CHAPTER TWELVE

FINANCIAL AND DELIVERY OPTIONS ANALYSIS

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CHAPTER SUMMARY AND CONCLUSIONS:

- The capital cost of the CRR Project amounts to $5.4 billion (P90 nominal)
- The capital costs is based on the delivery of the core elements of the CRR Project with future investment for additional station and signalling to be considered separately to support the enhanced level of service facilitated by the CRR Project.
- Market sounding was undertaken to establish market views on key aspects of the CRR Project such as potential packaging, staging and delivery options.
- Delivery model options were considered using the assessment approach outlined in the Queensland Government's Project Assessment Framework Delivery Options Analysis and Building Queensland Business Case Development Framework (BCDF).
- This assessment recommended the tunnels and stations be delivered through a form of long-term contract (construction and maintenance), with significant and appropriate risk transfer to the private sector.
- The CRRDA is responsible for refining the approach to packaging and delivery as part of the CRR Project's procurement phase, discussed in Chapter 16: Implementation Plan.

12.1 Purpose and Overview of this Chapter

The purpose of this chapter is to outline the financial costs of the CRR Project and activities undertaken relating to packaging and delivery.

This chapter outlines:

- the approach taken to complete the financial analysis
- the capital and ongoing costs associated with the CRR Project
- a summary of the independent financial model audit outcome
- activities undertaken to identify packaging and delivery models.

The financial analysis serves a different purpose to the economic analysis as it focuses on the financial costs (the net direct financial impact to the Queensland Government including cash flow implications) from a Queensland Government financing perspective. In contrast, Chapter 7: Economic Analysis focused on the overall economic impacts of the CRR Project for the broader community.

12.2 Costs

12.2.1 Approach

To estimate the costs of the CRR Project, a financial cost model was developed that takes into account costs over the life of the project. This model is populated with inputs reflecting the capital costs, ongoing costs and risk adjustments. Changes to the delivery approach and timeline may impact on the total costs.

A Monte Carlo simulation was used to develop an aggregated statistical cost risk profile for the CRR Project cost estimate combining both planned and unplanned risks to determine appropriate risk adjustments. Quantitative risk adjustments for the CRR project costs have been undertaken at the P50 and P90 level. The P90 value represents an estimate a 90 per cent probability that the cost will not be exceeded

12.2.2 Capital Works

The financial analysis estimated a risk-adjusted capital cost of $5.4 billion (P90 nominal) for the CRR Project. Capital costs include:

- surface works
- signals, rail systems and power
- underground station works
- tunnelling
- tunnel track
- project land costs.

Underground station works such as excavation, structural works, lifts/escalators and internal finishes represent the largest item of project cost. Tunnelling works, rail systems and surface works also account for a materially significant proportion of the total cost. Allowances have also been made for the cost of acquiring the required project lands.

12.2.3 Ongoing Works

Analysis was also completed on the ongoing project costs associated with operating and maintaining the new infrastructure over a 30-year operating period. In general terms these costs include maintenance, repairs, cleaning, security and running the new facilities (including lighting and ventilation). The majority of these costs are incurred within the new underground stations.

12.2.4 Project Cashflows

A summary of the capital and recurrent expenditures over the project life is presented in Figure 12.1.

