Models for the coordination of approvals and procurement for major transport projects

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Abstract

Delivery of major transport projects involves seeking the planning and environmental approvals needed and procurement of contractors for project implementation. A key strategic decision for governments is how to coordinate their approvals and procurement processes.

Early involvement of contractors in projects, before the route selection is complete and before the allowable footprint is determined can foster innovation and better solutions. Constructors, designers and impact assessors working together can drive positive outcomes. This approach however introduces new challenges associated with confidentiality, the commercial sensitivity of the procurement process and communication with project stakeholders

It is proposed to provide an overview of two different models for coordinating approvals and procurement in Australia and describe the interrelationship. In recent times in Australia, it has been typical to use a reference design as the basis for impact assessments of major transport projects. A reference design is an indicative design, representing one way the project could be implemented. Use of a tender design; a design selected through a competitive contractor selection process, as the basis for impact assessment is a less common approach. With reference to recent project examples, the benefits of using a tender design as the basis for an impact assessment have been explored. Some overall conclusions are drawn, based on the analysis undertaken.

1. Introduction

Population growth in Australia's major cities has caused a surge in the development of transport infrastructure across the nation. In response, governments are responsible for progressing major transport projects in a timely fashion that provide value for money and minimise the impacts of the projects in the communities that surround them.

Delivery of major transport projects involves seeking the planning and environmental approvals needed and selecting suitable contractors for project implementation. A key strategic decision for governments is how to coordinate their approvals and contractor selection processes. This choice is important as it has a bearing on the approach to impact assessment and stakeholder engagement and the timing of project delivery.

Alternative models for approvals and procurement has been the subject of past research. The drivers for alternative models identified in this research include the need for more innovation in infrastructure projects to deal with growing complexity of infrastructure and environmental planning particularly in urban areas with little open space, many environmental pressures and conflicting interests between stakeholders. Traditional approaches to approvals and procurement leave little

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room for innovation and adaptation to deal adequately with complexity (Nijsten et al., 2008, Van Valkenburg et al., 2008, Arts et al., 2010).

This paper compares two different models for the coordination of approvals and procurement (contractor selection) and evaluates their advantages and disadvantages and identifies key matters to be considered in making a choice between the two.

The methodology involved review of:

- current practices for coordination of approvals and procurement in Australia;
- documentation of four recent environmental impact assessments (EIAs) across Australia; and,
- other literature relating to the coordination of approvals and contractor selection.

As a starting point it is important to define approvals and procurement and describe how they relate to the project life cycle. Approvals are the principal planning and environmental approvals that need to be granted for a project to proceed, involving environmental assessment of the project. Procurement is the means whereby a contractor is selected (usually through a tender process) to carry out detailed design and construction and in some cases operation of the built asset.

2. Key milestones in the project life cycle for major transport projects

Major transport developments in Australia typically have a number of key milestones in their life cycle. These are listed below and presented in Figure 1 below.

Figure 1: Key milestones in the project life cycle of major transport projects

3. Models for coordination of project approvals and procurement

There is more than one sequence of steps to achieving the key milestones of the project life cycle. This paper examines the pathway options in the period between a government deciding to proceed with a major transport project to the point of achieving contract close with the selected contractor to commence construction of the project.

Two distinct models have been used in recent projects in Australia. These are as follows:

- Sequential: where the impact assessment and approvals are based on a reference design and the tender process for contractor selection follows project approval.
- Integrated: where the impact assessment and approvals are based on a tender design and contractor selection occurs before or concurrent with project approval.

These two models are described in further detail on the next page.

Sequential model

The sequential model is the more traditional approach to the coordination of approvals and contractor selection as shown in Figure 2 below.

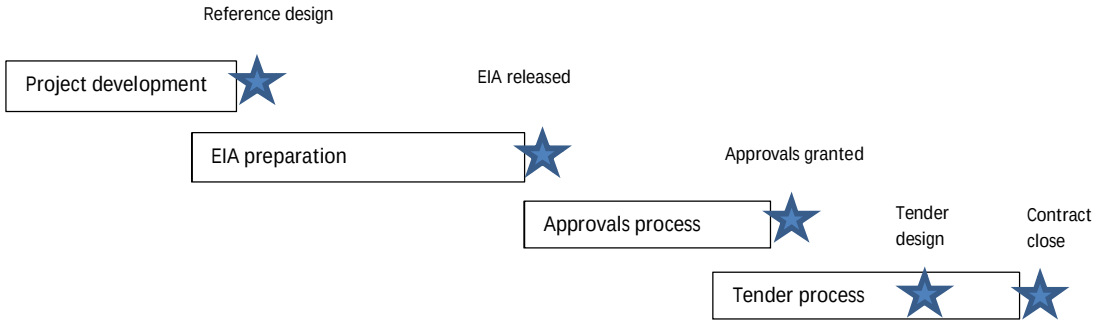

Figure 2: Sequential model for project approvals and contractor selection

This model has been commonly used by governments over the past decade and involves the preparation of a reference design as the basis for the impact assessment performed to seek project approvals. For mitigation of potential impacts, the sequential model relies on performance based approaches rather than specific commitments. Once approvals have been granted, a tender process is undertaken to select a contractor to implement the project.

