



Public Accounts and Estimates Committee

Advice to Inquiry into Effective Decision-Making for the Successful Delivery of Significant Infrastructure Projects

FINAL REPORT

17 December 2012

Evans & Peck was commissioned to provide specialist advice on specific aspects of three of the terms of reference to assist the Public Accounts and Estimates Committee prepare their overall inquiry report.

The documentation available for this review has been limited, particularly on the six project case studies selected for review. We also conducted this work as a desktop exercise without consultation with Victorian government agencies.

Our review report therefore cannot be regarded as a comprehensive or complete audit of performance of the selected projects or of departmental project processes.

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Executive summary

Public confidence in the Victorian government's ability to successfully select, procure and deliver projects continues to be undermined by perceived poor outcomes on some projects, despite leading-edge practices in many areas of project development. This is occurring at a time of increased public scrutiny, greater information availability and an increasingly tight fiscal and complex commercial environment.

This has driven a focus on the need to demonstrate and deliver infrastructure productivity, in particular the procurement and management of infrastructure projects, and comes at a time when evidence shows that project delivery and technical / engineering skills and commercial acumen in dealing with the private sector is less available in the public sector than in the past.

The Public Accounts and Estimates Committee (PAEC) has therefore been commissioned to report to the Victorian Parliament on six terms of reference (TOR) on the overall capability of the public sector to optimise decision-making, procurement, management and delivery of major infrastructure projects, with an overarching objective of maximising infrastructure outcomes and benefits to the Victorian community.

Evans & Peck was commissioned to provide specialist advice on specific aspects of three of those terms of reference. The documentation available for this review has been limited, particularly on the six project case studies selected. Our review cannot be regarded as a comprehensive or complete audit of the selected projects or of departmental processes and performance of projects. It is our opinion (except where otherwise attributed), informed by the evidence provided and our *a posteriori* knowledge gained through our extensive involvement at the front line of major infrastructure project planning and delivery around Australia and the world. Our key advice and findings are summarised below.

What are the skills and competencies required in the Victorian public sector for effective evaluation, decision-making and oversight of major infrastructure projects?

Government acts in three roles on major public infrastructure projects – **owner**, **investor** and **deliverer**. Clarity and delineation of these roles is fundamental to good outcomes. For example, clear delineation must be made between development of the business case (owner) and the decision to approve it (investor). The investor assures itself that the business case is sound, and the deliverer may contribute information to the business case, but the owner remains accountable for the business case. This approach ensures that the ultimate owner of the asset, who has the best understanding of the service outcome required, owns the business case that describes the service outcome and the required asset. This accountability should not be delegated.

From our research, experience and review of the six case studies being examined in this inquiry, we have identified the broad project activities, from business case preparation through to transaction management, and the participation in each by these government roles at the five stages defined in Victoria's investment lifecycle framework.

For each project activity, we have detailed the purpose, work requirements, skills and competencies from subject matter expertise through to transaction management and project leadership. We have noted some of the advisory skills and competencies commonly sourced

externally on major projects. We have also proposed best practice project governance structures and protocols which should apply to maximise performance of major projects.

Skills and competencies are below a level that is desirable to achieve good outcomes on major public infrastructure projects in Victoria. This is caused by a **deterioration of commercial and technical expertise in the public and private sectors**, evidenced by a shortage of skilled and experienced people in project development and delivery in both the public and private sectors. Initial research suggests that the deterioration of expertise has occurred more rapidly in the government sector compared to the private sector. Technical expertise is not being maintained in government, with a gradual reduction of its role in training and developing technical staff. This has contributed to poor outcomes on projects generally, but has been particularly apparent on ICT projects, where this is an insufficient volume of projects to retain such staff within government. This leads to a reduced ability to develop, retain and transfer knowledge.

Governments have therefore been forced to rely on private consultants and contractors, but commercial acumen to specify, procure and manage project services efficiently is not consistently available across the public sector. There is also a tendency to compensate with an over-emphasis on legal, contractual and probity issues, which reduces the effectiveness of engagement with industry and stakeholders.

The private sector is also struggling to meet the increasing demands of larger, more complex and greater number of public projects because training and professional development, particularly in engineering, is also not being undertaken in the private sector to the extent that it was, and engineers are being attracted to other industries.

Competencies and skills, whether internally or externally sourced, are one part of overall organisational capability. We found deficiencies in structure, systems and leadership of that organisational capability, which appear to be contributing to difficulties in successful planning and execution of major infrastructure projects. These include: a failure to sufficiently respond to increasingly complex external influences on government projects; lack of integration of project planning and delivery; over-reliance on systems and procedures to do work at all levels (instead of analysis and judgement in problem solving and decision making); and an apparent lack of systems to engage, develop and retain key people. There is also evidence that there are people working in this area of government who are committed, working hard and doing their best for the state in what are challenging circumstances.

Have six major Victorian infrastructure projects been developed and implemented in a manner which aligns with the public interest and which maximises transparency and accountability?

We approached the assessment of project from the perspective of the Victorian Government's investment lifecycle framework and whether the delivery of the project was in the public interest, including transparency, accountability and value-for-money. This high-level review has implicitly assessed the six projects against these criteria and reported performance at each of the five investment lifecycle stages. A detailed audit of all relevant project documentation would be required for a comprehensive and explicit assessment.

Conceptualise and Prove

The problems that occurred in delivery on four of the six projects were largely related to inadequacies in the early phases of the project and the business case process, This stems from a

lack of front-end investment in project conceptualisation, end-user analysis, options identification and analysis and robust cost estimation and benchmarking. There appears to be a strong tendency, at the conceptual stage of the investment management process, to focus on the solution itself, rather than the strategic fundamentals, notably the problems to be solved, strategic options assessment and the higher-level outcomes to be achieved. Other issues related to poor engagement with stakeholders and end-users, confused accountabilities and governance, insufficient rigour in investigating options and over-optimistic delivery timeframes through lack of benchmarking, among other reasons. An overwhelming theme that emerges from the review of these projects is the need to commit the necessary time and effort into planning and business case development, i.e. at a time when there is maximum ability to influence cost and outcomes.

The ICT projects in particular suffered from poor specification of scope, including the change or transition management arrangements. Inadequate engagement with end-users and stakeholders to inform the requirements and scope was the principal reason for major problems on the HealthSMART and Melbourne Markets projects.

By contrast, the Royal Children's Hospital and the Melbourne Convention Centre fully understood end-user requirements and were delivered successfully.

Procure

There appears to be a growing tendency for some organisations to use probity and confidentiality as barriers to effective engagement with industry. Whilst a degree of formality is certainly required to satisfy success elements such as transparency and contestability, interactive tender processes promote information exchange with tenderers and mutual understanding of requirements, which can significantly improve project outcomes, as occurred on MCC.

A more interactive process on Desalination may have led to a more realistic timeframe for delivery. Probity appeared to be a barrier to any interaction on HealthSMART, where the requirements were difficult to understand and were more task-driven rather than outcome-driven. Early contractor involvement is a growing trend on major infrastructure projects, with East-West Link, Melbourne Metro and North West Rail Link in Sydney all engaging with construction contractors to inform the business case.

Committing to the project scope and price prior to detailed specification of the solution on both myki and HealthSMART led to major problems during delivery. A staged procurement process on these projects would have given the government a much better understanding of the costs and timeframes to deliver, and the opportunity to abandon or redefine the projects if it were considered unacceptable.

Procurement on the Melbourne Markets project suffered from the lack of front-end user engagement. Initially a PPP, the project had to revert to a broader scope and design and construct (D&C) procurement because of the lack of buy-in from the market community. The D&C procurement and tender award was dominated by design requirements, with significant time, money and effort on the design to engender market buy-in, yet the design still changed significantly after the tender evaluation process concluded. In addition, significant probity issues during the project planning and procurement phases meant that VfM has not been demonstrated on this project.

Implement

The implementation phase proved difficult for HealthSMART, myki, Desalination and Melbourne Markets. This can be attributed largely to inadequate project planning and specification, and over-optimistic timeframes.

With an appropriate timeframe for Desalination, the industrial issues may not have materialised to the same extent and weather delays may have had less impact on the program. Many construction contractors are less likely to claim in that context. In addition, a realistic timeframe for myki would not have reduced the costs of extending Metcard, but it would have meant that the costs were understood at the outset.

Implementing sophisticated tolling technology on the CityLink and EastLink projects, while experiencing some delays, showed that these delays can be minimised when the requirement is clear and there is an incentive for timely delivery, such as through a PPP.

The implementation phase for RCH and MCC were successful, largely because each project's fundamentals were strong from the outset and the scope was very clear.

Completion of the Melbourne Markets project has continued to be delayed in the implementation phase, with unusually long construction delays caused by wet weather.

Realise

While four of the six projects are operating largely as intended, it is not possible from this review to determine whether value-for-money, in the broadest sense, has been achieved on any the six projects reviewed, though it is apparent that some have not been delivered in a way which maximises public interest.

Myki is regarded as one of the most complex smart card ticketing solutions in the world, though it appears to be operating largely as originally intended. However, the question remains as to whether an off-the-shelf ticketing solution could have provided sufficient functionality at a lower cost to the public. This lower upfront cost must of course be balanced against the reduced sophistication of the ticketing system, flexibility and potential higher cost of future upgrades that an off-the-shelf system often requires.

Similarly, Desalination is now producing desalinated water as intended, albeit much later than planned. While the successful bid price was lower than the Public Sector Comparator, the final costs to the state and the degree to which the state is protected from the delivery risks on the project is yet to be finalised. The annual payment regime also suffers from a lack of transparency.

The success of the Royal Children's Hospital and Melbourne Convention Centre projects stemmed from a clearly defined scope and a well-understood and mature business model. An experienced and competent project team and strong governance arrangements enabled these projects to be successful PPPs for the state.

A failure to determine organisational changes or effects the project requires or creates to enable the benefits as a significant issue for HealthSMART rollout. The Austin Hospital ICT system now operating demonstrates that HealthSMART could have been successfully delivered if the system were piloted first and progressively implemented across the health network using the learnings from the pilot.

General observations

We note that, in a number of instances, projects were announced and went to market before the need was substantiated, strategic options investigated and a full business case completed. Once an announcement is made, the government is committed to an un-tested solution and its attendant risks, and the legitimacy of the investment management framework is undermined.

It would appear that only limited Gateway reviews have been undertaken on the projects reviewed – it is pointless having a good process that is not effectively embraced. Gateway reviews are now compulsory for HV/HR projects, which should ensure that the projects have a strong rationale and basis, assuming they are quarantined from external influences. Government, as an astute investor, must be prepared to cancel or re-plan projects that will not deliver benefits cost-effectively for the taxpayer.

Confusion around the roles and accountability of DTF was raised by numerous agencies. DTF's multiple roles of assurance and decision-making (as an investor) and its expert technical input role participating in the project's development and delivery are conflicting and this leads to confusion around roles, responsibility and accountability, particularly for PPP projects.

An increasingly volatile and uncertain political environment and the need for urgent action appears to be an influencing factor throughout the project lifecycle, with compressed timeframes available during the critical conceptualise and prove stages. As a result, public sector managers are often unable to adequately consider all available options and complete business cases to the requisite quality, and are perhaps unwilling to deliver frank and fearless advice on projects. Both issues severely undermine the investment management process and lead to suboptimal funding decisions and hasty procurement processes.

Many projects are becoming larger and increasingly complex, especially given the increasing need to develop infrastructure on brownfield locations, sometimes in high profile locations of intense activity, and due to an increased trend to package up projects to transfer interface risk to the private sector. Projects are also attracting greater scrutiny by a more informed public with high expectations. Managing projects is therefore becoming increasingly demanding, requiring a more diverse capability across strategic, commercial, financial, technical, construction, stakeholder and general management disciplines. This is an emerging area of research and practice globally.

Should public sector expertise be centralised or decentralised in the Victorian government?

A major factor in deciding how to assemble PPP skills in the public sector in particular is the volume of PPP projects. Victoria has relatively few projects, meaning that it is difficult for line-agencies to develop, retain and productively employ skilled staff in PPPs over the long term. The Department of Health is a current exception, having recently procured three major PPPs and is about to embark on another. Major Projects Victoria, which delivers PPPs across several portfolios, is also able to maintain a small team, while Linking Melbourne Authority is preparing the business case for another road PPP, which if delivered would be their third in the past decade. Dispersed knowledge and the lack of scale in most portfolios points towards the need to centralise key skills and experience.

There is also a limit to which government can outsource capability, given the need to retain sufficient knowledge, capability and understanding to be an informed client/buyer and to protect public interest, and the need to be accountable for project outcomes. External advisors are unlikely to match public sector understanding of policies and outcomes required by government, though

specialist skills are best sourced from the most competent pool, whether internal or external. Project director-manager capability in particular needs to be selected from within government to provide the understanding of government process and policy and to ensure true accountability.

Combining the assurance (investor) function with the technical input function in DTF has created role confusion and has blurred accountability, adversely affecting the working relationship between line agencies and DTF. It is important that DTF has sustained capability to carry out its assurance and oversight role as investor. Strengthening the assurance and independent oversight roles of DTF while separating and centralising technical skills and access to precedent project documentation and materials will contribute to a retained skill base and learning and greater consistency across government. This independence is only possible if DTF does not also provide input in an owner's or deliverer's role.

Our research indicated that generally on more complex and high-risk forms of procurement, it was extremely difficult to retain and employ a skill base within line agencies with current levels of Victorian expenditure on PPPs. The establishment of a PPP centre-of-excellence independent of DTF's assurance function and line agencies would be beneficial for Victoria's PPP governance. This centre would nurture skills and competencies in project management by harnessing industry and academia, capture precedent knowledge and provide expert input or be seconded to line agencies for PPPs. An important observation is that these measures will be most effective if applied to all forms of procurement, including PPPs.

1 Introduction

Major public infrastructure projects are being subjected to increased scrutiny regarding the delivery of intended outcomes and protection of the public interest, given the tight fiscal and complex commercial environment and increasing accessibility of information to the population. Confidence in the Victorian government's ability to successfully select, procure and deliver projects continues to be undermined by perceived poor outcomes on some projects, despite leading-edge practices in some areas of project development. This includes successful execution of PPPs, significant development of guidelines, notably around PPPs and alliances, and ongoing enhancements to the investment lifecycle framework.

The increased focus on infrastructure productivity, in particular the procurement and management of infrastructure projects, comes at a time when technical and engineering skills and commercial acumen in dealing with the private sector is less available in the public sector than in the past. Recent studies undertaken by DTF Victoria, the Inter-jurisdictional Steering Committee on Alliancing and Evans & Peck have identified this 'asymmetry' in commercial capability between the private and public sectors as an underlying cause of poor value for money outcomes in major infrastructure projects¹. ICT projects have experienced similar challenges, with the Auditor-General and Ombudsman's audits finding that lack of ICT skills in government contributed to problems on the HealthSMART and myki projects.

There is also growing concern with the effectiveness of risk management processes in infrastructure projects, particularly in the public sector, which have led to cost increases and delays.

The Public Accounts and Estimates Committee (PAEC) has therefore been commissioned to report to the Victorian Parliament on six terms of reference (TOR) on the overall capability of the public sector to optimise decision-making, procurement, management and delivery of major infrastructure projects, with an overarching objective of maximising infrastructure outcomes and benefits to the Victorian community.

Evans & Peck is providing specialist advice to support the Inquiry on three of those terms of reference:

TOR a:

The competencies and skills that public sector managers require for the effective evaluation, decision-making and oversight of significant infrastructure projects and protection of the public interest.

TOR d:

Whether particular significant infrastructure projects have been developed and implemented in a manner which aligns with the public interest and maximises transparency and accountability for the life cycle of projects

¹ *In pursuit of additional value: A benchmarking study into Alliancing in the public sector*, Inter-jurisdictional Steering Committee on Alliancing, 2009; *Towards agreed expectations – tender strategies to improve design and construct infrastructure delivery outcomes*; Inter-jurisdictional Steering Committee on Alliancing, 2011.

and TOR f:

The merits of centralisation versus decentralisation of available skilled experts in the Victorian public sector during the life-cycle stages of public-private partnership projects, including considering any benefits that may be derived from greater flexibility to contract specialist services from external sources

The overall questions which arise from these terms of reference are:

- What are the skills and competencies required in the Victorian public sector for effective evaluation, decision-making and oversight of major infrastructure projects?
- Have six major Victorian infrastructure projects been developed and implemented in a manner which aligns with the public interest and which maximises transparency and accountability?
- Should public sector PPP experts be centralised or decentralised in the Victorian government ?

This report is structured into three chapters to address the terms of reference separately. Each TOR required a particular approach and research technique. The reporting of each therefore differs significantly. However there is common ground between the TORs and these linkages have been reported as appropriate.

2 Required public sector skills & competencies

2.1 Our approach

In order to determine the required public sector skills and competencies it is first necessary to understand the role of the public sector in addressing community need through the provision of major infrastructure.

Section 2.2 demonstrates that there are three major roles for government in managing major infrastructure projects.

Section 2.3 then identifies the project management framework that applies in Victoria, including the investment lifecycle framework, which gives the context for the deployment of skills; and the public sector organisational context and structure for public sector managers of major infrastructure projects.

Sections 2.4 and 2.5 then define the necessary skill-sets, based on Evans & Peck's research of global best practices and experience in developing, delivering and operating major infrastructure.

Section 2.6 provides an overview of the best-practice governance arrangements that are necessary for the effective application of skills.

Section 2.7 provides our analysis of the deficiencies in current practices compared to the expectations we have detailed in the preceding sections. This section, in particular, draws on evidence from our analysis of the performance of the six example projects analysed in some detail in Section 3, as well as on Evans & Peck's wide experience of projects in Victoria, across Australia and internationally.

2.2 The role of government

Major infrastructure projects are delivered by government to provide a public service outcome. It is important when considering the skills and competencies required to distinguish the three key roles government undertakes, the distinctly different objectives of each of the roles and the subsequent differences in required capability for each role:

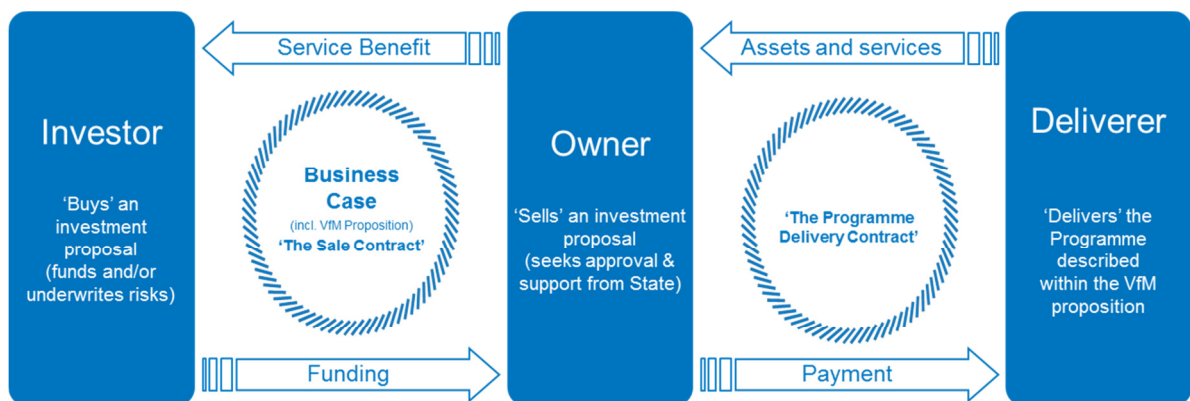
- Government as the **investor**, determines investment priorities, approves specific business cases and provides the funding, and/or underwrites the risks. In Victoria, this role is generally undertaken by the DTF and/or Federal Government Department as co-funder. The 'investor' assesses the relative value of the proposed project against the many other projects proposed by other 'owners', taking a portfolio approach to assess the set of projects that will offer best value for money in terms of service outcomes against whole of government priorities.
- Government as the **owner**, identifies the community need and possible solutions for funding by the State and prepares the business case, which may include a requirement for a major infrastructure asset; and is responsible for delivering the service outcome outlined in the business case. This role is typically undertaken by the line agency or department that will ultimately own and manage the asset to be delivered, and be responsible for the service

outcomes that the asset provides. The owner establishes the corporate policy in relation to the project, provides funding, approves procurement within its delegations, and provides appropriate high-level liaison and representation.

