals been obtained prior to contract award?		Initial	Preliminary	Final		
Project initiative summary Are there a range of initiatives identified that could provide potential strategic responses to resolve problems?	Final					
Project option assessment report Have all considered options been recorded? Is the recommended single option approved by relevant governance?	Preliminary	Final				

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Project management						
Constraints, risks and opportunities register Have risks and opportunities within the available project information been identified and registered?	Initial	Preliminary		Final		
Cost estimation Has a QS been engaged and prepared a high-level cost? Has the preliminary cost estimate been updated? P50/P90 estimate available?	Initial	Preliminary		Final		
Project schedule Has the scheduler been engaged and prepared a high-level schedule and key milestones identified? Is the preliminary program/schedule updated? Is the critical path identified?	Initial		Preliminary	Final		
Project assurance plan Are there project assurance milestones?		Initial	Final			
Governance plan Is there a clear governance and approval process available within the organisation?	Initial	Preliminary		Final		
Interfaces and interdependencies Have interfaces and interdependencies with the location and other projects been identified?		Initial	Preliminary	Final		

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Resource management plan Are there adequate resources available within the business?	Initial		Preliminary	Final		
Stakeholder matrix Are key external stakeholders and their influence on project development and delivery identified?	Initial	Preliminary		Final		
Asset handover plan Have all new procedures for process testing, acceptance and transition been completed?			Initial		Final	
Commissioning plan Have all new procedures for process testing, commissioning, acceptance or transition been completed?			Initial	Preliminary	Final	
Interface and integration plan Have plans been developed to mitigate any potential impacts to adjacent property, business or other projects?			Initial	Final		
Benefits realisation management Have the predicted benefits been reviewed, and the outcomes documented? Is there a set of lessons learned?	Initial		Preliminary			Final
Investigations						
Air quality assessment Is there an air quality plan available?		Preliminary	Final			

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Asset audit Has an asset audit been completed?		Preliminary	Final			
Constructability assessment Is the scope of work feasible within the constraints of the existing site conditions, time and budget envelope?	Initial	Preliminary	Final			
Contamination and spoil management assessment Are the EPA regulations clearly noted and recorded?		Preliminary	Final			
Cultural heritage assessment Is a cultural heritage assessment been undertaken?	Initial	Preliminary	Final			
Disruption identification Have potential disruptions to stakeholder groups been identified and mitigated?	Initial	Preliminary	Final			
Ecological assessment Has an ecological assessment been undertaken?	Initial	Preliminary	Final			
Ecological audits Has an ecological audit been undertaken?	Initial	Preliminary	Final			
Existing conditions assessment Is existing conditions and dilapidated survey available?	Preliminary	Final				
Existing conditions plan Has an existing conditions plan mapping specific conditions and modifications been developed?	Preliminary	Final				
Geotechnical assessment Has a geotechnical assessment been undertaken?	Initial	Preliminary	Final			

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Hydrological, hydrogeological and hydraulic conditions Have hydrological and hydraulic conditions been assessed?	Initial	Preliminary	Final			
Land survey Have constraints and opportunities been analysed and taken into account in the feature survey? Is the project boundary defined?	Initial	Preliminary	Final			
Land use assessment Has a planning officer undertaken a strategic land use assessment?	Preliminary	Final				
Landscape and visual assessment Has a landscape and visual impact assessment been prepared?	Initial	Preliminary	Final			
Major utility locations and diversion strategies Have major utilities been identified and any relevant diversion strategies been developed/implemented?	Initial	Preliminary	Final			
Noise and vibration assessment Is there a noise and vibration assessment and management plan?		Preliminary	Final			
Water quality assessment Has a water quality assessment been undertaken and requirements documented?	Initial	Preliminary	Final			

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Procurement and delivery						
EOI/RFT management plan Is there a transaction management plan prepared?	Preliminary	Final				
Tender documents Have project specific conditions and modifications if required been identified?	Initial	Preliminary	Final			
Tender evaluation plan Are governance approvals in place to manage the evaluation?			Preliminary	Final		
Construction strategy Is the construction strategy in line with the latest design drawings?	Initial	Preliminary		Final		
Traffic management and logistics Does it adequately attempt to create minimum disruption to the surrounding area?		Preliminary		Final		
Handover of design drawings and reports Is there a set of certified drawings? Are the design reports up-to-date and relevant? Have as-built drawings been provided? Have you received confirmation that all drawings are submitted to the appropriate drawing management system?					Final	

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Management plans						
Project management plan Has the project management plan been updated with the reporting process clearly noted?	Initial	Preliminary		Final		
Design management plan Is the management plan consistent with the RFT document?			Preliminary	Final		
Procurement management plan Is the procurement team engaged and approved the procurement plan?		Preliminary	Final			
Change management plan Has a change request management process been identified?				Final		
Community and stakeholder engagement plan Has the CSEP been prepared? Has it been updated for delivery phase?	Initial	Preliminary		Final		
Construction environmental management plan Has the contractor prepared the CEMP and does it meet all requirements?				Final		
Construction management plan Has the construction management plan been updated to reflect contractor's approved strategy and defects management?			Preliminary	Final		

PDDD elements	Stage 1 – Business case		Stage 2 – Procurement		Stage 3 – Delivery	
	Gate 1 – Concept and feasibility	Gate 2 – Business case	Gate 3 – Readiness for market	Gate 4 – Tender decision	Gate 5 – Readiness for service	Gate 6 – Benefit evaluation
Cost management plan Has a work breakdown structure been established and agreed with the finance division?				Final		
Fire and life safety plan Is there a comprehensive OHS plan? Have all safety incidents been documented?			Initial	Final		
Information management plan Does the plan outline the management of information for the project?	Initial	Preliminary	Final			
Quality assurance management plan Are the legislated requirements documented and a plan in place for how they will be met?		Initial	Final			
Risk and opportunity management plan Is there time or budget contingency to allow for possible impacts?			Final			
Decanting management plan Is there an analysis of the real or potential impact of any transitional movements, interfaces and interdependencies?		Initial		Final		

