

# Cost Control Framework for the Infrastructure Program

26 April 2022

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# 1 Background

Infrastructure NSW was directed by the Delivery and Performance Committee (DaPCo) to update the Contingency Management Guidebook to improve cost and risk estimation, and management of risk, to enable successful delivery of the infrastructure program. Rigorous and defensible cost estimates are integral to driving greater transparency and accountability in infrastructure decision-making. Ministers and Cabinet should have confidence that business cases submitted for consideration can be relied upon. Similarly strong cost control processes and culture are integral to the delivery of the portfolio within the parameters approved by Ministers and Cabinet.

This Cost Control Framework (the Framework) was prepared in response to the DaPCo Direction and replaces the Contingency Management Guidelines<sup>1</sup>. The Framework applies to all projects<sup>2</sup> and programs registered under the Infrastructure Investor Assurance Framework (IIAF)<sup>3</sup>, excluding State Owned Corporation projects subject to the IIAF and grants programs. It provides:

- a consistent approach to cost control and risk management across the state infrastructure capital works program;
- delivery agencies with the flexibility to manage the delivery of their capital works portfolios within the overall funding approval, and
- central clusters with transparency over how clusters apply this Framework across the infrastructure program.

Clusters will be required to review their existing cost control processes to ensure that they are aligned to the Framework, whilst retaining the flexibility for the processes to be aligned with the particular risk profile of the cluster's capital works portfolio and the existing governance arrangements in the cluster. Where agencies in a cluster have capital portfolios that differ significantly in terms of the nature and risk profile of projects being delivered, the cluster may opt to develop separate cost control processes for each agency. An INSW Cost Control Deep Dive will be undertaken on each cluster's cost control processes prior to the end of the Implementation Period and will be submitted to the Cabinet Infrastructure Committee for approval. Any references in this document to processes or actions being in accordance with this Framework are to be read as also being in accordance with the cluster's associated cost control processes.

This Framework supports, and is strengthened by, other policies recently developed by Infrastructure NSW, including the Timely Information on Infrastructure Projects guide and the Oversight Framework.

The Framework represents a comprehensive, consistent policy response to the DaPCo Direction and must be implemented in full.

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<sup>1</sup> [https://www.infrastructure.nsw.gov.au/media/1266/insw\\_contingency\\_management\\_guidebook\\_-\\_february\\_2014.pdf](https://www.infrastructure.nsw.gov.au/media/1266/insw_contingency_management_guidebook_-_february_2014.pdf)

<sup>2</sup> The definitions of terms such as project, program and portfolio are consistent with the definitions in the IIAF

<sup>3</sup> [https://www.infrastructure.nsw.gov.au/media/3011/infrastructure-investor-assurance-framework-iiaf-\\_march-2021.pdf](https://www.infrastructure.nsw.gov.au/media/3011/infrastructure-investor-assurance-framework-iiaf-_march-2021.pdf)

## 2 Key principles

### Framework application

The Framework applies to all capital infrastructure projects registered in the Infrastructure Investor Assurance Framework with an enhanced focus on High Profile High Risk (HPHR) and Tier 2 projects. It does not apply to grant programs as both the risk profile and structure of risk provisions are different to traditionally delivered infrastructure projects.

Project teams delivering projects with Commonwealth funding should have regard to Infrastructure Australia's guidance on cost estimation ([https://investment.infrastructure.gov.au/about/funding\\_and\\_finance/cost\\_estimation\\_guidance.aspx](https://investment.infrastructure.gov.au/about/funding_and_finance/cost_estimation_guidance.aspx)). The Cost Control Framework is consistent with this guidance.

### Framework objectives

The Framework aims to establish consistent, effective cost control processes across projects and the capital portfolio of infrastructure projects through providing:



The Framework provides high level minimum requirements to meet these objectives as well as guidance on the detailed implementation at the cluster level. The Framework provides flexibility for clusters to tailor the

detailed implementation framework to the risk profile and existing oversight processes and decision-making (collectively referred to as governance) arrangements of their infrastructure portfolio. This approach recognises the differences in the risk profile of each cluster, as well as existing delivery and governance frameworks whilst also creating consistency and a baseline capability requirement across clusters.

The Framework provides clusters with the ability to manage risk more effectively across their portfolios and is balanced by enhanced transparency and accountability. Clusters will be required to report to Infrastructure NSW every six months on the aggregated status of risk provisions against risk exposure and on any redistribution of risk provisions across the portfolio. Clusters will continue to report on contingencies at the project level through assurance reporting. Infrastructure NSW and NSW Treasury will report to the Cabinet Infrastructure Committee (CIC) on the sustainability of each cluster's portfolio following each submission by the delivery clusters.

## Framework implementation

The Framework will be implemented in stages following endorsement by Cabinet Infrastructure Committee (CIC), to provide clusters with the opportunity to update or develop detailed processes for cost control, to minimise the potential disruption caused by the implementation and to allow the Framework to be refined through lessons learnt.

The Framework will not apply retrospectively to projects which have already passed Investment Decision. A six-month Implementation Period will be allowed following CIC endorsement of the Framework after which the Framework will be applied progressively to HPHR projects with an ETC greater than \$1 billion, then all HPHR projects and finally to Tier 2 projects and below. Clusters may nominate that the Framework applies to HPHR projects that will seek an investment decision during the 6-month implementation period. The staged implementation will initially focus on projects earlier in the lifecycle to avoid the need to revisit well developed project budgets.