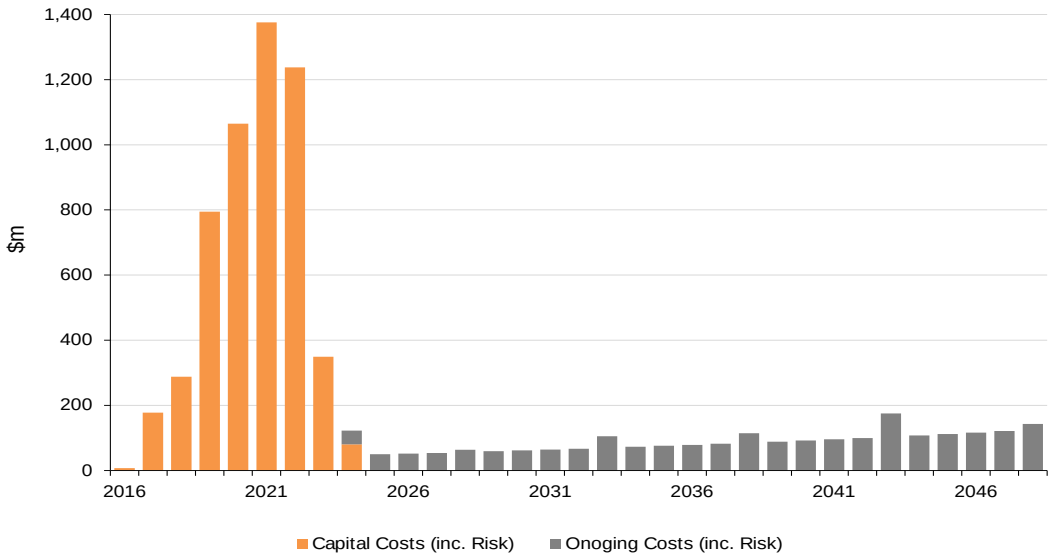

Figure 12.1: Cashflow Profile (Years 2016 to 2048)

Capital costs are spread over the project delivery period with a peak in year 2021. The increase in ongoing costs over time reflects inflation with peaks in years 2033, 2038, 2043 and 2048 when scheduled lifecycle replacements are expected to be undertaken.

12.3 Associated Investment and Rollingstock Considerations

The financial analysis has been based on the delivery of the core elements of the CRR Project.

To realise the full benefits of the CRR Project by 2036, future investment will be necessary in some station and signalling works at Northgate and Wooloowin and the acquisition of additional rollingstock and provision of additional train services to support the enhanced level of service facilitated by the CRR Project.

These future projects will be funded separately and may generate their own benefit streams.

12.4 Financial Model Audit

A suitably qualified model auditing firm was engaged to undertake an independent peer review of the financial model developed for the business case with no material issues identified.

12.5 Delivery Options Considerations

A targeted market sounding process was undertaken to establish market views on key aspects of the CRR Project, including potential approaches to scope, packaging, staging and delivery. Domestic and international contractors, property investors and financiers participated in the market sounding. Findings have informed the development of packaging and delivery options.

Delivery model options for the CRR Project were considered using the assessment approach outlined in the Queensland Government's Project Assessment Framework Delivery Options Analysis and Building Queensland BCDF. The assessment considered project-specific circumstances such as project objectives, project risks, market analysis, technical characteristics and precedent projects.

The CRRDA is responsible for refining the approach to packaging and delivery as part of the CRR Project's procurement phase, discussed in Chapter 16: Implementation Plan.

12.5.1 Project Packaging Analysis

12.5.1.1 Aggregated and Disaggregated Packages

The CRR Project could be packaged, procured and delivered as a single package or a number of separate packages.

To the extent that works are disaggregated, it is important to consider how best to package the various works elements (determining the size and scope of each package).

In general, procuring and delivering large, integrated packages has advantage of:

- reducing interface risk
- reducing cost through integrated design outcomes and economies of scale and scope
- creating a single point of accountability
- creating a more efficient and streamlined process
- creating greater capacity for the private sector to drive innovation and assume risk
- attracting major industry players.

While procuring and delivering the CRR Project components as multiple packages may increase integration and interface challenges, this approach has the advantage of:

- creating increased flexibility in responding to differing characteristics of the various project elements
- creating a larger pool of bidders with the capability and capacity to bid for at least one package.

12.5.1.2 Individual Project Component Analysis

To determine the optimal approach to packaging, the technical characteristics of each project component – and their relationship to each other – need to be considered, along with the implications for cost, risk, market capacity and appetite. Table 12.1 describes the core project components that need to be procured and delivered.