- Government as the **project deliverer**, manages the delivery of the project to provide the major infrastructure asset that addresses the community need identified in the business case. This role is to deliver the asset, but the agency or Department does not necessarily own the asset nor have accountability for the outcomes it delivers or enables.

Clarity regarding which role an individual/organisation within government is undertaking is fundamental to good outcomes. For example, good practice requires that there is clear delineation between development of the business case and the decision to approve it. Whilst the *investor* may require certain information of a particular quality to be provided in the business case, it is the *owner* who is accountable for the business case. Similarly, the *deliverer* may contribute information to the business case in terms of cost and risk profile of the delivery of the related infrastructure asset, however overall accountability, for the business case remains with the owner. This clarity of roles ensures that the ultimate owner of the asset, who has the best understanding of the service outcome required, owns the business case that describes the service outcome and the required asset. Figure 1 depicts the relationships between the roles of government.

Figure 1: Roles of government in project delivery



Adapted from the National Alliancing Contracting Guidelines (Australian Government, July 2011)

In undertaking any of these roles, government must demonstrate high levels of capability, integrity and transparency in processes while pursuing value for money outcomes in the public interest – that is delivering the identified benefits and addressing the service need at appropriate quality for the lowest whole-of-life cost. The foundations to achieving this outcome are:

- **Clear objectives** - clearly defined service need and project objectives aligned with scope, benefits and outcomes.
- **Contestability** – keeping barriers to entry low so that there is an ongoing, wide range of potential suppliers willing to bid for public infrastructure projects.
- **Competition** – providing a process by which potential suppliers can offer their services and be evaluated on their merits against appropriate criteria that will lead to a value for money outcome for the state.

- **Capability symmetry** between the government and the supplier in order to make informed decisions throughout the decision-making process.
- **Gated decision-making** to ensure that as the project progresses through investment decision and then delivery, the initial value for money proposition is maintained and decisions are made appropriately reflecting commonly held principles such as separation of duties.
- **Transparency** - refers to the availability of information to the general public and clarity about government rules, regulations and decisions
- **Accountability** - public officials are answerable for their behaviour and responsive to the entity from which they derive their authority. Accountability also means establishing criteria to measure the performance of public officials, as well as oversight mechanisms and having clear and empowered assurance processes to provide checks and balances and ensure that standards are met.

These success foundations provide the context for the capabilities and skills required by the public sector to successfully deliver major projects. They also provide the basis for the assessment of whether projects have been delivered in the best interests of the public (refer section 3.2).

2.3 Victoria's project management and decision-making framework

2.3.1 Investment lifecycle framework

As owners, most departments in Victoria establish and follow formal internal guidance on the processes for identifying and procuring capital works projects. As the investor, the Department of Treasury and Finance (DTF) has established a suite of guidance material, including for PPPs. It has recently established a High Value / High Risk (HV/HR) assurance framework to more closely scrutinise projects that are either large, high profile or deemed to be high risk. A Gateway Review process is administered and funded by DTF, which enables departments and agencies to undertake independent reviews by an expert panel at six designated phases of the project (two in Stage 3 of the life cycle). This is mandatory for HV/HR projects and mitigating actions on critical or urgent recommendations made by the Gateway reviewers are to be reported to DTF by the Senior Responsible Owner (SRO) of the project.

The investment lifecycle framework for how projects are approved, governed, managed and delivered in Victoria, including this gateway process, is shown in Figure 2 below. For consistency, the analysis and findings presented in this report are framed around the same five lifecycle stages.

The HV/HR guidelines introduced mandatory procedures to all government infrastructure projects of a value greater than \$100m, or where projects are identified as high risk. Otherwise the use of procedures and adherence to specific policies and guidance is generally at the discretion of the line agency. The specific procurement guidelines applicable in Victoria are listed in section 4.4.

Figure 2: Investment management framework and Gateway process



Source: DTF Victoria

2.3.2 Organisational and managerial environment in Victoria

This section gives a brief overview of the structure of the relevant parts of the public sector in Victoria to provide further context for the findings on the necessary competencies and skill-sets.

Delivery of major projects in Victoria is largely undertaken by dedicated divisions within individual Departments, namely:

- Health (DOH).
- Human Services (DHS), via the Office of Housing.
- Business and Innovation (DBI), via Major Projects Victoria (MPV).
- Transport (DOT).
- Sustainability & Environment (DSE).
- Education and Early Childhood Development (DEECD).
- Justice (DOJ).

All of these Departments have experience in delivering PPPs under the Partnerships Victoria (PV) model except for DHS. The regional water authorities deliver their own projects, including under the PV model.

The Department of Primary Industries (DPI) and Arts Victoria in the Department of Premier & Cabinet (DPC) have agreements with MPV to deliver their major capital works, while the

Department of Planning & Community Development (DPCD) has agreements with Places Victoria and DOT to deliver their capital works.

In addition to MPV, other infrastructure project development and delivery agencies in Victoria include:

- Linking Melbourne Authority (has PPP experience).
- VicRoads.
- Public Transport Victoria.
- VicTrack.

Project directors are generally either experienced public sector staff or long-term contractors. Support staff are a mix of contractors and Victorian Public Service (VPS) staff, with external advisory teams procured to provide specialist support.

2.4 Best practice public sector skills and competencies in major infrastructure projects

This section provides details of the skills and competencies that should be in place (i.e. normative) in the public sector to deliver major infrastructure projects. They have been identified through Evans & Peck's research and experience in development and delivery of major infrastructure projects. The competency framework is consistent with Project Management Body of Knowledge (Project Management Institute), however it is tailored to reflect specific requirements of major infrastructure projects and described using the Victorian Investment Management Framework phasings.

The specific project activities required at each stage of the lifecycle to effectively deliver major public infrastructure projects by the primary role (investor, owner, deliverer) is provided in Table 1.

These project activities are detailed in Table 2. This includes their purpose, a description of the work involved and the essential competencies, skills and experience required to execute this work. These skills and competencies have been identified through Evans & Peck's research and practical experience at the front line of in the development and delivery of major infrastructure projects.

Competencies associated with oversight and governance of projects is addressed at Section 2.5.

Table 1: Specific project activities by lifecycle phase and role

✓ - Investor ✓ - Owner ✓ - Deliverer

| Project activity | Conceptualise | Prove | Procure | Implement | Realise |
|--|---------------|-------|---------|-----------|---------|
| 1. Strategic Assessment | ✓ | ✓✓ | | | ✓✓ |
| 2. Business case development | ✓ | ✓✓✓ | | | ✓✓ |
| 3.1 Scope definition | ✓ | ✓✓✓ | ✓✓ | | |
| 3.2 Scope management | | | ✓✓ | ✓✓ | |
| 4. Technical review and oversight | ✓ | ✓✓✓ | ✓✓ | ✓✓ | |
| 5. Cost management | ✓ | ✓✓ | ✓✓ | ✓✓ | |
| 6. Risk management | ✓ | ✓✓✓ | ✓✓ | ✓✓ | |
| 7. Stakeholder engagement | ✓ | ✓✓ | ✓✓ | ✓✓ | |
| 8. Communications | ✓ | ✓✓ | ✓✓ | ✓✓ | |
| 9.1 Project Leadership - business case | ✓ | ✓ | | | |
| 9.2 Project Leadership - procurement | | | ✓✓ | | |
| 9.3 Project Leadership - delivery | | | | ✓✓ | |
| 9.4 Project Management & Coordination | ✓ | ✓ | ✓✓ | ✓✓ | |
| 10. Project funding and financing strategy | | ✓✓ | ✓✓ | | |
| 11. Procurement strategy | | ✓✓ | | | |
| 12. Value for Money assessment | | ✓✓ | ✓✓✓ | | |
| 13. Commercial structuring and documentation development | | | ✓✓✓ | | |
| 14. Transaction management | | | ✓✓ | | |
| 15. Tender evaluation & financial review | | | ✓✓✓ | | |
| 16. Expenditure review & oversight | | | ✓✓ | ✓✓ | |
| 17. Scheduling - definition, preparation & management | | | ✓✓ | ✓✓ | |
| 18.1 Contract management – project development | | ✓ | ✓✓ | | |
| 18.2 Contract management - delivery | | | | ✓ | |
| 19. Project controls | | ✓ | ✓✓ | ✓✓ | |
| 20. Evaluation of project performance | | | | | ✓✓✓ |

Table 2: Definition of best practice skills and competencies required to develop and deliver major infrastructure projects

| Project Activity | Activity Purpose | Work | Essential Competencies & Skills |
|--|---|--|---|
| 1. Strategic Assessment | <ul style="list-style-type: none"> ▪ Identify the portfolio strategic planning context of the service need ▪ Identify service need ▪ Identify and measure benefits ▪ Identify the range of strategic options available to address the need and deliver the benefits | <ul style="list-style-type: none"> ▪ Provide advice as required to investor, owner or deliverer to assist in understanding and defining strategic context of service needs/problems and importance of benefits ▪ Strategic options assessment ▪ Develop benefit management plan ▪ Contribute to scope definition framework, risk management and value management ▪ Benchmarking | <ul style="list-style-type: none"> ▪ Relevant technical / professional qualification ▪ Relevant domain or portfolio technical experience and expertise ▪ Experience in strategic portfolio analysis and planning ▪ Modelling |
| 2. Business case development | <ul style="list-style-type: none"> ▪ Develop overall value for money proposition that is deliverable | <ul style="list-style-type: none"> ▪ Develop business case for investment and 'roadmap' for the project including <ul style="list-style-type: none"> - service need and project objectives - proposed benefits, how they will be measured, benefits realisation plan - details of the proposed solution, including a clearly defined scope, risks and budget - TBL impacts and cost benefit analysis - schedule, procurement strategy and delivery arrangements | <ul style="list-style-type: none"> ▪ Relevant professional qualification ▪ Critical insight and strategic thinking ▪ Expertise and experience in strategic planning in relevant domain / portfolio ▪ Deep expertise in writing, information structure and presentation ▪ Commercial acumen and understanding of project procurement and delivery arrangements ▪ Technical, commercial, economic and social analysis |
| 3.1 Scope definition | <ul style="list-style-type: none"> ▪ Solution meets standards and delivers required benefits ▪ Define scope to be delivered ▪ Robust cost estimate with appropriate allowance for risks ▪ Innovative design incorporated into program | <ul style="list-style-type: none"> ▪ Articulate required scope clearly in an easy-to-understand framework including a robust basis for scope inclusions and exclusions ▪ Optimise scope to what is actually needed to achieve the identified benefits ▪ Identify opportunities for design innovation ▪ Robust 'whole of life' cost estimating with appropriate allowance for risks ▪ Community consultation and statutory approvals | <ul style="list-style-type: none"> ▪ Strategic / critical thinking ▪ Experience in value management and benchmarking ▪ Relevant professional qualification ▪ Extensive experience and expertise in leading multi-disciplined design teams ▪ Demonstrated understanding of relevant Design Standards ▪ Ability to liaise with industry to identify design innovations ▪ Understanding of delivery process ▪ Strong project and risk management expertise ▪ Strong collaborative skills, multiple stakeholders |
| 3.2 Scope management - verification - monitoring - adjustment - control | <ul style="list-style-type: none"> ▪ Solution meets standards ▪ Innovative design incorporated into program | <ul style="list-style-type: none"> ▪ Communicate required scope ▪ Ensure compliance to required scope and designs ▪ Identify opportunities for design innovation ▪ Manage stakeholder influence on scope | <ul style="list-style-type: none"> ▪ Relevant professional qualification ▪ Strong stakeholder engagement and management skills ▪ Extensive experience in leading multi-disciplined design teams ▪ Demonstrated understanding of relevant Design Standards ▪ Ability to liaise with industry to identify design innovations ▪ Understanding of delivery process ▪ Strong project management skills |
| 4. Technical review and oversight | <ul style="list-style-type: none"> ▪ Identify and assess project options ▪ Define and develop scope | <ul style="list-style-type: none"> ▪ Contribute to identifying service need and benefits ▪ Undertake project options assessment ▪ Define and detail scope ▪ Prepare concept and reference designs | <ul style="list-style-type: none"> ▪ Relevant tertiary and professional qualification and accreditation ▪ Demonstrated understanding of relevant Design Standards ▪ Ability to liaise with industry to identify design innovations |
| 5. Cost management - estimation - planning - budgeting - monitoring - control | <ul style="list-style-type: none"> ▪ Project cost plan accurate and controlled ▪ Project cost profile identified and articulated at all stages | <ul style="list-style-type: none"> ▪ Plan and manage costs ▪ Quantify and incorporate changes ▪ Prepare project cost plan ▪ Quantify project risks and cost / schedule impacts ▪ Develop risk-adjusted cost | <ul style="list-style-type: none"> ▪ Professional qualification ▪ Experience and knowledge of constructability or delivery issues ▪ Understanding of influences on cost: design, quantities, industry cost rates and broader industry ▪ Understanding of project risks and impact on costs |

| Project Activity | Activity Purpose | Work | Essential Competencies & Skills |
|---|---|--|---|
| 6. Risk management - review - mitigation - planning - control | <ul style="list-style-type: none"> ▪ Identify and articulate project risks ▪ Establish project risk management plan | <ul style="list-style-type: none"> ▪ Facilitate identification of project risks ▪ Facilitate quantification of risks ▪ Establish risk management plan including accountabilities, process and regular updates | <ul style="list-style-type: none"> ▪ Professional qualification ▪ Experience and knowledge of constructability or delivery issues ▪ Ability to articulate project risks and impact |
| 7. Stakeholder engagement | <ul style="list-style-type: none"> ▪ Effective stakeholder engagement, support and contributions across life-cycle of the project | <ul style="list-style-type: none"> ▪ Map stakeholder influences on scope ▪ Develop stakeholder engagement strategy, including involvement of end-users ▪ Develop and maintain engagement and plans ▪ Establish feedback loops to assess effectiveness of processes and activities ▪ Support executive in external inquiries | <ul style="list-style-type: none"> ▪ Experience and expertise in stakeholder engagement and management ▪ Knowledge of key stakeholders and their issues for this Project ▪ Understanding of existing engagement mechanisms ▪ Understanding of end to end Project delivery processes |
| 8. Communications | <ul style="list-style-type: none"> ▪ Optimised collaboration and support for the project ▪ Effective delivery of key messages into community and external media | <ul style="list-style-type: none"> ▪ Develop communications strategy ▪ Develop communications content ▪ Establish feedback loops to assess effectiveness of processes and activities ▪ Establish project 'brand' ▪ Ensure consistency in communications external and internal ▪ Support executive in external inquiries | <ul style="list-style-type: none"> ▪ Experience and expertise in media liaison ▪ Experience and expertise in communications management ▪ Understanding of existing communication mechanisms ▪ Understanding of end to end project processes |
| 9.1 Project Leadership - business case / project development | <ul style="list-style-type: none"> ▪ Lead the project definition and business case preparation process | <ul style="list-style-type: none"> ▪ Oversee inception and project development phases ▪ Steer project approvals process ▪ Oversee preparation of business case and associated processes ▪ Make decisions about project direction and scope ▪ Manage work-streams and design process ▪ Manage steering or project control group | <ul style="list-style-type: none"> ▪ Likely to have relevant professional qualification ▪ Demonstrated strategic subject matter knowledge and expertise ▪ Strong commercial skills and preferably also has understanding of technical, procurement and delivery issues ▪ Strong project management skills ▪ Strong communications skills ▪ Leadership skills, including decisiveness and willingness to be accountable ▪ Effective management skills ▪ Knowledge of industry environment ▪ Understanding of policy objectives ▪ Demonstrated stakeholder and relationship management skills ▪ Demonstrated ability to work decisively and to tight time frames under pressure ▪ Respected in industry |
| 9.2 Project Leadership - procurement | <ul style="list-style-type: none"> ▪ Procurement undertaken to support program ▪ Procurement meets probity and procurement requirements | <ul style="list-style-type: none"> ▪ Pragmatic and timely assessment of tenders against assessment criteria | <ul style="list-style-type: none"> ▪ Strong commercial skills ▪ Knowledge of industry environment ▪ Understanding of policy objectives ▪ Strong project management skills ▪ Strong communications skills ▪ Effective management skills ▪ Leadership skills, including decisiveness and willingness to be accountable ▪ Demonstrated stakeholder and relationship management skills ▪ Demonstrated ability to work to tight time frames under pressure |

| Project Activity | Activity Purpose | Work | Essential Competencies & Skills |
|--|--|---|---|
| 9.3 Project Leadership - delivery | <ul style="list-style-type: none"> ▪ Accountable for delivering program on time on budget to required standards ▪ Achieving relevant policy objectives ▪ Ensure Program operates efficiently and effectively ▪ Inform key stakeholders ▪ Escalate issues outside of the Program as required ▪ Ensure consistency and commitment across life of program ▪ Compliance with all relevant standards ▪ Accurate reporting and forecasting ▪ Effective financial management | <ul style="list-style-type: none"> ▪ Achieve policy objectives ▪ Own Program strategy ▪ Identify, manage and resolve risks and issues ▪ Engage with stakeholders ▪ Accurate timely reporting ▪ Resolve complex issues including cross-functional and cross-organisational issues ▪ Lead program strategy and implementation ▪ Drive synergies across work-streams ▪ Facilitate adherence to the program processes ▪ Resource planning and allocation ▪ Managing, monitoring, and performance of all delivery providers ▪ Oversee establishment and allocation of technical experts to support delivery programs to ensure compliance with all relevant delivery standards | <ul style="list-style-type: none"> ▪ Detailed knowledge of relevant department ▪ Good communication skills ▪ Strong PM capabilities ▪ Good knowledge of Owner functions ▪ Good knowledge of entities the Program must engage with effectively ▪ Demonstrated understanding of the Program interdependencies ▪ Extensive experience in managing the performance of delivery providers ▪ Demonstrated commercial expertise ▪ Ability to solve complex problems across multiple interfaces ▪ Strong stakeholder engagement skills ▪ Effective management skills ▪ Leadership skills, including decisiveness and willingness to be accountable ▪ Understanding of policy objectives ▪ Media experience and skills |
| 9.4 Project Management & Coordination | <ul style="list-style-type: none"> ▪ Early identification of Program wide issues and strategic issues to be addressed ▪ Provision of information to Project Director ▪ Accurate, timely, relevant reporting | <ul style="list-style-type: none"> ▪ Liaise with Executive to understand Program reporting requirements ▪ Establish Program reporting regime ▪ Accuracy of reporting ▪ Timeliness of reporting ▪ Identification of anomalies ▪ Highlight cost and schedule issues ▪ Development and ongoing optimisation of the Program Plan ▪ Manage performance of external service providers ▪ Establish and maintain project governance including financial and procedural controls ▪ Provide an 'arm's length' view on Program performance and key issues ▪ Identify trends and strategic issues ▪ Provide support to Project Director in analysing issues ▪ Contribute to Program strategy | <ul style="list-style-type: none"> ▪ Knowledge of existing reporting regimes and mechanisms ▪ Understanding of existing reporting requirements ▪ Experienced in multi-project program cost and schedule control ▪ Proficient in industry recognised cost and schedule control software packages ▪ Demonstrated project management skills, including ability to work to tight time frames under pressure and decisiveness ▪ Strong data analysis skills to ensure consistency and appropriateness of data ▪ Strong program development and optimisation skills ▪ Understanding of end to end project delivery processes ▪ Strong analytical skills ▪ Ability to identify trends and issues in detailed data ▪ Good communication skills ▪ Good report writing skills |
| 10. Project funding and financing strategy | <ul style="list-style-type: none"> ▪ Determine how the funding over time is to be procured for the construction and operation of an asset. | <ul style="list-style-type: none"> ▪ Full integrated needs analysis and outcomes requirements analysis. ▪ Decide internal or private sector finance, budgetary impact, what can be achieved within the defined budget over time, how the whole of life costing might vary for different options, including the balance between construction and recurrent funding. ▪ May also involve a justification on defined criteria of various funding approaches. It usually involves modelling and qualitative analysis of financial criteria. | <ul style="list-style-type: none"> ▪ Relevant financial qualifications ▪ An understanding of the terms and conditions and pricing of various forms of private and public sector finance, or the future likely trends in this, of government budgetary and financing mechanisms; ▪ An ability to examine management accounts and understand the overall impact in terms of current revenues and costs and the impact of service and physical changes to the supporting asset base. |