The table below presents the Effective Dates and framework elements required to be addressed for projects in each Tier. The Approval Date is the day that the policy is approved by CIC.

| Tier                      | Date                         | Level of project definition as at Effective Date                        | Application of Framework   |
|---------------------------|------------------------------|---|--|
| <b>Portfolio</b>          | 12 months post Approval Date | Projects post-Investment Decision                                       | Portfolio reporting to commence<br>Delegations, oversight and other cost control culture measures to commence implementation |
| <b>HPHR &gt; \$1,000m</b> | 6 months post Approval Date  | SBC in development or not yet commenced                                 | Cost plan to be developed in accordance with Framework   |
|                           |                              | FBC in development and being considered by ERC in greater than 3 months | Cost plan alignment with Framework subject to Treasury <sup>4</sup> determination on a case-by-case basis                    |
|                           |                              | Projects post-Investment Decision                                       | 6 monthly reassessment of risk exposure<br>Oversight in accordance with cluster cost control processes                       |
| <b>HPHR to \$1,000m</b>   | 12 months post Approval Date | SBC in development or not yet commenced                                 | Cost plan to be developed in accordance with Framework   |

<sup>4</sup> Treasury approval by Deputy Secretary, Policy and Budget (or equivalent position)

| Tier   | Date                         | Level of project definition as at Effective Date                        | Application of Framework   |
|--------|------------------------------|---|--|
|        |                              | FBC in development and being considered by ERC in greater than 3 months | Cost plan alignment with Framework subject to Treasury determination on a case-by-case basis           |
|        |                              | Projects post-Investment Decision                                       | 6 monthly reassessment of risk exposure<br>Oversight in accordance with cluster cost control processes |
| Tier 2 | 18 months post Approval Date | FBC in development or not yet commenced                                 | Cost plan to be developed in accordance with Framework   |
|        |                              | FBC in development and being considered by ERC in greater than 3 months | Cost plan alignment with Framework subject to Treasury determination on a case-by-case basis           |
|        |                              | Projects post-Investment Decision                                       | 6 monthly reassessment of risk exposure<br>Oversight in accordance with cluster cost control processes |
| Tier 3 | 18 months post Approval Date | To be specified in cluster cost control processes                       | To be specified in cluster cost control processes  |
| Tier 4 | 18 months post Approval Date | To be specified in cluster cost control processes                       | To be specified in cluster cost control processes  |

Given that the cluster cost control processes will need to cover arrangements across the full spectrum of cluster projects, and to provide time for any recommended changes to be implemented, the INSW Cost Control Review of those processes will need to be finalised at least two month before the first occurring Effective Date for the cluster's portfolio of projects. For example, if the portfolio's most significant project in business case stage is a HPHR with a capital value of less than \$1 billion, the INSW Cost Control Deep Dive Review would need to be finalised by 10 months post Approval Date.

### Framework review

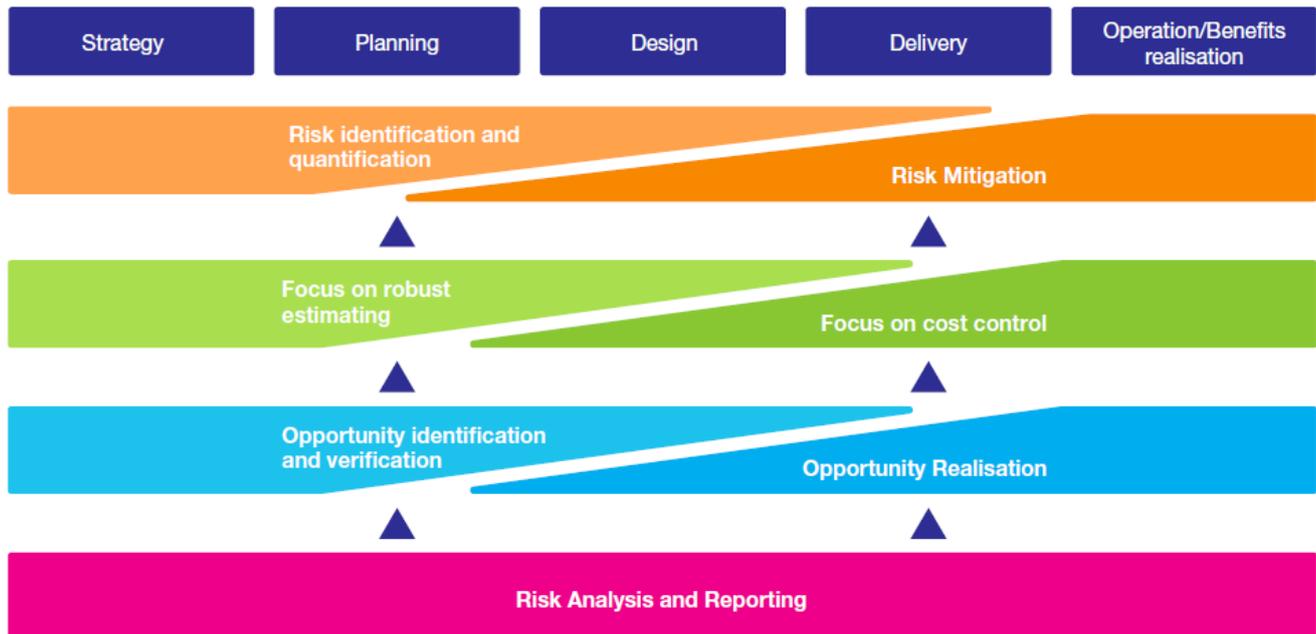
Infrastructure NSW and NSW Treasury, in consultation with delivery agencies, will conduct a review of the implementation of the Cost Control Framework at time-based milestones from the Approval Date. Reviews will be conducted annually for the first four years and thereafter every four years (Policy Review Dates). Each review is expected to include consideration of:

- Risk estimation and impact of known and unknown risks on the clusters and State Budget
- Effectiveness of oversight arrangements including delegations and approvals processes
- The application of best practice measures such as probabilistic risk modelling across a greater portion of the portfolio
- Whether there is a rationale for extending the HPHR requirements to Tier 2 projects
- Whether there is a rationale for extending the Tier 2 requirements to Tier 3 and 4 projects
- Any outstanding, or emergent, issues, such as the application of the Framework to contracts which include maintenance or operation of the infrastructure.

