

ACT AUDITOR-GENERAL'S REPORT

**INITIATION OF THE LIGHT RAIL PROJECT**

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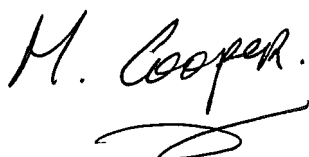
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The Speaker  
ACT Legislative Assembly  
Civic Square, London Circuit  
CANBERRA ACT 2601

Dear Madam Speaker

I am pleased to forward to you a Performance Audit Report titled 'Initiation of the Light Rail Project' for tabling in the Legislative Assembly pursuant to Subsection 17(5) of the *Auditor-General Act 1996*.

Yours sincerely



Dr Maxine Cooper  
Auditor-General  
16 June 2016



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# SUMMARY

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In 2012 the ACT Government made a policy decision to implement a light rail between Gungahlin and Civic. Between 2012 and late 2014, the Capital Metro Agency undertook work to plan for the delivery of the Capital Metro light rail, including:

- designing the light rail, i.e. determining its design features and how the light rail should operate;
- estimating the costs associated with the light rail and the value of the benefits expected to be derived from the light rail; and
- identifying the most appropriate way to proceed with the delivery of the light rail, including whether it should be delivered through a public private partnership.

This audit considers the activities of the Capital Metro Agency in initiating the Capital Metro Light Rail Project, following the ACT Government's 2012 policy decision, including project management, governance and administrative arrangements associated with the Capital Metro Light Rail Project and activities to design the light rail, estimate the costs and benefits associated with the light rail and identify the most appropriate way to proceed with the delivery of the light rail.

## Overall conclusion

The Capital Metro Light Rail Project's governance, administrative and project management framework is sound and generally accords with better practice. Although improvements can be made, it positions the Capital Metro Agency to be able to meet the challenges of implementing light rail in the ACT. The integrity of the framework will need to be retained under revised 1 July 2016 Administrative Arrangements, whereby functions of the Capital Metro Agency and Territory and Municipal Services Directorate are merged.

Benefits management needs to be given priority and a whole-of-government Benefits Realisation Plan, and associated documentation, developed and implemented to guide the management and realisation of the project's benefits. This is important as considering only the project's transport benefits the benefit-cost ratio is 0.49, with an estimated 49.3 cents in transport benefits gained for every \$1 spent<sup>1</sup>; and considering transport benefits and wider economic benefits (including land use benefits), the benefit-cost ratio is 1.20, with an estimated \$1.20 in benefits for every \$1 spent. However, the benefit-cost ratio of 1.20 needs to be used with caution as there is a lack of an agreed methodology and robust data in Australia for calculating wider economic benefits (including land use benefits). In the 1.20 benefit-cost ratio approximately 60 percent of the project's benefits are not transport-related. This is large compared with other transport infrastructure projects for which information was publicly available.

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<sup>1</sup> Derived by \$406.0 million in transport-related benefits divided by \$823.0 million in estimated total project costs (as per Table 29 in the Capital Metro *Full Business Case*).

Although the ACT Government publicly released the *Full Business Case*, even though there was no requirement to do so, providing a discussion and explanation of the limitations of including wider economic benefits (including land use benefits) in the cost-benefit analysis would have provided more comprehensive information. Infrastructure Australia's approach is that wider economic benefits can add 'texture' for certain initiatives but need to be considered separately when considering a project.

Realising the project's benefits will involve a wide range of activities related to 'land development decisions undertaken by ACT Government; ticketing and fare setting; bus and park & ride integration; parking charges; value capture activities; signalling priorities; the location of ACT Government staff in the corridor; and other undertakings to promote economic activity in the ACT'. Accordingly, a Benefits Realisation Plan that captures such activities will require a concerted and sustained whole-of-government approach to be effectively implemented.

While actions may have commenced to realise benefits associated with the Capital Metro Light Rail Project, without a Benefits Realisation Plan there is a lack of transparency and accountability as to what needs to be done, when and by whom. The implementation of the Benefits Realisation Plan needs to be monitored (with benefits and costs clearly articulated and measured) and at key stages evaluated.

The estimated value of the project's benefits changed between various versions of the *Full Business Case*, including those considered by decision makers and that presented to the ACT community. While changes over time should be expected, the changes that occurred were made in a relatively short period of time, indicating that assumptions on which the benefits were being calculated were changing rather than circumstances associated with the project.

In order to achieve the benefit-cost ratio figures presented for the Capital Metro Light Rail Project, in addition to continuously monitoring and evaluating the expected benefits through a Benefits Realisation Plan, it will be important to ensure that project costs are effectively controlled. The ACT Budget will need to accommodate the expected cost of the Capital Metro Light Rail Project of approximately \$939 million (present value, January 2016) or \$1.78 billion (nominal value) over 20 years.<sup>2 3</sup> This does not include ACT Government agency costs for managing the implementation of the project. Revenue from fares will partially offset the costs of the Capital Metro Light Rail Project. The *Full Business Case* identified a total of \$81 million in revenue from fares (present value, July 2014) over 20 years.

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<sup>2</sup> The 2014 cost estimates are the focus in this audit as they were relevant at the time of audit field work and to the audit objective. However, in May 2016, following the signing of a contract with the successful consortium and financial close on the project's procurement phase, the Audit Office obtained updated information from the Capital Metro Agency with respect to expected project costs as at January 2016. This is presented for completeness.

<sup>3</sup> The nominal cost estimate of the project is not discounted, i.e. the time value of money is not reflected. The present value estimate represents the discounted value of the nominal cost estimate of the project and is, in part, dependent on the timing of expenditure and the discount rate applied. The Capital Metro Agency has used a discount rate of 7.52 percent per year to calculate the present value estimate.



## Chapter conclusions

### GOVERNANCE AND PROJECT MANAGEMENT

The governance, administrative and project management framework for the Capital Metro Light Rail Project is sound and generally accord with better practice. While there are some opportunities for improvement, specifically with respect to resource management and project controls procedures, the Capital Metro Agency has established a sound framework for managing the project. The Capital Metro Agency has managed its budget so that spending has been within allocated budgets, which have been publicly reported. As of 1 July 2016 this framework may be affected by functions of the Capital Metro Agency and the Territory and Municipal Services Directorate being merged.

External reviews of the Capital Metro Light Rail Project, which have been identified in key planning documents as forming a part of the governance and oversight of the project, have not been undertaken as planned, or as rigorously as needed for a project of this size and complexity. One peer review, which was conducted in relation to the *Full Business Case*, was very brief and did not consider key attributes of the project including transport modelling, quantified economic analysis, the benefit-cost ratio, financial analysis or assumptions used in the Public-Private Partnership assessment, or capital construction costs. In contrast, a second peer review, which was well documented, was conducted with a specific focus by subject matter experts over a three day period at the procurement stage.

### ADVICE TO DECISION-MAKERS

The Capital Metro Agency has relied heavily on advice and inputs from consultants on a range of aspects associated with the planning and scoping of the project, including the technical and design aspects of the Capital Metro light rail, the estimated costs and benefits of the light rail and the recommended mechanism for the delivery of the light rail. Advice and inputs from consultants during the planning and scoping of the project led to the preparation and presentation of the *Full Business Case* to decision-makers in August and September 2014. The Capital Metro Agency's reliance on external consultants to supplement its own capability and obtain external expertise was necessary and facilitated the planning and scoping of the project.

Between mid August 2014 and mid September 2014, advice presented to decision-makers on the expected value of the benefits to be delivered by the project varied significantly. Furthermore, the value of benefits subsequently presented in the *Full Business Case* provided to the community has also varied from those presented to the decision-makers. Between the August 2014 version of the *Full Business Case* presented to the Capital Metro Project Board and the October 2014 version of the *Full Business Case* released to the community, a decrease of 26.0 percent in the expected transport benefits of the project was offset by an increase of 17.2 percent in land use benefits and 16.9 percent in wider economic benefits. While estimated benefits (and costs) should be refined as a project progresses, the changes for the Capital Metro Light Rail Project were significant and occurred over a short period. This indicates that assumptions underpinning

the calculation of the benefits associated with the project were still being developed. There was insufficient documentation maintained to explain the differences in the values and the rationale for the changes.

Given the size and scale of the Capital Metro Light Rail Project, and that it represents a significant financial cost to the Territory, it is important that there be transparency over the cost of the project into the future. It will be important that the actual costs of the delivery and implementation of the Capital Metro light rail be transparently and publicly reported in the Transport Canberra and City Services Directorate financial statements. The Capital Metro Agency has estimated the cost to be approximately \$939 million (present value, January 2016 using a 7.52 percent per year discount rate, or \$1.78 billion nominal over 20 years). However, this figure does not include estimated agency costs associated with the construction and operation of the light rail, i.e. agency costs for managing the successful consortium over a twenty-year period.

The cost of the construction and operation of the light rail will be offset by fare revenue, which has been estimated as \$81 million (present value, July 2014) over the twenty years of the concession period. Under an Availability Public-Private Partnership (PPP) the ACT Government will retain patronage and revenue risk, i.e. the risk of low passenger use and associated low revenues, but will have the opportunity to set fares.

### REALISING THE BENEFITS OF LIGHT RAIL

Despite its stated intention to do so, the Capital Metro Agency has not yet developed and implemented key documents and processes associated with benefits management, a project management discipline which seeks to provide a framework for the management of a project and decisions to be made for the project. Without a structured, disciplined benefits management approach throughout the project lifecycle there is a risk that the project's benefits will not be optimised. A Benefits Realisation Plan, and associated documentation, is needed as a priority.

The ACT Government has advised that the project is expected to deliver \$984 million (present value, July 2014) in benefits, against an expected cost of \$823 million (present value, July 2014). Transport-related benefits associated with the project are estimated to be \$406 million (present value, July 2014), while wider economic benefits (including land use benefits) associated with the project are estimated to be \$579 million (present value, July 2014). The wider economic benefits (including land use benefits) of the project are very significant and form the majority of expected benefits associated with the project: 58.8 percent of the total expected benefits. This is a significantly higher proportion than other transport-related projects (for which publicly available information is available).

The calculation of wider economic benefits (including land use benefits) needs to be treated with caution. Methodologies for the calculation of wider economic benefits (including land use benefits) are continuously evolving, but have not yet reached a stage where they are widely and uniformly accepted and, in Australia, their calculation is hampered by the lack of necessary base data. Australian better practice guidance from Infrastructure Australia and National Guidelines

for Transport System Management in Australia Steering Committee has noted that the 'calculation of these impacts is also still in its infancy, both in Australia and internationally' and that there are 'serious measurement difficulties in Australia due to limited data availability'.

There are two benefit-cost ratio figures presented in the Full Business Case; 1.0 (transport and land use benefits) and 1.2 (transport, land use and wider economic benefits). The benefit-cost ratio of 1.2 takes into account traditional transport-related benefits of \$406 million (present value, July 2014) and land use and wider economic benefits of \$381 million (present value, July 2014) and \$198 million (present value, July 2014) respectively. In the Full Business Case and associated documents emphasis is given to the benefit-cost ratio figure of 1.2, without sufficient discussion and explanation of the inherent risks and limitations associated with this figure and its inclusion of wider economic impacts (including land used benefits).

The achievement of a significant proportion of the benefits identified for the Capital Metro Light Rail Project is predicated on two key assumptions: the implementation of the light rail will be the catalyst for economic activity (including land use benefits); and action will be taken by 'current and future Governments to ensure stated benefits are realised and maximised'. In relation to the former, the economic analysis that underpinned the *Full Business Case* assumed a 'do nothing' base case scenario, including assumptions that 'only already approved and planned changes to road and bus networks occur' and that 'land development activity is concentrated on sites currently controlled or owned by the ACT Government, with no effort to acquire other sites in order to aggregate into precincts or zones'. These actions may have occurred, and benefits may have been achieved, irrespective of the Capital Metro Light Rail Project. Regardless of views on this matter, it is imperative that there be a concerted whole-of-government approach to the management of benefits associated with the Capital Metro Light Rail Project, to ensure that the benefits are realised. A range of actions need to be implemented relating to 'land development decisions undertaken by ACT Government; ticketing and fare setting; bus and park & ride integration; parking charges; value capture activities; signalling priorities; the location of ACT Government staff in the corridor; and other undertakings to promote economic activity in the ACT'.

## Key findings

### GOVERNANCE AND PROJECT MANAGEMENT

#### Paragraph

The Capital Metro Light Rail Project's <i>Governance Framework</i> is comprehensive. The high level governance and management arrangements, including its governance structure and decision-making roles and responsibilities, accord with better practice. The Under Treasurer is identified as the Project Owner, and can provide the requisite financial and economic direction on behalf of the ACT Government.	2.9
The Capital Metro Project Board's responsibilities are well-defined and appropriate. The inclusion of the Directors-General of relevant ACT Government agencies as members of the Board means that issues can readily be considered in the broader whole-of-government context, and decisions made efficiently because the need for members to refer back to their agencies for authority is minimised.	2.18
The Capital Metro Project Board is an important governance mechanism for the Capital Metro Light Rail Project, with a significant workload. Its Charter is comprehensive with Board accountabilities, roles and responsibilities clearly defined. 'Commercial reports' provided at each month's Board meeting are comprehensive and informative.	2.25
The Capital Metro Agency's Audit Committee is governed by a comprehensive Audit Committee Charter. The Audit Committee has met five times since its establishment, and has completed two internal audits, in relation to the agency's financial management and procurement. The Capital Metro Agency intended to undertake a greater number of audits in 2016, with four audits scheduled to be conducted in 2016 covering information management, human resource management, fraud and integrity and risk management. It will be important for the intended internal audit activity for Capital Metro Agency to continue when the functions of the Capital Metro Agency are combined with some of those of the Territory and Municipal Services Directorate to form the Transport Canberra and City Services Directorate, as of 1 July 2016.	2.36
The Capital Metro <i>Project Plan</i> is comprehensive. Workstream descriptions have been carefully compiled and are at an appropriate level of detail. Interdependencies between workstreams have been identified and noted.	2.45
In order to supplement its comparatively small workforce, the Capital Metro Agency is heavily reliant on consultants. Many key documents associated with the project, e.g. the Capital Metro Light Rail Project's <i>Governance Framework</i> and the <i>Full Business Case</i> , were authored by consultants.	2.48

The Capital Metro Agency has a relatively small number of personnel (approximately 25). In order to progress the Capital Metro Light Rail Project, the Capital Metro Agency has supplemented its comparatively small workforce with consultants. A better practice approach to manage workforce and resource risk for a project the size and scope of the Capital Metro Light Rail Project would be to develop a Resource Management Strategy and associated Resource Management Plan; this has not happened. In July 2015 the Capital Metro Agency did, however, engage EY, its commercial advisor, to develop a resourcing transition plan to assist in managing the transition of the project to the delivery phase.	2.57
The Capital Metro Agency's stakeholder engagement policies and practices are well-documented. Relevant strategies and plans accord with better practice, and suitable staff are actively engaged in appropriate stakeholder engagement and communications activities.	2.63
The Capital Metro Agency's risk management policies and procedures are comprehensive and relevant to its activities for the Capital Metro Light Rail Project. The Risk and Change Management Committee is an effective mechanism for the oversight of the management of risks associated with the project.	2.73
There are appropriate change management procedures in place with respect to the Capital Metro Light Rail Project. The <i>Change Management Procedure</i> effectively sets out the protocols to be followed for changes to the project, as well as roles and responsibilities for managing and monitoring changes to the project.	2.80
The Capital Metro Agency has not had a documented Project Controls Procedure, as provided for by the <i>Project Plan</i> . This increases the risk that the project's objectives might not be fully achieved, or not achieved as efficiently as they could be.	2.86
The Capital Metro Agency's issues management policies and practices accord with better practice. Suitable arrangements are in place to ensure that issues are identified, captured, managed and closed, and receive adequate Executive attention.	2.94
The Capital Metro Agency's overarching financial management arrangements are in accordance with whole-of-government requirements. The Agency's Director-General Financial Instructions are comprehensive, have been updated, and are readily available to all staff. Financial procedures to be followed have been adequately documented. Financial reporting is in accordance with whole-of-government requirements, and arrangements are in place for the Executive to have oversight of financial matters.	2.111

An analysis of the Capital Metro Agency's operating results against budget for 2013-14 and 2014-15, and the budget for 2015-16 shows: 2.113

- for the three financial years 2013-14 to 2015-16, the total budgeted *Government Payment for Outputs* for the Capital Metro Agency is \$34.4 million. That is, the cost of operating the Capital Metro Agency between 2013-14 and 2015-16 is expected be \$34.4 million; and
- the significant majority of expenditure relates to supplies and services. Approximately 68.7 percent of all budget expenditure for the three years to 2015-16 relates to supplies and services, compared to 31.3 percent for employee and related expenses.

As the Capital Metro Agency is a comparatively small agency with respect to number of staff it is heavily reliant on contractors for the delivery of the Capital Metro Light Rail Project. This is reflected in the large proportion, \$23.7 million (68.7 percent of total expenditure), of the Agency's budget that is attributable to supplies and services expenditure (which includes contractor expenditure). 2.114

The total budgeted amount of Appropriation to the Capital Metro Agency for financial years 2013-14 to 2015-16 is \$55.6 million, with \$34.4 million *Government Payments for Outputs* and \$21.2 million being for *Capital Injections*. 2.120

In 2014-15 almost all of the budgeted appropriation for the Capital Metro Agency was for *Government Payment for Outputs* to deliver the services and objectives outlined in the Agency's budget papers. In 2015-16 a significant proportion of appropriation is identified as *Capital Injections* to be used for the development of the light rail infrastructure. This change is due to the progress of the project being at a stage where in 2015-16 approximately two thirds of the costs associated with the Agency can be directly attributed to the development of the light rail infrastructure.<sup>4</sup> 2.121

An analysis of the Capital Metro Agency's *Supplies and Services* expenditure shows that: 2.123

- there has been a significant increase between 2013-14 and 2014-15 for the majority of the *Supplies and Services* expenditure items, with the total *Supplies and Services* expenditure increasing by 206 percent; and
- the *Contractors and Consultants* expenditure contributes 78 percent of the total *Supplies and Services* expenditure in 2014-15 and 82 percent for 2013-14.

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<sup>4</sup> Expenditure that is associated with the purchase or development of an asset can be recognised on the agency's balance sheet once two conditions are met. If it is determined that it is probable that future economic benefits associated with asset will flow to the entity and the cost of the asset can be measured reliably, the expenditure can be capitalised and an asset recorded on the agency's balance sheet.

Following the *Contractors and Consultants* expenditure, *Legal Costs* are the second largest *Supplies and Services* expense for the Capital Metro Agency. In 2014-15 *Legal Costs* amounted to approximately 13.0 percent of the Capital Metro Agency's *Supplies and Services* expenditure. In 2013-14 *Legal Costs* represented 5.1 percent.

2.124

Gateway reviews initially planned for the Capital Metro Light Rail Project, which were designed to 'provide for rigorous exploration of the project's readiness to market' did not occur as planned. Three gateway reviews were to be conducted prior to the release of procurement documentation to the market. Instead, two 'peer reviews' were conducted over this period. The first peer review was not conducted in accordance with better practice gateway review practices, had no identified objective, was very brief and did not consider key attributes of the project including transport modelling, quantified economic analysis, the benefit-cost ratio, financial analysis or assumptions used in the Public-Private Partnership assessment, or capital construction costs. The second peer review was conducted with a specific focus by subject matter experts over three days and was well documented. The second review more closely resembles a gateway review than the first, and should be regarded as the minimal level of external scrutiny a major project should receive at a critical control gate.

2.133

## ADVICE TO DECISION-MAKERS

Paragraph

Different versions of the *Full Business Case* have been prepared. These include:

3.15

- *CMA Full Business Case – Board Version* (presented to a Board meeting on 15 August 2014);
- a version presented to government on 10 September 2014; and
- a version subsequently made public on 30 October 2014.

There is no policy or administrative requirement for the ACT Government to make the *Full Business Case* publicly available. In other jurisdictions some business cases for other major transport infrastructure projects have been made publicly available and some business case have not. The public release of the *Full Business Case* assists with providing information to the community and stakeholders on the details of the project.

3.16

Calculations associated with the benefits of the Capital Metro Light Rail Project, which underpinned the cost-benefit analysis undertaken for the project and advice to decision-makers, were continuing to be worked on during the period between August and October 2014. There were significant changes to specific components of the benefits associated with the project within a short time, indicating that assumptions underpinning the model were changed rather than circumstances affecting the project. With the exception of the project contingency, which was changed at the request of the Capital Metro Project Board, the total estimated costs associated with the Capital Metro Light Rail Project did not change significantly between the different versions of the *Full Business Case*.