COMPONENT	DESCRIPTION
Early and enabling works	This would typically include works such as site demolition and clearing, service diversions, creation of access points and earthworks.
Surface works	This would comprise both new track and connections with the existing rail network i.e. connection between the tunnel and associated surface track works at the southern end and more substantial surface works from the northern portal (incorporating works through the Exhibition station and Mayne Yard and connection to the northern line).
Tunnelling	This would comprise all underground tunnelling works.
Station development	This would incorporate station development including station excavation, structural works and the development and fit-out of new underground stations. A key packaging consideration is whether to combine the underground tunnelling works and station development.
Rail systems and track	This would incorporate all rail systems including power and signalling works within the CRR Project, including associated track works. This new equipment will have significant levels of interface with the existing network.
Development opportunities	Property development opportunities are still under assessment at each station location.

Table 12.1: Core Components of the CRR Project

12.5.1.3 Packaging Options

Packaging options for the delivery of the CRR Project that could be considered include:

- delivering the project components as one single integrated package
- separating individual project components such that each is procured and delivered independently
- a combination of the above options
- separating the package, or potential future packages, based on geographical factors.

In considering packaging options, the following key aspects of the CRR project are noted:

- The project is complex and interface risk is considered to be a significant project risk and critical success factor.
- Working underground carries with it unique project risks in terms of safety and access.
- A combination of greenfield and brownfield works is included within the project scope.

- The scale of the project is sufficient to attract market interest.

12.5.1.4 Role of Queensland Rail

In considering packaging options, it is noted that the CRR Project will be closely integrated into the core of the SEQ rail network. On this basis, Queensland Rail is currently expected to remain responsible for:

- coordinating corridor and network access
- accepting assurance and acceptance of assets into operation and maintenance
- monitoring performance over the life of the asset
- first-line response for rail system maintenance
- planning and coordinating the delivery of any possible future stages of the rollout of European Train Control System Level 2 (ETCS L2) across the network
- undertaking rail operations
- coordinating on behalf of the project with the Office of the National Rail Safety Regulator (ONRSR) on matters relating to rail safety and interface with the QLD rail network.

Table 12.2 provides criteria for the assessment of works packaging.

PACKAGING CRITERA	DESCRIPTION OF CRITERIA
Technical requirements	Similarities in technical requirements, skills and capabilities needed to deliver the components of the package.
Economies of scale	Scale of the package is of sufficient value to generate economies of scale and associated efficiencies.
Timeline and completion	Package has a natural and definable point of completion and handover that is consistent with the overall timetable for delivery of the CRR Project.
Interface and integration with other packages	The separation of the package creates a manageable point of interface with other packages or creates unworkable interface risks. Assisting or detracting from achieving effective system integration.
Brownfield versus greenfield works	Natural points of separation in terms of brownfield and greenfield works.
Market appetite and capacity	Sufficient market interest in delivering the project package. Market capacity (i.e. private finance and/or contractor) is sufficient to deliver the package such that a competitive outcome is likely to be achieved.
Value for money	Packaging of the works maximises value for money in project delivery and future maintenance and infrastructure development. Proposed packaging solution drives appropriate risk transfer, such that cost efficiencies can be achieved.

Table 12.2: Packaging Criteria

A further detailed assessment of packaging options will be undertaken by the CRRDA as part of the procurement phase activities.

12.5.2 Potential Delivery Model Options

12.5.2.1 Delivery Model Options

Table 12.3 provides a short list of potential delivery model options, taking into account the full suite of available delivery model options, the project-specific circumstances and potential project packaging solutions.