All changes to the Cost Control Framework must be approved by CIC.

## Driving efficient delivery of projects

An effective system for cost control will incorporate measures to minimise the cost of delivery and ensure effective management of risks through every stage of the project lifecycle. As shown in the diagram below, the focus of these measures changes depending on the stage of the infrastructure project.



Early in the development phase of an infrastructure project, when little is known about the scope, risks and opportunities that will be inherent in the delivery of the service, measures that should be incorporated into cost control processes include:

- Clear definition of the service need (Gate 0)
- Identification and analysis of options to deliver the service need, including staging of delivery and non-infrastructure solutions to deliver the service need
- Avoiding early anchoring of estimates, particularly through public announcements (refer to the Timely Information on Infrastructure Projects policy)
- Early engagement with industry to identify risks and potential value management options
- Planning and design activities to define the scope, staging and delivery methodology for the project
- Value management, opportunity identification and validation to ensure the scope is the most efficient way to deliver on the service need
- Identification, quantification and mitigation of risks, including targeted investigations to quantify high impact risks
- Ensuring the robustness of assumptions

The outcome of the above activities will be a robust cost estimate which should provide the project team with a challenging but achievable target cost for delivering the service need.

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Later in the project, the focus of the project team's effort progressively switches to project controls, systematic mitigation of risk and realisation of opportunities. The intent of these activities is to manage the delivery of the project within the funding envelope approved at the Investment Decision. Measures that should be incorporated into cost control processes through these phases include:

- Identification and implementation of lessons learnt from similar projects, ideally by including project team members from similar projects
- Effective oversight (refer to Oversight Framework) with a strong focus on delivering for the minimum possible cost, not just within budget
- Strict change control in accordance with oversight measures
- Structuring contingencies to limit the access of project teams to the full contingency (i.e. holding some portion of contingency to a higher delegation)
- Ongoing systematic identification, assessment, and implementation of opportunities
- Regular reviews of the risk register and re-quantification of risks, including schedule risk analysis
- Proactive issue management

At the cluster portfolio level, the focus throughout the project lifecycle is on maintaining a clear, transparent picture of project and portfolio health and diffusing the potential impact of strategic risks.

### **Cost control culture**

Cost estimation and risk analysis are challenging and complex to verify. Different analysts can quantify the assumptions which underpin cost estimates and risk exposure in different (and equally correct) ways. Decisions may be less clear-cut than desirable. Changes to cost estimates and risk provisions at any stage in the project life cycle, for example to meet either announced Budget or delivery schedules, without understanding the full impacts of these changes, may result in either overstated or understated estimates.

Culture is critical to overcoming these factors. It is incumbent on the cluster to foster a culture of robust cost estimation, managing projects to budget, continuously seeking opportunities to reduce costs, encouraging active risk and value management and countering late changes to achieve competing objectives. Measures to develop this culture are to be detailed in the cluster cost control processes.

Clusters should consider the following measures to drive a positive cost control culture:

- Consistent with the Oversight Framework,<sup>5</sup> assessing the performance of executives based on effective management of risk exposure, contingencies and Portfolio Reserve at the cluster portfolio level
- Assessing the performance of project leaders based on accurate cost estimation, effective value management and risk mitigation, particularly in the early phases of projects, and delivering to a minimum cost in the delivery phase
- Designing oversight frameworks to ensure accountability for poor cost estimation or control as set out in the Oversight Framework<sup>4</sup>
- Reporting risk exposure in delivery as a range, with incentives and performance assessment for project leadership tied to the lower end of the range (for example P30-P50 for Tier 2 projects and P50-P90 for HPHR projects)
- Actively encouraging accuracy and openness in estimating – this can be enhanced by encouraging tension between stakeholders with opposing agendas (i.e. where one party seeks a higher estimate and one lower, designing the process so that they must reach agreement)

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<sup>5</sup> [https://www.infrastructure.nsw.gov.au/media/2932/oversight-framework\\_final.pdf](https://www.infrastructure.nsw.gov.au/media/2932/oversight-framework_final.pdf)

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- Creating a process which encourages project team knowledge of risks and active management – requiring quantitative risk analysis during early phases of the project to drive this behaviour
  - Actively and systematically managing opportunities to reduce the Contingency (i.e. mitigate known risks) and to reduce the Project Costs
  - Continuous improvement in risk management and estimating (including development of databases to support baselining of projects)
  - Stringent definition of scope as early as possible (requiring to appropriately define project scope at each stage),
  - Collaboration between project team members on cost, scope and risk (for example, open communication between designers and cost estimators).

## Transparency and accountability

Transparency of cost control is essential to provide government with the confidence that the cost of delivering the infrastructure program is being diligently controlled. It minimises potential adverse impacts on the NSW Government's fiscal position when external shocks occur and ensures accountability for the outcomes delivered. It underpins the concept of cluster flexibility to deliver their infrastructure portfolio and in certain circumstances will, in the future, facilitate the implementation of portfolio management approaches to allow risk to be managed across the portfolio rather than being contained to a project by project basis. The provisions of this Framework are designed to increase transparency and accountability of clusters to manage the cost of project delivery.

In addition to the principle detailed in the Oversight Framework, transparency in the context of cost control is provided by transparent communication of risks at the point of investment decision and regular reporting of the aggregate status of project budgets (including Contingencies) across the portfolio. HPHR reporting for each HPHR project is to include reporting of original contingency provisions, contingency drawn, contingency added (which will require separate agreement with Infrastructure NSW) and available contingency.