3.24



Documentation associated with the Capital Metro Project Board's endorsement of the *Full Business Case* is poor. The meeting through which the Capital Metro Project Board purported to endorse the *Full Business Case* was attended by a minority of its members (although some of these members were represented by their identified proxies). The meeting did not have a quorum, as the Project Owner (or their proxy) or the Senior Supplier (or their proxy) did not attend. While the Project Owner has subsequently advised (January 2016) that they agreed at the time to the *Full Business Case* being presented to ACT Government decision-makers for approval, this was not documented at the time.

3.34

There were four sign-offs of the *Full Business Case* from various business units within the Chief Minister, Treasury and Economic Development Directorate in accordance with the Capital Framework. These sign-offs covered aspects of the financial and economic analysis that underpinned the Full Business Case, the selection of the delivery method for the project and the procurement method for the project. Treasury had a role with respect to reviewing the *Full Business Case*, as a form of quality assurance, including testing and questioning the calculations and assumptions underpinning the analysis. It did this through a desktop review of the *Full Business Case*, discussions with Capital Metro Agency staff, other ACT Government agency staff and the Capital Metro Agency's commercial advisers to assess the reliability and veracity of the financial model. This is consistent with the *ACT Government's Single Assessment Framework Business Case (Tier 3)*, which requires Treasury sign-off 'that the financial analysis has been prepared by an appropriately skilled advisor (Procurement and Capital Works Panel) and that there are no unacceptable assumptions in the analysis (only applicable for [public private partnership / design construct maintain operate] delivery models)'. This does not, however, amount to rigorous analysis or validation of the estimated benefits or costs, or of the Capital Metro Agency's advice on delivery options.

3.41

Reviews were conducted of the Full Business Case between August 2014 and October 2014. A peer review was conducted in August 2014, but this did not include consideration or examination of the economic analysis or the benefit-cost ratio as 'transport modelling was still being finalised'. Two external reviews were also conducted, which did not include 'comment on assumptions in or other inputs to the [*Full Business Case*], nor on detailed analysis, some of which is to be found in supporting technical documents' or 'an audit of the detailed data or values used'.

3.48

The original schedule for the development of the design of the Capital Metro Light Rail Project for incorporation in the *Full Business Case* for presentation to stakeholders for decision-making purposes saw the design stage commencing in mid-2013 and delivering a Definition Design and Refined Business Case (i.e. a *Full Business Case*) by November 2013. Following slippage in the project a revised schedule was developed, which had a similar five-month timeframe for the development of the design.

3.56

Some technical advice and inputs were not available at the time that the Definition Design report was completed in July 2014, to inform the *Full Business Case* for presentation to stakeholders for decision on the Capital Metro Light Rail Project. These included contamination studies, utility surveys, flooding studies and

3.67



geotechnical studies. As these studies were not complete at the time of the preparation of the Definition Design report in July 2014 and the presentation of the *Full Business Case* to decision-makers in September 2014, the technical design of the Capital Metro light rail was subject to further refinement as better information was developed.

The Capital Metro Agency's contract with Arup (the technical advisor for the Capital Metro Light Rail Project) identified a robust process to be followed for the review and acceptance of technical advice provided as part of the development of the Definition Design. This process was modified in practice, and significant reliance was placed on the existence of a Design Comments Register that was prepared, and responded to, for each of the key design deliverables. While this facilitated Capital Metro Agency and other stakeholders' review of the technical advice, it was not as rigorous or robust as originally planned. 3.75

Under an Availability PPP, direct costs of constructing and operating the Capital Metro light rail will be borne by the private sector operator, in return for an ongoing 'availability payment'. 'Availability' refers to the operation of the light rail and its availability for use by patrons. Availability payments are to commence once the Capital Metro light rail is available for use by patrons. 3.84

The *Full Business Case* identifies a nominal capital cost estimate (i.e. not discounted) for the Capital Metro Light Rail Project of \$783 million (July 2014). The capital cost estimate is presented as a P75 figure. 'P75' means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent. By way of contrast the P50 nominal capital cost estimate of the project is \$759 million (July 2014 estimate) (where the probability of the estimated cost being exceeded is estimated to be less than 50 percent) and the P90 nominal capital cost estimate of the project is \$806 million (July 2014 estimate) (where the probability of the estimated cost being exceeded is estimated to be less than 10 percent). 3.94

Turner and Townsend prepared an initial capital cost estimate based on the Definition Design document prepared by Arup, and provided to the Capital Metro Agency on 21 July 2014. This initial capital cost estimate put the total capital cost of the Capital Metro Light Rail Project at \$1,011,439,147. 3.99

In August 2014 Turner and Townsend prepared a revised *Definition Design - Cost Plan Report*, which identified a capital cost estimate for the Capital Metro Light Rail Project (without contingency) of \$609,517,600. Key changes to the initial cost estimate prepared by Turner and Townsend (29 July 2014) and the revised *Definition Design - Cost Plan Report* are: 3.103

- the removal of owner's costs of \$101,987,000 (and a contingency for owner's costs of \$40,795,000);
- the removal of a contingency for the main works of \$226,637,000;
- reduction of escalation allowance by \$10,789,104; and
- savings of \$21,713,443 derived from design revisions derived from a Value Engineering Workshop conducted on 31 July 2014.

With respect to the calculation of the contingency amount, the Audit Office was provided with an undated *Construction Risks Estimates Matrix*, which was produced by EY, which identifies various risks to the Capital Metro Light Rail Project, assesses their impact, and quantifies them in dollar terms. The *Construction Risks Estimates Matrix* provides for a total value of \$146.3 million (in real terms). However, there is no documentation of the process by which the quantification was derived. The Capital Metro Agency did not maintain sufficient documentation with respect to the Monte Carlo statistical simulation, used to calculate the expected contingency for the capital cost estimate for the project. This was specifically lacking with respect to the input assumptions (important because different assumptions will produce different results), the algorithm used (important because different algorithms will produce different results) or the number of iterations, or repetitions, performed (important because more iterations will produce more accurate results).

3.107

The Capital Metro Agency does not intend to replace the rolling stock until 2049, i.e. the initial trams are expected to continue operating for 30 years. There are some risks with this approach, as there is evidence that trams in other jurisdictions have been replaced anywhere between 15 to 22 years. There is also evidence that trams in other jurisdictions, e.g. Melbourne, have operated for close to forty years. The Capital Metro Agency has sought to manage this risk through the procurement process, whereby potential bidders 'provided fitness for purpose / residual life warranties with respect to their rolling stock of (at least) 30 years'.

3.116

The *Full Business Case* identifies a nominal operating cost estimate (i.e. not discounted) for the Capital Metro Light Rail Project of \$1,289 million (July 2014 estimate). The operating cost estimate is presented as a P75 figure. 'P75' means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent.

3.119

The Capital Metro Agency's analysis of the Public Sector Comparator and PPP Proxy shows:

3.133

- the total estimated cost of delivery of the project through a public-private partnership was \$875 million (present value, July 2014). This includes the present value of estimated availability payments to be made to the successful consortium over the concession period and a contingency amount for the project for the Territory;
- the total estimated cost of delivery of the project through a public-private partnership was estimated to be cheaper than the cost of delivering the project by the public sector, which was estimated to be \$970 million (present value, July 2014);
- the *Full Business Case* estimated that the expected cost of availability payments to be made to the successful consortium over the 20 year concession period would be \$804 million (present value, July 2014); and
- the Territory-retained risk for the Capital Metro Light Rail Project was estimated to be \$71 million (present value, July 2014). (This would be

the same irrespective of whether the project was delivered by the public sector or through a public-private partnership). This represents a contingency amount for the project for the Territory.

The *Full Business Case* recommended an Availability PPP for the delivery of the Capital Metro Light Rail Project, which would involve a single vertically integrated package comprising rail infrastructure, rolling stock, maintenance, and operations. In doing so, the *Full Business Case* notes that 'the project is of such size and complexity that any attempt by the ACT Government to undertake the project outside a PPP model would be fraught with acute cost and timing risks'.

3.134

The Capital Metro Agency has advised that the discount rate applied to the Public Sector Comparator is 5.52 percent and the discount rate applied to the PPP Proxy is 7.52 percent as per the calculation methodology in Volume 5 of the *Australian Government National PPP Guidelines*. These were not disclosed in the *Full Business Case*.

3.137

The total nominal capital and operating cost estimate for the Capital Metro Light Rail Project, i.e. not discounted to present value, was \$2,072 million (July 2014 estimate). This figure does not include agency costs, i.e. agency costs in managing the operator during both the construction and operational phases.

3.139

The estimated cost of the project, as represented by the PPP Proxy, was \$875 million (present value, July 2014). This included \$804 million in availability payments (present value, July 2014) and \$71 million in Territory-retained risk (present value, July 2014), representing a contingency amount for the project for the Territory. This figure does not include the Capital Metro Agency (or ACT Government) costs associated with the delivery of the project.

3.147

Under an Availability PPP the ACT Government will retain patronage and revenue risk, i.e. the risk of low passenger use and associated low revenues, but will have the opportunity to set fares. The estimated cost of the Capital Metro light rail will be partially offset by income from fares. The *Full Business Case* has not identified a nominal value of estimated 'indicative potential revenues' over 20 years, but has identified a total of \$81 million in present value terms (July 2014).

3.152

The Capital Metro Agency advised that the expected nominal cost of the Capital Metro Light Rail Project, following the signing of contracts was approximately \$1,779,041,000. This figure comprises:

3.155

- \$375,000,000 Territory capital contribution;
- \$1,274,352,000 in availability payments to the successful consortium; and
- \$129,689,000 Territory-retained risk amount.

The Capital Metro Agency further advised that the present value of the expected cost of the Capital Metro Light Rail Project is \$939 million (January 2016, discounted at 7.52 percent). This figure comprises:

3.157

- \$305,427,000 Territory capital contribution;
- \$519,672,000 in availability payments to the successful consortium; and
- \$113,919,000 Territory-retained risk amount.

The \$939 million (present value) figure is calculated as at January 2016. It is not directly comparable with the \$875 million (present value) figure that was included in the *Full Business Case*, as the latter figure was calculated as at July 2014, approximately 18 months previously.

3.158

The updated cost estimate for the Capital Metro Light Rail Project, following the signing of contracts, of \$939 million (present value, January 2016) is less than the estimated cost of the project in the *Full Business Case* (PPP Proxy), which is estimated to be \$975 million in January 2016 (discounted at 7.52 percent). The updated cost estimate for the Capital Metro Light Rail Project of \$939 million (present value, January 2016) is also less than the Public Sector Comparator identified in the *Full Business Case*, which is estimated to be \$1,051 million in January 2016 (discounted at 5.52 percent).

3.161

Following the signing of contracts, the Territory's retained risk amount for the project has increased from \$71 million (present value, July 2014) to \$114 million (present value, January 2016). The Territory's retained risk amount represents a contingency amount for the project for the Territory. The Capital Metro Agency advised that the increased amount is due to a reassessment of the value and allocation of risks through the contract between the successful consortium partner and the Territory, including the allocation of certain contamination and other risks, as well as measuring retained risk from a common January 2016 measurement date.

3.162

## REALISING THE BENEFITS OF LIGHT RAIL

Paragraph

The *Full Business Case* identified 18 benefits that are intended to be achieved from the Capital Metro Light Rail Project. Benefits are identified with respect to four identified 'problems': 'the need to build future alternative transport capacity', 'a need for sustainable urban re-development and increased urban densification', 'economic challenges' and 'sub-optimal gateway to the Capital'. The *Full Business Case* does not separately value these benefits, or (apart from identifying high-level 'Possible Key Performance Indicators' for eight of the benefits) indicate how they will be measured.

4.19

The breadth of expected benefits associated with the Capital Metro Light Rail Project, including benefits relating to urban redevelopment and densification and the ACT economy, demonstrates that the project is expected to have broader non-transport related benefits.

4.23

For the purpose of the cost-benefit analysis for the Capital Metro Light Rail Project, the *Full Business Case* identified a total of \$984 million in project benefits (calculated in July 2014 present value dollar terms), including: 4.26

- \$406 million in transport benefits;
- \$381 million in land use benefits; and
- \$198 million in wider economic benefits.

The land use benefits, specifically the urban densification benefits (\$72 million, present value, July 2014) and infrastructure efficiency savings benefits (\$140 million, present value, July 2014) are predicated on the achievement of agglomeration and productivity gains from the densification of housing and development in the light rail corridor. In this respect they are akin to wider economic benefits. The land value benefits (\$168 million, present value, July 2014) represent the benefits that are expected to be derived by land owners and developers due to expected development throughout the light rail corridor. 4.35

The *Business Case in Brief* states that ‘over 30 years, land use benefits from light rail are estimated to be \$765 million’. This figure represents the nominal value of land use benefits over a thirty year period (i.e. the term of the economic appraisal) which, when discounted, equates to a present value of \$381 million (July 2014). The *Business Case in Brief* does not identify that this figure is the nominal value and has not been discounted. 4.36

Analysis of the Capital Metro Light Rail Project against other transport infrastructure projects for which there is publicly available information shows wider economic benefits (including land use benefits) i.e. those that are non-transport benefits form a significant component of the overall benefits identified for the Capital Metro Light Rail Project (58.8 percent). 4.38

In guidance published in 2013 (and updated in 2016) Infrastructure Australia urged caution with respect to the calculation of land use benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. Infrastructure Australia advised that such benefits may ‘add texture to the decision making process for certain initiatives’ but that it would treat these benefits separately in its consideration of projects. 4.55

In guidance published in 2013 (and updated in 2016) Infrastructure Australia urged caution with respect to the calculation of wider economic benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. Infrastructure Australia advised that such benefits may ‘add texture to the decision making process for certain initiatives’ but that it would treat these benefits separately in its consideration of projects. 4.58

The <i>2015 National Guidelines for Transport System Management in Australia</i> (the NGTSM Guidelines) published by the Commonwealth Department of Infrastructure and Regional Development advise caution with respect to the use of wider economic benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. The guidelines note that ‘there are serious measurement difficulties, with the availability of Australian specific data needed to calculate WEBs being currently sub-optimal’.	4.62
In advice to the Audit Office in relation to the use of wider economic benefits (including land use benefits) in economic appraisal, Dr Geoffrey Clifton from the University of Sydney advised ‘whilst recognised as existing, these wider benefits have traditionally been very difficult to accurately measure and have traditionally not been included in economic impact analysis and they are still not uniformly included. The literature suggests that these benefits need to be treated with some caution, given that the way these are measured is still under development’.	4.67
The <i>Full Business Case</i> identified a benefit-cost ratio for the Capital Metro Light Rail Project of 1.0, based on transport benefits and land use benefits, and a benefit-cost ratio of 1.2, taking into consideration transport benefits, land use benefits and wider economic benefits.	4.69
The <i>Full Business Case</i> identified that ‘as the [benefit-cost ratio] is greater than one, the economic analysis anticipates the project will deliver a net benefit to the ACT community.’ It does not adequately explain the difference in the benefit cost ratio figures of 1.0 (transport benefits and land use benefits) and 1.2 (transport benefits, land use benefits and wider economic benefits).	4.74
It is critical that there be an appropriate understanding, because better practice guidance has highlighted the risks associated with valuing wider economic benefits (including land use benefits). Infrastructure Australia guidance emphasises the importance of traditional cost-benefit analysis, primarily focused on transport-related benefits, as a means to maintain the ‘methodological rigour of the appraisal process’, while noting that transport and land use and wider economic benefits may be considered separately as a means to add texture.	4.75
There is inadequate documentation associated with the assumptions underpinning the calculation of benefits associated with the economic analysis underpinning the Full Business Case. This is apparent with respect to: <ul style="list-style-type: none"> <li>• discussion / justification for values used in the calculation of benefits; and</li> <li>• discussion / justification for the recognition of timing of the benefits.</li> </ul>	4.93
While it would not be expected that the estimates in the <i>Full Business Case</i> presented to the Capital Metro Project Board (15 August 2014) would necessarily be final, the magnitude and type of changes between this version of the <i>Full Business Case</i> and the version presented to ACT Government decision-makers on 10 September 2014 were significant, given the short time between changes. Changes between the 15 August 2014 and 10 September 2014 versions of the <i>Full</i>	4.104

*Business Case* included a 31 percent decrease in estimated transport benefits, indicating that assumptions underpinning the economic analysis were insufficiently developed and were still being developed as decision-makers (including the Capital Metro Project Board and the ACT Government) considered the merits of the *Full Business Case*. There was inadequate documentation maintained with respect to the changes to the calculation of the benefits, including with respect to identifying the reasons for the changes in the calculation of the benefits.

Benefits management is identified as a key feature of the Capital Metro Light Rail Project in the *Capital Metro Project Board Charter* and the *Governance Framework*. The *Governance Framework* states that the Project Owner (Under Treasurer) will 'ensure the project focuses on benefits realisation throughout its life' and the *Capital Metro Project Board Charter* states that the Project Owner will 'ensure the project team focuses on benefits realisation throughout its life'.

4.114

The *Governance Framework* identified the need to prepare a Benefits Realisation Plan, and the first two iterations of the *Project Plan* (Versions 1.0 and 2.0, dated 30 July 2013 and 4 March 2014 respectively) similarly identified a need to prepare a Benefits Management Plan, as a means by which to 'identify the project's benefits and put the long term management processes in place to ensure they are realised', with a Benefits Realisation Plan to be prepared by July 2014. Better practice benefits management, as documented in APMG International's *Managing Benefits* (2012) guide, includes the preparation of a Benefits Management Strategy, a Benefits Realisation Plan and Benefit Profiles. None of these have been produced for the Capital Metro Light Rail Project.

4.115

Better practice benefits management provides that dis-benefits (i.e. negative side-effects and consequences arising from the project) should be identified, managed, tracked and measured in the same way as benefits. This provides transparency of net benefits against costs in the business case, allows dis-benefits to be minimised, and facilitates ongoing review of the economic viability of a project. The *Full Business Case* does not specifically identify the dis-benefits associated with the Capital Metro Light Rail Project.

4.118

The achievement of the Capital Metro Light Rail Project's benefits, including wider economic benefits (including land use benefits), is predicated on a number of key assumptions associated with the project. Two key overarching assumptions are:

- the implementation of the light rail will be the catalyst for economic activity (including land use benefits); and
- action will be taken by 'current and future Governments to ensure stated benefits are realised and maximised'.

4.122



The Capital Metro Light Rail Project's benefits are calculated on a 'do nothing' base case scenario, including assumptions that 'only already approved and planned changes to road and bus networks occur' and that 'land development activity is concentrated on sites currently controlled or owned by the ACT Government, with no effort to acquire other sites in order to aggregate into precincts or zones'. It is noted that these actions may occur irrespective of the Capital Metro Light Rail project.

4.129

In various governance and planning documents for the Capital Metro Light Rail Project, including the *Capital Metro Project Board Charter, Governance Framework* and Versions 1.0 and 2.0 of the *Project Plan* (dated 30 July 2013 and 4 March 2014 respectively), the Capital Metro Agency identified its intention to practise the project management discipline of benefits management throughout the Capital Metro Light Rail Project. However, there are currently no formal plans to guide benefits management.

4.132

The achievement of the expected benefits associated with the Capital Metro Light Rail Project, including the wider economic benefits (including land use benefits) are predicated on a number of assumptions including alignment of ACT Government policies and the rapid densification of the light rail corridor. It is imperative that there be a concerted whole-of-government approach to the management of benefits associated with the Capital Metro Light Rail Project, to ensure that the benefits are achieved. A structured, disciplined benefits management approach throughout the project lifecycle is needed if the project's benefits (\$984 million, present value, July 2014) are to be achieved and optimised. Given this, it would be prudent to implement the practice of benefits management, in accordance with approved supporting plans to guide and integrate needed actions as a high priority.

4.133

The benefits to be realised from the Capital Metro Light Rail Project are significantly dependent on the light rail acting as a catalyst for economic activity (including land use benefits) and actions taken by 'current and future Governments to ensure stated benefits are realised and maximised'. With respect to the latter, current and future ACT Government policy in a range of areas will be important to realise and optimise the benefits from the project. This will require a concerted whole-of-government effort and the development of a Benefits Realisation Plan to guide actions.