DELIVERY MODEL OPTION	DESCRIPTION
Alliancing	Alliancing is a form of relationship based contracting in which the government collaborates with one or more non-owner parties (e.g. designer, constructor or other key stakeholders) to share the risks and responsibilities in delivering the construction phase of a project. This may be structured as either a single target outturn cost (TOC) alliance or a competitive TOC alliance whereby a competitive TOC is developed by more than one contractor.
D&C	A D&C contract typically involves government engaging a party that undertakes both the design and the construction of a project. The key principle of a D&C contract is to seek to transfer a level of design risk as well as construction risk. This model can be used where there is a desire for a level of innovation and risk transfer in design, the scope can be well defined and where there is a desire for a reasonable level of cost certainty which can be developed under a competitive tender process. However, in the event that design and operational requirements are not clearly articulated or contractually enforced, the model can lead to a strong focus on construction costs which may not necessarily best reflect a whole-of-life, value for money outcome.
DCM	The design, construct and maintain (DCM) model is similar to the D&C model, with the inclusion of a period of maintenance to be delivered by the contractor.
DBOM	In a design, build, operate and maintain (DBOM) arrangement, the private sector party is responsible for designing, building, operating and maintaining the project.
PPP	A PPP is typically a long-term service contract between the public and private sectors where the government pays the private sector (typically a consortium) a service fee to deliver infrastructure and related services over an agreed project term. The private sector consortium typically designs, builds and finances the facility and operates and maintains it to specified standards. PPPs typically make the private sector parties who build public infrastructure financially responsible for its condition and performance throughout the asset's lifetime. PPPs are typically used where government is seeking the whole-of-life innovation and efficiencies that the private sector can deliver in the design, construction and operating phases of the project. PPPs also have the potential to provide a greater degree of time and cost certainty than traditional delivery approaches through the discipline of private finance. PPPs also provide an opportunity for the transfer of project risk to the PPP consortium.

DELIVERY MODEL OPTION	DESCRIPTION
Hybrid solution	There are many permutations for the structuring of a 'hybrid' delivery solution. The hybrid approach is assumed to involve implementing an alliance with respect to 'non-fixed' components and a D&C or DCM approach for the 'fixed' price components within the project package structure. The rationale for considering a hybrid approach is to seek a better value for money outcome for the project by adopting alliance delivery only for those project elements which show costing uncertainties.

Table 12.3: Short-listed Delivery Model Options

Criteria to evaluate potential delivery model options have been developed based on the project objectives, project characteristics and the outcomes of the market sounding process. These are outlined in Table 12.4.

EVALUATION CRITERIA	DESCRIPTION
Project objectives	Ability of the delivery model option to meet the project objectives.
Optimal risk transfer	Extent to which the delivery model option facilitates optimal allocation and management of project risks. The most critical risk is the ability to effectively address interface risks, in particular, recognising the difference between greenfield works conducted underground and brownfield works conducted in a live rail operating environment.
Innovation	Extent to which the delivery model option is able to achieve innovation in design, installation and whole-of-life considerations.
Budget certainty and value for money	Extent to which the delivery model option facilitates a cost-effective outcome and delivers value for money (taking into account price and other value criteria such as design, installation and other innovation factors, whole-of-life cost considerations and risk allocation).
Market appetite	Ability of the delivery model option to attract market appetite (in terms of both contractor capacity and availability of private finance), thereby ensuring effective competition and ultimately delivering value for money.
Timeline and complexity	Ability of the delivery model option to deliver the project in the required timeframes and appropriately deal with the complexity of the project's implementation requirements.
Whole-of-life design and maintenance	Extent to which the delivery model option promotes a whole-of-life design and management solution across the asset and services delivered.

Table 12.4: Evaluation Criteria for Delivery Model Options

12.5.2.2 Assessment of Delivery Model Options

As described above, delivery model options considered range from relationship-based, risk-sharing contracting through to models that feature greater levels of risk transfer to the private sector and which may even include a financing component.

The delivery model assessment found that a delivery model with a form of long-term contract (construction and maintenance) – with significant and appropriate risk transfer to the private sector – is recommended for the tunnels and stations. This is subject to further detailed planning and assessment by the CRRDA.