## Communication of risk at investment decision

The cost estimate, program and scope communicated through the business case (or equivalent) at investment decision are a point in time prediction of the future cost of the project. Robust risk management and cost estimation will provide a reasonable estimate of the base cost of the project and the likely cost of the risks that have been identified. However, the actual outcome of the project in terms of cost is subject to a range of uncertainties, including market changes, project performance, unanticipated events such as industrial action and delays to approvals.

It is important that, prior to considering an investment decision, decision makers both have confidence in the cost estimates provided in the business case and are fully informed of the risks that may impact on the project. To ensure this is the case, clusters preparing CABSUBs to support an investment decision should, as far as practicable, include the following:

- In the recommendations, a note on the reasonably possible cost outcomes for the project<sup>6</sup>
- Significant risks allowed for in the quantitative risk analysis<sup>7</sup>, including the likely and worst case cost impact of each risk if realised
- Potential systemic risks which may impact on the project
- The likely impact of a delay to the investment decision (say six and twelve months) on the cost of delivering the project

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<sup>6</sup> Clusters may define possible cost outcomes in their cost control processes based on the cost performance of projects in the portfolio

<sup>7</sup> It would be reasonable to identify the five highest impact risks for each project

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## Reporting requirements

The aggregate status of project budgets in each cluster's portfolio is to be reported to Infrastructure NSW every six months and is to include:

- Aggregate Estimated Total Cost for the cluster portfolio
- Aggregate current risk exposure for the projects in the portfolio
- Aggregate current Contingency for the projects in the cluster portfolio
- Where a cluster has approval to maintain a Portfolio Reserve (see page 15), the current size of the Reserve
- The difference between the aggregate risk exposure and Contingency (including Portfolio Reserve if used) for the projects in the cluster portfolio
- Trends for the above indices
- Forecasts for the above indices over the forward estimates
- Predicted aggregate cashflow over:
  - The forward estimates
  - Ten years, from the date of the report
- Any portfolio risks identified by the cluster which may impact on the capital portfolio (for example, a sudden and substantial increase in the cost of a critical input material or geopolitical instability threatening the reliability of the supply chain)
- Mitigation strategies to contain the risks
- Any additional project related costs that were absorbed into the portfolio over the reporting period outside of any contingency drawdown

Clusters may provide further breakdowns as specified in the cluster cost control processes, for example, by Tier, for particular programs or by category of projects.

Where clusters are approved to maintain a Portfolio Reserve to absorb impacts of unforeseen or unknown risks across the portfolio, reporting on the balance and use of the Portfolio Reserve will be agreed with Infrastructure NSW

Based on the information provided, Infrastructure NSW is to include a report appraising the sustainability of each cluster's portfolio as soon as practicable through HPHR reporting to Cabinet. The content and exact timing of these reports will be developed by Infrastructure NSW ahead of the Effective Date.

These provisions will provide a clear picture of the health of the cluster's portfolio and the effectiveness of cost control efforts which can be used to assess the performance of responsible executives. It encourages transparency on cost overruns whilst at the same time giving clusters the ability to manage overruns within their budget.

Accountability for the governance and management of Contingencies will be clearly specified in the cluster cost control processes to align with the existing operating model and governance framework.

These transparency and accountability provisions will enhance, and also be strengthened by, other initiatives recently introduced by Infrastructure NSW, including the oversight framework and portfolio reviews. Taken together, these initiatives will provide Government with a clear picture of the performance of each cluster's portfolio over time and confidence in the quality of oversight applied to projects. Systemic issues that may lead to underestimation of budgets and compromised project outcomes can be identified and resolved.

### 3 Approach to cost control

#### Structure of cost estimates

Cost estimates are to be structured to reflect the various forecast costs and risks to the project in a consistent and reliable manner. The general structure of cost estimates is shown to the right noting that there are slight changes to this general structure as the project progresses from Gate 1 to Gate 4 as detailed overleaf.

This structure is consistent with Commonwealth requirements in order to avoid the need for multiple cost plans to be produced for Commonwealth funded projects. Clusters will be required to define and provide further detail on the structure in accordance with cluster or agency-specific issues (for example, what is included in direct costs, indirect costs and client costs).

Project Costs incorporate the following:

- **Construction costs** – The estimated cost of construction to deliver the project without consideration of escalation and risk. This element includes the following:
  - **Direct costs** – All contractor’s costs directly attributable to a project element including plant, equipment, materials and labour.
  - **Indirect costs** – All contractor’s costs not directly attribute to a project element, for example, preliminaries, overheads, cost of bank guarantees, insurances etc.
  - **Contractor’s margin**, which usually includes some level of risk margin which the contractor assesses as being necessary to return a profit from the project.
- **Client costs** – Costs for delivery of the project that are expected to be borne by the cluster, including the cost of the project team, consultants, travel costs, biodiversity offsets, client-supplied equipment, land acquisition<sup>8</sup>, licences and other regulatory costs etc

The Risk Adjusted Project Costs further include **Contingency**. Contingencies are designed to protect the portfolio and project budget against known risks that have been identified in the project risk register. The total Contingency for a project should not fully cover the cost of all of the risks should they occur but should be a weighted assessment of the total risk exposure including the probability of the risks occurring and the significance of their impact.

The Estimated Total Cost also includes **Escalation**. Escalation is in effect a Contingency intended to protect the project budget against the risk of price escalation during the planning and delivery of the project. That is, between when the cost estimate is completed and the date on which the cost is incurred. Cost escalation must have regard to the particular nature of the project (eg significant and/or complex new construction, refurbishment etc), as well as the likely time frame for delivery and should be referenced against Treasury guidance and ABS indices as appropriate.