4.140



## Recommendations

### RECOMMENDATION 1 PROJECT CONTROLS PROCEDURE

The Capital Metro Agency (the Transport Canberra and City Services Directorate as of 1 July 2016) should develop and implement a Project Controls Procedure to assist in managing project activities in accordance with the *Project Plan* and its objectives.<sup>5</sup>

### RECOMMENDATION 2 EXTERNAL REVIEWS

The Capital Metro Agency (the Transport Canberra and City Services Directorate as of 1 July 2016) should design independent external reviews of the Capital Metro Light Rail Project so that:

- a) objectives are defined;
- b) appropriately qualified subject matter experts conduct the reviews;
- c) sufficient time is allowed for their conduct; and
- d) documentation is thorough.

### RECOMMENDATION 3 PUBLIC REPORTING OF CAPITAL METRO LIGHT RAIL COSTS

The Capital Metro Agency (the Transport Canberra and City Services Directorate as of 1 July 2016) should accurately and transparently report the actual costs of delivering the Capital Metro Light Rail Project. This should include:

- a) public reporting of actual costs compared to published budgets for the Capital Light Rail Project in annual reports of the Transport Canberra and City Services Directorate;
- b) availability payments made to the PPP consortium; and
- c) Capital Metro Agency costs associated with managing the PPP consortium during the construction of the Capital Metro light rail and for the ongoing operation of the Capital Metro light rail.

### RECOMMENDATION 4 BENEFITS MANAGEMENT HIGH PRIORITY

The Chief Minister, Treasury and Economic Development Directorate should, as a priority, take a lead role in implementing benefits management, including developing a whole-of-government Benefits Realisation Plan and associated documentation. This plan should identify and document the benefits to be realised by the project, their timing, ownership, critical dependencies for the achievement of the benefits and associated key performance indicators.

<sup>5</sup> During the audit the Capital Metro Agency advised that a Project Controls Procedure was being developed as part of the transition to the delivery phase of the Capital Metro Light Rail Project. On 14 June 2016 the Capital Metro Agency advised that a Project Controls Procedure had been developed for the delivery phase of the project. This has not been audited as to do so would have delayed publication of this report.

## Agency response

In accordance with subsection 18(2) of the *Auditor-General Act 1996*, the Capital Metro Agency and Under Treasurer were provided with:

- a draft proposed report for comment. All comments were considered and required changes were reflected in the final proposed report;
- a final proposed report for further comment. All comments were considered and required changes were reflected in the final report; and
- a final report for further comment. As part of this process, the Capital Metro Agency and Under Treasurer were also asked to provide comments for inclusion in the final report in the Summary chapter.

The Capital Metro Agency and Under Treasurer did not provide comments for inclusion in the Summary chapter of this report.

# 1 INTRODUCTION

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- 1.1 This chapter provides background information on the Capital Metro Light Rail Project and the audit objective, scope, criteria and method.
- 1.2 The ACT Audit Office's *Public Transport: The Frequent Network* performance audit report was tabled in the Legislative Assembly on 6 November 2015. The audit examined arrangements associated with the delivery of the public transport Frequent Network. The Frequent Network, as articulated in the ACT Government's *Transport for Canberra: Transport for a Sustainable City 2012-2031 (Transport for Canberra)*, was intended to form the basis of public transport planning and implementation in Canberra until 2031.
- 1.3 Since the identification of the Frequent Network in *Transport for Canberra*, the ACT Government made a policy decision to implement a light rail for part of the Frequent Network. The Capital Metro light rail is a large financial commitment for the Territory and the Audit Office intends to audit the Capital Metro Light Rail Project as it is implemented, in order to provide ongoing audit assurance on the delivery of the light rail. This audit is the first in a series of three planned audits in relation to the Capital Metro Light Rail Project. The other planned audits are:
  - Procurement of the Light Rail Project; and
  - Implementation of the Light Rail Project.

## Consideration of light rail for Canberra

- 1.4 Light rail has been identified as a public transport option for Canberra in a number of submissions, proposals and strategic plans since 2004.

### *ACT Strategic Public Transport Network Plan*

- 1.5 In 2008, the ACT Government commissioned a transport planning study. The resulting report, the *ACT Strategic Public Transport Network Plan* by consulting firm MRCagney, was presented to government in June 2009. The report:
  - ... defines steps that will need to be taken over the next two decades to achieve the ACT Government's sustainable transport goals, and to ensure competitive sustainable mobility for Canberrans into the future.
- 1.6 The report advocated the concept of a Frequent Network, which was to serve as the 'backbone' of future public transport in the ACT. A key feature of the Frequent Network was public transport 'corridors', which were to facilitate rapid public transport services.

1.7 In relation to light rail, the *ACT Strategic Public Transport Network Plan* stated:

This plan takes no position on the question of whether certain corridors should be served by light rail as opposed to buses, but it does suggest the set of alignments that light rail might usefully serve. Light rail could be an option for any or all of the identified Rapid corridors, whose length and stopping patterns are similar to those of light rail transit worldwide. Light rail in the form of trams could also be considered for any of the Frequent local corridors, which stop more frequently and are intended for shorter trips.

*Transport for Canberra*

1.8 In March 2012, the ACT Government released *Transport for Canberra 2012-2031* (*Transport for Canberra*), a major policy document that 'sets a new policy direction for transport from now to 2031'. *Transport for Canberra* identifies 34 different Actions to be undertaken across a range of transport policy areas. Action 3 of *Transport for Canberra* is:

Actively plan for mass public transport like light rail or bus rapid transit in all new public transport infrastructure and design.

1.9 *Transport for Canberra* stated:

The 2031 network has been designed for the current bus-based fleet, but will be adaptable to, and supportive of, mass public transport technology like light rail, bus rapid transport or other technology.

...

The ACT Government will continue to explore funding opportunities for light rail and bus rapid transport with the Australian Government and private sector, and planning for light rail (or bus rapid transport designed for later conversion to light rail) is at the centre of planning for this corridor.

1.10 *Transport for Canberra* also stated:

Northbourne Avenue and the Gungahlin to City corridor will be the government's priority corridor for new infrastructure investments in the short to medium term, with mass rapid transit to be considered following the results of the 2011-12 study.

*Submission for Australian Government funding (August 2012)*

1.11 In August 2012, the ACT Government made a submission to Infrastructure Australia, seeking '\$15 million in funding from the Nation Building Program 2 for the forward design and planning of the City to Gungahlin Transit Corridor'. According to the funding submission:

Forward design and planning will include: further demand modelling and economic assessment (including triple bottom line analyses); feasibility and preliminary design of Dickson station, Gungahlin terminus and City connections; design of transit oriented development options including a public transport network review; a vehicle options feasibility study; and infrastructure feasibility and design work.

1.12 According to the funding submission:

The Government has considered the economic outcomes of investing in either bus rapid transit (BRT) or light rail transit (LRT) under a business as usual land use setting and against higher population and employment densities in the Project Corridor.

- 1.13 The submission to Infrastructure Australia proposed that the design and planning would determine the feasible vehicle options, either light rail transport or bus rapid transport. The funding submission noted:

The pre-feasibility economic evaluation results shows that all core Project options [light rail transit or bus rapid transit] have the potential to generate positive economic returns under the business as usual and higher density land use settings. This median outcome supports the notion that rapid transit investment within the Project Corridor has real potential to deliver net economic benefits.

Of the transport options, [bus rapid transit] is projected to deliver higher economic returns.

On the other hand, the economic returns that can be delivered through [light rail transit] investment alone are likely to be economically marginal and the net economic outcome for [light rail transit] under even minor adverse circumstances is likely to result in negative economic returns.

- 1.14 The ACT Government was not successful in securing funding from Infrastructure Australia for the forward design and planning of the City to Gungahlin Transit Corridor.

#### *ACT Labor and ACT Greens Parliamentary Agreement*

- 1.15 On 21 September 2012, the ACT Labor Party announced:

If re-elected in 2012, ACT Labor will establish the ACT's first large-scale private sector partnership to plan, finance and develop the first stage of a Light Rail Network for Canberra - the Capital Metro.

- 1.16 Following the 2012 Australian Capital Territory election for the 8<sup>th</sup> Legislative Assembly, a Parliamentary Agreement was made on 2 November 2012 between the Leader of ACT Labor and the ACT Greens Member for Molonglo. The Parliamentary Agreement included a commitment by ACT Labor to progress a light rail network for Canberra by:

- a) Establishing a statutory independent authority to implement the light rail project and associated development in the corridor;
- b) Undertaking the necessary design studies, preparatory works, financing, procurement and tendering arrangements, with a target date for laying of tracks for the first route commencing in 2016;
- c) Creating a Canberra-wide light rail network master plan.

- 1.17 The ACT Government made a policy decision in 2012 to establish the Capital Metro Agency and undertake 'the necessary design studies, preparatory works, financing, procurement and tendering arrangements' for the Capital Metro light rail. This audit does not consider the merits of this policy decision but its implementation, through the initiation of the Capital Metro Light Rail Project. Accordingly, information considered by decision-makers post the 2012 policy decision is considered to be information relevant to the project management, governance and administrative arrangements associated with the Capital Metro Light Rail Project and the Capital Metro Agency's activities to design the light rail system and develop processes to approach the market for the delivery and implementation of the Capital Metro Light Rail. By association, information presented to the community is also considered.

## Establishment of the Capital Metro Agency

- 1.18 The Capital Metro Agency was established on 1 July 2013. According to the Capital Metro Agency's Budget Statement for 2013-14, the Agency's purpose is to:

... deliver the first stage (Gungahlin to the City) of a light rail network in the Territory. This service will contribute to the achievement of the Government's *Transport for Canberra* policy objectives through the provision of scheduled route services, initially between the City and Gungahlin.

- 1.19 The head of the Capital Metro Agency is identified as the Project Director for the Capital Metro Light Rail Project.

- 1.20 From 1 July 2016 the functions of the Capital Metro Agency and the Territory and Municipal Services Directorate are to be merged to form the Transport Canberra and City Services Directorate. This directorate will be responsible for the implementation of the Capital Metro Light Rail Project.

## Audit objective and scope

- 1.21 The objective of this audit was to provide an independent opinion to the Legislative Assembly on the effectiveness of the Capital Metro Light Rail Project's management framework, project planning to date, and the development of processes to approach the market.

- 1.22 This audit examines:

- the extent to which the project's management framework and practice align with better practice in program and project management;
- project planning and scoping processes;
- spending to date; and
- advice provided to decision makers on potential technical solutions and procurement strategies.

## Audit criteria and method

- 1.23 The effectiveness of the Capital Metro Light Rail Project's management framework, project planning to date, and the development of processes to approach the market are considered using the following questions as the criteria:

- Does the Capital Metro Agency have the required capability to manage the project successfully?
- Are the project's governance arrangements adequate to ensure effective oversight and management control?

- Have planning and scoping activities to date been robust and well-managed?
- Has spending to date been publicly reported and within planned budgets?
- Has advice provided to decision makers on the technical solutions that might be procured, and available procurement strategies, been appropriate and timely?

1.24 The audit was conducted in line with the Audit Office's Performance Audit Methods and Practices and related policies, practice statements and guidance papers. These policies and practices have been designed to comply with the requirements of the *Auditor-General Act 1996* and relevant professional standards (including ASAE 3500 – Performance Engagements).

1.25 The audit included:

- a review of Capital Metro Light Rail Project documentation maintained by the Capital Metro Agency, including:
  - governance and administrative documentation for the Capital Metro Agency;
  - project management policy and procedural guidance maintained by the Capital Metro Agency; and
  - technical and financial information, advice and other documentation relating to the Capital Metro Light Rail;
- consideration of national and international guidance associated with infrastructure project management and delivery;
- discussions with Capital Metro Agency and ACT Treasury representatives;
- discussions with Capital Metro Agency advisors;
- engagement of Dr Geoffrey Clifton, Institute of Transport and Logistics Studies at the University of Sydney, to provide advice on the economic appraisal and cost-benefit analysis for the Capital Metro Light Rail Project;
- engagement of Dr Neil Douglas, Douglas Economics, to examine the audit approach, analysis and conclusions, in particular the economic appraisal and cost-benefit analysis. Dr Douglas was engaged following comments from the Capital Metro Agency in response to the *Final Proposed Report*; and
- consultation with the Chief Minister on the disclosure of 'deliberative information' in this audit report.

## Disclosure of deliberative information

1.26 Section 20 of the *Auditor-General Act 1996* (the Act) relates to the disclosure of 'deliberative information' in Audit Office reports. Section 20 of the *Auditor-General Act 1996* provides that the Auditor-General may only include 'deliberative information' in a report:

- if the auditor-general considers that it is in the 'public interest' to do so; and
- after consulting with the Chief Minister.

1.27 'Deliberative information' is defined in the Act as 'information that discloses a deliberation or decision of the Executive'.

### *Reference to documents provided to Cabinet*

1.28 This audit report refers to, and includes information from, key documents that were ultimately provided to Cabinet, following the ACT Government's 2012 policy decision to 'plan, finance and develop the first stage of a Light Rail Network':

- the Capital Metro Light Rail Project *Full Business Case*;
- the Capital Metro Light Rail Project's *Governance Framework*; and
- the *Capital Metro Light Rail Project Plan*.

### *Reference to documents marked 'Cabinet-in-Confidence'*

1.29 This report also refers to, and includes information from, key documents that were marked 'Cabinet-in-Confidence', but not provided to Cabinet:

- Capital Metro Light Rail Project *Full Business Case – Board Version*;
- briefing document from the Under treasurer to the Treasurer (5 September 2014);
- *Capital Metro - Canberra's Light Rail - Definition Design Report* (21 July 2014), produced by Arup; and
- *Definition Design - Cost Plan Report* (August 2014), produced by Turner and Townsend.

1.30 While these documents were not provided to Cabinet, in the interests of transparency they were provided to the Chief Minister for response.



### *Consultation with the Chief Minister*

- 1.31 In the interests of transparency and open communication, on 4 December 2015 and 18 April 2016, the Chief Minister was provided with information on the documents provided to Cabinet and those that were marked 'Cabinet-in-Confidence', but not provided to Cabinet. The Chief Minister advised:

... analysis and findings in the Audit report on the various iterations of the business case (including the draft versions that were presented to the Capital metro Project Board, the publicly released versions, and inputs by consultant and briefs by Treasury) amounts to a review of Cabinet's decision, and I consider this to exceed the scope of the role of the Auditor-General.

### *Reasons for including material*

- 1.32 With one exception in the material that had been sent to the Chief Minister, it is considered that the information does not amount to deliberative material of the Executive and that there is no impediment to its inclusion in the report.
- 1.33 It is considered that information that discloses a deliberation or decision of the Executive should be interpreted as information that would reveal the matters that the Executive considered, consulted or discussed as part of its formal decision-making processes or that would reveal the outcome of these processes; and the information should reflect the active debate by the Executive, or its weighing up of alternatives, in order to come within the 'deliberation' aspect of the definition of 'deliberative information'.
- 1.34 In order for information to fall within section 20 of the Act, the information must be able to be linked to the specific decision-making processes of the Executive in a relevant and direct way. The information needs to either reflect the particular matters on which the Executive deliberated in the course of making its decision or the terms of the actual decision made following that deliberation.
- 1.35 In this respect a distinction may be drawn between documents and information that directly reflect the matters deliberated and decided upon and record the terms and outcomes of the decision-making process, and documents and information that concern the subject-matter of a decision, but which instead informed that decision or placed it in a broader context.
- 1.36 Accordingly, it is not considered that the documents provided to Cabinet, including the *Full Business Case*, can be said to reveal Executive deliberations or record the decision of the Executive. Specifically with respect to the *Full Business Case* it is not clear from any version of the *Full Business Case*, or from our discussion of the various versions of the *Full Business Case* in the audit report, what any individual Minister may have thought about the issues dealt with in the *Full Business Case*, or any of its recommendations. None of this material comprises 'information that discloses a deliberation or decision of the Executive' within the definition of 'deliberative information' in the dictionary to the Act.

1.37 A further consideration is that, in order for documents or information to be properly described as ‘deliberative information’, they will need to have a contemporaneous link with the Executive decision-making process and directly reflect the treatment given to a particular subject-matter by the Executive and on which the Executive made its formal decision. Documents that were not provided to Cabinet do not fall within this definition.

1.38 Therefore, ‘deliberative information’ would not include:

- documents concerning the same subject matter as a matter on which the Executive has made a specific decision; or
- documents which pre-date or post-date the specific meeting at which the Executive made its decision on the matter.

*Material included in this report*

1.39 The cabinet-in-confidence information that is included in this report is considered necessary and in the public interest as it is not available from any other source and is audit evidence for some audit findings and conclusions. To the best of the Audit Office’s knowledge no ‘deliberative information’ has been included.

1.40 Some material that was initially presented to the Chief Minister could be considered to constitute ‘information that discloses a deliberation or decision of the Executive’. As a result references to this material are not included in this report.

1.41 On 7 June 2016 the Chief Minister was advised accordingly.

## 2 GOVERNANCE AND PROJECT MANAGEMENT

- 2.1 This chapter discusses the governance and project management arrangements associated with the Capital Metro Light Rail Project. It includes consideration of the governance and administrative arrangements of the Capital Metro Agency, the key ACT Government agency that has had responsibility for delivering the Capital Metro Light Rail Project. The chapter also discusses arrangements for independent external review of the Capital Metro Light Rail Project and reviews of the *Full Business Case*.

### Conclusion

The governance, administrative and project management framework for the Capital Metro Light Rail Project is sound and generally accord with better practice. While there are some opportunities for improvement, specifically with respect to resource management and project controls procedures, the Capital Metro Agency has established a sound framework for managing the project. The Capital Metro Agency has managed its budget so that spending has been within allocated budgets, which have been publicly reported. As of 1 July 2016 this framework may be affected by functions of the Capital Metro Agency and the Territory and Municipal Services Directorate being merged.

External reviews of the Capital Metro Light Rail Project, which have been identified in key planning documents as forming a part of the governance and oversight of the project, have not been undertaken as planned, or as rigorously as needed for a project of this size and complexity. One peer review, which was conducted in relation to the *Full Business Case*, was very brief and did not consider key attributes of the project including transport modelling, quantified economic analysis, the benefit-cost ratio, financial analysis or assumptions used in the Public-Private Partnership assessment, or capital construction costs. In contrast, a second peer review, which was well documented, was conducted with a specific focus by subject matter experts over a three day period at the procurement stage.

### Key findings

The Capital Metro Light Rail Project's *Governance Framework* is comprehensive. The high level governance and management arrangements, including its governance structure and decision-making roles and responsibilities, accord with better practice. The Under Treasurer is identified as the Project Owner, and can provide the requisite financial and economic direction on behalf of the ACT Government.

Paragraph

2.9

The Capital Metro Project Board's responsibilities are well-defined and appropriate. The inclusion of the Directors-General of relevant ACT Government agencies as members of the Board means that issues can readily be considered in the broader whole-of-government context, and decisions made efficiently because the need for members to refer back to their agencies for authority is minimised.

2.18

The Capital Metro Project Board is an important governance mechanism for the Capital Metro Light Rail Project, with a significant workload. Its Charter is comprehensive with Board accountabilities, roles and responsibilities clearly defined. 'Commercial reports' provided at each month's Board meeting are comprehensive and informative.

2.25

The Capital Metro Agency's Audit Committee is governed by a comprehensive Audit Committee Charter. The Audit Committee has met five times since its establishment, and has completed two internal audits, in relation to the agency's financial management and procurement. The Capital Metro Agency intended to undertake a greater number of audits in 2016, with four audits scheduled to be conducted in 2016 covering information management, human resource management, fraud and integrity and risk management. It will be important for the intended internal audit activity for Capital Metro Agency to continue when the functions of the Capital Metro Agency are combined with some of those of the Territory and Municipal Services Directorate to form the Transport Canberra and City Services Directorate, as of 1 July 2016.

2.36

The Capital Metro *Project Plan* is comprehensive. Workstream descriptions have been carefully compiled and are at an appropriate level of detail. Interdependencies between workstreams have been identified and noted.

2.45

In order to supplement its comparatively small workforce, the Capital Metro Agency is heavily reliant on consultants. Many key documents associated with the project, e.g. the Capital Metro Light Rail Project's *Governance Framework* and the *Full Business Case*, were authored by consultants.

2.48

The Capital Metro Agency has a relatively small number of personnel (approximately 25). In order to progress the Capital Metro Light Rail Project, the Capital Metro Agency has supplemented its comparatively small workforce with consultants. A better practice approach to manage workforce and resource risk for a project the size and scope of the Capital Metro Light Rail Project would be to develop a Resource Management Strategy and associated Resource Management Plan; this has not happened. In July 2015 the Capital Metro Agency did, however, engage EY, its commercial advisor, to develop a resourcing transition plan to assist in managing the transition of the project to the delivery phase.