| Project Activity | Activity Purpose | Work | Essential Competencies & Skills |
|--|---|---|--|
| 11. Procurement strategy | <ul style="list-style-type: none"> ▪ Identify optimal procurement strategy for project ▪ PPPs only - Public Sector Comparator (PSC). Used most commonly at business case stage to compare PPP procurement against traditional government-funded construction and operations procurement and operating models to assess whether there is value for money in adopting a PPP model or not. | <ul style="list-style-type: none"> ▪ Identify project characteristics relevant to procurement strategy ▪ Identify external considerations including industry demand and community issues ▪ Determine best procurement strategy to deliver project and achieve value for money outcomes ▪ Developing a raw PSC based on a government reference design and preliminary costing ▪ Adjust raw PSC for the risk transfer to the private sector that would occur in a PPP as against a traditional procurement model. ▪ May be reviewed prior to RFP-stage when the detail of the project is more developed to confirm the decision. ▪ Further review may be needed prior to contract close as the negotiation stage can significantly impact both the design and the risk transfer. | <ul style="list-style-type: none"> ▪ Professional qualification ▪ Experience and knowledge of constructability or delivery issues ▪ Understanding of project risks ▪ Understanding of government procurement requirements ▪ Understanding of industry environment ▪ Costing, high level design, modelling, ▪ Capital Asset Pricing Model (CAPM) know-how ▪ Experience in quantification and definition of project risks ▪ Experience in selecting the correct CAPM factors for the systematic risk, precedent experience. |
| 12. Value for Money assessment | <ul style="list-style-type: none"> ▪ Identify financial and economic impacts of project ▪ Identify relative merits of different procurement options and 'do-nothing' case | <ul style="list-style-type: none"> ▪ Quantify benefits and undertake cost benefit analysis ▪ Articulate unquantified benefits ▪ Quantify systematic and project risk transfer for different delivery models ▪ Assess qualitatively additional value to government ▪ Undertake sensitivity tests | <ul style="list-style-type: none"> ▪ Finance or economics qualification ▪ Financial and economic modelling ▪ Capital Asset Pricing Modelling (CAPM) |
| 13. Commercial structuring and documentation development | <ul style="list-style-type: none"> ▪ All steps leading to finalised commercial documentation for the delivery of a project | <ul style="list-style-type: none"> ▪ To formulate practical, deliverable commercial structures and later documentation, and negotiate these with the private sector subsequent to getting internal sign off | <ul style="list-style-type: none"> ▪ Hands-on negotiation experience in the particular delivery model ▪ Some exposure to relevant legal documentation and standard approaches ▪ Understanding of state risk appetite ▪ Understanding of private sector risk appetite |
| 14. Transaction management | <ul style="list-style-type: none"> ▪ Management of each stage of a project's development in line with policy ▪ Pragmatic and timely assessment of tenders against assessment criteria | <ul style="list-style-type: none"> ▪ Prepare standard bid documentation such as RFP's ▪ Manage assessment and valuation process being undertaken by Assessment and Valuation Service Providers ▪ Coordinate assessment and valuation output ▪ Verify output received from Service Providers ▪ Review and recommend outcomes for final approval ▪ Contribute to program optimisation | <ul style="list-style-type: none"> ▪ Strong commercial skills ▪ Knowledge of industry environment ▪ Understanding of relevant policies ▪ Strong project management skills ▪ Strong communications skills ▪ Demonstrated stakeholder and relationship management skills ▪ Demonstrated ability to work to tight time frames under pressure |
| 15. Tender Evaluation and Financial Review | <ul style="list-style-type: none"> ▪ Bid financial evaluation and Value for Money (VfM) calculation ▪ Analysis of bids to check robustness and to compare their financial parameters including VfM on a common basis | <ul style="list-style-type: none"> ▪ Review of financial model and submitted financial structure and terms and conditions. Interrogation of unknowns and anomalies. Assessment of risk transfer and VfM comparison of discounted cash flows. | <ul style="list-style-type: none"> ▪ Financial modelling ▪ Financial products ▪ Typical finance terms and conditions ▪ Commercial evaluation capability |
| 16. Expenditure review and oversight | <ul style="list-style-type: none"> ▪ Expenditure governance and control | <ul style="list-style-type: none"> ▪ Manage payment of expenses reconciled against activity as per contractual arrangements and within jurisdictional requirements | <ul style="list-style-type: none"> ▪ Professional qualification ▪ Experience and expertise in managing contracts and public sector financial management requirements |
| 17. Scheduling - definition and preparation - management | <ul style="list-style-type: none"> ▪ Identify timeframes for delivery ▪ On time delivery | <ul style="list-style-type: none"> ▪ Prepare development and delivery program, including approvals, procurement, construction and commissioning ▪ Identify critical path activities ▪ Identify delay risks and impacts on schedule | <ul style="list-style-type: none"> ▪ Professional qualifications in engineering, construction or similar ▪ Experience and expertise in developing and delivering projects, particularly scheduling ▪ Understanding of approvals, procurement, construction and commissioning timeframes and risks and impacts on schedule |

| Project Activity | Activity Purpose | Work | Essential Competencies & Skills |
|--|--|---|---|
| 18.1 Contract management – project development | <ul style="list-style-type: none"> Communicate requirements and how consultant outputs will be used and by whom | <ul style="list-style-type: none"> Develop clear, specific briefs and process of selecting preferred consultant Efficiently procure services by using panel arrangements as appropriate and without imposing unnecessary tendering costs via inappropriately competitive or bureaucratic processes; Determine appropriate and efficient fee arrangements (eg lump sum, time basis) Undertake tender assessments Review consultant outputs and coordinate views from other parties in an efficient manner Determine what should be done in-house and what can be procured externally Ensure a good outcome for government and consultants | <ul style="list-style-type: none"> Demonstrated understanding of industry environment Strong project management skills Strong communication skills Sufficiency of knowledge and awareness of the portfolio and service to be able to manage the scope of the consultancy effectively Sufficient commercial, contractual and negotiating skills to manage this area Strong analytical skills |
| 18.2 Contract management - delivery | <ul style="list-style-type: none"> Contractor program delivered on time on budget Contractual terms met by service providers | <ul style="list-style-type: none"> Establish procurement process and frameworks Conduct procurement activities to support Delivery Managers Monitor and review contract performance Report on contract performance Manage Contractor program delivery Identify and resolving obstacles that could inhibit performance of the Contractors Identify trends or recurring issues which should be communicated to the whole of Program Identify process or policy changes that would assist Program progress Provide monitoring and reporting of Program progress as required Ensure value for money is achieved | <ul style="list-style-type: none"> Demonstrated understanding of industry environment Contract management skills Hands on experience in management of significant contractor delivered projects (~10-15 years' experience) Good communication skills Good stakeholder engagement and management skills Strong analytical skills Demonstrated strong commercial and contractual skills Strong negotiation skills Demonstrated understanding of procurement policies and requirements Strong project management skills Strong reporting capability |
| 19. Project controls | <ul style="list-style-type: none"> Schedule and cost control Information management Quality Assurance | <ul style="list-style-type: none"> Document control and information management Management of change and the MoC system Monitor, consolidate and report integrated budget and schedule, progress and gaps Ensure compliance and optimised operation of established project policies, systems and management standards Implementing established quality strategy, plan, procedures and auditing | <ul style="list-style-type: none"> Professional qualifications in a relevant discipline Deep expertise in quality planning, assurance and control Expert knowledge in project planning, scheduling and costing Earned value analysis and reporting Strong information analysis and reporting skills Good communication, negotiation and advisory skills |
| 20. Evaluation of project performance -services provided - investment - project delivery | <ul style="list-style-type: none"> Lessons learned and continuous improvement | <ul style="list-style-type: none"> Identify and capture lessons learned against approved business case objectives Recommend necessary improvements | <ul style="list-style-type: none"> Demonstrated understanding of industry environment Strong communication and stakeholder engagement skills Sufficiency of knowledge and awareness of the portfolio and service to be able to assess effectiveness of outcomes Sufficient commercial and contractual knowledge to assess effectiveness of outcomes Strong analytical skills |

The above tables are not an exhaustive list of every specific activity, skill and competency that is required – these vary across sectors and types of projects. More specialist skills and activities are commonly provided by external advisors, as it is not generally not practical or efficient to retain specialist advisors within government, given the relatively small volume of major infrastructure investment in Victoria. These skills include:

- Commercial advisor
- Financial advisor (often linked to commercial advisor)
- Transaction manager
- Legal advisor
- Insurance advisor
- Design and technical advisors (architect, engineer etc) for reference design, statutory approvals and bid evaluation
- Estimator (cost planning)
- Independent verifier (certifier)
- Probity advisor

Determining the level of skills and competencies that should be retained within government and what should be outsourced is a most significant and strategic decision that strikes at the heart of the role of government and what can be delegated. This is beyond the scope of this assignment, but is fundamental to the public sector governance of major infrastructure projects development and delivery.

2.5 Project governance

2.5.1 Purpose

The competencies and skills required in the public sector are provided under governance arrangements that give a context in which the skills are deployed. Accordingly, the following section outlines briefly some best practice principles of project governance structures and the experience and skills that are required to undertake those roles.

The purpose of governance arrangements is to:

- Provide overall control and guidance;
- Ensure appropriate communications and stakeholder involvement;
- Provide direction on policy issues;
- Provide clear accountability for project decisions;
- Provide transparency of decision making;
- Establish mechanisms to control and deal with unpredictable events and outcomes; and
- Provide informal advice and peer review.

A key element of this structure is a 'managing entity or committee'. The **purpose** of this entity is therefore to:

- provide accountability to the CEO/Board/Minister for monitoring and reviewing performance of the project to achieve the owner's project objectives
- Make recommendations to the owner on reports and submissions from the project team
- Investigate deficiencies and initiate responses
- Provide effective project-based governance for delivery of the project (as opposed to day to day management).

Its **functions** are to:

- Establish 'board' style leadership structure and governance with project team
- Ensure the project team understands the owner's project objectives
- Remove barriers preventing reasonable progress of project
- Monitor and recommend corrective actions to the owner
- Ensure the project team has access to necessary resources and timely decision making
- Ensure accurate and timely reporting to owner

Members typically have the following **experience** and **capability**:

- Subject matter expertise
- Experience in board /steering committee role
- Understanding of project risks
- Understanding of project costs
- Strong communication and negotiation skills
- Strong leadership skills and industry credibility

An effective governance arrangement should ensure the high standards of integrity and transparency required of public sector procurement processes. Effective governance should also manage any material issues that might otherwise lead to significant time and cost overruns and possibly failure to achieve the owner's project objectives.

2.5.2 Structure

It is the responsibility of the owner to develop the governance plans and frameworks to suit the unique characteristics of the project and satisfying the investor's requirements.

Generally there are three governance models that can be considered for major projects, as discussed below.

Statutory Board model

This model can be used when the owner is experienced in the type of project and procurement, or the project is relatively straightforward and can be governed within the owner's existing corporate structures. The model uses the existing 'board' function as the ultimate decision making authority for the owner and hence the project. This model may include a Board, a Minister, Head of Department and/or Cabinet.

The owner's CEO is the executive owner of the project.

Project Control Group (PCG) or Steering Committee model

The Project Control Group model can be used when the project is particularly complex. A Project Control Group (PCG) is established to advise the owner. Such a group may be chaired by the CEO and include senior executives from the owner organisation. The PCG may also include public officials external to the owner organisation. The PCG does not determine the delivery strategies, but ensures appropriate strategies are developed and implemented. The PCG assures itself and the owner that the project will be successful.

Special purpose legal entity

A special purpose body also can be used when there is a particularly complex or large project. The benefits of this approach include that the owner can focus on existing core business without being overwhelmed by the project; providing appropriate strategic focus of senior executives who are removed from the distractions of day to day management; and provide the project with a degree of independence and controls. This special purpose entity takes on the role of owner.

2.5.3 Operations

Timely decision-making is critical to the successful delivery of any project. The governance structure should include clearly delegated authority to ensure decisions are made in a timely and efficient manner. Delegated authority levels should be subject to governance controls over expenditure for project decisions outside the project scope as defined by the investor

Effective project governance relies on timely, accurate and transparent monitoring and reporting of project progress and performance to the project owner, investor and deliverer. Performance standards and benchmarks (eg time, costs, compliance with standards) should be agreed and incorporated in the delivery contract to ensure the performance requirements are clearly understood and they can be objectively measured and monitored.

Effective and efficient project governance is dependent on protocols that guide communication, interaction and approval processes between the deliverer, owner and key stakeholders.

2.6 Challenges and gaps in Victoria's public sector competencies and skills

In this section we detail our findings on where there are deficiencies in the current capability, in order to assist PAEC with its role of reporting to Government on the overall capability of the public sector with respect to major infrastructure delivery. This analysis draws on our review of the six

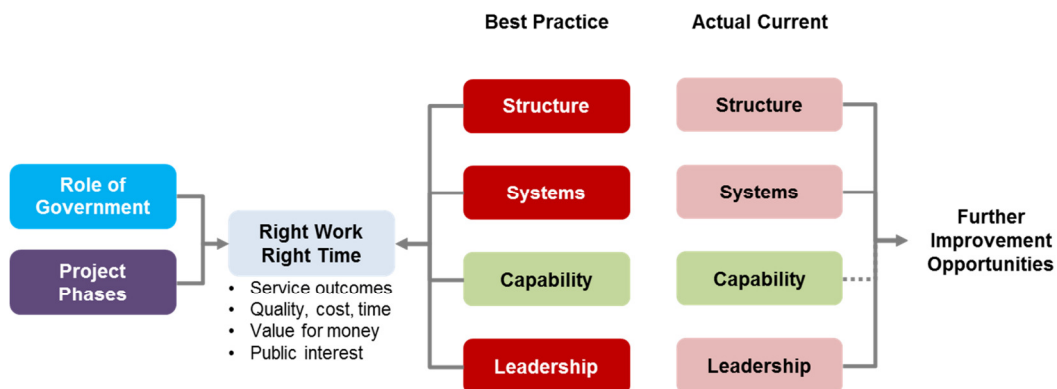
nominated projects (refer chapter 3), industry reports, state and federal government inquiries and research.

2.6.1 Organisational capability

Competencies and skills, whether internally or externally sourced, are one part of overall organisational capability. The various roles of Government in infrastructure projects in successfully progressing through the DTF Victoria investment management framework and Gateway process requires that the right work is done, at the right time. Competencies and skills are an important part of this however without the right organisational capability of integrated organisational structure, systems and leadership - high quality outcomes, value for money and the public interest will not be consistently and predictably achieved.

Figure 3 depicts how the work to be done relates to the broader context of this organisational capability framework of structure, systems, capability and leadership. Close review and analysis of all of these elements is outside the scope of this report. However from the information available, we provide an indication of apparent deficiencies in structure, systems and organisational leadership which may be contributing to difficulties in successful planning and execution of major infrastructure projects.

Figure 3: Organisation capability context



Of particular note are the implications organisationally of the scale and potential complexity of projects coupled with constraints imposed externally. Responding to these factors combined is much more than securing the required competencies and skills, it is actually the application of these skills and competencies to the work that has to be done in an organisational context. It is therefore a defining aspect of a specific executive role or roles.

This analysis is based on Evans & Peck’s research and experience in developing and delivering major infrastructure projects and is necessarily a high-level commentary as this is not in scope for this report, however it provides an important context for understanding the findings of this report.

Table 3 below details the best practice and current practices in Victoria for each of the organisational elements.

Table 3: Organisational capability gap analysis

| Element | Best Practice | Actual Current (indicative) |
|--|--|--|
| <p>Structure</p> | <ul style="list-style-type: none"> ▪ Levels and complexity of work associated with infrastructure projects understood and defined | <ul style="list-style-type: none"> ▪ Insufficient understanding and application as detailed below |
| | <ul style="list-style-type: none"> ▪ Managing and influencing external factors for benefit of internal activities. ▪ Setting organisation for future success | <ul style="list-style-type: none"> ▪ Insufficient response to increased pressure from external environment having a significant impact on people’s ability to do their job: <ul style="list-style-type: none"> – Political expediency – Public opinion – Media scrutiny ▪ Failure to match increased capability requirement with increases in scale and complexity of projects (complexity is a function of capability) |
| | <ul style="list-style-type: none"> ▪ Creating, shaping and sustaining an organisation capable of planning and delivering major infrastructure projects over time | <ul style="list-style-type: none"> ▪ Asymmetry in capability between government / industry. ▪ ‘Base level’ expertise required to execute strategy not being retained ▪ Essential commercial capability lacking ▪ Government reliant on contractors and consultants ▪ Government lacks the ability to effectively manage contracts during delivery ▪ Lack of culture or framework to train and nurture graduates ▪ VicRoads appears successful in this area, at least on cost and time. ▪ Failure to match organisation to varying levels of project complexity |
| | <ul style="list-style-type: none"> ▪ Integrating multiple activities and functions, making compromises for best overall project or portfolio outcomes | <ul style="list-style-type: none"> ▪ Problems adapting to increased role of technology in projects ▪ Apparent lack of critical thinking capacity to test merits of projects ▪ Lack of expertise in business case preparation ▪ Apparent lack of ability to manage project definition / business case (ambiguity, rapid change, competing issues) ▪ ‘One size fits all’ approach ▪ Poorly managed tender processes ▪ Projects viewed individually rather than as part of a portfolio |
| <ul style="list-style-type: none"> ▪ Developing and deploying best practice systems and methodology - enduring and project specific | <ul style="list-style-type: none"> ▪ Gaps evident in the conduct of evaluations against benchmarks ▪ Lack of transfer of knowledge, sharing lessons learned | |

| Element | Best Practice | Actual Current (indicative) |
|-------------------|---|---|
| | <ul style="list-style-type: none"> ▪ High productivity and improvement within established systems and practices ▪ Structural boundaries are positioned to minimize the flows (people, money, assets, material, information) across the boundary and to allow measurement on the boundary. ▪ Clarity on the basis by which people are held accountable | <ul style="list-style-type: none"> ▪ Lack of ability to be effective purchaser ▪ Apparent lack of enduring skills and capability development programs ▪ Appears people are doing their best within multiple constraints on their performance ▪ People lacking clarity as to their responsibilities with overlaps and gaps in responsibilities, public / private sectors ▪ Combining the assurance (investor) function with the technical input function in DTF has created role confusion and has blurred accountability, adversely affecting the working relationship between line agencies and DTF |
| Systems | <ul style="list-style-type: none"> ▪ Aligned with achieving business objectives (drive the desired behaviour and decision making) ▪ Clear purpose, output, process and accountability ▪ Maximised discretion, effective controls | <ul style="list-style-type: none"> ▪ Government reliant on contractors and consultants ▪ Excessive layers of governance and approval ▪ Lack of transfer of knowledge ▪ Lack of training ▪ Lack of career development ▪ No graduate program ▪ Over reliance on contractual solutions, legal advisors |
| Capability | <ul style="list-style-type: none"> ▪ Competencies and Skills ▪ Technical ▪ Commercial ▪ Competencies and skills ▪ Social, people ▪ Application / energy (ability to make things happen) ▪ Cultural fit ▪ Problem solving and decision making ▪ Individual capacity to deal with complexity of problems and decisions inherent in work required | <ul style="list-style-type: none"> ▪ Possible over-reliance on experience (age) for key roles ▪ No clear data ▪ No clear data ▪ No clear data ▪ Failure to match increased capability requirement with increases in scale and complexity of projects ▪ Apparent lack of critical thinking capacity to test merits of projects ▪ Shorter planning horizons driving complexity up |

| Element | Best Practice | Actual Current (indicative) |
|-------------------|--|--|
| Leadership | <ul style="list-style-type: none"> Leadership work identified, understood and tailored into work volume of roles | <ul style="list-style-type: none"> No clear data |
| | <ul style="list-style-type: none"> At all levels from CEO to Supervisor Setting context, assigning tasks, monitoring performance, feedback and coaching, recognition and reward Team engagement and development | <ul style="list-style-type: none"> Gradual loss of key skills within departments |
| | <ul style="list-style-type: none"> Development and career growth | <ul style="list-style-type: none"> Lack of training Lack of career development |
| | | |

This analysis shows there appears to be weaknesses within this area of Government that will contribute significantly to its ability to deliver major infrastructure projects, particularly:

- Insufficient response to external influences on Government project activities, i.e. these are constraints which have to be accounted for in how projects are approached internally, and vigorously pursued for change externally;
- Failure to sustain an organisation of the size, capability and stability to meet the challenges of the State's well known immediate and longer term major infrastructure service needs;
- Insufficient integration of project planning and delivery activities, within and across Departments;
- Over-reliance on systems and procedures to do work at all levels (instead of analysis and judgement in problem solving and decision making);
- Apparent lack of systems that operate to engage, develop and retain key people.