<sup>8</sup> Note that some clusters may separate land acquisition costs into its own category

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## Preparing robust cost estimates

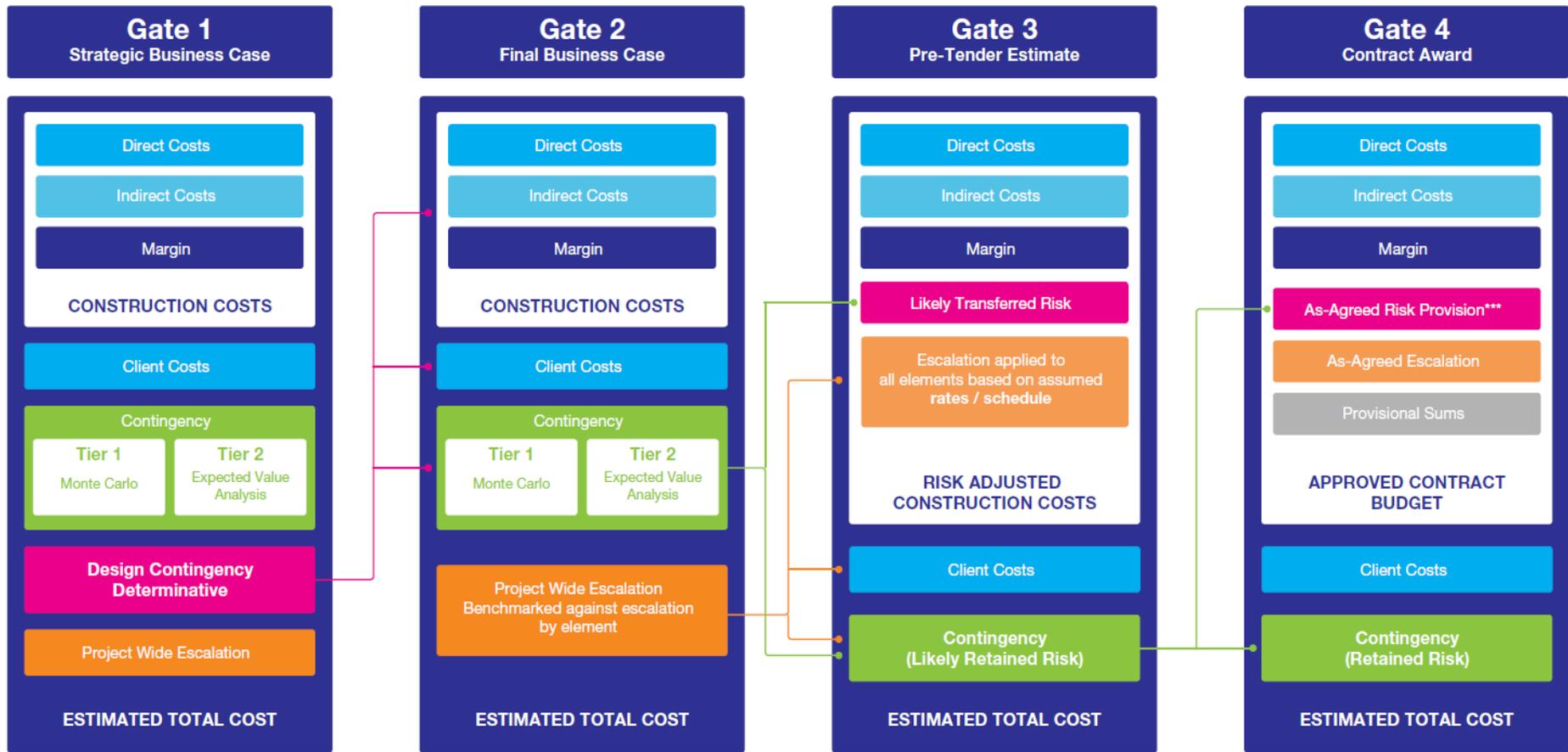
Preparation of robust estimates is fundamental to successful cost control for infrastructure projects. Noting the significant differences between clusters, particularly with respect to the components of the Construction Costs, clusters will need to demonstrate detailed processes in their cluster cost control processes. The following measures will be expected to be addressed when the INSW Cost Control Deep Dive is undertaken:

- clear responsibility for reviewing and approving cost estimates, including risk provisions
- accountability for the reliability of cost estimates and connection to performance management
- establishment, updating and validation of cost databases
- capability frameworks for staff involved in cost estimating
- identification and incorporation of lessons learnt from similar projects
- quantification and resolution of identified risks and assumptions through site investigations or studies
- where appropriate, early involvement of contractors to assist with scope development and value management, as well as risk identification, quantification and mitigation
- collaboration between design, risk and cost estimation teams - cost and risk estimates should be prepared side-by-side, for completeness and to combat double-counting
- peer review of cost estimates

The Estimated Total Cost of High, Profile High Risk projects must be presented in a range at Strategic Business Case and Final Business Case stage in accordance with the *Timely Information on Infrastructure Projects* policy.

Key points to note from the diagram on the following page include:

- **Gate 1** - The Estimated Total Cost of the project includes Construction Costs and Client Costs (see Section 6 – Estimation of Project Costs), a probabilistic Contingency and a determinative Design Contingency (see Section 7 – Contingencies) and a project wide escalation (see Section 8 - Escalation).
- **Gate 2** - The determinative Design Contingency should be retired by Gate 2, placing the onus on the project teams to define the scope and identify and quantify the risks to be included in the Contingency. It would be expected that both the Construction Costs and probabilistic Contingency would increase through this process. The project wide escalation should also be benchmarked by calculating escalation by element where possible. Provision for environmental disasters should be considered based on the location of the project. Clusters are not required to provision for potential future pandemics and options to identify funding to mitigate potential impacts will be considered in the unlikely event of another pandemic. Clusters are required to highlight known risks with potential unknown impacts to ERC at Investment Decision for HPHR projects.
- **Gate 3**. The draft contract should provide a risk allocation that will be modelled in the Contingency. The Contingency should be split by reference to whether the draft contract transfers the risk, or it is retained by the cluster, such that the Risk Adjusted Construction Costs include the risks to be transferred to the contractor. This figure is the cluster's best assessment of the likely contract sum. Escalation should be calculated by element. Note that escalation should be applied to the Risk Adjusted Construction Costs, the Client Costs and Contingency. For some collaborative contracts, escalation risk for the Direct Costs may be retained by the cluster, in which case it should be addressed in the retained Contingency. Clusters are required to provide regular updates to the relevant Cabinet Committee on the sufficiency of provisions for unknown risk provisions and effectiveness of mitigations through procurement.
- **Gate 4**. The overall Construction Costs are locked in and the retained risk should be updated based on the outcomes of negotiations. The Approved Contract Budget should reflect the contract price at Contract Award and the Contingency should include provision for any retained risks.