2.57

The Capital Metro Agency's stakeholder engagement policies and practices are well-documented. Relevant strategies and plans accord with better practice, and suitable staff are actively engaged in appropriate stakeholder engagement and communications activities.	2.63
The Capital Metro Agency's risk management policies and procedures are comprehensive and relevant to its activities for the Capital Metro Light Rail Project. The Risk and Change Management Committee is an effective mechanism for the oversight of the management of risks associated with the project.	2.73
There are appropriate change management procedures in place with respect to the Capital Metro Light Rail Project. The <i>Change Management Procedure</i> effectively sets out the protocols to be followed for changes to the project, as well as roles and responsibilities for managing and monitoring changes to the project.	2.80
The Capital Metro Agency has not had a documented Project Controls Procedure, as provided for by the <i>Project Plan</i> . This increases the risk that the project's objectives might not be fully achieved, or not achieved as efficiently as they could be.	2.86
The Capital Metro Agency's issues management policies and practices accord with better practice. Suitable arrangements are in place to ensure that issues are identified, captured, managed and closed, and receive adequate Executive attention.	2.94
The Capital Metro Agency's overarching financial management arrangements are in accordance with whole-of-government requirements. The Agency's Director-General Financial Instructions are comprehensive, have been updated, and are readily available to all staff. Financial procedures to be followed have been adequately documented. Financial reporting is in accordance with whole-of-government requirements, and arrangements are in place for the Executive to have oversight of financial matters.	2.111
An analysis of the Capital Metro Agency's operating results against budget for 2013-14 and 2014-15, and the budget for 2015-16 shows: <ul style="list-style-type: none"> <li>for the three financial years 2013-14 to 2015-16, the total budgeted <i>Government Payment for Outputs</i> for the Capital Metro Agency is \$34.4 million. That is, the cost of operating the Capital Metro Agency between 2013-14 and 2015-16 is expected be \$34.4 million; and</li> <li>the significant majority of expenditure relates to supplies and services. Approximately 68.7 percent of all budget expenditure for the three years to 2015-16 relates to supplies and services, compared to 31.3</li> </ul>	2.113

percent for employee and related expenses.

As the Capital Metro Agency is a comparatively small agency with respect to number of staff it is heavily reliant on contractors for the delivery of the Capital Metro Light Rail Project. This is reflected in the large proportion, \$23.7 million (68.7 percent of total expenditure), of the Agency's budget that is attributable to supplies and services expenditure (which includes contractor expenditure). 2.114

The total budgeted amount of Appropriation to the Capital Metro Agency for financial years 2013-14 to 2015-16 is \$55.6 million, with \$34.4 million *Government Payments for Outputs* and \$21.2 million being for *Capital Injections*. 2.120

In 2014-15 almost all of the budgeted appropriation for the Capital Metro Agency was for *Government Payment for Outputs* to deliver the services and objectives outlined in the Agency's budget papers. In 2015-16 a significant proportion of appropriation is identified as *Capital Injections* to be used for the development of the light rail infrastructure. This change is due to the progress of the project being at a stage where in 2015-16 approximately two thirds of the costs associated with the Agency can be directly attributed to the development of the light rail infrastructure.<sup>6</sup> 2.121

An analysis of the Capital Metro Agency's *Supplies and Services* expenditure shows that: 2.123

- there has been a significant increase between 2013-14 and 2014-15 for the majority of the *Supplies and Services* expenditure items, with the total *Supplies and Services* expenditure increasing by 206 percent; and
- the *Contractors and Consultants* expenditure contributes 78 percent of the total *Supplies and Services* expenditure in 2014-15 and 82 percent for 2013-14.

Following the *Contractors and Consultants* expenditure, *Legal Costs* are the second largest *Supplies and Services* expense for the Capital Metro Agency. In 2014-15 *Legal Costs* amounted to approximately 13.0 percent of the Capital Metro Agency's *Supplies and Services* expenditure. In 2013-14 *Legal Costs* represented 5.1 percent. 2.124

Gateway reviews initially planned for the Capital Metro Light Rail Project, which were designed to 'provide for rigorous exploration of the project's readiness to 2.133

<sup>6</sup> Expenditure that is associated with the purchase or development of an asset can be recognised on the agency's balance sheet once two conditions are met. If it is determined that it is probable that future economic benefits associated with asset will flow to the entity and the cost of the asset can be measured reliably, the expenditure can be capitalised and an asset recorded on the agency's balance sheet.

market' did not occur as planned. Three gateway reviews were to be conducted prior to the release of procurement documentation to the market. Instead, two 'peer reviews' were conducted over this period. The first peer review was not conducted in accordance with better practice gateway review practices, had no identified objective, was very brief and did not consider key attributes of the project including transport modelling, quantified economic analysis, the benefit-cost ratio, financial analysis or assumptions used in the Public-Private Partnership assessment, or capital construction costs. The second peer review was conducted with a specific focus by subject matter experts over three days and was well documented. The second review more closely resembles a gateway review than the first, and should be regarded as the minimal level of external scrutiny a major project should receive at a critical control gate.

## Governance

- 2.2 Effective and appropriate governance arrangements are critical to the successful implementation of government policy. According to the ANAO's *Successful Implementation of Policy Initiatives* Better Practice Guide (October 2014):

Governance refers to the arrangements and practices which enable an entity to set its direction and manage its operations in order to discharge its accountability obligations and assist in the achievement of expected outcomes. Governance encompasses many facets, including leadership, policies, relationships and control and accountability measures.

- 2.3 The Capital Metro Light Rail Project's *Governance Framework* was approved in April 2013. The *Governance Framework* notes 'the ACT Government recognises that the project must transition from a planning to a procurement stage to achieve the ambitious targets' and that the *Governance Framework* 'confirms how major decisions will be made with a view to ensuring these decisions are made quickly, but also to ensure they are correct decisions'. The *Governance Framework* outlines the Capital Metro Light Rail Project's:

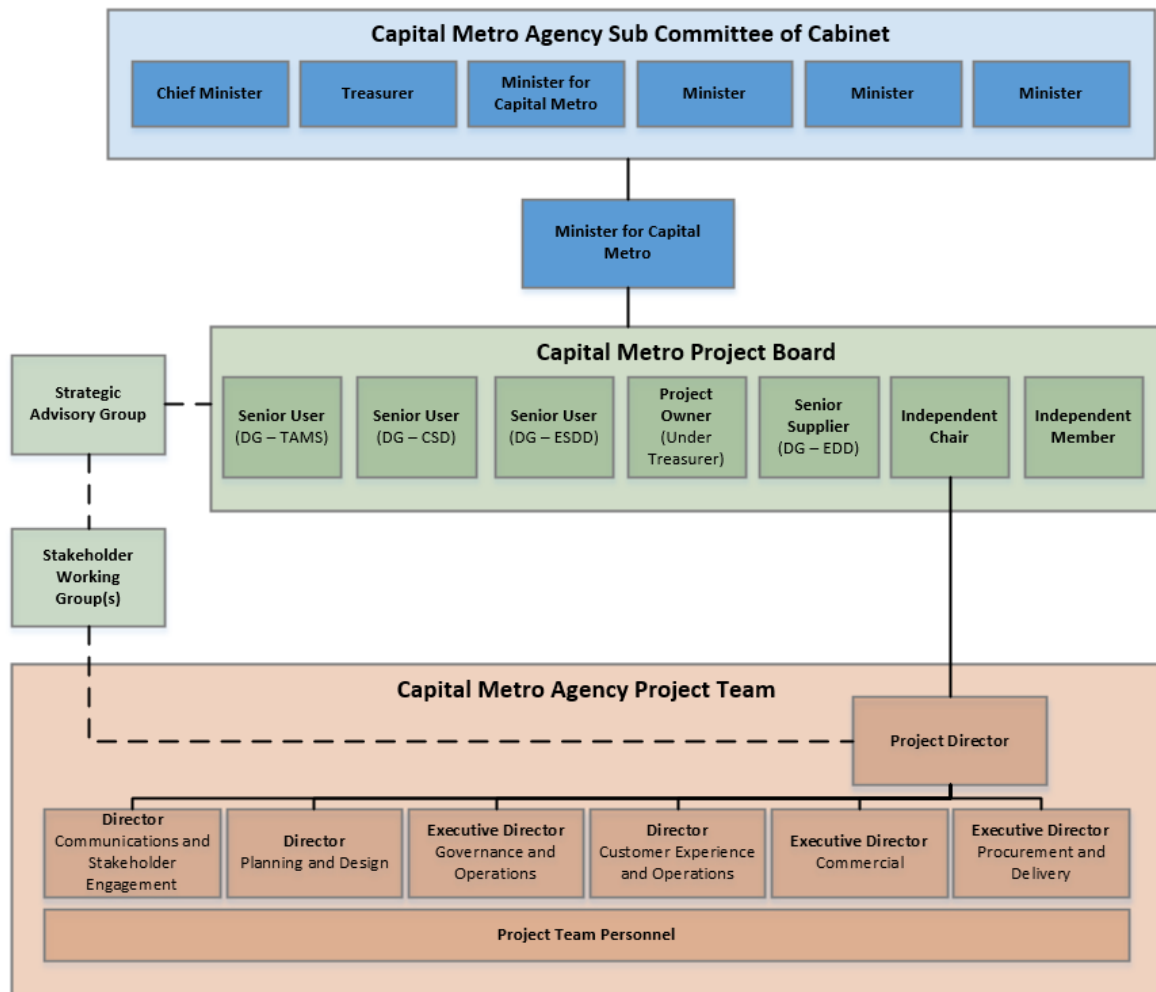
- **Organisational structure**, including the identification of decision-making bodies.
- **The types of decisions required at organisational levels**, for instance leadership and strategy (typically the steering committee), management and operational matters (typically a project control group), etc.
- **Major accountabilities against the project objectives**, in particular identifying the project owner, senior user and senior supplier and importantly what this means for the decisions those individuals are expected to make.
- **Roles and responsibilities** of decision making groups and senior individuals.
- **Key documents required to facilitate decision making** and which individual/group is required to prepare, endorse and approve them.
- **Decisions required to meet key milestones and where those decisions lie** (i.e. an approvals pathway).

## Governance structure

2.4 The *Governance Framework* established a governance structure for the Capital Metro Light Rail Project (refer to Figure 2-1). Key elements of the governance structure are:

- the Capital Metro Agency Sub-committee of Cabinet;
- the Capital Metro Project Board; and
- Capital Metro Agency Project Team (i.e. the Capital Metro Agency Director-General and staff).

**Figure 2-1 Capital Metro Agency Governance Structure**



Source: Capital Metro Agency



## Project decision-making

2.5 The Capital Metro Light Rail Project's *Governance Framework* identifies 'four levels of decision making' related to the project, as follows:

- **Investment decision.** Where decision makers are accountable for approving government funding to the project. The Capital Metro Subcommittee operates at this level.
- **Strategy and leadership.** Where decision makers set the strategy for the project and then lead according to it. They think ahead about strategic opportunities and risks facing the project. The Minister, Project Board and Project Director operate at this level.
- **Management.** Where decision makers focus 'down' to ensure the resources, capability and systems are in place to deliver on the objectives set by the Project Board.
- **Operational.** Those responsible for delivering tasks. Personnel at this level are not involved in major decision making, but rather escalate decisions through to their respective manager.

2.6 The Capital Metro Light Rail Project's *Governance Framework* further identifies types of decisions that are made with respect to the various levels of decision making, the groups and individuals that are expected to make those decisions and 'key guiding documents' that are expected to guide and facilitate such decisions.

## Project Ownership

2.7 The Under Treasurer is identified as the Project Owner. The Under Treasurer is the Deputy Chair of the Capital Metro Project Board and their responsibilities as Project Owner are primarily discharged through their role on the Capital Metro Project Board. According to the Capital Metro Light Rail Project's *Governance Framework*, the Project Owner:

... is accountable for the success of the project. 'Success' for the Project Owner is the delivery of a transport asset that meets the service delivery requirements (defined in the Business Case). As the Under Treasurer, the Project Owner has the capability and means to mobilise government resources around this aim.

2.8 The responsibilities of the Project Owner are well-articulated in the *Governance Framework*. Key responsibilities include ensuring 'the project is aligned with the goals, vision and policies of the ACT Government' and taking 'primary responsibility for ensuring a whole-of-government response to the project. Ensure the various directorates are aligned and providing the necessary support to the Project Director'.

2.9 The Capital Metro Light Rail Project's *Governance Framework* is comprehensive. The high level governance and management arrangements, including its governance structure and decision-making roles and responsibilities, accord with better practice. The Under Treasurer is identified as the Project Owner, and can provide the requisite financial and economic direction on behalf of the ACT Government.

## Capital Metro Sub-committee of Cabinet

- 2.10 According to the Capital Metro Light Rail Project's *Governance Framework* the Capital Metro Sub-committee of Cabinet:

... is the group accountable for the 'investment decision'; i.e. they are accountable for decisions to commit significant public funds and for the efficacy of that public investment. This accountability attaches to it significant reputational risks that are best managed at the political level.

- 2.11 According to the *Governance Framework*, 'material that directly relates to the investment decision should be escalated to this group for approval'. The *Governance Framework* further states:

This includes [matters relating to]:

- Government reputation, particularly in relation to the Capital Metro project.
- Global capital and operational expenditure cost estimates.
- The project's design (scoping, definition, reference) because it directly relates to the project's scope and subsequent cost.
- The Delivery Strategy, because it identifies which components of the project require upfront government funding and which may be financed through a public-private partnership (PPP).
- The Business Case including the Economic Appraisal upon which it is based.
- The Funding and Value Capture Strategy, because that confirms that affordability of the project.

## Capital Metro Project Board

- 2.12 According to the Capital Metro Light Rail Project's *Governance Framework* the Capital Metro Project Board 'is the peak approver for the majority of strategically important decisions on the project', although it is also noted that the Minister and/or the Cabinet Sub-committee also have responsibility for certain key decisions, as provided for by the *Governance Framework*.

## Capital Metro Project Board responsibilities

- 2.13 According to the *Governance Framework*, major responsibilities of the Capital Metro Project Board are stated as including:

- Strategy formulation, including the development of major goals and strategies in conjunction with the Project Director and wider Project Management team. This includes generating the Project Objectives.
- Project Director selection, monitoring, evaluation, mentoring, remuneration and when necessary, removal.
- Monitoring of the project team's performance. Monthly Reports - and most importantly the Dashboard Report within them - will assist the Board with this.
- Action on 'extreme' rated risks from the project risk schedule and awareness of 'high' rated risks (which are generally acted on by the Project Management Team).

- Ensuring the Capital Metro Agency is compliant with all relevant legislation and regulations.
- Ensuring the Capital Metro Agency is operating according to government policy.
- Networking on behalf of the Agency to assist in achieving organisational goals.
- Communication with key strategic stakeholder groups (often this will occur through the Strategic Advisors Group(s)).

2.14 The Capital Metro Board has nine members, as follows:

- Independent Chair;
- Deputy Chair and Project Owner: Under Treasurer;
- Independent Member;
- Senior Supplier: Director-General Economic Development;
- Senior Users: Directors-General of the Justice and Community Safety, Environment and Planning, Community Services, and Territory and Municipal Services directorates; and
- Capital Metro Agency Director-General/Project Director (non-voting).

2.15 The identification of the Directors-General of the Justice and Community Safety, Environment and Planning, Community Services, and Territory and Municipal Services Directorates as 'Senior Users' seeks to ensure representation on the project of those users of the 'final product'. Key responsibilities of Senior User representatives are to 'advise the Project Board of any user issues that may have an impact on the project' and 'ensure the user requirements accurately represent the needs of users'.

2.16 The identification of the Director-General of the Economic Development Directorate as the 'Senior Supplier' seeks to balance the representation of Senior Users (and their focus on end user needs) with 'those who deliver the transport asset itself: designers, developers, builders and procurers [whose role] is to ensure the assets or products the project delivers meet the needs of the Project owner and the Senior User, i.e. the user requirements'.

2.17 The Directors-General of the key ACT Government directorates provide a high level of representation for the project. The Capital Metro Project Board Charter states 'the use of proxies is discouraged', but also identifies individual executives who may attend on behalf of each Director-General, either at the Deputy Director-General or Executive Director level.

2.18 The Capital Metro Project Board's responsibilities are well-defined and appropriate. The inclusion of the Directors-General of relevant ACT Government agencies as members of the Board means that issues can readily be considered in the broader whole-of-government context, and decisions made efficiently because the need for members to refer back to their agencies for authority is minimised.

## Capital Metro Project Board operation

2.19 A *Capital Metro Project Board Charter* guides the operation of the Capital Metro Project Board. The purpose of the Charter is to:

- Define the role of the Capital Metro Project Board (the Board) in relation to the decisions made to progress the project.
- Define the scope of the Board's decision making authority.
- Define the Board's membership and the role each member plays within the Board.
- Define the Board's operations and meeting principles such as: the decision making approach, location and frequency of meetings, use of proxies, record keeping and other administrative arrangements, etc.

2.20 The *Capital Metro Project Board Charter* articulates a range of requirements and principles for the operation of the Project Board, including:

- decision making, dissenting views and dispute resolution processes;
- attendance, quorum, and meeting frequency and location requirements; and
- requirements for meeting preparation, pre-briefings, meeting papers, working documents and Board papers.

## Capital Metro Project Board decision making

2.21 The Capital Metro Project Board usually meets every month. It first met on 13 May 2013 and, as at April 2016, had met 33 times. It has a heavy workload; over the five meetings up to July 2015 it considered more than 60 papers, many of which required decisions. The August 2014 Board meeting considered 28 items, ranging from technical and operational aspects to broadly related Territory planning activities.

2.22 According to the Capital Metro Light Rail Project's *Governance Framework*, key principles associated with meetings of the Capital Metro Project Board include:

... Project Board members adopt a 'best for project' approach while on the Board. If what is best for project differs from what is best for their organisation, the matter must be raised at the Project Board meeting and addressed there. If the dispute remains it must be escalated to the Minister, who may choose to escalate it further to the Capital Metro Subcommittee for resolution.

All Project Board members have the necessary authority to make decisions concerning their respective organisations. Members are expected to make decisions regarding the project at meetings, rather than taking the matter in question 'outside' to feed through their respective organisations. Board papers will be issued one week prior to Project Board meetings to support this.

2.23 The Capital Metro Project Board reports to the Capital Metro Sub-committee of Cabinet through the Minister for Capital Metro.

## Reporting to the Capital Metro Project Board

2.24 The Capital Metro Agency typically provides monthly ‘commercial reports’ to the Capital Metro Project Board. The content and format of these reports has matured over time, and the reports now follow a standard format and include:

- an Executive Summary which highlights top and key issues relating to the project plan, financial results, milestones and risks;
- detailed financial reporting, including performance against budget for the month, year to date and variance explanations for material variances between budget and actual;
- details of project changes, including details on changes raised, impacts and the decision made;
- progress against the Project Plan outlining key milestones and future dates;
- updates of top rated risks and movement in individual risk levels; and
- a summary of legal, probity and human resource issues.

2.25 The Capital Metro Project Board is an important governance mechanism for the Capital Metro Light Rail Project, with a significant workload. Its Charter is comprehensive with Board accountabilities, roles and responsibilities clearly defined. ‘Commercial reports’ provided at each month’s Board meeting are comprehensive and informative.

## Audit and assurance arrangements

### Audit Committee

2.26 The Capital Metro Agency has established an Audit Committee, whose role is to ‘oversee the Agency’s governance framework, risk, compliance, external accountability and the internal control environment’.

2.27 The role and activities of the Audit Committee are governed by an *Audit Committee Charter*, which was approved by the Director-General of the Capital Metro Agency in October 2014. The *Audit Committee Charter* is comprehensive and outlines the Committee’s:

- role and authority;
- composition and tenure;
- responsibilities;
- administration; and
- reporting requirements.

- 2.28 The Audit Office reviewed the Capital Metro Agency's *Audit Committee Charter* against the ANAO's *Public Sector Audit Committees* Better Practice Guide. The Audit Committee Charter has all the elements recommended by the ANAO's *Public Sector Audit Committees* Better Practice Guide.
- 2.29 The Audit Committee held its first meeting in July 2014, following the appointment of members to the Committee, as approved by the Minister for Capital Metro. The Audit Committee has since met four times, in November 2014, July 2015, December 2015 and April 2016.