Examples of significant transport projects progressed following this model include the Metro Tunnel Project (Melbourne) and Cross River Rail Project (Brisbane).

Integrated model

The integrated model is a less common approach to the coordination of approvals and contractor selection as shown in Figure 3 below.

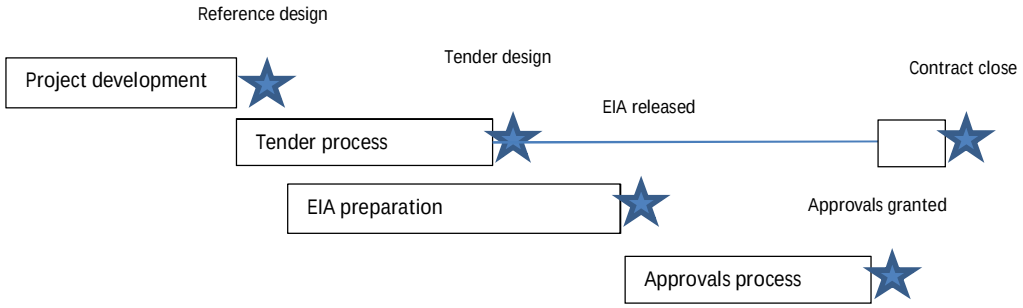

Figure 3: Integrated model for project approvals and contractor selection

Under this model the impact assessment is undertaken alongside the tender process with the published EIA based on a selected tender design. For mitigation of potential impacts, specific design and construction measures can be adopted. The alternative tender designs, not selected are not revealed publically as part of this process.

Examples of significant transport projects progressed following this model include the West Gate Tunnel Project (Melbourne) and the NorthConnex Project (Sydney).

4. Discussion

Opportunities for innovation

There is a nexus between the level of certainty for stakeholders arising from the approval process and the opportunity for innovation available in a subsequent tender process to select the project contractor. This situation is depicted in Figure 4 below.

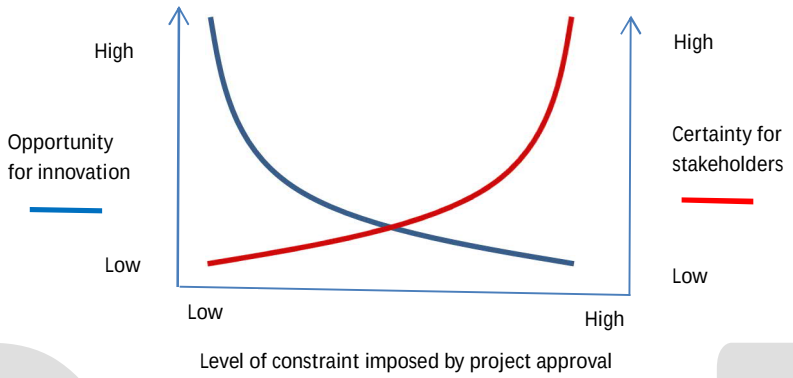

Figure 4: The trade-off between certainty for stakeholders and opportunity for innovation

The sequential model typically restricts innovation; this is because project approvals typically define the area within which the project must be located and the environmental performance outcomes that must be achieved for the project during implementation. Using the sequential model, this situation rightly discourages the development of substantially different designs through a tender process as the approval seeks to confine impacts to a minimum footprint. Any departure from the approved project area would be likely to trigger supplementary approvals steps.

For some projects where the design solution is relatively simple or obvious, design innovation is not critically important. However, for projects that are complex with many possibilities, innovation is highly valued.

In the case of the West Gate Tunnel Project, which used the integrated model, the preferred tender design that arose from the procurement process departed significantly from the initial reference design that was prepared. The road tunnel was lengthened, moving the western ventilation structure away from residential areas into industrial land, providing significant environmental benefits. These benefits are unlikely to have been captured if the sequential model was used. This is because tenderers are reluctant to depart from a reference design that has secured its approvals. A tender design that does depart significantly would be less desirable than others because of the additional time and expense of amending or seeking new environmental approvals.

Experience has shown that for complex projects different design teams will come up with different design solutions. The integrated model provides greater scope for these different design solutions to be explored and where the tender process prioritises minimising impacts, it can also facilitate improved environmental outcomes. These benefits have been identified in other project examples in Europe (Nijsten et al., 2008, Leendertse et al., 2012).