There is also evidence that there are people working in this area of government who are committed, working hard and doing their best for the state in what are challenging circumstances.

2.6.2 Commercial and technical expertise

Following our review of the six subject projects, industry reports, and state and federal government inquiries and research (refer Appendix A), it is clear that in addition to the challenges of the organisational capability elements of structure, systems and leadership, there are deficiencies in skills and competencies in the Victorian public sector to meet current and future needs. Table 4 below provides an overview of the key symptoms supporting this finding along with specific examples.

Table 4: Symptoms and examples supporting finding that there are gaps in current skills and competencies

| Symptom | Example |
|---------|---------|
|---------|---------|

| Symptom | Example |
|---|--|
| <p>Government roles not filled by personnel with the necessary technical expertise</p> | <ul style="list-style-type: none"> ▪ Problems with adapting to increased role of technology in projects ▪ Gradual loss of specialist technical or subject matter experts in government agencies. A base level of in-house technical expertise is needed for the government to effectively deliver projects through their lifecycle from establishment of a strategic portfolio through to detailed design and construction ▪ Specialist technical or subject matter experts are needed for the full life cycle of projects, from considering a strategic portfolio through to detailed design and construction. It appears that this has been missing from some projects with the gradual loss of these skills within Departments (eg a lack of ICT knowledge and skills in public sector was a significant issue on myki and HealthSMART projects). |
| <p>Government roles not filled by personnel with the necessary expertise – including commercial expertise</p> | <ul style="list-style-type: none"> ▪ Governments must have a base level of expertise to undertake strategic investigations of projects such that they align with the portfolio’s asset and service strategies and its strategic plan and to the Government’s wider planning, such as a State Plan. The initiative or project must explicitly arise from these plans, which means the quality of Department’s strategic planning is fundamental to the business case. ▪ Limited expertise, experience and confidence to manage commercial relationships and undertake commercial negotiations ▪ Lack of competence, skill and mindset required to deliver business case, including scope definition, an implicit skill requiring critical thinking and value management skills. Projects seem to lack this critical thinking capacity and subject matter expertise to test the merits of projects and define a scope which is linked to the original intent. ▪ A lack of expertise in business case preparation within line agencies (also noted in DTF’s submission to PAEC’s EDM inquiry). ▪ Government is reliant on contractors and consultants, but often lacks the expertise to know when and to what extent to engage external parties and manage their outputs ▪ Government agencies are poorly equipped to manage external parties effectively, in particular determining and managing scopes of engagement and quality of outputs ▪ There are inconsistencies in the application of evaluative techniques including evaluations against benchmarks ▪ Managing consultants in the project definition / business case phases requires sound judgement and decisiveness, often in the face of ambiguity, competing issues and fast-changing directions and requirements. This is quite different from the project delivery phase, which has different challenges, such as managing stakeholder influences on scope. Being a “good client” is critical to good outcomes on both sides and can include: <ul style="list-style-type: none"> - knowing when to use lump sum and when to use time basis contracts - knowing the best way to procure services without imposing unnecessary tendering costs - managing probity in a pragmatic way that promotes interaction and understanding - having sufficient knowledge and awareness of the area to be able to manage the scope effectively - knowing how to enable consultants to make a reasonable but not excessive margin on their work to ensure the standard of their outputs - knowing how to manage a changing scope with a consultant - what should be done in-house and what can be let externally - managing consultants and their time. |

| Symptom | Example |
|--|---|
| <p>Compensation for a lack of project expertise with the use of contractual arrangements to 'protect' agencies and address issues</p> | <ul style="list-style-type: none"> ▪ Overreliance on contractual solutions and legal advisors in establishing and delivering projects and conducting commercial negotiations without establishing sound commercial structures ▪ Involvement of lawyers earlier and in broader roles than required in the project delivery process ▪ Growing tendency for some organisations to use probity / cost / confidentiality as barriers to effective engagement with industry – taking an 'arm's length' approach to engagement. Effective engagement with industry, striking the right balance between maintaining adequate formality yet communicating effectively requires experience and commercial acumen |
| <p>Compensation for a lack of project expertise with increased administrative requirements during project delivery, including more layers, processes and documentation</p> | <ul style="list-style-type: none"> ▪ Addition of processes, documentation and oversight requirements of line agencies by central agencies to compensate for deterioration of skills in the line agencies ▪ Excessive layers of governance and approvals with a focus on avoiding 'mistakes' rather than promoting value outcomes ▪ A desire for consistency and a "one-size-fits-all" approach at the expense of flexibility. This tendency was raised as an issue for delivery in the Royal Victorian Eye & Ear hospital's submission to PAEC's EDM inquiry, citing the increasing difficulty of delivery and related increased costs. |
| <p>Reduced ability to develop, retain and transfer knowledge</p> | <ul style="list-style-type: none"> ▪ Lack of transfer of knowledge from completed projects ▪ Shortage of senior experienced personnel reducing in part due to line agency 'silo-ing' the ability of agencies to develop personnel for the future ▪ A reliance on consultants and contract staff ▪ Poor evidence of post project implementation and sharing of lessons learned |
| <p>Government lacking ability to be an effective purchaser of services</p> | <ul style="list-style-type: none"> ▪ A reduction in the in-house technical and commercial capabilities of governments has necessitated increased use of consultants and contractors. In some cases government agencies do not have the capabilities to be an effective purchaser of services. In particular, governments do not always have the capability to conduct negotiations for the provision of services by industry in a way that achieves value for money. ▪ The reliance on specialist advisors to act on behalf of the government is one solution used by the government however the government must still have the ability to effectively engage and manage these advisors. ▪ The importance of maintaining enough capability to be an informed purchaser of services is widely discussed, including in "Realising an innovation economy" by the Australian National Engineering Taskforce (ANET). ▪ Governments poorly managing tender processes for services, with a lack of project definition and ill-defined specifications prior to commencing the tender process resulting in increased uncertainty and costs for consultants and contractors |

| Symptom | Example |
|--|--|
| Government lacking ability to effectively manage contracts during delivery | <ul style="list-style-type: none"> ▪ Service agreements may be poorly defined , with personnel lacking clarity as to their responsibilities with overlaps and gaps in responsibilities between public and private sectors ▪ The consequences of Governments lacking the capabilities to be an effective client are discussed in the Submission to the Draft Productivity Commission Report into Performance Benchmarking of Australian Business Regulation by Civil Contractors Federation. In particular, this identifies the financial impacts on contractors of poor management of contracts by local governments |
| Breakdown in training and development of junior staff | <ul style="list-style-type: none"> ▪ Governments no longer act as the provider of early career training and development for large numbers of young professionals and para-professionals. Industry has not stepped in to fill this role. This shift was documented in the Senate Inquiry into “<i>The shortage of engineering and related employment skills</i>” ▪ The current generation of young professionals often lack access to a coherent early career development program. The importance of this post-graduation ongoing training, particularly for the transfer of skills from senior to junior professionals within the industry is noted in publications including “<i>Engineering Skills Capacity in the Road and Rail Industries</i>” prepared by the Australian National Engineering Taskforce ▪ There has been a significant reduction in the government’s role in training and developing younger engineers via large-scale cadetship or traineeship programs. There is often a lack of culture or framework to train and nurture graduates in technical disciplines, resulting in project managers being ill-equipped to deal adequately with major technical issues, and the focus falling to financial and legal issues. This issue is discussed in detail in the submissions to and report arising from both the Federal Government’s Senate Committee Inquiry into “<i>The shortage of engineering and related employment skills</i>”. In some cases, programs have recommenced in recent years (e.g. DTMR, Ausgrid); however, there still remains a significant gap. ▪ Road authorities in Australia have tended to maintain a good engineering culture and have maintained and nurtured expertise in their departments and agencies. VicRoads is no exception. Their project performance is generally considered to be reasonable from a budgetary and timeliness perspective. ▪ The private sector is also struggling to meet the increasing demands of larger, more complex and greater number of public projects because training and professional development, particularly in engineering, is also not being undertaken in the private sector to the extent that it was, and engineers are being attracted to other industries. |

| Symptom | Example |
|---|--|
| <p>Asymmetry of experience and capability</p> | <ul style="list-style-type: none"> ▪ Symmetry between the purchaser (government) and provider (industry) is critical to the government achieving value for money outcomes in any transaction. However, for major projects, it is often impossible for the government from its own internal resources to bring a similar capability as industry to the negotiating table, often with the government executives who specialise in these projects in their career versus industry that does many of these projects. This issue goes to the heart of the requirement for government to be an informed owner or purchaser. The use of effective competition goes some way to addressing this matter by using competitive tension between equally capable parties (two or more bidders) to drive value for money outcomes. Additionally, government may use specialist advisors to address this issue. ▪ As projects become increasingly large and complex, the available pool of skilled and experienced professionals to provide coverage diminishes considerably. ▪ In addition there is inconsistency within government, DoH for example, has a strong capability around capital asset planning and delivery, though a poor record in ICT delivery. Likewise, there are clear differences in performance between those agencies where there is a constant stream of projects and strong capability, compared to those agencies where major projects may only occur every few years. ▪ Departments with sporadic major infrastructure project pipeline – DOJ, DPI, DHS, DPCD, DBI, DSE, DEECD – are likely to be generally poorer performers ▪ Department with a continuous pipeline of projects – DOT-VicRoads-LMA; DOH; Places Victoria – are better performers generally, ▪ Issues arise in new technology or ICT or ‘new frontier’ projects even in experienced departments ie relating to those projects that might be deemed pioneering, or where there is limited local or international experience. For example it could be argued that myki and HealthSMART are very sophisticated systems with few comparators and therefore required correspondingly advanced specification and procurement. |

3 Identifying the causes of project performance

The documentation available for this review has been limited and the desktop nature of this review has not involved consultation with departments and agencies. The findings regarding the nature and causes of both project success and failure are based upon our interpretation of the evidence provided to us by the Committee and the reports reviewed. This report cannot be considered as complete or a comprehensive audit of project performance.

3.1 Case studies examined

In responding to the inquiry's term of reference d, Evans & Peck undertook a high-level assessment of the nature and causes of project performance of the six projects selected for review by PAEC. The projects assessed were:

- Victorian Desalination Plant ('Desalination').
- myki smart card ticketing system (myki).
- Melbourne Wholesale Fruit and Vegetable Market relocation ('Markets').
- HealthSMART whole-of-health information and communication technology system (HealthSMART).
- Melbourne Convention Centre (MCC).
- Royal Children's Hospital (RCH).

This suite represents a diverse range of project types and complexity (and associated procurement and delivery methods), encompassing: information and communications technology; industrial building construction; heavy civil construction; and institutional and commercial construction.

Of the six projects listed above, projects one to four were deemed to be largely unsuccessful and the latter two largely successful. The purpose of our assessment was to understand the context and isolate some of the causes of the apparent successes and failures of these projects and furnish suggestions to PAEC about the future management of significant infrastructure projects in government.

3.2 How we approached the assessment

We approached the assessment from the perspective of the State Government's investment lifecycle framework (refer section 3.2.1) and whether the delivery of the project was in the public interest, based on an adapted and expanded definition of the eight elements of the public interest test (refer section 3.2.2). These frameworks are designed to help facilitate quality advice and

decision-making within agencies, including the development and review of investment proposals to the Government.

3.2.1 Investment lifecycle framework

The investment lifecycle framework (refer Figure 2) has been recently updated and gives government central oversight of its capital investment programme, through the assurance role performed by DTF across the five lifecycle stages. The recently instituted HV/HR process, which provides a higher level of oversight and scrutiny, aims to increase confidence in project delivery according to forecast cost, time and benefits.

The investment management framework is structured around a Gateway Review process (Gateway) that allows independent assessment of government projects at six key points (gates) in the project. Each gate provides government with the opportunity to abandon or pause and re-engineer projects that are not or will not deliver benefits cost-effectively for the taxpayer.

Table 5 below summarises the main attributes of the investment lifecycle framework.

Table 5: Key attributes of Victoria’s investment lifecycle framework

| Stage | Purpose | Outputs | Gateway Reviews |
|----------------------|---|---|---|
| Conceptualise | Establish a clear need, define likely benefits and explore strategic interventions | <ul style="list-style-type: none"> Preliminary business case | Gate 1: Concept and feasibility |
| Prove | Explore project options and estimate costs to validate value for money and viability | <ul style="list-style-type: none"> Full business case Investment business plan | Gate 2: Full business case |
| Procure | Finalise procurement plan, specify requirements, engage the market and award contract | <ul style="list-style-type: none"> Expression of interest Request for tender Contracts Project status reports | Gate 3: Readiness for market Gate 4: Tender decision |
| Implement | Implement solution and transition to normal business | <ul style="list-style-type: none"> Project status reports | Gate 5: Readiness for service |
| Realise | Measure the success of the investment | <ul style="list-style-type: none"> Project wrap-up report Investment evaluation report | Gate 6: Benefits realisation |

3.2.2 Public interest

We also viewed the projects through the lens of the public interest. We have prepared a definition of public interest for the purposes of this review (Table 6). This definition has been adapted from the eight elements of the full public interest test that must be considered in the investment evaluation and business case phases of project approval for all major infrastructure projects. For PPP delivery, the public interest test involves determining whether suitable measures can be

established to adequately protect the public interest. We have added value-for-money (VfM) and commercial criteria for the purposes of this review. These aspects are obviously critical components of the overall project assessment and are perhaps a more tangible manifestation of public interest.

This review has not explicitly or comprehensively assessed the six projects against these criteria, as it would require an audit of all relevant project documentation, which has not been available for this review. These criteria are however inherent in the investment lifecycle framework and are therefore implicitly included in the review. Where specific public interest issues are apparent in the information reviewed, we have highlighted this in the assessments.

Table 6: Public interest definitions

| Criteria | Elaborated definition |
|------------------------------------|--|
| Value for money (VfM) | <ul style="list-style-type: none"> ▪ Project is effective in meeting government objectives and delivers as originally intended i.e. scope, quality, fit for purpose ▪ Whole-of-life benefits comfortably exceed whole-of life-costs ▪ Project delivered as efficiently as possible for the lowest possible cost ▪ Operates at the lowest possible cost (to government) ▪ Risks were appropriately allocated and managed |
| Accountability and transparency | <ul style="list-style-type: none"> ▪ Community was well informed about the obligations of government and the private provider and processes were transparent ▪ Project reports including forecast costs at completion were adequately addressed and communicated to the relevant sponsoring department or authority and in a timely manner ▪ Probity was managed effectively |
| Affected individuals and community | <ul style="list-style-type: none"> ▪ Those affected have been able to contribute effectively at the planning stages ▪ Impacts on those affected were satisfactorily resolved |
| Equity and consumer rights | <ul style="list-style-type: none"> ▪ Everyone who needs to is able to effectively and equally use the infrastructure or access the related service ▪ The project provides sufficient safeguards for all consumers, particularly those for whom government has a high level of duty of care, or those who are most vulnerable |
| Public access | <ul style="list-style-type: none"> ▪ There are safeguards that ensure ongoing public access to essential infrastructure |
| Security | <ul style="list-style-type: none"> ▪ The project provides assurance that community health and safety will be secured |
| Privacy | <ul style="list-style-type: none"> ▪ The project provides adequate protection of users' rights to privacy |
| Governance | <ul style="list-style-type: none"> ▪ Adequate skills and competencies were available for the project ▪ Clear accountabilities and effective project governance |
| Procurement | <ul style="list-style-type: none"> ▪ Transparent, robust and effective process was followed to select procurement method ▪ Procurement method was effective and delivered best outcome possible |
| Commercial | <ul style="list-style-type: none"> ▪ Project was delivered within budget ▪ Project was delivered on time ▪ Any project overruns were transparently and clearly communicated to the community ▪ Adequate processes were employed to deal with any commercial performance issues |

Adapted from Victorian DTF investment lifecycle guidance for the purposes of this review

3.3 Data sources

The data sources used to perform the assessment were those provided by PAEC, consisting of:

- Submissions provided by government agencies and the private sector in response to PAEC's project questionnaires.
- Transcripts of witness accounts from the PAEC project hearings.

In addition to the above, we reviewed publicly available reports, including:

- The Ombudsman's, *Own motion investigation into ICT-enabled projects*, dated November 2011.
- The Victorian Auditor-General's, *Delivering HealthSMART – Victoria's whole-of-health ICT strategy*, tabled 16 April 2008.
- The Victorian Auditor-General's, *The New Royal Children's Hospital - a public private partnership*, tabled 6 May 2009.

We note and share PAEC's frustration at the inadequacy of some of the written responses and evidence provided in relation to the questionnaire, as well as the verbal responses tendered during the Committee hearings. The lack of documentation and content has limited the depth of our review and so it cannot be regarded as comprehensive or complete.

For this reason, we would like to qualify that the conclusions reached regarding the nature and causes of both project success and failure are based upon our interpretation of the evidence provided to us by the Committee and the public reports we reviewed, as well Evans & Peck's *a posteriori* knowledge gained through our involvement in major infrastructure project planning and delivery. The method described below sought to bring rigour to the assessment exercise by minimising subjective bias.