### Internal audits

- 2.30 A proposed Internal Audit Plan has been developed for the years 2015 to 2017. Minutes of the 18 December 2015 meeting of the Audit Committee indicate the Committee endorsed a program of audits for 2016, with four audits planned (including one on the Design Review Process in place of the audit on Risk Management identified in Table 2-1 below).
- 2.31 The proposed Internal Audit Plan shows eight audit topics to be examined over a three year period. Two audit topics, Financial Management and Procurement, are to be examined twice in the period, once in 2015 and again in 2017. The internal audit topics to be performed are shown in Table 2-1. As of 1 July 2016, however, functions of the Capital Metro Agency are to be combined with some of those of the Territory and Municipal Services Directorate to form the Transport Canberra and City Services Directorate. Future internal audit activity in relation to the Capital Metro Light Rail Project may be affected..

**Table 2-1 Draft Capital Metro Agency Internal Audit Plan 2015-17**

	Audit to Be Performed	Calendar Year		
		2015	2016	2017
1.	Financial Management	√		√
2.	Procurement	√		√
3.	Information Management		√	
4.	Human Resource Management		√	
5.	Fraud and Integrity		√	
6.	Risk Management		√	
7.	Legislative Compliance			√
8.	Community Engagement			√

Source: Capital Metro Agency Internal Audit Plan 2015-17

- 2.32 Since the establishment of the Capital Metro Agency on 1 July 2013, two internal audits have been completed by external providers, in relation to the Capital Metro Agency's financial management and its procurement practices. The objectives of the financial

management internal audit, which was finalised in July 2015, were to assess whether the Capital Metro Agency's financial practices:

- comply with all relevant ACT Public Service financial policies, procedures, rules and regulations;
- provide management with timely and accurate financial reporting; and
- provide a proper financial control framework.

2.33 The financial management internal audit concluded that the 'CMA financial control framework is generally robust' and 'there were areas of minor non-compliance with legislation and internal policies and procedures'.

2.34 The objectives of the procurement internal audit, which was finalised in October 2015, were to assess whether the Capital Metro Agency's procurement practices:

- comply with the *Government Procurement Act 2001* and all other relevant ACT Public Service policies, procedures, rules and regulations; and
- provide the Capital Metro Agency with high quality goods and services.

2.35 The second internal audit concluded that the Capital Metro Agency 'has a robust and compliant process in place governing procurement', but also identified opportunities for improvement.

2.36 The Capital Metro Agency's Audit Committee is governed by a comprehensive Audit Committee Charter. The Audit Committee has met five times since its establishment, and has completed two internal audits, in relation to the agency's financial management and procurement. The Capital Metro Agency intended to undertake a greater number of audits in 2016, with four audits scheduled to be conducted in 2016 covering information management, human resource management, fraud and integrity and risk management. It will be important for the intended internal audit activity for Capital Metro Agency to continue when the functions of the Capital Metro Agency are combined with some of those of the Territory and Municipal Services Directorate to form the Transport Canberra and City Services Directorate, as of 1 July 2016.

## Project management

2.37 The Audit Office considered the project management arrangements that were in place for the delivery of the Capital Metro Light Rail Project. The Audit Office focused on:

- project planning;
- resource management; and
- stakeholder engagement.

## Project Planning

- 2.38 According to the ANAO's *Successful Implementation of Policy Initiatives* Better Practice Guide (October 2014):

Effective implementation planning is a critical factor contributing to an entity's ability to successfully prepare for the delivery of intended policy outcomes. Planning for successful implementation involves getting the implementation strategy, plan and design right before beginning time-critical and expensive implementation activities.

Planning for implementation is most effective when it is: led by appropriately skilled and experienced personnel; underpinned by a systematic and structured approach; and supported by a sound project management methodology that tailors corporate tools and reporting processes to the requirements of individual measures and programs.

- 2.39 The Capital Metro Agency has developed a *Capital Metro Project Plan* for the purpose of guiding the management and implementation of the project. The *Project Plan* is currently at version 3.0, covering the procurement phase (September 2014 to April 2016). Previous versions of the *Project Plan* covered the periods 1 July 2013 to 30 June 2014 and 1 February 2014 to 31 January 2015 respectively. As at April 2016, the *Project Plan* was being revised for the delivery phase of the project.
- 2.40 Version 3.0 of the *Project Plan* notes the 15 September 2014 announcement by the Minister for Capital Metro 'to progress Stage 1 of the Capital Metro project from the City to Gungahlin with operations to commence in 2019/20' and that 'the delivery method will be through a public private partnership'. The purpose of the *Project Plan* is 'to confirm the timing and content of activities the [Capital Metro Agency] needs to undertake to meet this commitment during the Procurement Phase'. Previous versions of the *Project Plan* covered activities throughout the Project Definition Phase.
- 2.41 The *Project Plan* confirms the project's vision, objectives and governance arrangements, including with reference to other key documents such as the *Governance Framework*. Additionally, the *Project Plan*:
- confirms the intended outcomes and deliverables from the current phase;
  - identifies a high-level work breakdown structure, including identifying workstreams for the delivery of the procurement phase of the project (see Figure 2-2);
  - assigns responsibility for each workstream to a functional area in the Capital Metro Agency;
  - identifies milestones for the phase, as well as a timeline showing workstream outputs and interdependencies;
  - identifies key risks, as well as risk owners and mitigation strategies; and
  - articulates a comprehensive stakeholder engagement matrix (further described at paragraph 2.59).



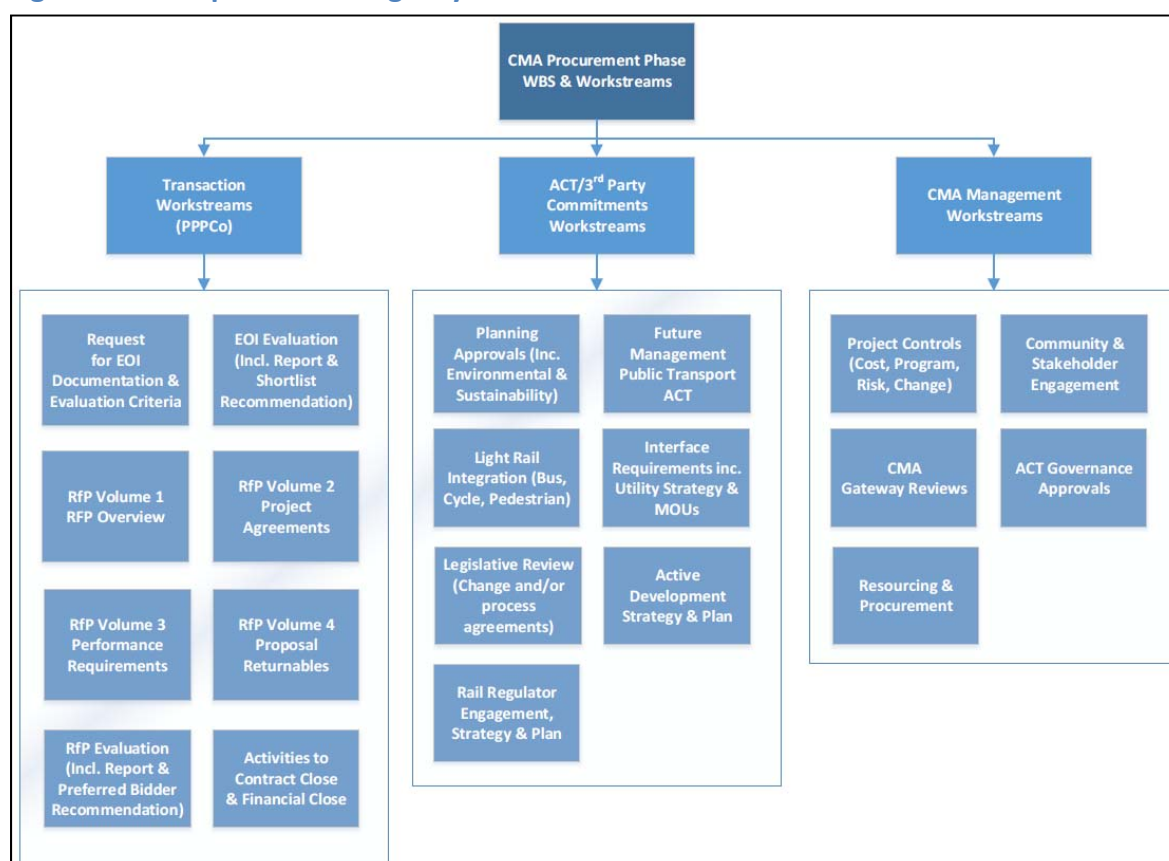
## Workstream descriptions

2.42 The *Project Plan* notes that ‘most of the significant deliverables to be undertaken by the project team need input from all functional areas’. Accordingly, the *Project Plan* identifies workstreams that operate ‘horizontally across the organisational structure rather than vertically in line with functional areas (i.e. a matrix model)’. The *Project Plan* establishes three types of workstreams for the procurement phase of the project as follows:

- **Transaction workstream (‘procuring from the market’)**, representing deliverables that go towards procuring the construction and operation of the Light Rail by the Capital Metro Agency; e.g. EOI, RFP and negotiations.
- **ACT/3<sup>rd</sup> Party Commitment workstream (‘commitments/agreements essential to light rail success’)**, agreements and plans are in place to ensure all relevant ACT government departments and 3<sup>rd</sup> parties are committed to providing interfaces and/or services to ensure the success of the Light Rail.
- **CMA Management workstream (‘how we’re going to do it’)**, representing deliverables focused on the Capital Metro Agency business; e.g. programming, stakeholder engagement, government relations, cost forecasting, etc.

2.43 Between five to eight separate workstreams have been identified under each of these workstream types. Figure 2-2 shows:

- the three types of workstreams that have been identified for the procurement phase of the project; and
- the 20 workstreams that have been identified across the three workstream types.

**Figure 2-2 Capital Metro Agency Workstreams**

Source: Capital Metro Agency, Project Plan v3.0 24 February 2015

- 2.44 In order to document and manage the 20 workstreams identified in the *Project Plan*, the Capital Metro Agency has developed workstream templates.
- 2.45 The Capital Metro *Project Plan* is comprehensive. Workstream descriptions have been carefully compiled and are at an appropriate level of detail. Interdependencies between workstreams have been identified and noted.

## Resource Management

- 2.46 Resource management is an important project management discipline that aims to optimise the use of an organisation's resources (especially human resources) and to ensure that critical resources are available when needed.
- 2.47 The Capital Metro Light Rail Project has an appropriate range of staff with light rail-specific experience and expertise, as well as experienced corporate, finance and project management executives. With around 25 staff the Capital Metro Agency is a small agency and the ratio of executives to other staff is around 1:2 (in the wider ACT Public Service it is in the order of 1:30). The Capital Metro Agency advised that 'the Executive to staff ratio is a consequence of the use of advisors for certain tasks for a limited duration during the project's procurement phase ... [Capital Metro Agency] Executives bear a very heavy, hands-on workload with limited resources at their disposal'.

2.48 In order to supplement its comparatively small workforce, the Capital Metro Agency is heavily reliant on consultants. Many key documents associated with the project, e.g. the Capital Metro Light Rail Project's *Governance Framework* and the *Full Business Case*, were authored by consultants.

2.49 By way of example, the May 2015 Commercial Report to the Capital Metro Project Board listed 24 firms as providing advisory services in relation to the project. On this issue, the Capital Metro Agency advised:

It should be noted that the Business Case was a CMA document prepared with heavy input by EY and the input of work from other consultants, such as Arup and Turner and Townsend. This is normal practice, and it should be emphasised that CMA has utilised consultants with relevant experience from other transport and infrastructure projects.

### Resource management risk

2.50 Notwithstanding the significant reliance on consultants for the project, the Capital Metro Light Rail Project is also reliant on a small group of in-house personnel to manage and oversee the engagement of consultants for the project. This means that workforce risk (i.e. the potential for workforce issues, such as unexpected vacancies or absences, and difficulties sourcing specialist expertise to affect the delivery of business outcomes) is particularly high for the Capital Metro Agency.

2.51 On this issue, the Capital Metro Agency advised:

The CMA has procured specialist advice through short term contracts to ensure that work streams identified in the project plan are delivered to a high standard. This is necessary as a project of this nature has never been undertaken in the ACT before and there is no sole local capability to perform the work to the required standard.

### Better practice resource management

2.52 Workforce risk is typically addressed through active resource management, and a better practice approach would include the development of a Resource Management Strategy and associated Resource Management Plan. A Resource Management Strategy should outline how staffing and subject matter expert requirements will be assessed and met and would pay particular attention to expected changes in requirements as the project moves through its lifecycle. Arrangements for sharing resources across workstreams could also be outlined in the Resource Management Strategy.

2.53 A Resource Management Plan should include a schedule of activities to implement the Resource Management Strategy. It should assign responsibilities, track existing resources and future needs, monitor resource performance and utilisation and include timings for review and updates. It should be carefully aligned with the *Project Plan*.

2.54 The Capital Metro Agency has not developed a Resource Management Strategy and associated Resource Management Plan. Nevertheless, it was apparent that the Capital Metro Agency had undertaken work to identify resource requirements for the tender evaluation period of the project, and has commissioned work to identify resource

requirements and other workforce management issues for the delivery phase of the project, including the identification of resource requirements to manage the transition to the delivery phase.

2.55 The Capital Metro Agency advised that, in July 2015, it engaged EY (who have acted more generally as commercial advisor for the Capital Metro Light Rail Project) to develop a resourcing transition plan. The objectives of the resourcing transition plan are to:

- establish a project team, accommodation and supporting systems to manage delivery phase activities for the Capital Metro Light Rail Project;
- ‘prepare the Territory for its role in pre-Financial Close “early” delivery phase activities’; and
- ‘prepare the Territory for its role in the delivery phase post Financial Close’.

2.56 The Capital Metro Agency has also advised that a Project Team has also been established to oversee the plan.

2.57 The Capital Metro Agency has a relatively small number of personnel (approximately 25). In order to progress the Capital Metro Light Rail Project, the Capital Metro Agency has supplemented its comparatively small workforce with consultants. A better practice approach to manage workforce and resource risk for a project the size and scope of the Capital Metro Light Rail Project would be to develop a Resource Management Strategy and associated Resource Management Plan; this has not happened. In July 2015 the Capital Metro Agency did, however, engage EY, its commercial advisor, to develop a resourcing transition plan to assist in managing the transition of the project to the delivery phase.

## Stakeholder Engagement

2.58 Stakeholder engagement is an important project management discipline that aims to establish, monitor and optimise relationships with all individuals and groups that have a role in a project, or that will be affected by the project’s outcomes.

2.59 The primary document outlining the Capital Metro Agency’s stakeholder engagement approach is the *Communications and stakeholder engagement strategy (Communication Strategy)*. As at April 2016 the *Communication Strategy* was at version 3.5, as it has been updated a number of times since its endorsement by the Capital Metro Project Board in September 2013. The *Communication Strategy* is detailed and comprehensive, and identifies more than 50 stakeholder groupings. The *Communication Strategy* includes:

- identification and a brief analysis of target audiences: external – community; external – stakeholders; internal – ACT Government; and internal – other government agencies, with communication aims for each;

- methods and approaches the Capital Metro Agency will use to communicate with target audiences, including the use of social media, websites, brochures, and community events; and
  - a detailed stakeholder engagement action plan which outlines the engagement activity, a brief description of the activity, the intended audience and the timing. This action plan outlines activity for a six month period.
- 2.60 The stakeholder engagement action plan is a comprehensive and detailed document, which outlines planned communication activities. It lists communication opportunities, such as project milestones and community events, and identifies primary and secondary audiences and the communication channel/s to be used.
- 2.61 The Capital Metro Agency's Director, Communications and Engagement is the single point of contact for media and stakeholder engagement issues and requests. A communications team member is located in each of the Capital Metro Agency's divisions. The team conducts extensive media scanning activities and is active. All media releases, newspaper columns and op-ed pieces are cleared by the Director-General, and the clearance is documented.
- 2.62 A link on the Capital Metro Agency's website opens a stakeholder feedback form. The Capital Metro Agency advised that most stakeholder-generated communication is submitted this way and that the communications team replies to all communications received through this channel and all interactions are recorded in a database.
- 2.63 The Capital Metro Agency's stakeholder engagement policies and practices are well-documented. Relevant strategies and plans accord with better practice, and suitable staff are actively engaged in appropriate stakeholder engagement and communications activities.

## Project controls and risk management

- 2.64 The Audit Office considered the project controls and risk management arrangements that were in place for the delivery of the Capital Metro Light Rail Project. The Audit Office focused on:
- risk management;
  - change management; and
  - issues management.

## Risk Management

- 2.65 Risk management is an important component in the implementation of government policy initiatives. According to the ANAO's *Successful Implementation of Policy Initiatives* Better Practice Guide (October 2014):

Systematic risk management practices enable entities to be confident that implementation has been designed to achieve government outcomes and objectives most effectively. Good risk management practices reduce the likelihood or consequence of unpleasant surprises that may result in an increase to implementation timeframes or costs and, in some cases, could jeopardise the achievement of objectives.

The successful management of risks is not simply a matter of avoiding risks altogether - this will stifle innovative practices, which are critical to the implementation of new initiatives - rather it is a preventative measure that entails identifying and assessing risks and deciding on the most appropriate treatment strategy to manage each risk.

- 2.66 In order to manage the risks associated with the implementation of the Capital Metro Light Rail Project, the Capital Metro Agency has:
- developed and implemented a Risk Management Procedure; and
  - convened a Risk and Change Management Committee.

### Risk Management Procedure

- 2.67 The Capital Metro Agency developed a *Risk Management Procedure* to guide the management of risks associated with the project. The *Risk Management Procedure* was approved by the Project Board in September 2014, and has since been updated (in April 2015). The *Risk Management Procedure* states:

Risk management aims to identify the risks which might jeopardise the achievement of the Project's objectives so that timely action can be taken to avoid those risks or, if that is not possible, to mitigate their consequences.

- 2.68 The *Risk Management Procedure* further states:

The Project Board requires all Project risks to be promptly and fully identified and, where appropriate, mitigated by the Agency. Risks must be escalated to relevant stakeholders for noting and mitigation as set forth in the Agency's Risk Management Procedures and other Agency governance documents.

- 2.69 The Capital Metro Agency's *Risk Management Procedure* includes:

- a policy statement and definitions;
- details of the risk management process, including roles and responsibilities;
- details of the Risk Register and Risk Measurement Framework;
- management plans for the top risks;
- procedures for identification and notification of emerging risks;

- procedures for the management of risks that have been realised, i.e. those that have occurred, or risks that have been reduced, i.e. the risk may no longer be relevant or of such importance;
- arrangements for reporting new risks, closed risks and changes in the project's risk profile in the monthly Commercial Report; and
- a process map, forms and templates.

2.70 The Risk Register is of a high standard, and is being diligently maintained. Approximately 130 risks have been identified in the Risk Register (as at April 2016). The Risk Register includes information on each identified risk, such as:

- the nature and category of the risk;
- the likelihood of the risk materialising (before and after mitigation);
- possible impact on cost, schedule, performance or reputation;
- action/s to mitigate the risk;
- a specific individual who is responsible for managing the risk; and
- whether the Territory or the operator will carry the risk after contracts are signed.

### Risk Management Committee

2.71 The Capital Metro Agency's *Risk Management Procedure* provides for a Risk Management Committee. The *Risk Management Procedure* includes a Risk Management Committee Charter.

2.72 In practice, risk and change issues are considered by the Risk and Change Management Committee, which has met fortnightly. Weekly Executive meetings have also considered three risks from each of the divisions. All staff in the Capital Metro Agency are empowered to identify an issue, risk or change.

2.73 The Capital Metro Agency's risk management policies and procedures are comprehensive and relevant to its activities for the Capital Metro Light Rail Project. The Risk and Change Management Committee is an effective mechanism for the oversight of the management of risks associated with the project.

### Change Management

2.74 Change management is an important project management discipline that aims to ensure that unplanned changes to the organisation and its activities, output specifications for deliverables, or other aspects of the project do not occur. When changes are required, change management aims to ensure that the impact of the change is understood, dependencies are mapped, and the change occurs as a managed process.

- 2.75 The Capital Metro Agency has developed a *Change Management Procedure* document to assist in the management of changes to the project. The *Change Management Procedure* states:

A seemingly innocuous alteration to the Project's characteristics may have serious and unintended consequences for the entire Project if not properly considered across the Agency and by other stakeholders (where relevant).

The Project Board requires all Proposed Changes to be promptly and fully considered by all Groups. Proposed Changes must be escalated to relevant stakeholders for noting and/or approval as set forth in this document. The primary purpose of the Change Control Procedure is to maintain a common understanding of the Project by all Agency personnel and all relevant stakeholders at all times.