Transparency for stakeholders

A reference design, as typically used in the sequential model represents one way a project could be designed and built. This idea can be conceptually difficult for communities trying to comprehend how they could be affected by a project. The exact form and location of the project elements and certainly the ultimate urban design of the project are not known at the time of environmental assessment.

Alternatively, under the integrated model, it is the preferred tender design that is the subject of the environmental assessment and is presented in the published EIA. In these cases, greater design detail is available and impacts can be determined with greater certainty. This model is therefore considered to be more transparent even though it is not possible to share all of the submitted tender designs with the public because of their commercial sensitivity.

However, once selected the preferred tender design can be communicated, stakeholders have a greater level of certainty than with a reference design. This design provides a more accurate representation of how the project would be implemented and therefore greater transparency to those potentially affected. In the case of the West Gate Tunnel Project the ability to be able to present the accurate location of key project elements, along with their design form was appreciated by project stakeholders.

On the other hand a sequential model has the advantage that the roles of public and private stakeholders are clear and the procurement process is controlled due to a clear and formalised public scope (Rørena et al., 2017). These lines become somewhat blurred where multiple designs being prepared by the private sector are developed concurrent with the approvals process.

The other tender designs, not selected are not revealed publicly as part of this process due to commercial and intellectual property sensitivity. The least impactful option will not necessarily be chosen as the selection criteria will also consider transport functionality and commercial aspects. With the intertwining of approvals and procurement, careful attention is needed to prevent an obscure process between government and private sector contractors that limits inclusiveness and transparency for third parties (Arts et al., 2010). This can be addressed through ongoing public involvement in the approvals process and after approvals have been granted.

Duration of the approvals and procurement process

Overlapping of the tender selection process and the environmental assessment process as is possible under the integrated model, can significantly reduce the duration of the period between governments deciding to proceed with a project to the time of achieving contract close with the selected contractor.

This is consistent with other research that identifies early contractor involvement as a means for better integration of planning phase decisions with the construction activities, and improved environmental outcomes while achieving financial and time savings (Sanchez et al., 2015). “Interweaving” zoning and design activities, with designers entering at an earlier stage than usual has the potential to realise cost and time savings (Rørena et al., 2017).

For example, projects in Australia where the overall process will typically take two and a half to four years, the duration can be reduced by around six months by adopting the integrated model. This was achieved with the West Gate Tunnel Project.

Confidentiality and commercial considerations

Due to the scale and value of major transport projects, the contractor selection process is of high commercial sensitivity. Contractors vying for selection through this process seek to gain an advantage over their competition by identifying areas of innovation and this includes enhanced design functionality, reduced impacts, reduced cost and more speedy delivery. Keeping this intellectual property confidential is vital to the integrity of the contractor selection process.

Under the integrated model, the commercial sensitivity of tender design information adds to the complexity of EIA preparation whilst the tender process is underway. Information used by the team to prepare the EIA must be closely guarded until the preferred contractor (and associated tender design) is selected. Further, any temptation to incorporate the good ideas of one tender design into another (more preferred design) must be resisted. The need for confidentiality can constrain stakeholder consultation during this period as well. This added complexity does not arise with the sequential model.

It is widely accepted that the commitments arising from the EIA process and approvals conditions should be incorporated into the procurement process and contractor management systems to ensure that the desired environmental outcomes are achieved (Varnas et al., 2012). For the sequential process, these obligations are known when the contractor tender process commences. However, for the integrated model any requirements or modifications that emerge from the approvals process not envisaged in the tender design may add cost. The government is in a relatively weak position to negotiate these additional costs with their preferred contractor outside of a competitive tender process. This problem can be mitigated to some extent by ensuring that the contractor selection criteria give sufficient weight to the key environmental and planning issues associated with the project.

5. Conclusion

This paper identifies two different models for the coordination of approvals and procurement for major transport projects; the sequential model and the integrated model. Overall it is concluded that either of these models can be used effectively to coordinate approvals and procurement and proponents should give consideration to the particular circumstances of their project when making this strategic choice.

The integrated model, involving early contractor involvement before they have been granted their planning and environmental approvals is considered to have a number of benefits when compared to the sequential model. These include:

- More opportunity to capitalise on innovation
- Greater transparency with stakeholders
- Shorter duration of the period between government decision to support the project and contract close

It is however recognised that under the integrated model there is additional complexity regarding the management of confidential information during the tender process for contractor selection and there are potential implications for commercial negotiations to deal with commitments arising from the EIA process and approvals conditions.

Ultimately decisions on how best to coordinate approvals and procurement will be made on a project by project basis. These decisions will require a careful consideration of the project specific advantages and disadvantages but also a willingness to try a new approach from government (both regulators and proponent arms).

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