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## Risk provisions

The Framework makes provision for managing risk events through two mandatory risk provisions:

1. **Contingency**, which captures the expected value of risks identified in the risk register and is regularly updated throughout the project lifecycle
2. **Escalation**, which captures the expected increase in the cost of delivery, from the date of the cost estimate to the point when the cost is realised, due to inflationary pressures in the economy

### Contingency

The Contingency is funded specifically to manage identified project risks. Provisions in the Framework prevent its utilisation for costs which are, or should be, funded separately. The Contingency is *not* to be used for scope changes or additional scope (unless consistent with the approved Business Case or where scope changes are required to respond to a risk event), operating costs or funding of projects at Gate 2 or earlier (Contingency cannot be reallocated to fund new projects).

#### Estimation of contingency

Probabilistic risk assessment is deemed 'best practice' for the estimation of the Contingency as it directly aligns the quantum of the Contingency to the identified risks in the risk register and it provides a strong incentive for project teams to identify and analyse risks early in the project lifecycle. This in turn drives appropriate investigations and risk mitigation focussed on the highest impact risks. The minimum requirement for determining Contingencies at each stage of the project lifecycle should have regard to the level of information available to project team given the state of scope and design development, investigations and engagement with stakeholders and industry. This should be balanced with the principle of encouraging project teams to develop a detailed understanding of the risk profile of the project.

The scope of the risk assessment should be tailored to the complexity, cost and riskiness of the project. Provision for environmental disasters such as flooding should be considered based on the location of the project. Clusters are not required to provision for potential future pandemics or other force majeure events and options to fund potential impacts will be considered in the unlikely realisation of these risks. The cost plan report must explicitly state that these risks are not allowed for.

Some probabilistic risk assessment methodologies are resource, and time, intensive and may not be justified for Tier 3 projects and below. Clusters may determine the appropriate method determining the Contingency for Tier 3 and below projects. The use of generic risk percentages is to be avoided wherever practicable. Risk percentages must be determined by appropriate benchmarking against similar projects or projects in other infrastructure sectors with similar risk profiles.

The preferred approach for the estimation of the Contingencies for any projects within the scope of the Framework is probabilistic risk impact assessment. It can be undertaken through either or both of the following two processes:

1. **Monte Carlo Analysis**. This is the minimum requirement for all HPHR projects and is encouraged to be conducted, as best practice, for Tier 2 and below projects, particularly where the project has a unique risk profile or features major risks that do not have a deterministic (single point) outcome.
2. **Expected Value Analysis**. This approach may be utilised for Tier 2 projects or below, particularly where there are many recent and similar projects to benchmark against.

Clusters may employ both approaches as a further check on the robustness of the contingency.

Within each process, a deterministic design allowance may be required early in the design process to account for the fact that many risks will not have been identified or quantified. Clusters should use benchmarks to determine the quantum of the design allowance. This allowance must be retired by the Investment Decision, placing the onus on the project teams to proactively identify and quantify risks to the project by this stage.

Benchmarking the outcome of the cost estimate and probabilistic assessment against other similar projects in the portfolio, or projects with similar risks, is also required for HPHR and Tier 2 projects at both Strategic

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Business Case (SBC) and Final Business Case (FBC) stages. Cost reports are to detail the basis of the probabilistic modelling and the benchmarking that was used to produce and confirm the cost estimates.

Underlying challenges for risk management and procurement are magnified for HPHR projects, in particular, market capability and capacity in large, complex infrastructure projects. Infrastructure NSW's reviews demonstrate that megaprojects are approximately 1.5 times more likely to be at risk when compared with projects with an Estimated Total Cost less than \$1 billion. The magnified risks of HPHR projects necessitate a more conservative approach to apportioning of the Contingency. HPHR projects are to be submitted to ERC for consideration with cost estimates determined at a higher confidence level (to P90 level) unless directed otherwise by ERC, on the advice of INSW. Clusters are required to highlight known risks with unknown impacts to ERC at Investment Decision for Tier 1 projects and provide regular (as requested and at a minimum annual) updates to the relevant Cabinet Committee on the sufficiency of the provisions and effectiveness of mitigations through procurement and delivery. This will be reviewed through Gateway Reviews and reported through regular HPHR reporting.

Deterministic risk impact assessment is available for Tier 3 or below projects, at early stages of the project development where many risks are unknown or as an additional level of surety where probabilistic risk impact assessment was conducted. It should include benchmarking against projects with similar characteristics and/or risk profile.

#### Oversight of the contingency

The provisions for oversight of the Contingency are designed to allow projects the flexibility to respond quickly to risk events, whilst holding additional contingency at the senior executive level. The Framework ensures visibility of risk management at the senior executive level and the ability to redeploy some Contingency across the portfolio as required.

Clusters are to establish formal guidelines in the cluster cost control processes for the oversight of the Contingencies that satisfy the requirements of the Framework and are tailored to the cluster's overall governance framework. These guidelines ensure Contingencies are only used for permitted purposes and require the use of Contingency funds to be formally documented in formal project records and periodically reported to CIC.