- 2.76 The *Change Management Procedure* defines a 'proposed change' as:

... any identified, proposed or unavoidable variation to any actual or anticipated aspect of the project or operation of the Agency:

- as described in the Baseline Documents; or
- which is not described in a Baseline Documents, but which might reasonably be anticipated to have a potentially material effect upon the Project or Agency.

- 2.77 The 'Baseline Documents' referred to in the *Change Management Procedure* 'describe the common understanding of the Project at a point in time held by the Agency, Project Board, the Minister and Cabinet'. The *Change Management Procedure* states:

Any variations to the Project as against the Baseline Documents must be appropriately approved and communicated to relevant stakeholders so that a common understanding may be maintained.

- 2.78 The Capital Metro Agency's *Change Management Procedure* includes details associated with:

- the change approval process, including change notification and endorsement procedures;
- roles and responsibilities, including the role of the Director, Project Controls; responsibilities;
- arrangements for reporting and review; and
- a process map and templates.

- 2.79 The *Change Management Procedure* provides for the operation of the Change Control Committee, and includes a Charter for the Committee. The role of the Change Control Committee (now called the Risk and Change Management Committee) is to:

- Consider Proposed Changes as set forth in Change Notification Forms as and when is necessary;
- Endorse, require further action to be undertaken, or not support Proposed Changes in accordance with the Agency's *Change Management Procedures*;
- At its discretion, combine or split Proposed Changes for consideration;
- Determine the criteria by which Proposed Changes shall be assessed;



- Provide regular reports to the Project Director and Executive on actions undertaken by the Committee; and
- Make recommendations to the Director Project Controls, Executive Director Finance and Economics, Project Director and/or Executive on Change matters.

2.80 There are appropriate change management procedures in place with respect to the Capital Metro Light Rail Project. The *Change Management Procedure* effectively sets out the protocols to be followed for changes to the project, as well as roles and responsibilities for managing and monitoring changes to the project.

## Project Controls

2.81 The purpose of establishing formal project controls is to ensure that all project activities remain aligned with the project's overall objectives. It is important to monitor the progress of activities to detect deviations from the plan, and to promptly escalate and action issues that require management attention.

2.82 The *Project Plan* states:

Project control and management is undertaken using the following procedures:

- Change Management Procedure;
- Risk Management Procedure;
- Project Controls Procedure.

2.83 Despite it being identified as a key element of project control and management in the *Project Plan*, the Capital Metro Agency has not developed a Project Controls Procedure. The Project Controls Procedure should include:

- how activities/workstreams will be monitored;
- what information will be required for monitoring;
- how the project as a whole will assess its effectiveness; and
- links to independent assurance such as Gateway Reviews.

2.84 The Capital Metro Agency has advised that:

The CMA uses an integrated project controls system where the risk, issues and change management procedures are all linked and referenced within each of the individual procedures. Within each of these processes the Director, Project Controls is responsible for the co-ordination of activities and provides oversight of all the project controls processes.

The process diagrams are also linked. For example in the risk management procedure, when a risk is realised it becomes a change and is then directed to the change management procedure. There are also regular meetings around risks, issues, changes and schedule management. These meetings are run back to back every fortnight to ensure that, again, there is continuity between all processes, reporting and updating of senior management on project controls.

2.85 The Capital Metro Agency further advised that a Project Controls Procedure is being developed as part of the transition to the delivery phase of the Capital Metro Light Rail Project.

2.86 The Capital Metro Agency has not had a documented Project Controls Procedure, as provided for by the *Project Plan*. This increases the risk that the project's objectives might not be fully achieved, or not achieved as efficiently as they could be.

2.87 During the audit the Capital Metro Agency advised that a Project Controls Procedure was being developed as part of the transition to the delivery phase of the Capital Metro Light Rail Project. On 14 June 2016 the Capital Metro Agency advised that a Project Controls Procedure had been developed for the delivery phase of the project. This has not been audited as to do so would have delayed publication of this report.

RECOMMENDATION 1	PROJECT CONTROLS PROCEDURE
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The Capital Metro Agency (the Transport Canberra and City Services Directorate as of 1 July 2016) should develop and implement a Project Controls Procedure to assist in managing project activities in accordance with the <i>Project Plan</i> and its objectives. <sup>7</sup>
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## Issues Management

2.88 Issues in a project are events that have happened, but were not planned. They need to be actively managed and (if possible) resolved. Issues management is an important project management discipline that aims to detect, monitor, manage and resolve issues in a series of defined steps.

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<sup>7</sup> During the audit the Capital Metro Agency advised that a Project Controls Procedure was being developed as part of the transition to the delivery phase of the Capital Metro Light Rail Project. On 14 June 2016 the Capital Metro Agency advised that a Project Controls Procedure had been developed for the delivery phase of the project. This has not been audited as to do so would have delayed publication of this report.

- 2.89 The Capital Metro Agency has developed an *Issues Management Procedure*, which states:
- Issues Management forms part of the Project Controls function within [Capital Metro Agency] and is linked to the risk and change management procedures. The intent of this document is to outline how issues will be identified, captured, managed and closed within the Project environment.
- 2.90 The *Issues Management Procedure* includes details associated with:
- roles and responsibilities for the management of issues identified in relation to the project;
  - the management of issues, including the closing of issues; and
  - reporting the management of issues.
- 2.91 The *Issues Management Procedure* provides that ‘issues may be raised by anyone within [Capital Metro Agency], via the Project Controls Group. Issues may be raised through the Issues Form or IRW Issues Log, however Issues may also be raised verbally at meetings, via email correspondence etc’.
- 2.92 The *Issues Management Procedure* provides for an Issues Register template, which includes:
- a description of the issue, who raised it, when and how;
  - priority, due date, owner and responsibility;
  - impact of the issue, documents and clauses of documentation affected (if applicable);
  - details of progress in managing the issue; and
  - details of how the issue was closed, who closed it, when and how.
- 2.93 Issues have been considered at weekly Executive meetings. They can then be raised as a change or risk, or closed out via information provided in the data room (a secure environment providing controlled access to data for tenderers) or in an addendum to the Request for Proposals (RFP).
- 2.94 The Capital Metro Agency’s issues management policies and practices accord with better practice. Suitable arrangements are in place to ensure that issues are identified, captured, managed and closed, and receive adequate Executive attention.

## Financial management

- 2.95 The Capital Metro Agency is a directorate of the ACT Government and must comply with the *Financial Management Act 1996*. Subsection 31(1) of the *Financial Management Act 1996* states that the director-general of the directorate is ‘... accountable to the responsible Minister of the directorate for the efficient and effective financial management of the directorate.’

2.96 Subsection 31(2) of the *Financial Management Act 1996* states that:

Without limiting subsection (1), the responsible director-general of a directorate is responsible, under the responsible Minister, for ensuring –

- (a) that money spent by the directorate is spent in accordance with appropriations made for the directorate (including appropriations available under section 34B); and
- (b) that, as far as practicable, the operations of the directorate for a financial year are consistent with, and comparable to, the budget for the directorate for the year; and
- (c) that the officers and employees of the directorate comply with this Act (including the financial management guidelines); and
- (d) that proper accounts and records are kept of the transactions and affairs of the directorate in accordance with generally accepted accounting principles; and
- (e) that adequate control is maintained over the assets of the directorate and assets in the control of the directorate; and
- (f) that adequate control is maintained over the incurring of liabilities by the directorate.

### Director-General Financial Instructions

2.97 The Capital Metro Agency developed a set of *Director-General Financial Instructions*, which were approved by the Director-General in July 2013. The Instructions aim to ‘provide an overall framework for the financial operations’ of the Agency.

2.98 The Capital Metro Agency’s Instructions are similar (closely the same structure and format) to Instructions that have been developed and are in use by other ACT Government directorates.

2.99 The Instructions, which are available to staff on the Capital Metro Agency’s intranet, were first approved in July 2013 and were updated in December 2014. This update was in accordance with the Instructions’ requirements that they must be reviewed and updated each financial year.

2.100 As mentioned in paragraph 2.32, as part of the Capital Metro Agency’s internal audit program, an internal audit was undertaken to review the Agency’s financial governance. This included a review of the *Director-General Financial Instructions*. The internal audit report identified that, while the Instructions were comprehensive, there were some sections that were not applicable to the Agency or do not need to have the level of detail provided. For example, the Capital Metro Agency’s Instructions included sections on ‘Grant and Program Administration’ and ‘Act of Grace Payments’.

### Financial Procedures

2.101 Supporting the *Director-General Financial Instructions* is a set of detailed financial procedures. The Financial Procedures were approved by the Director-General in July 2014 and provide the agency’s staff with guidance on:

- the annual budget process;
- annual financial statement preparation;

- monthly financial reporting;
- account payable procedures; and
- procurement of goods and services.

2.102 The Financial Procedures include a detailed table covering the annual budget process, annual financial statement preparation and monthly financial reporting that shows the timing, activity, responsible officer, and if approval is required for key processes.

## Financial Performance and Monitoring

### Financial reporting

2.103 Each month the Chief Finance Officer prepares an Agency Financial Report. This report is provided to the Capital Metro Project Board, through the Director-General and Project Director's Update Report, and to each of the Capital Metro Agency's executive directors for the monthly Finance Meetings.

2.104 The monthly Agency Financial Reports are detailed and provide a comprehensive overview of the Capital Metro Agency's financial performance. The Report's Income Statement shows the Agency's:

- actual income and expenditure for the reporting month;
- variance between the actual and forecast amount for the reporting month;
- year to date performance against the forecast amount; and
- full year performance against the forecast and budget.

2.105 The Income Statements are supported by detailed commentary, which provides explanations for significant variances between the actual and budget, and the actual and forecast, amounts.

2.106 In addition to the Income Statements and detailed commentary for the Agency's overall performance, there are Income Statements and commentary for each Group within the Capital Metro Agency. The Groups are:

- Project Director's Office;
- Procurement and Delivery;
- Commercial (Finance, Economics and Controls);
- Governance;
- Communications and Stakeholder Engagement; and
- Customer Experience.

2.107 The Income Statements for each Group are in the same format and provide the same detailed information as the Agency's as a whole, described above.

- 2.108 The preparation of the monthly financial reports is detailed in the Agency's Financial Procedures, including a timeline for when key activities need to be completed.

### **Monthly Finance Meetings**

- 2.109 The Director-General, the Chief Finance Officer and the executives of each Group within the Capital Metro Agency have met monthly to discuss the financial performance of the Agency as a whole and the performance of each Group.
- 2.110 An agenda for each meeting has been prepared, and at the end of the meeting an Action List is produced. The Action List outlines the action item, the responsible officer, the completion date and, for ongoing action items, the current status.
- 2.111 The Capital Metro Agency's overarching financial management arrangements are in accordance with whole-of-government requirements. The Agency's Director-General Financial Instructions are comprehensive, have been updated, and are readily available to all staff. Financial procedures to be followed have been adequately documented. Financial reporting is in accordance with whole-of-government requirements, and arrangements are in place for the Executive to have oversight of financial matters.

## **Capital Metro Agency expenditure**

### **Budget and operating results**

- 2.112 Table 2-2 shows the Capital Metro Agency's financial results for the financial years 2013-14 and 2014-15 and budgeted expenditure for 2015-16.

**Table 2-2 Capital Metro Agency Budget and Actual Results for 2013-14 and 2014-15 and Budget for 2015-16**

	2013-14			2014-15			2015-16
	Budget \$'000	Actual \$'000	Variance \$'000	Budget \$'000	Actual \$'000	Variance \$'000	Budget \$'000
<b>Income</b>							
<b>Revenue</b>							
Government Payment for Outputs	3,000	8,468	5,468	23,535	23,535	-	7,859
Resources Received Free of Charge	-	168	168	-	525	525	-
<b>Total Revenue</b>	<b>3,000</b>	<b>8,637</b>	<b>5,637</b>	<b>23,535</b>	<b>24,060</b>	<b>525</b>	<b>7,859</b>
<b>Total Income</b>	<b>3,000</b>	<b>8,637</b>	<b>5,637</b>	<b>23,535</b>	<b>24,060</b>	<b>525</b>	<b>7,859</b>
<b>Expenses</b>							
Employee Expenses	2,109	1,891	-218	4,574	3,599	-975	3,175
Superannuation Expenses	190	213	23	423	378	-45	327
Supplies and Services	701	6,447	5,746	18,538	19,719	1,181	4,453
<b>Total Ordinary Expenses</b>	<b>3,000</b>	<b>8,551</b>	<b>5,551</b>	<b>23,535</b>	<b>23,696</b>	<b>161</b>	<b>7,955</b>
<b>Operating Result</b>	<b>0</b>	<b>86</b>	<b>86</b>	<b>-</b>	<b>364</b>	<b>364</b>	<b>-96</b>
<b>Total Comprehensive</b>	<b>0</b>	<b>86</b>	<b>86</b>	<b>-</b>	<b>364</b>	<b>364</b>	<b>-96</b>

Source: Audit Office, based on CMA Annual Report 2013-14 and CMA Financial Statements 2014-15

2.113 An analysis of the Capital Metro Agency's operating results against budget for 2013-14 and 2014-15, and the budget for 2015-16 shows:

- for the three financial years 2013-14 to 2015-16, the total budgeted *Government Payment for Outputs* for the Capital Metro Agency is \$34.4 million. That is, the cost of operating the Capital Metro Agency between 2013-14 and 2015-16 is expected be \$34.4 million; and
- the significant majority of expenditure relates to supplies and services. Approximately 68.7 percent of all budget expenditure for the three years to 2015-16 relates to supplies and services, compared to 31.3 percent for employee and related expenses.

- 2.114 As the Capital Metro Agency is a comparatively small agency with respect to number of staff it is heavily reliant on contractors for the delivery of the Capital Metro Light Rail Project. This is reflected in the large proportion, \$23.7 million (68.7 percent of total expenditure), of the Agency's budget that is attributable to supplies and services expenditure (which includes contractor expenditure).

#### 2013-14 financial results

- 2.115 The Capital Metro Agency's *Government Payment for Outputs* in 2013-14 was \$5,468,000 greater than the budgeted amount of \$3,000,000. The variance is due to the reclassification of *Capital Injections* as *Government Payment for Outputs*. The Capital Metro Agency's Annual Report for 2013-14 stated that it was recognised in the financial year that the expenditure being incurred by the Agency was of a recurrent nature rather than capital. Due to this assessment, the Capital Injections were reallocated to Payment for Outputs. This reallocation was recognised in the *Appropriation Act 2013-14 (No 2)*, which was presented to the Legislative Assembly on 20 March 2014 and passed on 13 May 2014.
- 2.116 The Capital Metro Agency's *Ordinary Expenses* in 2013-14 exceeded the budgeted amount by \$5,551,000. This variance is mostly made up of *Supplies and Services* expenditure, which exceeded the budgeted amount by \$5,746,000. This is offset by lower than budgeted expenditure of \$218,000 for *Employee Expenses*. As outlined in paragraph 2.115 the variance between the actual and budgeted amount was due to the recognition during the financial year that the expenditure being incurred by the Agency was recurrent and not capital in nature.

#### 2014-15 financial results

- 2.117 For the 2014-15 financial year, the Capital Metro Agency's actual *Ordinary Expenditure* exceeded the budgeted amount by \$161,000. The variance is made up of *Supplies and Services* expenditure, which exceeded the budgeted amount by \$1,181,000, offset by lower than budgeted expenditure for *Employee Expenses* and *Superannuation Expenses* of \$1,020,000.

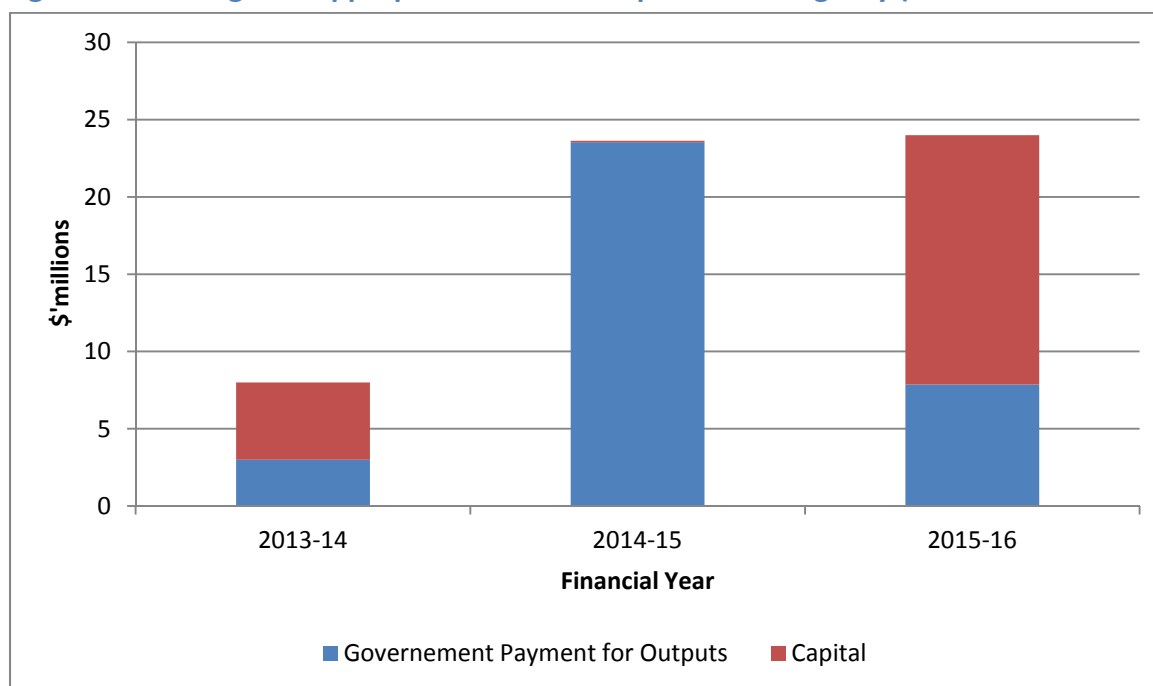
### Appropriations

- 2.118 As a directorate of the ACT Government, the Capital Metro Agency receives appropriations to deliver its outputs on behalf of the Government. An appropriation is the maximum amount of public money authorised by the ACT Legislative Assembly to be provided to an agency by the Territory Banking Account.
- 2.119 There are two types of appropriation: *Government Payment for Outputs* and *Capital Injections*. *Government Payment for Outputs* is an appropriation that is used by an agency to deliver goods and services as defined in the agency's budget papers. *Capital Injections* are used by the agency to purchase an asset, develop an asset, augment an asset or



reduce liabilities. Figure 2-3 shows the budgeted amounts appropriated to Capital Metro Agency for 2013-14 to 2015-16.

**Figure 2-3 Budgeted Appropriation for the Capital Metro Agency (2013-14 to 2015-16)**



Source: Audit Office, based on information from Capital Metro Budget Papers (2013-14 to 2015-16)

2.120 The total budgeted amount of Appropriation to the Capital Metro Agency for financial years 2013-14 to 2015-16 is \$55.6 million, with \$34.4 million *Government Payments for Outputs* and \$21.2 million being for *Capital Injections*.

2.121 In 2014-15 almost all of the budgeted appropriation for the Capital Metro Agency was for *Government Payment for Outputs* to deliver the services and objectives outlined in the Agency's budget papers. In 2015-16 a significant proportion of appropriation is identified as *Capital Injections* to be used for the development of the light rail infrastructure. This change is due to the progress of the project being at a stage where in 2015-16 approximately two thirds of the costs associated with the Agency can be directly attributed to the development of the light rail infrastructure.<sup>8</sup>

<sup>8</sup> Expenditure that is associated with the purchase or development of an asset can be recognised on the agency's balance sheet once two conditions are met. If it is determined that it is probable that future economic benefits associated with asset will flow to the entity and the cost of the asset can be measured reliably, the expenditure can be capitalised and an asset recorded on the agency's balance sheet.

## Supplies and services expenditure

2.122 As discussed in paragraph 2.113, the Capital Metro Agency's ordinary expenditure for both 2013-14 and 2014-15 is mostly made up of *Supplies and Services* expenditure. Table 2-3 shows the *Supplies and Services Note* from the Capital Metro Agency's Financial Statements for the financial years 2013-14 and 2014-15 and the variance between the actual expenditure for the two financial years.