3.4 Method

We approached the assessment using a case study method, which emphasises detailed analysis of events and their context. The investment management framework provided us with a logical structure around which to interrogate the projects in question. We used multiple investigators in order to gain a variety of perspectives and insights when examining the data and the patterns. The convergence of multiple observations also increased the confidence we have in our conclusions.

Each of the projects was individually reviewed by senior Evans & Peck staff. In reviewing the information available to us, we looked for linkages between events and their outcomes. We specifically looked for stand-out events and consistent themes from which to draw conclusions about the context and happenings that occurred during each stage of the investment management process.

The assessment team convened to share, discuss and distill their observations to reach a consensus view on the most likely cause/s of a project's performance. The team was particularly interested in events that occurred at the early stages of the investment management process, which are essential to the success of later stages and the project as a whole.

We observed that witnesses frequently had differing opinions regarding project performance, as well as conflicting recollections of events. We also note that in some instances, a witness's involvement on the project had been limited. In such instances, we sought to triangulate information in order to strengthen our conclusions.

3.5 Findings from the project reviews

The following sections detail the findings of our review on the selected projects at each of the five stages of the investment management process.

3.5.1 Overview

Our assessment suggests that, for challenged projects at least, there were conspicuous shortcomings at each of the investment stages, particularly at the early stages. The key shortcomings and areas of good practice on the selected projects is summarised in Table 7 below.

We would have expected these shortcomings to have been picked up in the Gateway Review process, and question whether opportunities to scrutinise a project's investment value through Gateways are being capitalised upon and whether findings were actually implemented. We qualify, however, that we did not have the benefit of access to any recommendations that may have arisen out of the Gateway processes and are uncertain if all subject projects were exposed to all Gateway reviews and the number of gates applied to the projects. We were particularly concerned at the Ombudsman's observation that some projects were announced prior to the completion of a rigorous business case.

Those projects that rigorously followed the path of the investment management process and where considerable effort was spent defining the need for the investment and crafting a well-considered solution were, by and large, more successful.

Table 7: Observed shortcomings and areas of good practice at lifecycle stages

| Stage | Observed shortcomings | Observed areas of good practice |
|----------------------|--|--|
| Conceptualise | <ul style="list-style-type: none"> ▪ Failure to bring relevant stakeholders and end-users together to define scope of work and functional requirements (Markets, HealthSMART). ▪ Insufficient canvassing of strategic options (myki, HealthSMART, Desalination) ▪ Lack of appreciation of complexity and the ability to deliver the whole project at once (HealthSMART) | <ul style="list-style-type: none"> ▪ The need and objectives well-documented (RCH, Markets, MCC) ▪ Involvement of stakeholders and end-users in developing concept (RCH) |
| Prove | <ul style="list-style-type: none"> ▪ Insufficient time and effort spent on options and business case (Desalination, myki, HealthSMART) ▪ Design process appeared over-complicated and costly (Markets) ▪ Over-optimistic assumptions on timeframes to deliver - failure to benchmark with similar projects (myki, Desalination) | <ul style="list-style-type: none"> ▪ Scope clear, requirements clear, cost recovery and business model well understood (RCH, MCC) ▪ Piloting or testing at a small scale in close collaboration with vendor (Austin hybrid version of HealthSMART) |

| Stage | Observed shortcomings | Observed areas of good practice |
|-------------------|---|--|
| Procure | <ul style="list-style-type: none"> ▪ Announcing projects and proceeding to market before business case completed (Desalination, HealthSMART) ▪ Inability to overcome constraints imposed by probity issues and lack of innovation to identify best contracting method ▪ Significant probity issues occurred in project planning and procurement process (Markets) | <ul style="list-style-type: none"> ▪ Interactive tendering (MCC, myki) |
| Implement | <ul style="list-style-type: none"> ▪ Lack of transparency in costs (myki, Desalination, Markets) ▪ Compressed timeframes for delivery increases industrial relations and cost risks (Desalination) ▪ Requirements were task-driven rather than outcome-driven (HealthSMART) ▪ Lack of transition / change management/benefits realisation planning (HealthSMART, Markets) | <ul style="list-style-type: none"> ▪ Performance-based environmental management (Desalination) ▪ Consistent project team (MCC, RCH) ▪ Strong informal and formal lines of communication (RCH, MCC) ▪ Strong focus on and understanding of change management (MCC, RCH) |
| Realise | <ul style="list-style-type: none"> ▪ HealthSMART difficult to use, dysfunctional and overly complex - not operating as intended ▪ Markets still not delivered or operating, take-up not secured, VfM not demonstrated ▪ Overall VfM and transparency not apparent on myki, HealthSMART and Desalination | <ul style="list-style-type: none"> ▪ Operating largely as intended (MCC, myki, Desalination, RCH) |
| All Stages | <ul style="list-style-type: none"> ▪ Confused accountability for stakeholder engagement (Markets) ▪ Inexperienced team without full range of skills available (HealthSMART, myki, Markets-part). | <ul style="list-style-type: none"> ▪ Experienced and capable team with right blend of skills that managed interfaces between functional brief, risk and commercial aspects (RCH, MCC). ▪ Clear governance |

3.5.2 Project-specific findings

3.5.2.1 Victorian Desalination Plant

The Victorian Desalination Plant is a heavy civil construction project being built for the Department of Sustainability and Environment (DSE). The Victorian Government, through DSE's Capital Projects Division, entered into an agreement with AquaSure to finance, design, build, operate and maintain the plant. AquaSure brings together three companies: Degrémont, Thiess and Macquarie Capital. The AquaSure consortium was announced as the successful bidder on 30 July 2009. Construction work officially began on 6 October 2009, with delivery of desalinated water from the plant to Victoria's water supply system scheduled to commence by 19 December 2011, though this date was not achieved. The budgeted capital cost of the project is \$3.5 billion.

Table 8: Observations on performance of Victorian Desalination Plant project by stage

| Stage | Observations |
|----------------------|---|
| Conceptualise | <ul style="list-style-type: none"> ▪ Unclear what alternatives were considered for strategic water supply management. ▪ Committed early to a single option. ▪ Minimal engagement with community and lack of transparency around decision-making process created atmosphere of distrust and suspicion. |
| Prove | <ul style="list-style-type: none"> ▪ The option was selected prior to the completion of the full business case (business case was run in parallel with tender process) ▪ Case for PPP was proven by bid prices. ▪ Ongoing costs to the consumers not transparent. ▪ Decision process not transparent. |
| Procure | <ul style="list-style-type: none"> ▪ Project is well set up for risk transfer to private sector and shared risks are acceptable. ▪ Use of private sector commercial negotiation skills to bulk purchase power at a fixed rate over the life of the concession. ▪ Going to market prior to finalisation of business case and approvals created uncertainty. |
| Implement | <ul style="list-style-type: none"> ▪ Compressed timeframes made it difficult to establish a good industrial relations environment and competitive labour costs and led to poor decision-making and lack of focus on the technical / productivity aspects of the project. ▪ Environmental management was performance-based rather than prescriptive, which avoided multiple approvals for the same thing (as occurred on the North-South pipeline). Should be carried forward to other projects. |
| Realise | <ul style="list-style-type: none"> ▪ Delivering desalinated water as originally intended, though much later than planned ▪ The delayed completion has resulted in the state being able to defer payments. Overall VfM and basis for payments not transparent to public ▪ The state was protected through the PPP from many of the delivery risks, however this remains the subject of claims. |

3.5.2.2 myki

myki is a contactless smartcard ticketing system being rolled-out on public transport across metropolitan Melbourne for the Transport Ticketing Authority (TTA). Following a competitive tender process in 2004, the Victorian Government, through the TTA, entered into an agreement with the Kamco consortium to develop the \$494 million system by 2007. The consortium is made up of Keane Inc, Ascom, ERG, and Giesecke & Devrient Australasia. Installation of myki readers commenced in May 2009, but as at October 2012 the system has still not yet been fully implemented, but is operating. In September 2012, Public Transport Victoria and the TTA announced that myki would become the only ticketing system on public transport from Saturday, 29 December 2012. The total cost of developing and implementing the system is expected to reach \$1.5 billion.

Table 9: Observations on performance of myki by stage

| Stage | Observations |
|----------------------|---|
| Conceptualise | <ul style="list-style-type: none"> ▪ Public announcement of major project funding prior to business case development. Government didn't fully understand what it was committing to. ▪ Insufficient rigour applied to exploration of alternatives to the fully open-system architecture approach. ▪ There needed to be a better understanding about the lock-in risks associated with vendor proprietary solutions versus open-architecture and the consequences of adopting architecture (in terms time, cost and complexity). ▪ The project was conceived, managed, procured and delivered as if it were a physical asset, not a software engineering exercise. Given the high level of complexity and uncertainty, the project may have benefited from a staged commitment to the vendor, with appropriate exit conditions (similar to Early Contractor Involvement model). ▪ ICT capability and capacity did not reside within the commissioning agency. |
| Prove | <ul style="list-style-type: none"> ▪ Failure to predict time and cost accurately (optimism bias) indicates that insufficient investment or skill (or both) was invested at the front end business case stage. ▪ The two year timeframe established by the TTA and agreed by Kamco had not been tested. The underestimation in complexity and time may have been avoided had there been rigorous benchmarking of similar projects implemented in other national or international jurisdictions (the much simpler Oyster system in the UK took seven years to implement). ▪ Reluctance to move away from the existing ticketing framework created unnecessary system complexity with questionable benefits to the public and the government. There did not seem to be an understanding within government around the immense complexities involved for system to capture multiple fare types, multiple zones and multiple concessions. If it had been simplified earlier, it may have been delivered more quickly and for less. ▪ The decision to pursue outcome-based requirements rather than functional requirements meant that the risks and consequences were not fully explored or understood. |
| Procure | <ul style="list-style-type: none"> ▪ The specification was poor, and the contract was an outcomes-based contract rather than a requirements-based contract. Given the system complexity that was being undertaken, it would have better served both government and the contractor if more time had been invested in the beginning to give substance to the requirements before commencing system development. ▪ Vendor had no track record on a proven operating system of this kind in operation (all other unsuccessful bidders did). Failed the public interest test as a result. ▪ Insufficient understanding of the risks associated with ICT project led to an inappropriately procurement approach. Fixed tender approach is not suitable for risky projects that are difficult to manage on a transaction basis. ▪ Interaction with tenderers during tender phase was insufficient to allow tenderers to appreciate the scale, complexity and requirements of the project, and provide the government with an adequate understanding of what the tenderers were offering. |
| Implement | <ul style="list-style-type: none"> ▪ The government was not sufficiently skilled in system integration and did not adequately understand requirements for management to be able to fulfil their role on the project. ▪ Significant changes to key personnel exposed the project to greater risks than if it had had a consistent, high quality team running it. ▪ The majority of cost over-run resulted from the need to operate Metcard for an extended period due to an under-estimate of delivery timeframes. |

| Stage | Observations |
|----------------|--|
| Realise | <ul style="list-style-type: none"> ▪ There are more than 26,000 devices system-wide and more than 800 retail outlets. The system copes with 68 passenger types and 78 zones and executes 150 business rules each time a card is scanned, which constitutes around 1.07 million fare transaction-type permutations, making it one of the most complex smart card ticketing solutions in the world. ▪ The state owns the architecture and is not beholden to the owner of a proprietary system, which provides flexibility for future upgrades and development. ▪ The myki system is used by more than 90 per cent of the public transport patrons in metropolitan Melbourne as well as regional buses and processing more than three million transactions per day, equivalent to more than a million touch-ons per day. ▪ Given alternatives to the largely bespoke, open-architecture systems were not fully explored, it is difficult to ascertain whether an off-the-shelf system may have led to better value-for-money outcomes for the state. |

3.5.2.3 Melbourne Wholesale Fruit and Vegetable Market

The Melbourne Wholesale Fruit and Vegetable Market project involves its relocation from Footscray Road in West Melbourne to a new site in Epping in Melbourne's north. The new facility is being developed as a modern fresh produce trading and distribution precinct, and is being delivered under a design and construct model managed by Major Projects Victoria on behalf of the Department of Primary Industries. Bovis Lend Lease was selected as the preferred builder for the design and construct project. Works commenced onsite at the end of 2009 and the market is expected to be fully operational in 2014, six years after its initial planned opening date. The expected cost to government is more than double the \$230 million included in the 2004 business case.

Table 10: Observations on performance of Melbourne Markets Relocation project by stage

| Stage | Observations |
|----------------------|---|
| Conceptualise | <ul style="list-style-type: none"> ▪ The need to relocate and solution concept were both sound. ▪ A good participatory process must be well embedded from the outset. Given that the livelihoods of many stakeholders were bound up with the redevelopment of the market, it should have been apparent that this would make for a long and protracted process of negotiation. |
| Prove | <ul style="list-style-type: none"> ▪ A fundamental flaw in the business case was that the strength of the opposition by traders was grossly underestimated and engagement was opaque and deficient, which meant that an otherwise sound project was significantly delayed. ▪ Options and risks were not clearly documented and assessed with stakeholders before delivering them. ▪ Business case did not have a practical and implementable business model. For example, the assumption that the private sector would deliver warehousing was wrong. Also trader opposition meant that the trading floor couldn't proceed as a PPP. |

| Stage | Observations |
|------------------|---|
| Procure | <ul style="list-style-type: none"> ▪ Gap in initial PPP scoping / feasibility where government would provide land for development of trading floor under a PPP arrangement and was assumed that warehousing would be provided by the private sector or market users. Why was warehousing left out? Was it to make the capital value/business case more attractive, by leaving out the possibly less attractive warehousing component? Rigour is not apparent. ▪ Market stall holders did not support the project, meaning that private sector would not commit to a PPP. ▪ Lack of engagement with stakeholders /end-users and payers and lack of ownership led to a fundamental change in scope and procurement method. ▪ Memorandum of understanding with market community fell over, Thiess pulled out of new D&C tender process, leaving a suboptimal competitive situation. ▪ In an attempt to engage with the market community, the trading floor design process was very detailed and costly. The tender requirements were very onerous for bidders and significant changes were made to the design after the winning bidder was announced. ▪ Significant issues around transparency and probity in relation to the procurement of the trading floor |
| Implement | <ul style="list-style-type: none"> ▪ Lack of engagement skills to enable and support transition/change management from Footscray to Epping. Unclear accountability in relation to responsibility for engagement. ▪ Stark differentiation in delivery capability when the project was transferred from DPI to DBI (MPV), though MPV was involved in some capacity early. ▪ Inconsistent levels of commitment by project sponsors and lack of management continuity, led to confusion around ownership and delivery. ▪ \$30 million difference in price arose from key movements from the brief – warehousing, additional loading docks, centralised refrigeration plant and additional paving, most of which had previously been assumed would be provided by the private sector. ▪ Significant changes made during the project created risks that were not well managed. ▪ Construction is being delayed significantly by wet weather and resultant damage, with five extensions of time granted, totalling more than 300 days. This appears unusually high |
| Realise | <ul style="list-style-type: none"> ▪ Poor project implementation and stakeholder management has resulted in delays and cost overruns and reputational damage for the government. ▪ The government taking responsibility for warehousing infrastructure has reduced the risk of failure, though increased the cost. Warehousing remains subject to business case approval. ▪ The new market will cost more than double its original estimate and is expected to be open in 2014–15, six years after its initial planned opening date. ▪ Lack of end-user engagement continues to contribute to uncertainty around take-up of the new facility by traders and relocation from the existing facility. |

3.5.2.4 HealthSMART

HealthSMART commenced in 2003 as a \$323 million program to build a whole-of-health information and communication technology (ICT) system across half of the Victorian public health service. The project was to have brought hospitals a new clinical, patient and client management, resource management and picture archiving systems. In 2005, iSOFT (now part of CSC) was awarded the contract to supply its i.Patient Manager (iPM) software to the HealthSMART initiative. Funding for the project concluded on June 30 2012, following a reported cost overrun of some \$140 million. System applications are only partially running in four hospitals.

Table 11: Observations on performance of HealthSMART project by stage

| Stage | Observations |
|----------------------|---|
| Conceptualise | <ul style="list-style-type: none"> ▪ Lack of appreciation of the complexity of IT projects of the scale and scope envisaged for HealthSMART. ▪ Insufficient engagement with end-users. Better engagement may have led to a greater understanding of the diversity of clinical requirements for each of the health services, which may have influenced how HealthSMART was conceptualised (e.g. basic platform with the ability to tailor to local needs). ▪ Seemed to be lack of recognition or awareness that different health services were at different levels of IT maturity and capability, which added another layer of complexity to the project. ▪ Only two options presented to government – do nothing or do HealthSMART. |
| Prove | <ul style="list-style-type: none"> ▪ Appears that there was an absence of a business case that set out objectives for the project, and benefits realisation subsequent to the project. ▪ Failure to appreciate the extent to which HealthSMART would require health services to undergo change to their clinical models, IT infrastructure and general operations to realise benefits. |
| Procure | <ul style="list-style-type: none"> ▪ The probity process disabled vendors from being able to engage with the client to gain a better understanding of requirements. ▪ Requirements were more task-driven than outcome-driven. ▪ The idea to simultaneously implement the system across all health services at once amplified the technical, people and operational challenges. The project may have benefited from building, testing and proving the technology around one health service, then implementing it across other services over time. ▪ Contract for HealthSMART was tripartite, which created difficulty for delivery and governance. |

| Stage | Observations |
|------------------|--|
| Implement | <ul style="list-style-type: none"> ▪ Focus during implementation was not on the highest value aspects of the system, but rather those that could be delivered early as “quick wins”. The promise of the new technology was lost in its implementation. ▪ No single organisation was given accountability to deliver the programme. ▪ HealthSMART was required to operate as a systems integrator and IT outsourcer, but had neither the capacity nor the expertise to perform this function. ▪ Centralised control meant that HealthSMART was removed from the clinical environment. Implementation appeared to go well when it was devolved so that individual health services could build things locally to their needs. ▪ Inability of health services to cover the costs of change management, technology upgrades, data migration and point-of-service devices, which made it more difficult (if not impossible) to implement. ▪ Inability for hospitals to meet the ongoing cost of HealthSMART providing support and other ICT services. ▪ A lot of the information was not designed to be made meaningful to clinicians, yet HealthSMART was being built as a system clinicians would use. ▪ HealthSMART had high turnover of staff due to combined pressure of cross-training by vendor on the new system and services that needed to be delivered to customers during the roll-out. ▪ The active involvement of the departmental secretary alleviated some of the more critical problems that the project was facing. |
| Realise | <ul style="list-style-type: none"> ▪ The system is not fully operational and has been deemed by most services as being overly complex and difficult to use with an unfriendly user interface. The critical component – the clinical system – has been found to be lacking³. ▪ Austin Health, however, claims to now have one of the best IT infrastructures in the health system, partly because of HealthSMART and partly because it prioritised investment in clinical IT systems. Requirements were developed from the ground up with the vendor, rather than top down through HealthSMART. ▪ The recurrent cost savings realised through the implementation of the technology at the Austin do not outweigh the increased costs of operating the system; however, if the positive impact on patient safety may well justify the investment. |

3.5.2.5 Melbourne Convention Centre

The Melbourne Convention Centre is an institutional and commercial building construction project managed by MPV on behalf of DBI (formerly the Department of Innovation, Industry and Regional Development). The convention centre serves as the centrepiece of a new \$1.4 billion precinct along the Yarra River. The project was delivered as a public private partnership project under the Partnerships Victoria framework. The Victorian Government contributed \$370 million toward construction of the centre. The remaining commercial development was financed privately. The contracted parties for the convention centre and commercial development were Plenary Group and

³ In providing evidence to the Committee at the project hearings, Austin Health stated that a lot of the information was not designed to be made meaningful to clinicians, yet HealthSMART was being built as a system that clinicians would use. Royal Victorian Eye and Ear Hospital (REEVH) stated that at the commencement of the HealthSMART project, individual health services were at different stages of IT maturity in terms of infrastructure and applications in use. RVEEH, in particular, had complex and bespoke IT systems. All of this added more complexity to the project than was originally anticipated in the business case. Department of Health stated that the majority of systems that were part of the HealthSMART program have met their objectives, however, the critical component - the clinical system - are found to be lacking.