To facilitate flexibility to respond to realised risks, the Project Director will have the delegation to approve drawdowns of up to the P50 Contingency subject to constraints on the size of each drawdown, the rate of drawdown over time and a total overall drawdown. The cluster cost control processes must clearly delegations.

For HPHR infrastructure projects, the delta P90-P50 Contingency is to be managed externally to the project at cluster senior executive level, with the responsible position or committee to be specified in the cluster cost control processes. This provision facilitates the management of the greater risk profile of these projects across the portfolio. Funding options for known risks with actual impacts well above provisions will be reviewed on a project-by-project basis.

Clusters may specify further measures, such as the apportionment of delegated control of Contingency between the client and the delivery agency, in the cluster cost control processes.

#### Management of the contingency

The Contingency is to be applied towards the cost impact of any known risks including the cost of amendments to the project scope required to address the impact of the risk. The quantum of the Contingency funds that can be used should address the actual cost impact associated with a risk occurrence and not be limited to the contribution that risk made to the total Contingency.

The Contingency should not be reallocated simply because a risk has been resolved. The adequacy of the Contingency is to be confirmed at 6 monthly intervals for HPHR and Tier 2 projects through quantitative reassessment of the risk exposure. Reassessment should also be undertaken at Gate 3 and Gate 4 particularly focussed on the risk allocation in the contract and any change in residual risk held by the cluster. Opportunities to reduce the Contingency should be systematically managed as part of the project development process.

Consistent with the requirements of Treasury Circular 12/20 'Budget Controls – Capital Expenditure Authorisation Limits' (or any superseding circular), the Co-ordinating Minister, on the recommendation of the

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senior cluster executive or committee responsible for the management of Contingency may reallocate excess Contingency or resolve a Contingency shortfall by reallocation to or from another project, following such an assessment. The Base Estimate should not be used to resolve a shortfall in Contingency. The Cluster will be required to inform INSW and Treasury prior to taking this action.

Any remaining funds in the Contingency at completion of the project may be transferred to the cluster's portfolio funding envelope (where applicable), to the Portfolio Reserve (if the cluster is authorised to establish a Portfolio Reserve) or reallocated to other projects or programs within the portfolio, subject to Treasury Circular 12/20 referred to above. This provision allows risk to be effectively spread across the cluster's portfolio and provides a powerful incentive for diligent management of Contingencies.

Opportunities to reduce the Contingency, if realised, will reduce the risk exposure for the project, making it more manageable for the project team, and will lead to a more efficient delivery of the service need. Opportunities to reduce the Contingency should be managed with the same systematic approach as the development of the risk register itself. The cluster cost control processes must detail how opportunities should be quantified, analysed and incorporated into the modelling of the Contingency.<sup>9</sup>

## Escalation

All construction costs should be calculated as being effective at a specific date or month/year, i.e. the Estimate Base Date. Escalation is then calculated from the Estimate Base Date. Clusters must detail the process for calculating the escalation at each stage of the project lifecycle in the cluster cost control processes, including key source assumptions (e.g. Treasury guidance, ABS indices and/or cost planner modelling). Clusters must also articulate the fidelity of escalation calculations with regards to the stage of cost estimation that the project is at and the sensitivity testing and benchmarking which is to be conducted on escalation figures. It is expected that Clusters adopt a considered approach to escalation and take into account the location of the project (metropolitan or regional) and the extent to which projects rely on scarce materials or specialist plant and equipment to increase provisions for projects at higher risk of escalation.

It should be noted that the escalation risk has traditionally been transferred to the contractor at Contract Award at which point the contractor will have incorporated its own calculations of escalation risk into its contract price. This is not necessarily the case for some collaborative forms of contract and clusters retain the risk of escalation on Client Costs. In either case, minimising the time between Investment Decision and Contract Award and then delivery minimises the escalation risk.

Clusters are required to demonstrate the impact of escalation on the total ETC of a High Profile Risk Project, where Cabinet decides to defer a decision so all implications are considered.

## Portfolio Reserve

Clusters may seek approval from ERC for the apportionment of a Portfolio Reserve. Approval of a Portfolio Reserve will be considered where:

- The cluster has demonstrated a track record of rigorous and effective cost estimation and control
- Processes for the funding, oversight, management and transparent reporting of the Portfolio Reserve have been agreed with Infrastructure NSW and Treasury
- The cluster's cost control processes have been reviewed through an Infrastructure NSW Cost Control Deep Dive and all critical recommendations have been closed

The Portfolio Reserve is generally designed to protect against unforeseen project cost overruns on designated projects across the portfolio. Where clusters elect, and are approved to maintain a Portfolio Reserve, the reserve will be internally funded from within project budgets as approved by the ERC. The funding earmarked to the Portfolio Reserve will be determined at Gate 1 and reviewed at Gate 2 for High Profile, High Risk and Tier 2 projects. Infrastructure NSW will undertake the review and provide advice on the cluster's ability to manage the Portfolio Reserve at Gate 2.

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<sup>9</sup> In practice, this outcome is difficult to achieve if the project is not utilising a modelling method with multiple risk outcomes

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Where clusters are approved to maintain a Portfolio Reserve, it will be held and managed by the cluster or agency centrally. The Portfolio Reserve will be available to address risk events on any project in accordance with cluster guidelines. The cluster's cost control processes should include details on the cluster's plan to fund, manage and utilise the Portfolio Reserve, including governance arrangements. Clusters may nominate to split the Portfolio Reserve so that programs within the portfolio have their own separately managed Portfolio Reserve Fund. For example, the Portfolio Reserve for Commonwealth-funded projects may be managed separately in order to avoid potential issues with Commonwealth funding being transferred to non-Commonwealth funded projects.

### Oversight of the Portfolio Reserve

It is expected that the Portfolio Reserve will be subject to strong governance controls, reflecting its purpose as a final buffer. There is expected to be significant oversight and constraints to ensure clusters are incentivised to proactively manage their Portfolio Reserve.