**Table 2-3 Supplies and Services Note from Capital Metro Agency's Financial Statements for 2013-14 and 2014-15**

	2013-14 Actual \$'000	2014-15 Actual \$'000	Variance \$'000
Contractors and Consultants	5,282	15,529	10,247
Legal Costs	332	2,545	2,213
Community Engagement Costs	254	375	121
Staff Development and Recruitment	203	146	-57
Rent and Utility Charges	185	322	137
IT Services and Telecommunications	71	439	368
Other Supplies and Services	120	363	243
<b>TOTAL</b>	<b>6,447</b>	<b>19,719</b>	<b>13,272</b>

Source: Audit Office, Capital Metro Agency's Financial Statements 2013-14 and 2014-15

2.123 An analysis of the Capital Metro Agency's *Supplies and Services* expenditure shows that:

- there has been a significant increase between 2013-14 and 2014-15 for the majority of the *Supplies and Services* expenditure items, with the total *Supplies and Services* expenditure increasing by 206 percent; and
- the *Contractors and Consultants* expenditure contributes 78 percent of the total *Supplies and Services* expenditure in 2014-15 and 82 percent for 2013-14.

2.124 Following the *Contractors and Consultants* expenditure, *Legal Costs* are the second largest *Supplies and Services* expense for the Capital Metro Agency. In 2014-15 *Legal Costs* amounted to approximately 13.0 percent of the Capital Metro Agency's *Supplies and Services* expenditure. In 2013-14 *Legal Costs* represented 5.1 percent.

## Independent external reviews

2.125 Independent external reviews are an element of better practice project governance that can provide assurance to decision makers that projects are on track, and can provide valuable insight into any weaknesses and opportunities for improvement. Better practice project management also includes stage gates: points beyond which the project cannot progress without formal authorisation. Scheduling independent external reviews to immediately precede stage gates is a well-established practice to improve project outcomes. An example of this practice is the Gateway Review Process™.

2.126 The Australian Government Department of Finance administers the Australian Government's Gateway Review process, and provides the following background information:

In November 2005, the Australian Government endorsed, through Cabinet decision, the adoption of the United Kingdom's Office of Government Commerce (OGC) Gateway Review Process.

OGC developed Gateway to improve the delivery of major projects and introduced it in the United Kingdom in 2000. The Victorian Government adopted the methodology in 2003.

The application of Gateway in the UK and Victoria has demonstrably benefited project delivery through:

- identifying the skills and experience required to deliver successful projects;
- increasing stakeholder understanding of their role in successful project management and the factors which contribute to the achievement of project objectives;
- identifying early in projects where corrective action may be required; and
- improving project management and delivery skills.

Gateway reviewers are experts in their field, who have extensive relevant experience and have been accredited by the Gateway Unit.

2.127 The Gateway Review process includes an onsite review, which involves examination of critical documentation and interviews with key project team members and other project stakeholders, and usually takes four to five days to complete.

2.128 The Gateway Review process has also been adopted by other jurisdictions, including New South Wales, Queensland and Western Australia. Gateway Reviews ideally take place at control gates, i.e. critical decision points in the project lifecycle. The ACT's Capital Framework does not provide guidance on control gates or on Gateway Reviews. On this issue, the Under Treasurer advised that:

Gateway Reviews are not formally part of ACT Government policy. The ACT Government's infrastructure policy framework is *The Capital Framework*. It was designed to explicitly exclude Gateway reviews for a more streamlined capital works approval process. I note that the Board for the Capital Metro project agreed to include reviews in the process, but this was done as an additional assurance mechanism, beyond the considerable governance that was overlaid on the project.

2.129 In this respect, the *Project Plan* (version 2.0, dated 4 March 2014) states that:

The next 9 months are about providing ... material required to make a confident investment decision. This decision will be supported by specific project gateways which provide for rigorous exploration of the project's readiness to market (EOI) and tender (RFP). The EOI gateway represents the government's main investment decision and will be informed by an Independent Peer Review, a Refined Full Business Case and will comply, in principle, with Treasury's Single Assessment Framework.

2.130 The *Project Plan* (version 2.0, dated 4 March 2014) identified 'subject the project to the formal Gateway Review process (Gateway 1 in October 2013, G2 May 2014, G3, Q3 2015)' as a risk mitigation measure for the project. None of these proposed gateway reviews occurred. Instead, the project underwent two 'peer reviews'.

2.131 The first was conducted on 7 August 2014 and was conducted on a working draft of the *Full Business Case*. It was undertaken by a four person panel and took three hours. The objective of the review is not clear, but according to the Capital Metro Agency 'establishment of this group reflected a desire from CMA for a "fresh set of eyes" to review the work to date and provide critical feedback'. The review did not consider transport modelling, quantified economic analysis, the benefit-cost ratio, financial analysis or assumptions used in the Public-Private Partnership assessment, or capital construction costs. The reviewers made recommendations on changes and additions for the next draft of the *Full Business Case*.

2.132 The second peer review, in March 2015, was more robust. It was conducted over three days by three independent reviewers 'to assess whether the project's RFP documentation will result in an achievement of project outcomes'. The review concluded that:

... there are no fatal flaws in the current process or documentation that should cause the Capital Metro Agency to consider a delay in the Request for Proposals program. Of the eight key Project Outcomes, the panel has rated five as 'green', and three as 'yellow'... The Panel has not rated the ability to achieve any of the stated project outcomes as 'red', although it has rated some activities as 'red' requiring critical action.

2.133 Gateway reviews initially planned for the Capital Metro Light Rail Project, which were designed to 'provide for rigorous exploration of the project's readiness to market' did not occur as planned. Three gateway reviews were to be conducted prior to the release of procurement documentation to the market. Instead, two 'peer reviews' were conducted over this period. The first peer review was not conducted in accordance with better practice gateway review practices, had no identified objective, was very brief and did not consider key attributes of the project including transport modelling, quantified economic analysis, the benefit-cost ratio, financial analysis or assumptions used in the Public-Private Partnership assessment, or capital construction costs. The second peer review was conducted with a specific focus by subject matter experts over three days and was well documented. The second review more closely resembles a gateway review than the first, and should be regarded as the minimal level of external scrutiny a major project should receive at a critical control gate.

**RECOMMENDATION 2      EXTERNAL REVIEWS**

The Capital Metro Agency (the Transport Canberra and City Services Directorate as of 1 July 2016) should design independent external reviews of the Capital Metro Light Rail Project so that:

- a) objectives are defined;
- b) appropriately qualified subject matter experts conduct the reviews;
- c) sufficient time is allowed for their conduct; and
- d) documentation is thorough.



### 3 ADVICE TO DECISION-MAKERS

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- 3.1 This chapter discusses the information prepared for, and advice given to, decision-makers with respect to the design and procurement strategy for the Capital Metro Light Rail Project.
- 3.2 It considers the Capital Metro Light Rail Project *Full Business Case* (and its development), as the embodiment of advice to decision-makers on the most appropriate mechanism by which to procure the delivery and implementation of the Capital Metro light rail. The chapter also considers work that was undertaken to achieve this, including work to identify:
- the design of the Capital Metro light rail;
  - the costs associated with the Capital Metro light rail; and
  - the different options and mechanisms for the delivery of the Capital Metro light rail.

#### Conclusion

The Capital Metro Agency has relied heavily on advice and inputs from consultants on a range of aspects associated with the planning and scoping of the project, including the technical and design aspects of the Capital Metro light rail, the estimated costs and benefits of the light rail and the recommended mechanism for the delivery of the light rail. Advice and inputs from consultants during the planning and scoping of the project led to the preparation and presentation of the *Full Business Case* to decision-makers in August and September 2014. The Capital Metro Agency's reliance on external consultants to supplement its own capability and obtain external expertise was necessary and facilitated the planning and scoping of the project.

Between mid August 2014 and mid September 2014, advice presented to decision-makers on the expected value of the benefits to be delivered by the project varied significantly. Furthermore, the value of benefits subsequently presented in the *Full Business Case* provided to the community has also varied from those presented to the decision-makers. Between the August 2014 version of the *Full Business Case* presented to the Capital Metro Project Board and the October 2014 version of the *Full Business Case* released to the community, a decrease of 26.0 percent in the expected transport benefits of the project was offset by an increase of 17.2 percent in land use benefits and 16.9 percent in wider economic benefits. While estimated benefits (and costs) should be refined as a project progresses, the changes for the Capital Metro Light Rail Project were significant and occurred over a short period. This indicates that assumptions underpinning the calculation of the benefits associated with the project were still being developed. There was insufficient documentation maintained to explain the differences in the values and the rationale for the changes.

Given the size and scale of the Capital Metro Light Rail Project, and that it represents a significant financial cost to the Territory, it is important that there be transparency over the cost of the project into the future. It will be important that the actual costs of the delivery and

implementation of the Capital Metro light rail be transparently and publicly reported in the Transport Canberra and City Services Directorate financial statements. The Capital Metro Agency has estimated the cost to be approximately \$939 million (present value, January 2016 using a 7.52 percent per year discount rate, or \$1.78 billion nominal over 20 years). However, this figure does not include estimated agency costs associated with the construction and operation of the light rail, i.e. agency costs for managing the successful consortium over a twenty-year period.

The cost of the construction and operation of the light rail will be offset by fare revenue, which has been estimated as \$81 million (present value, July 2014) over the twenty years of the concession period. Under an Availability Public-Private Partnership (PPP) the ACT Government will retain patronage and revenue risk, i.e. the risk of low passenger use and associated low revenues, but will have the opportunity to set fares.

## Key findings

	Paragraph
Different versions of the <i>Full Business Case</i> have been prepared. These include: <ul style="list-style-type: none"> <li>• <i>CMA Full Business Case – Board Version</i> (presented to a Board meeting on 15 August 2014);</li> <li>• a version presented to government on 10 September 2014; and</li> <li>• a version subsequently made public on 30 October 2014.</li> </ul>	3.15
There is no policy or administrative requirement for the ACT Government to make the <i>Full Business Case</i> publicly available. In other jurisdictions some business cases for other major transport infrastructure projects have been made publicly available and some business case have not. The public release of the <i>Full Business Case</i> assists with providing information to the community and stakeholders on the details of the project.	3.16
Calculations associated with the benefits of the Capital Metro Light Rail Project, which underpinned the cost-benefit analysis undertaken for the project and advice to decision-makers, were continuing to be worked on during the period between August and October 2014. There were significant changes to specific components of the benefits associated with the project within a short time, indicating that assumptions underpinning the model were changed rather than circumstances affecting the project. With the exception of the project contingency, which was changed at the request of the Capital Metro Project Board, the total estimated costs associated with the Capital Metro Light Rail Project did not change significantly between the different versions of the <i>Full Business Case</i> .	3.24
Documentation associated with the Capital Metro Project Board's endorsement of the <i>Full Business Case</i> is poor. The meeting through which the Capital Metro Project Board purported to endorse the <i>Full Business Case</i> was attended by a	3.34



minority of its members (although some of these members were represented by their identified proxies). The meeting did not have a quorum, as the Project Owner (or their proxy) or the Senior Supplier (or their proxy) did not attend. While the Project Owner has subsequently advised (January 2016) that they agreed at the time to the *Full Business Case* being presented to ACT Government decision-makers for approval, this was not documented at the time.

There were four sign-offs of the *Full Business Case* from various business units within the Chief Minister, Treasury and Economic Development Directorate in accordance with the Capital Framework. These sign-offs covered aspects of the financial and economic analysis that underpinned the Full Business Case, the selection of the delivery method for the project and the procurement method for the project. Treasury had a role with respect to reviewing the *Full Business Case*, as a form of quality assurance, including testing and questioning the calculations and assumptions underpinning the analysis. It did this through a desktop review of the *Full Business Case*, discussions with Capital Metro Agency staff, other ACT Government agency staff and the Capital Metro Agency's commercial advisers to assess the reliability and veracity of the financial model. This is consistent with the *ACT Government's Single Assessment Framework Business Case (Tier 3)*, which requires Treasury sign-off 'that the financial analysis has been prepared by an appropriately skilled advisor (Procurement and Capital Works Panel) and that there are no unacceptable assumptions in the analysis (only applicable for [public private partnership / design construct maintain operate] delivery models)'. This does not, however, amount to rigorous analysis or validation of the estimated benefits or costs, or of the Capital Metro Agency's advice on delivery options.

Reviews were conducted of the Full Business Case between August 2014 and October 2014. A peer review was conducted in August 2014, but this did not include consideration or examination of the economic analysis or the benefit-cost ratio as 'transport modelling was still being finalised'. Two external reviews were also conducted, which did not include 'comment on assumptions in or other inputs to the [*Full Business Case*], nor on detailed analysis, some of which is to be found in supporting technical documents' or 'an audit of the detailed data or values used'.

The original schedule for the development of the design of the Capital Metro Light Rail Project for incorporation in the *Full Business Case* for presentation to stakeholders for decision-making purposes saw the design stage commencing in mid-2013 and delivering a Definition Design and Refined Business Case (i.e. a *Full Business Case*) by November 2013. Following slippage in the project a revised schedule was developed, which had a similar five-month timeframe for the development of the design.

Some technical advice and inputs were not available at the time that the Definition Design report was completed in July 2014, to inform the *Full Business Case* for presentation to stakeholders for decision on the Capital Metro Light Rail Project. These included contamination studies, utility surveys, flooding studies and geotechnical studies. As these studies were not complete at the time of the preparation of the Definition Design report in July 2014 and the presentation of the *Full Business Case* to decision-makers in September 2014, the technical design of the Capital Metro light rail was subject to further refinement as better information was developed.

3.67

The Capital Metro Agency's contract with Arup (the technical advisor for the Capital Metro Light Rail Project) identified a robust process to be followed for the review and acceptance of technical advice provided as part of the development of the Definition Design. This process was modified in practice, and significant reliance was placed on the existence of a Design Comments Register that was prepared, and responded to, for each of the key design deliverables. While this facilitated Capital Metro Agency and other stakeholders' review of the technical advice, it was not as rigorous or robust as originally planned.

3.75

Under an Availability PPP, direct costs of constructing and operating the Capital Metro light rail will be borne by the private sector operator, in return for an ongoing 'availability payment'. 'Availability' refers to the operation of the light rail and its availability for use by patrons. Availability payments are to commence once the Capital Metro light rail is available for use by patrons.

3.84

The *Full Business Case* identifies a nominal capital cost estimate (i.e. not discounted) for the Capital Metro Light Rail Project of \$783 million (July 2014). The capital cost estimate is presented as a P75 figure. 'P75' means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent. By way of contrast the P50 nominal capital cost estimate of the project is \$759 million (July 2014 estimate) (where the probability of the estimated cost being exceeded is estimated to be less than 50 percent) and the P90 nominal capital cost estimate of the project is \$806 million (July 2014 estimate) (where the probability of the estimated cost being exceeded is estimated to be less than 10 percent).

3.94

Turner and Townsend prepared an initial capital cost estimate based on the Definition Design document prepared by Arup, and provided to the Capital Metro Agency on 21 July 2014. This initial capital cost estimate put the total capital cost of the Capital Metro Light Rail Project at \$1,011,439,147.

3.99

In August 2014 Turner and Townsend prepared a revised *Definition Design - Cost Plan Report*, which identified a capital cost estimate for the Capital Metro Light Rail Project (without contingency) of \$609,517,600. Key changes to the initial cost estimate prepared by Turner and Townsend (29 July 2014) and the revised *Definition Design - Cost Plan Report* are: 3.103

- the removal of owner's costs of \$101,987,000 (and a contingency for owner's costs of \$40,795,000);
- the removal of a contingency for the main works of \$226,637,000;
- reduction of escalation allowance by \$10,789,104; and
- savings of \$21,713,443 derived from design revisions derived from a Value Engineering Workshop conducted on 31 July 2014.

With respect to the calculation of the contingency amount, the Audit Office was provided with an undated *Construction Risks Estimates Matrix*, which was produced by EY, which identifies various risks to the Capital Metro Light Rail Project, assesses their impact, and quantifies them in dollar terms. The *Construction Risks Estimates Matrix* provides for a total value of \$146.3 million (in real terms). However, there is no documentation of the process by which the quantification was derived. The Capital Metro Agency did not maintain sufficient documentation with respect to the Monte Carlo statistical simulation, used to calculate the expected contingency for the capital cost estimate for the project. This was specifically lacking with respect to the input assumptions (important because different assumptions will produce different results), the algorithm used (important because different algorithms will produce different results) or the number of iterations, or repetitions, performed (important because more iterations will produce more accurate results). 3.107

The Capital Metro Agency does not intend to replace the rolling stock until 2049, i.e. the initial trams are expected to continue operating for 30 years. There are some risks with this approach, as there is evidence that trams in other jurisdictions have been replaced anywhere between 15 to 22 years. There is also evidence that trams in other jurisdictions, e.g. Melbourne, have operated for close to forty years. The Capital Metro Agency has sought to manage this risk through the procurement process, whereby potential bidders 'provided fitness for purpose / residual life warranties with respect to their rolling stock of (at least) 30 years'. 3.116

The *Full Business Case* identifies a nominal operating cost estimate (i.e. not discounted) for the Capital Metro Light Rail Project of \$1,289 million (July 2014 estimate). The operating cost estimate is presented as a P75 figure. 'P75' means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent. 3.119

The Capital Metro Agency's analysis of the Public Sector Comparator and PPP Proxy shows: 3.133

- the total estimated cost of delivery of the project through a public-private partnership was \$875 million (present value, July 2014). This includes the present value of estimated availability payments to be made to the successful consortium over the concession period and a contingency amount for the project for the Territory;
- the total estimated cost of delivery of the project through a public-private partnership was estimated to be cheaper than the cost of delivering the project by the public sector, which was estimated to be \$970 million (present value, July 2014);
- the *Full Business Case* estimated that the expected cost of availability payments to be made to the successful consortium over the 20 year concession period would be \$804 million (present value, July 2014); and
- the Territory-retained risk for the Capital Metro Light Rail Project was estimated to be \$71 million (present value, July 2014). (This would be the same irrespective of whether the project was delivered by the public sector or through a public-private partnership). This represents a contingency amount for the project for the Territory.

The *Full Business Case* recommended an Availability PPP for the delivery of the Capital Metro Light Rail Project, which would involve a single vertically integrated package comprising rail infrastructure, rolling stock, maintenance, and operations. In doing so, the *Full Business Case* notes that 'the project is of such size and complexity that any attempt by the ACT Government to undertake the project outside a PPP model would be fraught with acute cost and timing risks'. 3.134

The Capital Metro Agency has advised that the discount rate applied to the Public Sector Comparator is 5.52 percent and the discount rate applied to the PPP Proxy is 7.52 percent as per the calculation methodology in Volume 5 of the *Australian Government National PPP Guidelines*. These were not disclosed in the *Full Business Case*. 3.137

The total nominal capital and operating cost estimate for the Capital Metro Light Rail Project, i.e. not discounted to present value, was \$2,072 million (July 2014 estimate). This figure does not include agency costs, i.e. agency costs in managing the operator during both the construction and operational phases. 3.139

The estimated cost of the project, as represented by the PPP Proxy, was \$875 million (present value, July 2014). This included \$804 million in availability payments (present value, July 2014) and \$71 million in Territory-retained risk (present value, July 2014), representing a contingency amount for the project for 3.147

the Territory. This figure does not include the Capital Metro Agency (or ACT Government) costs associated with the delivery of the project.

Under an Availability PPP the ACT Government will retain patronage and revenue risk, i.e. the risk of low passenger use and associated low revenues, but will have the opportunity to set fares. The estimated cost of the Capital Metro light rail will be partially offset by income from fares. The *Full Business Case* has not identified a nominal value of estimated 'indicative potential revenues' over 20 years, but has identified a total of \$81 million in present value terms (July 2014). 3.152

The Capital Metro Agency advised that the expected nominal cost of the Capital Metro Light Rail Project, following the signing of contracts was approximately \$1,779,041,000. This figure comprises: 3.155

- \$375,000,000 Territory capital contribution;
- \$1,274,352,000 in availability payments to the successful consortium; and
- \$129,689,000 Territory-retained risk amount.

The Capital Metro Agency further advised that the present value of the expected cost of the Capital Metro Light Rail Project is \$939 million (January 2016, discounted at 7.52 percent). This figure comprises: 3.157

- \$305,427,000 Territory capital contribution;
- \$519,672,000 in availability payments to the successful consortium; and
- \$113,919,000 Territory-retained risk amount.