South Wharf Retail Pty Ltd respectively. The new convention centre opened in July 2009 and is fully integrated with the existing exhibition centre to create a versatile and advanced convention and exhibition centre.

Table 12: Observations on performance of Melbourne Convention Centre project by stage

| Stage | Observations |
|----------------------|--|
| Conceptualise | <ul style="list-style-type: none"> ▪ Project benefited from leveraging long-standing and well understood government business operation. ▪ Melbourne Convention and Exhibition Trust (MCET) represented end-users well. |
| Prove | <ul style="list-style-type: none"> ▪ Scope was clear, requirements clear, cost recovery from conventions well-understood, resulting in strong private sector interest. ▪ Ambitious and somewhat risky project (in that the riskier ancillary property development side, apart from the hotel, could have impacted upon on the success of the central part of the project), however this made it suitable for a PPP in that government was protected from risks. |
| Procure | <ul style="list-style-type: none"> ▪ Interactive tendering processes commended and contributed to success. ▪ Commercial development risks delinked from government. ▪ Project was well managed by an experienced and capable team drawn from MPV, commercial advisors and DTF. The team collaborated effectively and demonstrated how to develop a sound evaluation, financial and risk model and manage interdependencies between functional brief, risk and commercial aspects. ▪ Strong property market contributed to the attractiveness of the project to the market. |
| Implement | <ul style="list-style-type: none"> ▪ Project team was made up of key people with the necessary capacity and competencies that allowed for robust debate, negotiation and management of advisors and the private sector so that the risks were interrogated deeply, well-understood and managed. ▪ Project was well-managed with the benefit of good timing in respect of property development. ▪ Cost budgets were maintained throughout project which reflects a well-scoped and thoroughly negotiated deal. ▪ Time extensions were minimal and timelines were achieved. ▪ Steering committee involved only major government stakeholders including MCET representing end users, kept things simple. |
| Realise | <ul style="list-style-type: none"> ▪ Thorough application of governance and continual review of public interest test conformance – VfM was apparent and was delivered in accordance with VfM objectives. ▪ Given the sound commercial arrangements, the PPP withstood the failure of the Direct Factory Outlet included in the ancillary property development of the project. ▪ Could not ascertain that government got VfM on the land for the ancillary property development. |

3.5.2.6 Royal Children’s Hospital

The new Royal Children’s Hospital (RCH) project is the largest hospital redevelopment undertaken by the State Government of Victoria. The RCH was delivered as a PPP in accordance with the State Government’s Partnerships Victoria policy. On 21 November 2007 it was announced that the Children’s Health Partnership consortium would design, build, finance and maintain the hospital for

a 25-year period, as well as provide a significant range of extra facilities to benefit sick children, their families and hospital staff. The consortium comprised International Public Partnerships (INPP) as sponsors, Bovis Lend Lease as builder, Spotless Group as facilities manager and architects Billard Leece, Bates Smart and HKS (US). The new hospital opened in 2011 at a total capital cost of \$946 million.

Table 13: Observations on performance of Royal Children’s Hospital project by stage

| Stage | Observations |
|----------------------|--|
| Conceptualise | <ul style="list-style-type: none"> ▪ Models of care were not adequately developed. Recommendation in Gateway 1 to address this deficit was not addressed. |
| Prove | <ul style="list-style-type: none"> ▪ Detailed analysis of redevelopment options carried out. ▪ Significant engagement across all stakeholder groups – including staff, the community and patients. ▪ Project objectives and goals were solid such that project partner had an understanding of what was wanted. ▪ Models of care were further developed and defined after the business case stage to inform the project brief that was released to the market. |
| Procure | <ul style="list-style-type: none"> ▪ PPP model compelled participants to find a solution that would last 25 years and beyond and consider whole-of-life costs. ▪ Single point of accountability separating RCH users from DoH PPP delivery structure ▪ Capacity within the brief for innovation to occur during the bidding phase. |
| Implement | <ul style="list-style-type: none"> ▪ RCH had a dedicated team of seconded clinical staff who had an interest and desire to be part of the project, They brought the benefit of their clinical knowledge to the project. ▪ Responsibilities and lines of communication between all parties during development were open and transparent. Regular monthly meetings with the project director, steering committee meetings every quarter, the filtering of all issues through the steering committee, regular reporting on project status, formal management of variations through the steering committee all contributed to the outcome. ▪ Strong communications component with a dedicated communications manager and significant involvement by the executive director, communications. In addition to formal lines of communication, the teams instigated much informal communication to ensure that the project maintained its pace. ▪ RCH appointed KPMG to audit the work they needed to do to deliver their elements of the new facility. This audit added genuine quality to the process and outcome by keeping the project team focused. ▪ The new facility was designed to enable new clinical models and new ways of doing things. The hospital played a significant role in managing change, both operationally and culturally. ▪ Consistent team through all phases of the project. Department's agent and team were a constant throughout the process. |
| Realise | <ul style="list-style-type: none"> ▪ The project agreement includes a robust performance monitoring and reporting regime for the operating phase of the arrangement. |

3.6 Overall findings from project reviews

The main conclusions and observations from the project reviews are discussed below for each of the lifecycle stages.

3.6.1 Conceptualise

It is crucial to the success of a project that it is well founded in a strategic sense. It must align with the portfolio's asset and service strategies and its strategic plan, and to the Government's wider intent. This may take the form of some kind of state plan that outlines a broad yet integrated cross-portfolio strategic direction. The initiative or project must explicitly arise from these plans, and the identified problems, benefits, interventions and scope need to be clearly articulated and clearly linked - any disconnects in this process will potentially threaten the value for money delivered by the project.

Our review of the example projects suggests that there is a strong tendency, at the conceptual stage of the investment management process, to focus on the solution itself, rather than the strategic fundamentals. In particular, the problems to be solved and the higher level outcomes to be achieved, led to conceptualisation of the projects that lacked critical insight into the service need and the broader aims and plans of the owner organisation and the Government itself.

There were a number of instances where the government had committed major project funding to a project without clear articulation of the need and inadequate testing of strategic or project options. The challenge of delivering projects of the scale and complexity of both the myki and HealthSMART systems was poorly understood and thus poorly conceptualised. Had the responsible agencies better understood the risks involved in large-scale ICT development and deployment, they may have sought to pursue a process of progressive development and roll-out of the technology. There is also little evidence to suggest that alternatives to the largely bespoke, open-architecture systems were fully explored.

We are also not aware if alternative strategic water supply alternatives were fully assessed and analysed comparatively prior to the decision being made to invest in the development of the Victorian Desalination Plant. This comparative analysis should have been fundamental to the business case.

The absence of adequate engagement with, and input from, key stakeholders and end-users at the early stages of the project can contribute to the identification of interventions that are not fit for purpose, as was the case with the HealthSMART initiative, or to underestimation of stakeholder acceptance of risk, as experienced in the Melbourne Markets relocation. When a sound participatory process is embedded within a project's formulation, such as that which occurred during the early stages of the Royal Children's Hospital, there is significant capacity to leverage the experience and knowledge of stakeholders and end-users to innovate and to drive change.

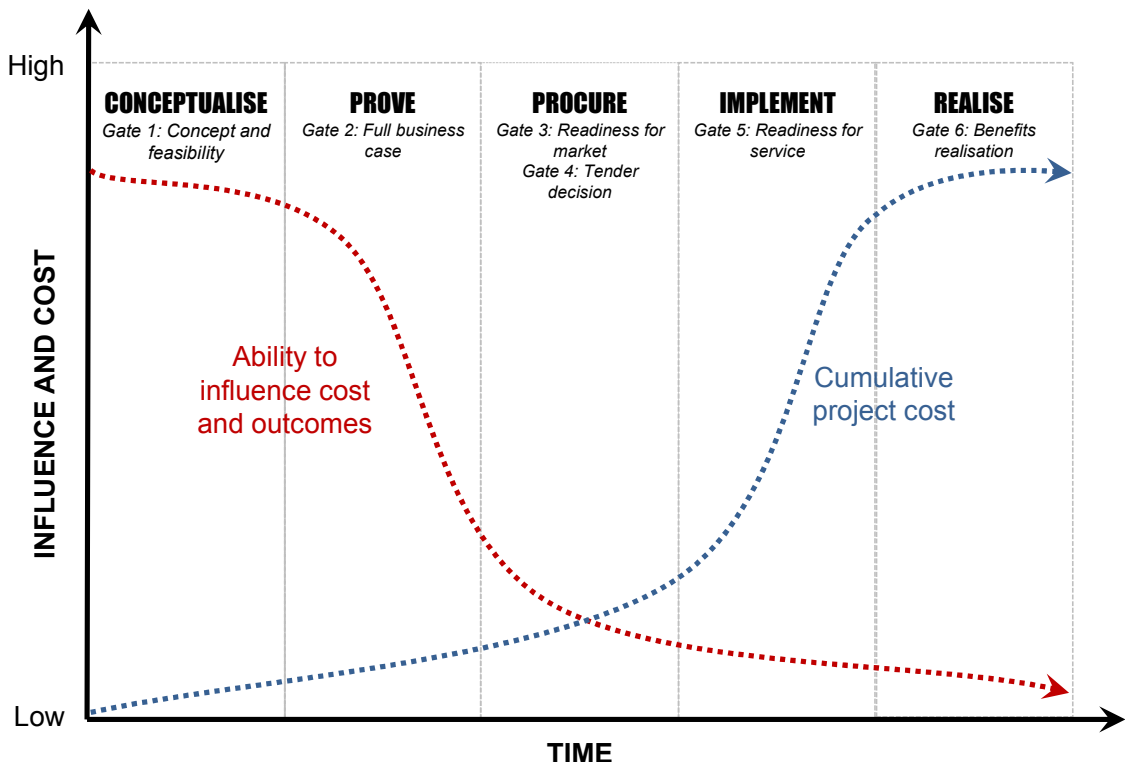
3.6.2 Prove

An overwhelming theme that emerges from the review of these projects is the need to commit the necessary time and effort into planning and business case development (Figure 4), i.e. at a time when there is maximum ability to influence cost and outcomes. The later in the process a change in scope is made, the more significant the cost impact is likely to be. The ultimate project outturn cost has a direct relationship with upfront planning investment.

The failure to adequately plan led to significant variances between the planned and actual procurement duration and costs for challenged projects. A few wrong assumptions underpinning a business case and then subsequently built into the architecture of a project can lead to significant problems down the track as shown on HealthSMART, myki, Markets and Desalination. While vendors are accountable for accepting unrealistic timeframes (or other contract terms), competitive tendering processes, which are geared towards complying bids, have the potential to induce vendors to agree to otherwise unreasonable terms in order to be competitive and secure work. It is unlikely that procuring agencies would look favourably upon a submission that proposes to deliver a project significantly longer than scheduled timeframes. Unrealistic timeframes established in the business case invariably lead to poor outcomes for all project participants.

The capability in preparing or managing the preparation of good business cases goes to the core of the success of major infrastructure project delivery. In addition, there needs to be a necessary authority and process for findings of the assurance process to be acted on and implemented. A thorough up-front process will minimise problems during development and delivery of the project. Evans & Peck's experience leads us to the opinion that front-end investment in project conceptualisation, end user analysis, options identification and analysis and robust cost estimation and benchmarking are primary reasons for projects not delivering to expectations.

Figure 4: Influence on project cost and outcomes by lifecycle stage



We note a number of recurrent practices that contributed to variances between what was planned and what was subsequently delivered:

- **Engagement with end-users and stakeholders:** Stakeholder and end-user inputs must be obtained and accounted for in the scope detailed in the business case. The failure to do this was the principal reason for major problems on the HealthSMART and Melbourne Markets projects. Documentation of the need for the project was sound, but the scope definition and

stakeholder management was severely lacking, while HealthSMART seemed to lose sight of its original purpose. The requirement for strong stakeholder involvement was undertaken extremely well on the Royal Children's Hospital, while the Melbourne Convention Centre had a mature government business model that was well-understood.

- **Scope and requirements definition:** Scope needs to be articulated clearly in the business case in an easy to understand framework, including a robust basis for inclusions and exclusions to provide adequate guidance to the deliverer. Projects of the scale and complexity of myki and HealthSMART by necessity demand a clear and unequivocal articulation of requirements. Should this not be possible, alternative procurement models ought to be explored (see below under Procure)
- **Assumptions:** There is a need for evidence-based front-end planning across all projects, particularly 'frontier projects' that feature high levels of innovation or where there is limited local experience in the project domain. Both myki and HealthSMART fall into this category. The projects involved significant ICT development of which there were few examples. The planners put an optimistic two-year timeframe on its delivery. Oyster, a much simpler public transport smartcard system in London, took seven years to implement. Rigorous global benchmarking on cost, user take-up and timeframes (sometimes referred to as reference class forecasting) might be a beneficial method for government to adopt to avoid this optimism bias. This technique requires a high degree of skill and understanding of what is relevant to the particular project and the ability to translate to local circumstances. The desalination plant project was also too optimistic on the timeframes to deliver.

3.6.3 Procure

There appears to be a growing tendency for some organisations to use probity and confidentiality as barriers to effective engagement with industry - taking an 'arm's length' approach to engagement. Whilst a degree of formality is certainly required to satisfy success elements such as transparency and contestability, establishing and maintaining communication with industry will benefit owners when they are seeking to engage industry in a project. If an owner organisation is viewed as a 'good client' then they will be preferred by industry and achieve better outcomes as against an organisation viewed as a 'bad client' which may struggle to attract interest.

Effective engagement with industry, striking the right balance between maintaining adequate formality yet communicating effectively requires experience and commercial acumen. Clients who cannot achieve this will be exposed to project over-runs (cost and/or time), resulting from lack of common understanding of scope and other project requirements. Interactive tender processes promote information exchange with tenderers and mutual understanding of requirements, which can significantly improve project outcomes, as occurred on MCC.

A more interactive process on Desalination may have led to a more realistic timeframe for delivery rather than the optimistic timeframe put forward by the bidder who was interested in winning the project (see above comments in 3.6.2). Probity appeared to be a barrier to any interaction on HealthSMART, where the requirements were difficult to understand and were more task-driven rather than outcome-driven.

On myki, rather than committing to the project scope and price prior to detailed specification of the solution, the contractor could have been appointed in a two-stage procurement. The first stage would include developing the solution, cost and timeframes in a collaborative way. Being awarded the main contract for delivery would be subject to performance on that phase and meeting the

requirements of the client. Competitive pricing from contractors for both phases would be ensured through the usual tender process and variations to price for the second stage would be subject to detailed justification. Contractors would be focussed on winning the major part of the contract (ie the second stage), The delivery agency would need to be skilled and knowledgeable in ensuring that any increases to the price for the second stage was fair and reasonable. The business case would need to evaluate consequences of a decision not to proceed with the Stage 1 contractor to ensure that government is in a position to change course. If it is deemed no possible to do this, the procurement method should not proceed.

The original PPP proposed for the Melbourne Markets project had to revert to a broader scope and design and construct (D&C) procurement because of the lack of front-end user engagement. In an attempt to get tenant buy-in, significant time, money and effort was spent on design. Procurement was dominated by design requirements, yet it still changed significantly after the tender evaluation process finished. In addition, significant probity issues during the project planning and procurement phases meant that VfM was not demonstrated.

There are current examples of early contractor involvement (ECI) in the business case and options phases, with construction contractors now working as consultants on major infrastructure projects such as Melbourne Metro and East-West Link, which does not rule them out of much larger downstream roles. The North West Rail Link project in New South Wales provides a good example of a mature approach to engagement with industry that is expected to realise significant benefits. ECI must follow a rigorous and transparent process however, with sufficient time and information made available in the tender period to provide a level playing field for tenderers. Involvement of the eventual winning bidder in the Markets' planning phase was not handled in a way which demonstrated fairness to other bidders.

3.6.4 Implement

The implementation phase proved difficult for HealthSMART, myki, Desalination and Melbourne Markets. This can be attributed largely to inadequate project planning and specification, and over-optimistic timeframes. With an appropriate timeframe for Desalination, the industrial issues may not have materialised to the same extent and weather delays may have had less impact on the program. Many construction contractors are less likely to claim in that context. In addition, a realistic timeframe for myki would not have reduced the costs of extending Metcard, but it would have meant that the costs were understood at the outset.

Construction of the Melbourne Markets project is being delayed significantly by wet weather and resultant damage, with five extensions of time granted. These are typical construction risks that are managed by the contractor, though they appear to be significantly longer than what would be expected.

Implementing sophisticated tolling technology on the CityLink and EastLink projects, while experiencing some delays, showed that these delays can be minimised when there is an incentive for timely delivery, such as through a PPP.

The implementation phase for RCH and MCC were very successful, largely because each project's fundamentals were strong from the outset and the scope was very clear.

There is sometimes a failure to look beyond the immediate scope of the project to see what organisational changes or effects the project requires or creates to enable the benefits. This seemed to be a significant issue for HealthSMART rollout and with proper up-front engagement or

piloting the program could have resulted in a more effective solution. The successful new ICT system at the Austin Hospital, which includes elements of HealthSMART, evolved from upfront engagement and interaction with the HealthSMART team to incorporate Austin-specific issues. This success shows the benefits of starting small with large and complex programs and learning lessons from their delivery before committing to the full rollout. The reality was that to be effective, there was a significant local expenditure on IT infrastructure required to make the systems work effectively (this was not included in the HealthSMART budget). For example, at Royal Victorian Eye and Ear Hospital (RVEEH), there was a need to increase staff and upgrade existing infrastructure to accommodate HealthSMART which did not accommodate RVEEH-specific issues. HealthSMART proved difficult to use, dysfunctional and overly complex, which meant rollout was always going to be difficult.

Such issues point to the need for a robust 'benefits realisation' section in the business case. It is in this section that the required complementary actions for outcomes to be achieved should be analysed, documented and necessary actions identified, often for parties other than the lead agency.

3.6.5 Realise

While four of the six projects are operating largely as intended, it is not possible from this review to determine whether value-for-money has been achieved, in the broadest sense, on any the six projects reviewed. However there are particular issues with each of the projects which suggests whether they have been delivered to serve the best interests of the public.

Lack of early stakeholder engagement and "ownership" may become an issue in the operations phase for the Markets project due to issues with the stall holders over rents at the new facility and relocation from the existing facility, exacerbated by construction issues that continue to impede the project's completion.

The Austin Hospital ICT system now operating demonstrates that HealthSMART could have been successfully delivered if the system were piloted first and progressively implemented across the health network using the learnings from the pilot.

It is not possible to determine from the information available in this review and at this stage if myki has realised VfM. Myki is regarded as one of the most complex smart card ticketing solutions in the world, though it appears to be operating largely as originally intended. The question remains as to whether an off-the-shelf ticketing solution could have provided sufficient functionality at a lower cost to the public. This lower upfront cost must of course be balanced against the reduced sophistication of the ticketing system, flexibility and potential higher cost of future upgrades that an off-the-shelf system often requires.

Similarly, Desalination is now producing desalinated water as intended, albeit much later than planned. While the successful bid price was lower than the Public Sector Comparator, the final costs to the state and the degree to which the state is protected from the delivery risks on the project is yet to be finalised. The annual payment regime also suffers from a lack of transparency.