It is expected that all drawdowns will be subject to review by an executive committee with the experience and understanding of the portfolio to ensure that drawdowns meet the intent of the Framework. The Cost Control Committee, or equivalent existing committee nominated in the cluster cost control processes, will be chaired by the Cluster Secretary or Chief Executive (where there is oversight by an independent board) and its members will be appointed by the Secretary or Chief Executive.

Ultimate accountability for the use of the Portfolio Reserve will rest with the Cluster Secretary. The Terms of Reference for these committees must include the matters that they are to consider in their deliberations.

### Opportunity management

The delivery of maximum benefits to the community and diligent control of costs requires a systematic approach to opportunity management, applying the same rigour as that applied to risk management. Opportunity management requires the project team, sponsor, contractor and other stakeholders to work together collaboratively and often to make concessions in furtherance of the overall outcomes of the project. It is therefore important that the Framework incentivises the enthusiastic participation of all stakeholders.

Opportunities are to be identified through deliberate activities involving a wide range of project stakeholders, particularly during early phases of the project lifecycle, recorded in an opportunity register and quantitatively assessed in terms of probability of success and potential benefit. The status and progress of opportunities are to be reported on as part of the ordinary reporting framework for the project.

Opportunities will not be accounted for in the project cost plan due to the potential to deplete the Contingency if not realised and to avoid incentivising project teams to underestimate opportunities.

Clusters are to address incentivisation of other stakeholders in the cluster cost control processes, including consideration of gain sharing with contractors, and distribution of the cost benefits of opportunities in order to incentivise all parties to participate, including:

- Separate retention of the savings in the project for later use
- Trade off with cost overruns or unfunded risks in other areas of the project (i.e. transfer to the Contingency)
- Funding of unfunded scope approved in the Final Business Case
- Funding of scope approved through a modification to the Final Business Case
- Reallocation to partially fund a new project or scope changes in another project

### Revision of cost control processes

During the Implementation Period, clusters will be required to undertake an INSW Deep Dive Review of their cost control processes. The cost control processes do not necessarily need to be incorporated into a single

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document but must be documented into approved agency processes. The review is to be scheduled so that it is completed no later than two months before the end of the Implementation Period. The outcomes of the review will be reported to the Cabinet Infrastructure Committee and will include recommendations for improvement that will be tracked and reported through a Close Out Plan in accordance with IIAF procedures.

Following the initial review of cost control processes, further reviews will be incorporated into the portfolio review framework under the IIAF.

The cost control processes to be reviewed are expected to include the following:

- The cluster's initiatives to improve the standard of Cost Control, such as development and maintenance of a cost and risk database for benchmarking, capability frameworks for staff involved in cost control and alignment of KPIs with cost control performance at the executive and project team levels
- Measures that the cluster will undertake to encourage a positive cost control culture.
- Detailed guidance on the structure and content of each element of the Project Costs for projects in each IIAF Tier. This guidance should facilitate comparison of elemental costs between projects and ease of benchmarking. It should include guidance on:
  - Standard Cost Breakdown Structure for the cluster
  - Costs to be included under each element
  - How each cost element should be calculated and allocated within the cost breakdown structure
  - Any benchmarks, data sources or other references that should be used in the preparation of cost plans
  - Requirements for cost reports
- For projects in each IIAF Tier, the responsibilities, processes and timing for risk identification and analysis activities required to robustly calculate the Contingency
- The process and responsibilities for management of opportunities to reduce the Contingency
- The process for calculating the escalation at each stage of the project lifecycle, including key source assumptions (e.g. Treasury guidance, Australian Bureau of Statistics indices and/or cost planner modelling), sensitivity testing and benchmarking to be conducted
- Detailed, cluster-specific, responsibilities and processes for preparing and approving the Project Budget, including the estimate of Construction Costs, Contingency and Escalation, and for identifying and capitalising on opportunities
- Detailed Governance requirements, including specific delegations, assignment of responsibilities to particular committees and cluster-specific frameworks for management of the Contingencies
- Terms of Reference for the cost control committee responsible for managing the Portfolio Reserve (if the cluster chooses to operate a Portfolio Reserve), including detailed guidance on matters to be considered by the committees in their deliberations and the permitted and prohibited uses of the Portfolio Reserve
- Cluster-or agency specific measures for the management of the Contingencies, including:
  - permitted and forbidden uses
  - formal procedures to be followed to request a drawdown from the Contingency
  - the position or positions with delegated authority to approve a drawdown from the Contingency
  - the size of the project delegation caps for drawdowns from the P50 Contingency.
  - the position with the delegation to authorise drawdowns in excess of the caps.

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- documentation requirements for a request for a drawdown from the Contingency and other activities related to the Contingency
  - management accountabilities
  - if relevant, any further segregation of the cluster portfolio for the purpose of the management of these funds
  - any further measures such as oversight controls on the Delta P90-P50 Contingency and the apportionment of delegated control of Contingency between the client and delivery agency.
  - Detailed guidance on the management of opportunities, including:
    - formal guidelines for the identification, verification and realisation of opportunities
    - when opportunity management activities are to take place, any specific minimum requirements for the activities and how they are to be reported on
    - clear accountability on the project leadership and the responsible executive to diligently pursue opportunities and specify how strong performance in this respect will be reflected as part of the performance management of staff involved.
    - permitted uses for, and processes for approval of, the distribution of cost savings from opportunities.
    - incentives to encourage project teams to identify and deliver opportunities which reduce the long-term cost of the asset.
  - Where utilised, cluster or agency-specific requirements for the Portfolio Reserve, including:
    - the funding strategy for the Portfolio Reserve
    - any segregation of the Portfolio Reserve or additional management requirements for the Portfolio Reserve
    - prohibited uses
    - requirements for any reallocation of the Portfolio Reserve
    - Reporting arrangements.