MCC and Royal Children's Hospital both now appear to be operating successfully and delivering benefits largely as intended.

3.7 General observations

3.7.1 Conformance to process

We note that, in a number of instances, projects were announced and went to market before the need was substantiated, strategic options investigated and a full business case completed. Once an announcement is made, the government is committed to an un-tested solution and its attendant risks, and the legitimacy of the investment management framework is undermined.

It would appear that only limited Gateway reviews have been undertaken on the projects we reviewed. We see little point in having a process that is not effectively administered or embraced by project owners. With the newly instituted HV/HR process, Gateway reviews are now compulsory for HV/HR projects, which should ensure that the projects have a strong rationale and basis, assuming they are quarantined from political influences or requirements. Project teams should be encouraged to embrace the process and to report issues and mitigating strategies as they arise. Furthermore, as an astute investor, Government must be prepared to cancel or re-plan projects that will not deliver benefits cost-effectively for the taxpayer.

3.7.2 Role conflict

Confusion around the roles and accountability of DTF was raised by numerous agencies. There is a perception that DTF's multiple roles of assurance and decision-making (as an investor) and its expert input role participating in the project's development and delivery are conflicting and this leads to confusion around roles, responsibility and accountability, as well as how information is captured and reported. This confusion is particularly apparent for PPP projects, with the Partnerships Victoria (PV) team, and therefore Victoria's PPP 'centre-of-excellence', being based in DTF. PV is not responsible for delivery of PPPs however, which falls to agencies such as Major Projects Victoria, Linking Melbourne Authority and Department of Health. This issue is the subject of the sixth term of reference of the PAEC inquiry and is discussed in more detail in Chapter 4.

Notwithstanding the underlying requirement for the public service to be apolitical and perform its functions in an impartial and professional manner, and to be responsive in advising government and in implementing its policies and programs, the quality and veracity of information and advice being provided to ministers has been questioned on some projects. The Victorian Auditor-General's Office stated in evidence to the inquiry that there is a tendency in the public service to deliver what the government is requesting. He notes that the quality of the government's decisions around important investments rests upon the frankness and quality of the advice they receive from the agencies.

3.7.3 Increased pressure from external political environment

An increasingly volatile and changing political environment appears to be an influencing factor throughout the project lifecycle, and in particular during strategic planning and project planning. This development appears to be affecting aspects such as funding decisions for projects, attitudes towards risk allocation and timeframes for planning delivery. Symptoms and examples of this increased pressure are detailed below in Table 14.

Table 14: Symptoms and examples of increased pressure on projects from external political environment

| Symptoms | Examples |
|---|--|
| Increased influence of political process in project planning | <ul style="list-style-type: none"> Projects frequently initiated from political and election commitments rather than as part of a long-term project pipeline <p>The Foodbowl Modernisation project was identified as an example of this by VAGO’s EDM inquiry submission which asserted that money was committed to the project through a political process without proper planning process</p> <ul style="list-style-type: none"> Aspects of project delivery influenced or determined by political considerations rather than by best practice. Austin Health’s EDM inquiry submission noted that the desire for project to be completed within the term of government influenced the delivery schedule and contributed to poor project planning Projects initiated and viewed individually rather than as part of a portfolio. |
| Shorter project planning horizons | <ul style="list-style-type: none"> Project planning horizons driving contract packaging decisions, with shorter planning horizons leading to a tendency to “bundle” projects to speed delivery, rather than considering the most effective packaging of projects. |
| Changed perspectives relating to project finance | <ul style="list-style-type: none"> Reduced acceptance of large initial capital outlays for projects Reduced acceptance of government borrowing for project funding Shorter horizon for required financial return for projects Reduced unwillingness by the government to bear project risk – risks shifted to the private sector often at very high cost |
| Increased public and media scrutiny at all stages of project delivery | <ul style="list-style-type: none"> Timeframes for aspects of project delivery determined by political factors rather than time required to “do it right”, and then publicised Aspects of project definition driven by public opinion and wariness of media perception. |

3.7.4 Changing external project environment

Projects are becoming larger and increasingly complex, given the escalating need to develop infrastructure on brownfield locations, sometimes in high profile locations of intense activity, and an increased trend to package up projects to transfer interface risk to the private sector. Projects are also attracting greater scrutiny by a more informed public with high expectations. This scrutiny demands an increasing capability to manage major projects, particularly the breadth and depth of strategic, commercial, technical, construction, stakeholder and overall management skills required for Project Directors/Leaders.

It is increasingly difficult to find people with capabilities in all these areas in either the public or private sector, which may lead to greater reliance on the capability of workstream leaders. Some organisations have recognised that traditional ‘Project Director’ led project teams, with command/control structures are not appropriate for these large, dynamic projects and are implementing ‘systems’ based project delivery approaches that rely more on *sense and respond* approaches that place less reliance on a single Project Director. This is an emerging area of research and practice.

Symptoms and examples of this changing environment are detailed below in Table 15.

Table 15: Symptoms and examples of changing external project environment

| Symptoms | Examples |
|---|---|
| Failure to adapt approach to project delivery to accommodate the trend for increased project complexity | <ul style="list-style-type: none"> ▪ Insufficient appreciation of impact of complexity on risk/estimation ▪ Failure to adjust management approach for projects of different levels of complexity. |
| Failure to adapt approach to project delivery to address increased level of technology in projects | <ul style="list-style-type: none"> ▪ Consistent underestimation of the costs and risks arising from technological interfaces on projects ▪ Consistent underestimation of the resources and skills required for implementation of projects with technological elements. ▪ This pervasive failure to develop a realistic perspective on the impacts of technology was raised by many of the submissions to PAEC's EDM inquiry from groups involved with the HealthSMART program, including Austin Health and the Royal Victorian Eye & Ear Hospital. |

4 PPP public sector management model

4.1 Introduction

This section examines whether public sector PPP expertise should be centralised or decentralised in Victoria, and the merits and risks for either path in locating skilled resources for management and delivery of PPPs. The section also covers:

- the use of external advisers and experts.
- comments on procurement models other than PPPs.

It draws on information from the PAEC process, our own experience and from other leading practice models.

On a broader front, the concerns at a generic level that have been expressed in our briefings include:

- How well do the State's procedures and the actual practice of them appropriately address long term planning as opposed to discrete and relatively short term decision requirements?
- Do current practice and accountability mechanisms enable utilisation of the government's budget efficiently while at the same time not negatively or commercially impacting the contractors and other sections of the private sector market?
- What models are working well for the State and to what degree can suggested checks and balances give guidance on their wider applicability?
- Are some of the difficulties that may be seen in some Victorian projects the result of a systemic problem derived from a far broader platform than Victoria, whether that be international practice and standards, the state or mechanism of the private sector market or other? This is particularly relevant to cost overruns.
- Fundamentally, what is the required government-side skill set and what does government need in order to optimise its project process – are the necessary people and intellectual property in existence and if so in the right places within government?

Of these, the last two points are addressed in this section, but the analysis is also an input into addressing the first three points.

4.2 Definition of the issues and context

Victoria has a defined operating model that it has in common with many other jurisdictions, which vests line agencies with a high degree of autonomy, responsibility and accountability for management of their particular component of the public portfolio. As a result, the general interpretation of the extent of duties and responsibilities for capital procurement mirrors responsibilities for all other functions of the line agency.

In the PPP spectrum, this extends to the whole-of-life delivery of assets and operations where to various degrees, procurement, operations and financing are closely interlinked. Arguably the most complex form of procurement may appear to be the PPP which addresses the whole-of-life delivery in detail as a result of engagement with the private sector over the full spectrum of the asset life.

But in theory, the process by which government conducts itself and procures capital projects should not differ materially between different methods. In each case, whole-of-life costs and service delivery should be the focus, regardless of the form of capital procurement (Alliance, D&C etc). Comments related to PPPs in this section are therefore largely applicable across all procurement alternatives.

As a result of line agency autonomy, the procurement process and delivery of operating structures for assets in Victoria has historically been largely controlled by the line agencies. Policy and expertise have been available internally to government, principally through the auspices of the Department of Treasury and Finance (DTF) and to some extent Major Projects Victoria – but until recently in the main not on a mandatory basis. The advent of new policy, such as the High Value / High Risk (HR/HV) framework, has resulted in certain processes becoming a requirement of the line agencies. Greater powers for DTF to overview, and in some cases to approve at key decision point, have also been, or are in the process of being, implemented. But these also may have a detrimental effect on the willingness of line agencies to access expertise in DTF given the latter's potential multiple roles of delivery and assurance.

4.3 Analysis

The analysis of the case for centralisation or decentralisation of skills for implementation, management and oversight of the delivery of PPPs, or any other procurement method, can firstly look at what is ideal. However, this needs to be tempered by what is achievable and workable with current government processes and structures, which also formalise the current delegation of responsibilities and accountabilities to line agencies.

We have attempted to identify the issues that arise in determining how the skill base is being accessed and where best to locate and access it. These include:

- The requirement for public transparency.
- Transparency within broader government, especially across departmental boundaries.
- Accountability for outcomes and expenditure.
- The employment of checks and balances to drive efficiency, responsibility, quality of outcome, and Value for Money (a form of cost-benefit analysis).
- The use of effective and appropriate decision-making processes for all sizes and impacts of asset development projects.
- The selection and application of appropriate criteria for decision-making, aligned to the public interest and policy.
- The level of definition of process and devolution of responsibility as between central government and line agencies.
- The degree to which policy and guidance on procedure is high level or granular.
- The importance of the retention of learning and the skill base to apply to future situations.
- Achieving consistency across all of government in the approach and the process of project delivery.

Some themes that recur frequently and have a bearing on the current mechanisms and practice, and the ability to assess these for best practice and possible improvement, are:

- A perceived degree of protectiveness by some agencies over their role in, and control of, procurement – probably least in evidence in the Departments of Health and Justice.
- A belief in the skills and capabilities within some line agencies which may not reflect reality - this is less obvious in line agencies with greater process history such as the Department of Health.
- A tendency to avoid discussing or recognising any shortcomings and therefore any focussed actions to improve or develop – there is evidence from all agencies in the submissions to PAEC.
- A tendency in some of the PAEC questionnaire responses to talk in terms of high level policy and approach which gives little insight into actual practical processes employed.
- A perceived or actual conflict between delivery of a project and the review and assessment of its implementation and performance, whether internal to the line agency or associated with external involvement such as DTF. Many line agencies seem to hold this view and it was expressed quite often by interstate and offshore sources as well.
- Projects influenced by or initiated from political commitments rather than as part of a portfolio strategic planning process based on ‘best practice’ and ‘best outcomes’ for the asset or service. This is a broadly held view in the current climate.

To some extent these attitudes may be cultural but will also be driven by the perception of actual negative consequences. To truly deliver best practice project by project, requires independence and objectivity. Owing to the variety of issues and objectives in government as a whole, we do not believe that on a pure single project basis, an ultimate definition of best practice is achievable. This is partly because a single form of best practice will not necessarily service the multiple objectives and aims of line agencies and government as a whole. The question is whether practice can be shifted closer to ensuring appropriate application of skills and more consistent and supportable approaches and outcomes.

One major issue that drives the ability to achieve good practice is that, particularly in the PPP procurement mode, Victoria has relatively few projects. This means that it is virtually impossible for an individual line agency to develop, retain and employ to the most productive level, the skills needed to deliver these projects. There are some exceptional circumstances such as in the Department of Health which has procured three major availability-based PPPs in a row and is about to embark on another (Bendigo Hospital), as well as having had prior experience on projects such as the Latrobe Valley Hospital. But if the flow of health service asset procurement stops for a period, it is highly likely that internal skill sets that have been developed will be dissipated so that they are no longer available for future projects and are not applied in the management of projects post-procurement. The lack of scale in most departments points towards the need to centralise key skills and experience.

There is also a limit to which government can outsource capability. In terms of communication and understanding of policies and outcomes required by government, no external party will be able to match a government agency or its officials. In terms of required granular technical skills, however, there is an argument to source these from the most competent pool whether internal or external. Nevertheless government must retain sufficient knowledge, capability and understanding internally

to manage and drive outcomes, make good decisions and "own" projects sufficiently to realistically be accountable for them.

Observations from available sources would suggest that the application of skills to projects and their sourcing in Victoria has been very dependent of the particular line agency and its approach. There have been some 'centralised' skill basis in areas such as MPV and DTF available but the use of them hasn't been universal or necessarily optimal. Where line agencies have developed the experience due to a reasonable deal flow, models seem to have been more effective.

Generally, the level of outsourcing outside the public service to deliver projects follows accepted and proven norms. The 'problems' have more to do with not applying the available public sector expertise across the board and not having sufficient expertise because it is dispersed and the local industry isn't large enough to support this model. This is exacerbated by the impacts of a reduction of internal skills over time, an issue that is potentially going to worsen with the current contraction the public service.

Flexibility is needed to assess public service/line agency capability and how best to augment this. However, the process for making these decisions itself is largely governed by the line agencies and their perceptions.

4.4 Current policy and guidelines in Victoria affecting PPPs

In the area of capital projects, policy guidelines in Victoria are provided centrally by DTF and are intended to guide the procurement process. Similarly, process guidelines are provided. This includes the investment lifecycle framework (refer section 2.3.1), which is supported by a Gateway review framework and more recently, a High Value/High Risk assurance process.

The specific process guidelines are:

- Investment lifecycle guidance material;
- the Gateway Review Process (an independent 'health check' undertaken for the project sponsor at key stages) – which is compulsory for all HV/HR projects;
- the new HV/HR project assurance process – compulsory for all projects categorised as HV/HR;
- the National Alliance Contracting: Policy Principles (July 2011) and also the Victorian Alliancing guideline materials (specific to Alliance contracts); and
- Partnership Victoria Policy and Guidelines and the overarching National PPP Guidelines (specific to PPP contracts).

4.5 Alternative jurisdiction approaches

From our own experience, previous policy and process work and general market feedback, we have assembled a picture of practice in a selection of other jurisdictions, both national and international. External informal feedback was sought from agencies and individuals involved in similar projects in Western Australia, Queensland, South Australia, British Columbia and Infrastructure UK. We have also drawn from Evans & Peck's experience and knowledge, both from

previous project experience and its staff experience in other entities. The issues Victoria faces with PPPs are recognised and are being, or have been addressed in other jurisdictions, with varying levels of success. Some high level observations of other 'models' are:

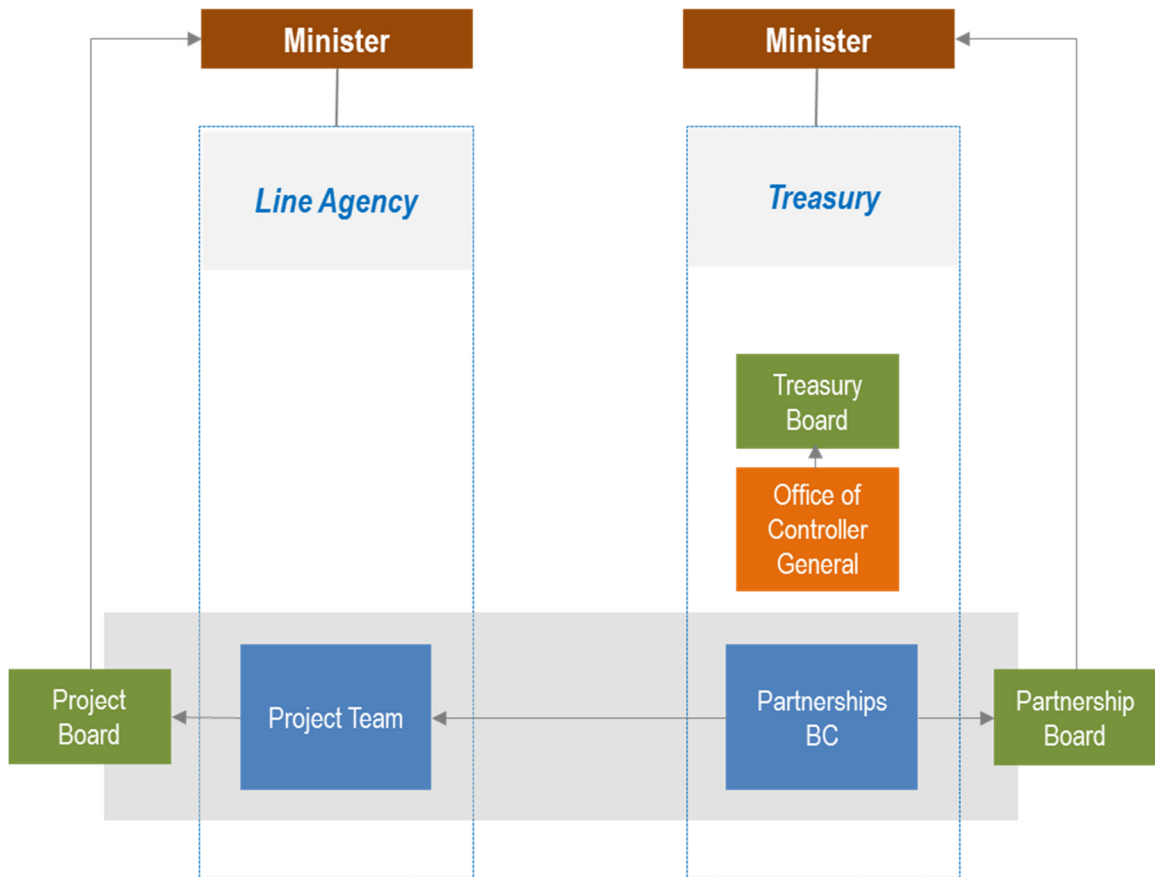
- Combining the assurance function with the expert input function in the one government entity such as a treasury department does not work as roles become confused and accountabilities become blurred. It also adversely affects the working relationship between the line agency and central government.
- It is important that the treasury department has sustained capability, at least in carrying out its assurance function – which most parties agreed was the core role for a treasury department in major project procurement. In one jurisdiction, for the equivalent of HV/HR projects, central cabinet has a review and approval role via a Major Project Office.
- The project manager or director of any major capital procurement needs to have an understanding or immediate access to experienced capability in the particular procurement model and process – especially PPPs. This can be achieved by several means ranging from contracting in a project manager with appropriate experience, to a central capability agency providing a project manager from within government, to the appointment of an expert from the private sector to sit alongside the project manager.
- It was generally agreed that a project manager has to have an understanding of government process and the confidence of the internal stakeholders. So even if an external person were appointed to the role, they would need to have significant prior experience acting for government.
- The role of the line agency as seen by various parties varied. In one instance, the belief was that as much procurement as possible should be outsourced to the private sector, and the line agency, together with the treasury department, should carry out an overview and critical review role. One interviewee went as far as to say that it is counter-cultural and not compatible with government governance requirements for a line agency to lead the procurement of assets – citing a perceived inflexibility of government sector governance.
- There was general agreement that, on more complex and high-risk forms of procurement, it was extremely difficult to retain and employ a skill base within line agencies, at least for jurisdictions with similar capital spend rates and allocations to PPPs as in the Australian states. It does seem possible to retain skill base centrally in states such as NSW and Victoria but very hard in the smaller states such as South Australia. However the smaller states benefit from smaller government and closer working relationships and rely heavily on contracting in experts to support government agencies in their roles.
- Opinions varied on whether standard processes such as Gateways and business cases should be mandatory. Generally, where line agencies had carriage of projects there was more success in having mandatory requirements and approvals of outcomes at central overview level. Many jurisdictions have relatively recently introduced the requirement for centralised review and approval at specific points in project development. In the UK this can include the specification and approval of required external consultants. In the Canadian province of British Columbia (BC), this involves a Treasury Board that has powers to specify how these processes are undertaken and to approve or condition approvals to proceed. Part of the success of Partnerships BC also lies in the virtually complete separation of a pool of internal expertise from any assurance process. Partnerships BC ultimately answers to the Finance Minister but reports directly to a board formed of senior private and public sector

representatives. The utilisation of the central skill base is quite high by the line agencies, and in some areas is also mandated by the Treasury Board, as are the process documents produced by Partnerships BC for general use.

- Most parties agreed the importance of a post-implementation review of any project and the use and application of lessons learned.
- In terms of detailed process, jurisdictions with larger project programs generally believed that the use of standard process should involve the requirement to use defined approaches and levels of detail and methods of analysis, for consistency, and for credible decision-making to occur. In some cases the forms or templates are mandated, in some the reviewing body has the power to prescribe what is required and to review outcomes. In other cases outcomes for standard processes were reported to the line agency concerned but this did not ensure the utilisation of preferred inputs as effectively.
- One other process of separation that was mentioned by several jurisdictions was the use of specific project boards set up independently to manage major project procurement. This method has been used in Victoria in the past. This board would report directly to the portfolio minister. In this model, both the line agency and Treasury have positions of overview and review.
- As stated, many of the concerns that are being addressed by the PAEC inquiry exist in other jurisdictions, but there is evidence that appropriate process and skill base application can be achieved together with corresponding project outcomes. It is noteworthy that in this area of discussion we did not hear views concerned about 'systemic problems' with PPPs.

An example of a structure used by another jurisdiction is shown below in Figure 5. This is reported to have effectively separated the assurance and expert technical advice roles.

Figure 5: Example PPP structure from British Columbia



This model separates the treasury overview role from line agency delivery responsibility and also from a central pool of delivery expertise. For major projects it enables the establishment of a special project vehicle within government.

The Treasury Board is the central entity responsible for assurance and review of project procurement processes. This covers approvals of business cases, staged reviews or specified requirements to utilise Partnerships BC, as examples. Partnerships BC is the repository for precedent information and skills which is made available to line agencies for their projects. They report to the Partnership Board, comprising Government and private sector executives.

4.6 Merits and demerits of centralising

Based on the gathered information, observations on key questions associated with the centralisation of PPP skills in government are shown in Table 16.

Table 16: Observations on key questions of centralisation of PPP skills

| Topic | With line agency | Centralised in government | Outsourced from government |
|---|---|--|---|
| <p>Where is a project best managed from?</p> | <p>Project is managed and potentially technically delivered where the ultimate accountability lies. Reporting to tiers of government and understanding of government process is likely to be more straightforward. Understanding of the overall line agency business and intersecting issues in the framework of portfolio planning better understood. A rapport will exist with line agency management and the Minister that can ease process.</p> | <p>In a centralised government model, overarching government policy is more likely to be adhered to and reporting can be very direct to either line agency minister or other agency such as Department of Premier and Cabinet. The weakness in this model is that any project forms part of the overall line agency mandate for which an integral knowledge of the agency and its functionality is needed.</p> | <p>More specific and in some areas more capable, experienced expertise can be sourced and the project driven from an independent delivery authority set up specifically for that purpose. This is appropriate only for large projects.</p> |
| <p>Where is project management skill best sourced from?</p> | <p>Experience internally is rarely sufficient for complex procurement forms but there are advantages in internal appointments as government process and context will be fully understood.</p> | <p>Broader inter-portfolio and precedent experience can be brought to bear. With procurement models like PPP and Alliancing, there is more chance that aggregating the volume of capital projects will support the centralised development and retention of skill base in specific procurement modes.</p> | <p>It is easier to locate specific suitable skills from the broader pool in the private sector. Alignment and commitment with agency and government policy may not be appropriate however.</p> |
| <p>Where is detailed analytical skill best sourced from?</p> | <p>The line agency is unlikely to be able to create and sustain these skills as one department is unlikely to have the volume of projects needed to build-up strong sustained expertise.</p> | <p>Input is likely to be more objective and less influenced by extraneous agenda so long as this function is separated from any functional checks and balances. In Victoria the economy can probably support retention of centralised skills.</p> | <p>Greater experience and access to precedent as well as private sector perspectives to inform commercial positions and negotiations can be brought to bear. Government must however retain sufficient expertise to manage and be truly accountable for making decisions.</p> |

| Topic | With line agency | Centralised in government | Outsourced from government |
|---|--|---|---|
| Accessing deal precedent and experience? | Owing to lack of volume in any one line agency this is difficult to access without external input. | It is possible in a jurisdiction the size of Victoria, and with its established pipeline of PPP projects, to hold sufficient precedent expertise centrally in government. | The private sector is likely to have more access to a greater range of precedent but not necessarily at the project management and government policy level. This precedent expertise is more likely to address granular analytical capability. |
| Consistent accountability capability and process | The line agency (on behalf of a portfolio Minister) is the ultimate accountable party and this accountability is difficult to place anywhere else. However, it is difficult for a line agency to influence consistency across all of government. | Centralised capability in government is the best place to ensure the consistency of application of policy and process across the whole of state government – so long as visibility through to the practice of individual line agencies and some ability to ‘impose’ appropriate and consistent practice is centralised as well. | These are unlikely to be roles that fall to outsourcing, but in the past there has been some reliance particularly on lawyers and financial / commercial advisors to supply this consistency as the ability to do it has been lacking in the line agency. |
| Cost efficiency of skill base? | Due to the sporadic use of specific skill base in a line agency, for specialised procurement types this would not seem efficient and results in skill base being duplicated between line agencies. | The skill base can be maintained more efficiently and more cheaply since it is potentially shared across all line agencies. Specialist agencies also seem to retain their staff and therefore their skill base more consistently. | Certain specific skills such as legal are more efficient to outsource. However, ultimately efficiency will reduce if government is not sufficiently skilled to make good decisions, to be able to lead negotiations and to be truly accountable. |
| Where should approvals, checks and balances be administered for a project? | If the line agency is managing the project then it should not be solely responsible for key decisions and process. | Generally the checks and balances should be outside the line agency but within government, however cannot be in the same area as any technical or project delivery responsibility. | This would not seem to be an appropriate role for the private sector. |

Addressing the key issues, there, appears to be an acknowledged need for centralised skills. There are two types of skill to address, however, as discussed below.

The first is project management skill. To some extent this is a general capability not requiring detailed knowledge of the particular delivery process (eg Alliancing or PPP). However an essential pre-requisite would seem to be an understanding of government communication and accountability processes, an understanding of government and departmental policy and its application, and sufficient high level understanding of the actual components of the particular delivery process and the key issues and format – such as for a PPP. It would be very hard for a project manager to manage such a project with little or no prior exposure or experience in a PPP. The overall function is best sourced from within the line agency because of context, relationships and accountability, as well as an understanding of process, however this will not optimise the knowledge of certain forms of delivery process.

One more successful model seen recently was on the Royal Adelaide Hospital, where a private sector executive with expertise in PPPs was seconded full time to work directly for the line agency project manager. This model is also being pursued on the Bendigo Hospital. Two further alternatives are:

- the utilisation of experienced government executives from a pool eg Major Projects Victoria (MPV) where line agencies lack suitably skilled people
- using contractors who work consistently within government in the particular procurement type, seconded or contracted in as project managers (as was done in Royal Children’s Hospital).

For very large projects, which have included some of the major road projects in Victoria, an independent entity with the budget to form a strong cross-sectional team has generally been successful. It assists accountability as well as the agency becomes more of a review body.

The second skill type is in technical execution, requiring a more detailed and analytical experience and understanding of documents, analytical components of the evaluation process, design and costing, financial modelling, and key negotiation positions and related precedents. There is a strong argument that this should be centralised within government and/or outsourced, as explained in this section. Currently in Victoria, centralisation of some of these skills is found in areas such as Partnerships Victoria (part of DTF) and MPV. This has not been as effective as it might be as:

- i) The range of skills covered is not comprehensive;
- ii) The utilisation of these skills has been largely discretionary;
- iii) The location the skills still is spread between departments; and
- iv) The centralised areas do not have access to all line agency precedents and experience.

There is however a tendency within government to outsource components of the implementation to the private sector which might possibly be conducted internally. This can be because:

- Government (or a line agency may) lack sufficient projects, so the level of retained skills is inadequate.
- There is a greater ability to access international and inter-jurisdictional experience.
- The ability to understand and negotiate meaningfully with the private sector is increased (not an entirely logical position as many of the consultants used work exclusively for government).

- There is a perceived positive impact on line agency accountability by involving highly visible private sector advisors.

There appears to be a sufficient number of large capital projects in Victoria to support a centralised skill base that would retain the core analytical skills and potentially project management skill, and to some extent the process and reporting skills, and make them available to the line agencies responsible for execution. Core analytical skills might involve PSC derivation, evaluation and value-for-money quantification and the project funding and financial strategy. Given it is understood that DTF is transitioning into more of an oversight and approval role, this would suggest that another entity separate from this function should be utilised.

In areas of costing, reference design development, architecture, environmental studies, detailed technical / engineering, detailed financial advisory, planning and legal, there is a stronger argument to outsource to the private sector. However it is important that the private sector input is managed and controlled and not the other way around (refer to findings on TOR a in section 2) and that this management function itself is overviewed within government. This can fail and there have been occasions when the line agency has been overly dependent on the private sector with few internal resources or limited internal capability. For example, in the legal area some jurisdictions maintain strong involvement from the Crown Solicitor's office in the project legal team for this reason. Realistic budgets should be set for each of these tasks based on experience from previous projects. Cheapest price may not deliver outcomes required at this critical inception stage. Scope, deliverables and quality criteria are important.

The skill available to the project manager in terms of experience in PPPs as an example, is also critical to managing consultant inputs as discussed above. Ultimately when it comes to negotiating with the private sector, negotiations need to be led by an informed but commercially interested party ie a counter-party to the eventual executed documents.

4.7 Findings

One of the issues with line agency process to date has been the level of discretion the agencies have exercised in employing components of process and central policy that are available. There is a need for a degree of independence of the project procurement process from the day-to-day line business of the agency – a very clear and consistent message. This seems to be best delivered by a combination of internal government-sourced, but independent, overview and approval, and by providing skilled experience and access to precedent via individuals at the project level focussed on the project delivery but answerable and overviewed by government with the broader government agenda at heart. The HV/HR framework will do much to remedy this requirement by ensuring that Gateway and business case processes are carried out capably and are subjected to comprehensive review by DTF. Any tendency for 'agenda' to take precedence over cost benefit analysis, appropriate detail in appraisal and true estimation of Value for Money we believe needs to be dis-incentivised.

Recommended best practice is:

- i. Line agencies either project manage, or for very large projects, an independent and independently accountable entity is formed within government to manage and the line agency carries out a 'checks and balances' role.

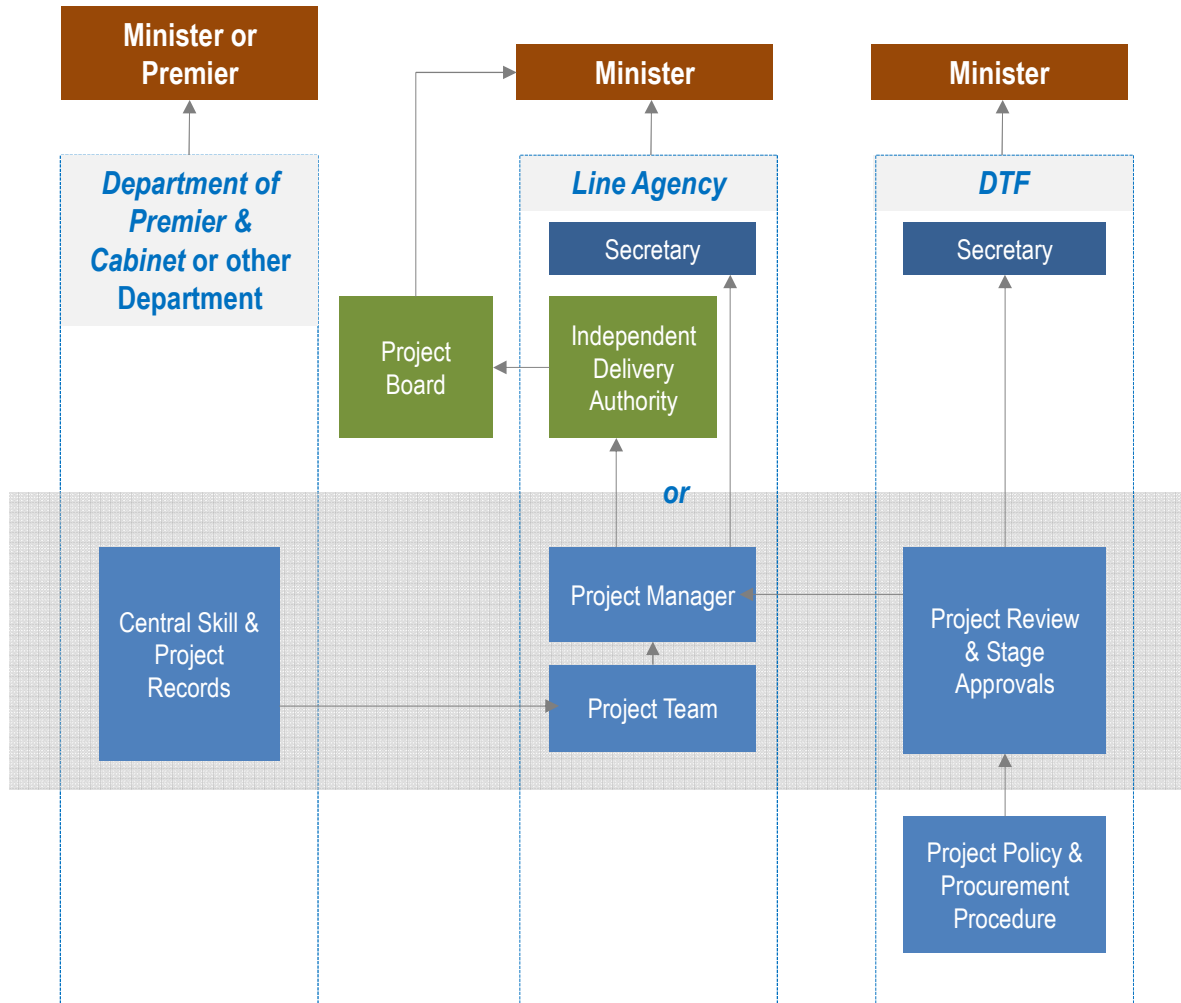
- ii. In terms of overview, review, and 'checks and balances' (assurance), this is best placed within DTF as the investor. This is largely where the role lies now, although there are potential benefits from increasing the powers of DTF in this regard to make assurance processes more effective.
- iii. Detailed granular project management and even more so certain technical execution skills are best held centrally, but not necessarily within DTF, or if so, with a clear separation as in the British Columbia model to avoid a conflict with the assurance role (perceived or real). The use of centralised project management skill should only be where the line agency is not capable itself, and the skills should be seconded into the agency to become part of an agency reporting and policy environment.

Some additional requirements that are advisable are:

- Apply a more rigorous specification of the components of, and data inputs into, a business case, especially in regard to a PPP which involves external finance. Even where a PPP is not being considered, some guidelines on the financial components of assessment of alternative procurement and impacts on balance sheet and budget need to be more prescriptive given the degree of variation that appears between business cases that are currently produced. We have witnessed variability in business cases and this appears to be supported by submissions made to PAEC. In particular, the Value for Money and cost benefit analysis should be more standardised and therefore reliable and consistent. This standardisation should be driven by DTF, in our view.
- Independent overview by DTF and the centralising of access to precedent project documentation and materials will contribute to a retained skill base and learning and greater consistency across government.
- To assist the quality of analysis and inputs to decision making, and as part of its review role, the fundamental inputs into the process used and the evaluation (such as the mechanism for PSC calculation and the mechanism for establishing transferred risk) should be discussed and agreed with DTF prior to implementation. This includes the business case stages when the decision to go down a particular procurement path is made.
- The project manager is such an important component of the success of a project that some broader government input into the selection and approval of the nominated manager should be considered based on stated criteria, along the lines discussed above.
- Line agencies should apply equal rigour to the post procurement stage of an asset lifecycle. Review processes should include through-life review of recurrent spending in accordance with asset management guidelines.
- Central policy should clearly take precedence over departmental policy – or more appropriately line agency policy should fit within central policy.
- Depending on the aggregated quantum of state budget that is impacted by projects under the \$100m threshold, it may well be worth considering lowering this threshold.
- Clear and measurable parameters should be placed around what is considered to be High Risk and DTF should have the final say on whether the classification applies to particular projects.
- The most developed procedures for project procurement, evaluation and development are generally those relating to PPP projects. These should be consistently applied across all procurement methods and certain jurisdictions across the world are in the process of considering or doing this.

A view of a concept structural model for procurement of material projects is suggested in Figure 6. It provides for the option of a project board (or equivalent), with external director appointees for major projects. Alternatively, the structure used by Partnerships BC, which effectively separates assurance and technical expertise roles within the treasury agency could be used.

Figure 6: Possible concept organisational structure for PPP procurement



Appendix A

Review of literature on capabilities in government and industry

| Paper | Author/published by | Topics | Type of Research Undertaken |
|---|--|--|--|
| Scaling Up: Building engineering workforce capacity through education and training | Australian National Engineering Taskforce (ANET) | ANET established to address these issues | Industry body report |
| Engineering Skills Capacity in the Road and Rail Industries | Australian National Engineering Taskforce | Importance of workplace learning Impending impact of mass retirements | Industry body report |
| The shortage of engineering and related employment skills | Senate Committees | Chapter 2 discusses the background of engineering training in Australia and details the transition from the government being a provider of engineering skills – also mentions that capability to manage other engineers doesn't exist in the industry either. http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=eet_ctte/engineering/report/c02.htm | Senate Committee Inquiry |
| Submission to Senate Inquiry | Engineers Australia | Mentions role of government in providing opportunities | Submission to Senate Inquiry |
| Submission to Senate Inquiry | Multiple | Submissions http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=eet_ctte/engineering/submissions.htm | Submission to Senate Inquiry |
| Submission to Senate Inquiry | Productivity Commission | | Submission to Senate Inquiry |
| Policy Document Submission to the Draft Productivity Commission Report into Performance Benchmarking of Australian Business Regulation | Civil Contractors Federation | Roles of Local Government – including impact of insufficient skill levels in local government on project outcomes | Submission to the Productivity Commission Report |
| University of Georgia | Galloping Elephants | Sample of “academic” type approach to public service, arguing that public sector is not as bad as is presented in the media etc | Academic paper |

| Paper | Author/published by | Topics | Type of Research Undertaken |
|--|--------------------------------------|--|------------------------------|
| Realising an innovation economy | ANET | Notes importance of Government at least having the capability to be an informed purchaser of engineering skills | Industry body report |
| State of the Service Report | QLD Public Service Commission | Case study: “Growing their own’ road designers The Department of Transport and Main Roads (DTMR) has responded to the challenges of an ageing workforce, staff career changes and industry demand by developing an innovative program to ‘grow their own’ road designers.” | Government body report |
| None | NSW Public Service Commission | Nothing useful found – various information about opportunities/policies etc but little analysis | Government body report |
| Various | Australian Public Service Commission | Various articles about need for ICT capability development | Government body report |
| Submission to inquiry | Ausgrid | Notes that cadetship program has been re-established | Submission to Senate Inquiry |
| State of the Sector 2011 | Public Sector Commission WA | Doesn’t appear to address engineering skills | Government body report |
| Toolkit: A guide for hiring and managing advisors for private participation in infrastructure | PPIAF | Emphasises that strong government team are still essential for effective PPP | Government body report |