The \$939 million (present value) figure is calculated as at January 2016. It is not directly comparable with the \$875 million (present value) figure that was included in the *Full Business Case*, as the latter figure was calculated as at July 2014, approximately 18 months previously. 3.158

The updated cost estimate for the Capital Metro Light Rail Project, following the signing of contracts, of \$939 million (present value, January 2016) is less than the estimated cost of the project in the *Full Business Case* (PPP Proxy), which is estimated to be \$975 million in January 2016 (discounted at 7.52 percent). The updated cost estimate for the Capital Metro Light Rail Project of \$939 million (present value, January 2016) is also less than the Public Sector Comparator identified in the *Full Business Case*, which is estimated to be \$1,051 million in January 2016 (discounted at 5.52 percent). 3.161

Following the signing of contracts, the Territory's retained risk amount for the project has increased from \$71 million (present value, July 2014) to \$114 million (present value, January 2016). The Territory's retained risk amount represents a contingency amount for the project for the Territory. The Capital Metro Agency advised that the increased amount is due to a reassessment of the value and allocation of risks through the contract between the successful consortium partner and the Territory, including the allocation of certain contamination and other risks, as well as measuring retained risk from a common January 2016 measurement date. 3.162

## Development of the Business Case

- 3.3 As discussed in paragraph 1.16, the Parliamentary Agreement made on 2 November 2012 between the Leader of ACT Labor and the ACT Greens Member for Molonglo included a commitment by ACT Labor as the ACT Government to support or implement various initiatives, including:

Progress a light rail network for Canberra by:

- a) Establishing a statutory independent authority to implement the light rail project and associated development in the corridor;
- b) Undertaking the necessary design studies, preparatory works, financing, procurement and tendering arrangements, with a target date for laying of tracks for the first route commencing in 2016;
- c) Creating a Canberra-wide light rail network master plan.

- 3.4 *Transport for Canberra* (the ACT Government's key transport policy document) identified that the Gungahlin to City transport corridor was to be the short to medium term priority for transport infrastructure investments:

Northbourne Avenue and the Gungahlin to City corridor will be the government's priority corridor for new infrastructure investments in the short to medium term, with mass rapid transit to be considered following the results of the 2011-12 study.

- 3.5 Following the ACT Government decision to proceed with the Capital Metro Light Rail Project, it was incumbent on the Capital Metro Agency to:
- design the Capital Metro light rail; and
  - select and recommend a delivery method for the Capital Metro Light Rail Project.

## Designing the Capital Metro light rail

- 3.6 The Capital Metro Agency's activities to design the Capital Metro light rail sought to identify and plan for the basis on which the light rail would be implemented. The design of the project was undertaken in three phases, with each phase providing an increased level of detail. The three phases (Feasibility, Scoping and Definition Design) outlined and provided options for design aspects such as:
- light rail vehicles and support systems (communications, power, ticketing, overhead power);
  - track types and assessment of impact on existing bridges and roadways;
  - impact on, and solutions for, existing utilities;
  - road and intersection designs;
  - trees and landscaping along the route; and
  - types of stops and proposed designs.
- 3.7 The three phases also considered environmental impacts, regulatory requirements, land impacts, safety regulation and sustainability.

## Selecting and recommending a delivery method

- 3.8 The Capital Metro Agency's activities to select and recommend a delivery method for the Capital Metro Light Rail Project sought to identify the means by which the project would be delivered. According to the *Full Business Case*, in doing so the Capital Metro Agency sought to assess two key questions:
- How should the various project components be packaged to deliver best-value-for-money outcomes?
  - Which contracting models are preferred for delivery of the proposed project?
- 3.9 Activities associated with the design of the Capital Metro Light Rail Project and the means by which it was to be procured culminated in the preparation and presentation of a *Full Business Case* to decision-makers.

## Business Case

- 3.10 In September 2014 the *Full Business Case* was presented to Government for consideration. The purpose of the *Full Business Case* was to seek:
- ... approval for the ACT Government, represented by Capital Metro Agency, **to procure the project on the basis set forth herein**. [Audit Office emphasis]

3.11 The publicly-released version of the *Full Business Case* (30 October 2014) notes that:

This Full Business Case has been drafted in the context of:

- One of the 2012 Territory election commitments of the current Government being the development of light rail in Canberra;
- The 2 November 2012 Parliamentary Agreement, which states: ‘2.2 Progress a light rail network for Canberra by: a) Establishing a statutory independent authority to implement the light rail project and associated development in the corridor; b) undertaking the necessary design studies, preparatory works, financing, procurement and tendering arrangements, with a target date for the laying of tracks for the first route commencing in 2016; c) Creating a Canberra wide light rail network master plan’;
- Capital Metro Agency having been established as an ACT Government directorate to manage all aspects of the ongoing planning, design and delivery of the project;
- The project’s objectives (approved by Cabinet in June 2013 and repeated herein) and public communications associated with Capital Metro Agency being based upon a City to Gungahlin light rail project; and
- Various studies and reports in connection with Canberra transportation options which were conducted prior to the establishment of Capital Metro Agency and which supported a City to Gungahlin light rail system.

Given this background and the focussed remit of Capital Metro Agency, including analysis already performed and decisions made, this Full Business Case considers the business case for a 12 kilometre light rail route from the City to Gungahlin. It does not extend to an analysis of alternate light rail routes, nor does it extend to considering alternate means of transport such as bus rapid transit.

3.12 The *Full Business Case* provides details such as:

- an overview of the project including the proposed route, location of stops, the technical requirements such as power, depots and other civil works required and the objective of the project;
- a needs analysis undertaken to identify key problems which would be addressed by the project and an outline of what benefits could be achieved;
- estimated capital delivery costs and project contingencies;
- a cost-benefit analysis for the project;
- delivery model analysis including options for delivering the project;
- estimated whole of life costs of the project if it were delivered by either the government or the private sector; and
- project governance, including the role of the Capital Metro Sub-committee of Cabinet, Capital Metro Project Board and the Project Director.

3.13 The *Full Business Case* was prepared with reference to guidance published by the Chief Minister, Treasury and Economic Development Directorate, including *The Capital Framework*, *The Partnership Framework* and the Single Assessment Framework Business Case Tier 3 Template.



- 3.14 The *Full Business Case* followed an earlier *Rapid Business Case*, dated 26 March 2014. The *Rapid Business Case* was intended to be a strategic working document and, unlike the *Full Business Case*, was not structured to meet the requirements of the Chief Minister, Treasury and Economic Development Directorate's frameworks described in paragraph 3.13. The *Rapid Business Case* was a preliminary, high-level strategic document, which provided analysis of land use, patronage, economic and delivery models and benefits limited to the 'long term role of the project in the city rather than finer grained construction and operation issues'.
- 3.15 Different versions of the *Full Business Case* have been prepared. These include:
- *CMA Full Business Case – Board Version* (presented to a Board meeting on 15 August 2014);
  - a version presented to government on 10 September 2014; and
  - a version subsequently made public on 30 October 2014.
- 3.16 There is no policy or administrative requirement for the ACT Government to make the *Full Business Case* publicly available. In other jurisdictions some business cases for other major transport infrastructure projects have been made publicly available and some business case have not. The public release of the *Full Business Case* assists with providing information to the community and stakeholders on the details of the project.
- 3.17 Appendix A provides examples of business cases for major transport infrastructure projects that are publicly available.
- 3.18 The Capital Metro Agency has advised that:
- Numerous working versions of the draft Full Business Case were prepared for broad stakeholder review during its development, including:
- a draft version which was circulated to numerous ACT Government stakeholders, including all Directors-General; and
  - a Draft Full Business Case which was submitted to [ACT Government decision-makers] as an information document for its consideration at an earlier stage of the business case development process.
- The thorough drafting process was undertaken in a manner that provided exposure of the full business case to a wide range of experts and ACT stakeholders. This robust process ensured that the final version had been subject to significant review and refinement prior to its presentation to Cabinet and public release.

### Changes to the Full Business Case

- 3.19 Changes were made to the *Full Business Case* between the version presented to the Board and the version approved by ACT Government decision-makers. Significant changes were made to the economic analysis underpinning the *Full Business Case*, including:
- the estimated benefits of the project (refer to Table 4-5); and
  - the estimated benefit-cost ratio for the project.

### *Changes to benefits*

- 3.20 The total estimated benefits of the project were reduced by 9.2 percent between the version of the *Full Business Case* that was presented to the Board and the version approved by ACT Government decision-makers. (The total estimated benefits of the project were subsequently increased in the publicly released version, such that the overall decrease was 5.7 percent). Key changes, however, were made to different components of the identified benefits for the project, i.e. some were significantly increased and some were significantly decreased (refer to Table 4-5 and paragraph 4.84), indicating that changes were being made to the assumptions underpinning the model.

### *Change to project contingency*

- 3.21 A further key change to the *Full Business Case* was that, following advice from the Capital Metro Project Board, it was decided to present the project contingency on a P75 basis, as opposed to a P50 basis. 'P75' means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent. The project contingency was presented as \$173 million, as opposed to \$149 million, and the estimated total project outturn cost was presented as \$783 million, as opposed to \$759 million (reflecting the revised contingency).

- 3.22 The Capital Metro Agency advised that:

The decision to present estimated project costs on a P75 basis was made by the Board, following a request by CMA officials that the Board consider the probability basis upon which contingency figures should be presented. The Board took the view that a P75 contingency figure would be appropriate having regard to the stage of the project's development, whilst being more conservative than the presentation of a P50 amount. The Full Business Case was adjusted accordingly prior to the presentation of that document to Cabinet.

### *Other changes*

- 3.23 Further changes were made to the *Full Business Case* between the version approved by ACT Government decision-makers and the version that was publicly released. As well as estimated benefits being adjusted (refer to Table 4-5 and paragraph 4.84), estimated patronage numbers were included and planned core operating hours were adjusted from 7 a.m. - 7 p.m. to 7 a.m. - 6 p.m.

### *Changes to economic analysis and assumptions*

- 3.24 Calculations associated with the benefits of the Capital Metro Light Rail Project, which underpinned the cost-benefit analysis undertaken for the project and advice to decision-makers, were continuing to be worked on during the period between August and October 2014. There were significant changes to specific components of the benefits associated with the project within a short time, indicating that assumptions underpinning the model were changed rather than circumstances affecting the project. With the exception of the project contingency, which was changed at the request of the Capital Metro Project Board,

the total estimated costs associated with the Capital Metro Light Rail Project did not change significantly between the different versions of the *Full Business Case*.

3.25 The Capital Metro Agency advised that:

The 'cost-benefit analysis' is but one tool available to Government to assist in its decision making process, and to this end the Business Case includes a range of quantitative and qualitative information associated with needs, policy considerations, benefits, risks and socio-economic outcomes to support the ACT Government in reaching a decision on the project.

3.26 The Capital Metro Agency further advised that 'it is misleading to suggest that "significant" changes were made to the Full Business Case during this period'. EY, on behalf of the Capital Metro Agency, also advised:

The economic analysis had been extensively developed based on the latest designs and cost estimates for each draft of the full business case presented to the board and cabinet. Any changes during that process were refinements that are common when subject to further review. The final version - approved by cabinet - whether by subsequent submission or during the final cabinet meeting - is the version that should be tested. The fact refinement was undertaken should be seen as a positive sign of a robust review process.

3.27 The Audit Office notes these comments and agrees that economic analysis underpinning major transport infrastructure projects may be refined and that it is legitimate to do so as planning for the project continues. For the Capital Metro Light Rail Project, however, there were significant changes in the different components of the benefits associated with the project (refer to Table 4-5 and paragraph 4.84) within a short time. By way of example, approximately \$83 million (present value) in anticipated health benefits were identified in the *Full Business Case* that was presented to the Board on 15 August 2014 (8.0 percent of the expected total project benefits), which was reduced to \$6 million in the Full Business Case presented to the Capital Metro Sub-committee of Cabinet on 10 September 2014. The reduction in the anticipated health benefits associated with the project were offset by increases in wider economic benefits (including land use benefits). This indicates that there were changes being made to the assumptions underpinning the economic analysis and not in response to changing circumstances.

## Endorsement of the Full Business Case

3.28 The *Capital Metro Project Board Charter* clearly specifies it is the Capital Metro Project Board's responsibility to endorse the *Full Business Case*.

3.29 A Capital Metro Project Board meeting on 15 August 2014 considered the *CMA Full Business Case – Board Version*. The meeting was attended by three of its seven members (two of the absent members were represented by their proxies) as well as a range of other attendees from the Capital Metro Agency and other ACT Government agencies.

3.30 According to the *Capital Metro Project Board Charter* 'a quorum is constituted when the Project Owner, two Senior Users and a Senior Supplier attend the meeting'. While the meeting was attended by a Senior User and the proxies of other Senior Users, the meeting

was not attended by the Project Owner or Senior Supplier, or their proxies. The minutes of the meeting recorded:

The Board made recommendations for changes to the paper.

The Board agreed that members who were not able to be present on the day were to be consulted and final comments incorporated into the paper.

The Board endorsed the public release of the Full Business Case and the Project Summary (Business Case in Brief document)

- 3.31 While it is not clear from the minutes that the Capital Metro Project Board actually endorsed the *Full Business Case*, it is assumed that this is the case as subsequent advice was provided to ACT Government decision-makers that ‘the Capital Metro Project Board has endorsed the presentation of the *Full Business Case* (including endorsement of the proposed procurement of the project via an Availability Public-Private Partnership), and the Project Summary’.
- 3.32 In a signed file note on 27 January 2016, the Project Owner recorded that they were briefed on 14 August 2014, prior to the Capital Metro Project Board meeting of 15 August 2014 in relation to the *Full Business Case*. The Project Owner recorded that a document was prepared for them to sign, ‘to give assurance to the board that I was satisfied with the Business Case’. The Project Owner also advised:
- I cannot recall signing this document off but I did agree to the Business Case being forwarded to [ACT Government decision-makers] prior to the board meeting of 15 August 2014.
- I was a signatory on the Business case and was subsequently present ... where [ACT Government decision-makers] endorsed the Business case.
- 3.33 The Audit Office sought confirmation from the Capital Metro Agency on whether this document was signed. The Capital Metro Agency did not provide a signed version of this document. Accordingly, the Audit Office has concluded that the document was not signed.
- 3.34 Documentation associated with the Capital Metro Project Board’s endorsement of the *Full Business Case* is poor. The meeting through which the Capital Metro Project Board purported to endorse the *Full Business Case* was attended by a minority of its members (although some of these members were represented by their identified proxies). The meeting did not have a quorum, as the Project Owner (or their proxy) or the Senior Supplier (or their proxy) did not attend. While the Project Owner has subsequently advised (January 2016) that they agreed at the time to the *Full Business Case* being presented to ACT Government decision-makers for approval, this was not documented at the time.

### Treasury’s review of the *Full Business Case*

- 3.35 Under the Territory’s Single Assessment Framework, the *Full Business Case* (Tier 3 – project value greater than \$50 million) requires three sign-offs by the Chief Minister, Treasury and Economic Development Directorate.

3.36 Sign-offs in the *Full Business Case*, required by the Capital Framework, were completed as follows:

- Review One – undertaken by Procurement and Capital Works Division (Economic Development in the Chief Minister, Treasury and Economic Development Directorate) – is to confirm that the design and output specification has been undertaken in a manner sufficient to proceed to market for Expressions of Interest.
- Review Two – undertaken by Finance and Budget Division (Treasury in the Chief Minister, Treasury and Economic Development Directorate) – is to confirm that sufficient needs analysis has been undertaken. This section focuses primarily on the problem to be solved and the benefits to be achieved by the project.
- Review Three – undertaken by Procurement and Capital Works Division (Economic Development in the Chief Minister, Treasury and Economic Development Directorate) – is to confirm that the selected delivery model is suited to the project requirements and level of risk.
- Review Four – undertaken by Infrastructure Finance and Advisory (Treasury in the Chief Minister, Treasury and Economic Development Directorate) – is to confirm the financial analysis has been prepared in accordance with the relevant guidelines and by an appropriately capable organisation.

3.37 The Audit Office sought specific information on the role of Treasury with respect to its review of the *Full Business Case*. Treasury advised that its 'role was to review the business case, consider the statement of need and provide advice to the Treasurer in relation to our review of the business case'. Treasury further advised:

The review activities undertaken by [Treasury] were consistent with business case analysis and review for other capital projects. However, reflecting the size and nature of this project it was given considerably greater attention and there was greater interaction with Capital Metro Agency, including through an iterative approach through development and comment on [advice to ACT Government decision-makers] in the lead up to the preparation of the business case.

3.38 In doing so, Treasury advised it undertook the following review activities in relation to the *Full Business Case*:

- a desktop review of the *Full Business Case*;
- meetings with executive officers from the Capital Metro Agency to discuss and develop a thorough understanding of the information and drivers of elements of the *Full Business Case*;
- discussions with executive officers of the Economic Development Directorate on the land development aspects of the *Full Business Case*;
- discussions within Treasury in relation to the *Full Business Case*;
- discussions within Treasury in relation to the externalities associated with the project;

- meetings within Treasury to develop advice on the accounting treatment and headline net operating balance impact of the project over its life;
- discussions with EY to assess the reliability and veracity of the financial model; and
- various briefing sessions.

3.39 Treasury advised the Audit Office that this work was documented in a brief that was provided to the Treasurer from the Under Treasurer on 5 September 2014. The brief stated:

In summary, we consider that the Capital Metro Full Business Case is thorough and has been prepared by appropriately skilled advisers and in collaboration with the relevant parts of the Government.

3.40 Treasury officials advised that Treasury was not responsible for the accuracy of the costs and benefits estimates, but had undertaken its role as a form of quality assurance, testing and questioning the calculations and assumptions underpinning the analysis. Treasury officials also confirmed that the Capital Metro Agency had gone through an appropriate tender process to select advisers with proven capacity in the area and, accordingly, the ACT Government was entitled to rely on the advice received.

3.41 There were four sign-offs of the *Full Business Case* from various business units within the Chief Minister, Treasury and Economic Development Directorate in accordance with the Capital Framework. These sign-offs covered aspects of the financial and economic analysis that underpinned the Full Business Case, the selection of the delivery method for the project and the procurement method for the project. Treasury had a role with respect to reviewing the *Full Business Case*, as a form of quality assurance, including testing and questioning the calculations and assumptions underpinning the analysis. It did this through a desktop review of the *Full Business Case*, discussions with Capital Metro Agency staff, other ACT Government agency staff and the Capital Metro Agency's commercial advisers to assess the reliability and veracity of the financial model. This is consistent with the *ACT Government's Single Assessment Framework Business Case (Tier 3)*, which requires Treasury sign-off 'that the financial analysis has been prepared by an appropriately skilled advisor (Procurement and Capital Works Panel) and that there are no unacceptable assumptions in the analysis (only applicable for [public private partnership / design construct maintain operate] delivery models)'. This does not, however, amount to rigorous analysis or validation of the estimated benefits or costs, or of the Capital Metro Agency's advice on delivery options.

## Other reviews of the Full Business Case

### Peer review of the Full Business Case

3.42 In August 2014, the Capital Metro Agency established a four person panel to review the draft *Full Business Case*. The four person panel met for three hours on 7 August 2014, prior to the submission of the *Full Business Case* to the Capital Metro Project Board on 15 August 2014. According to the Capital Metro Agency 'establishment of this group

reflected a desire from CMA for a “fresh set of eyes” to review the work to date and provide critical feedback”. Comments arising from the review were provided directly to a CMA Business Case Working Group.

- 3.43 The peer review did not include consideration or examination of the economic analysis or the benefit-cost ratio as ‘transport modelling was still being finalised’.

### Scrafton Review

- 3.44 On 31 October 2014, Professor Derek Scrafton of the University of South Australia provided a report of a review of the *Full Business Case*. According to the report:

The Terms of Reference for this review of the Capital Metro Agency’s Full Business Case (FBC) are to comment on the appropriateness of the FBC that has been prepared in support of the decision to proceed with the first stage of the proposed light rail project linking Gungahlin with the Canberra city centre via Flemington Road and Northbourne Avenue, with particular focus on the suitability of the methodology adopted and the rigour applied in the analysis.

- 3.45 The review did not include consideration of the assumptions or other inputs into the *Full Business Case*, noting:

It is important to note that the review is not expected to comment on assumptions in or other inputs to the FBC, nor on detailed analysis, some of which is to be found in supporting technical documents.

### Vickerman Review

- 3.46 On 30 October 2014, Professor Roger Vickerman provided a report of a review of the *Full Business Case*. According to the report:

This Independent Review was commissioned by CMA in order to assess the soundness of the methodology used to develop the Business Case for the Capital Metro project.

- 3.47 The review did not include consideration of the assumptions or other inputs into the *Full Business Case*, noting:

The Review focuses on the broad approach to the Business Case, rather than an audit of the detailed data or values used.

- 3.48 Reviews were conducted of the Full Business Case between August 2014 and October 2014. A peer review was conducted in August 2014, but this did not include consideration or examination of the economic analysis or the benefit-cost ratio as ‘transport modelling was still being finalised’. Two external reviews were also conducted, which did not include ‘comment on assumptions in or other inputs to the [Full Business Case], nor on detailed analysis, some of which is to be found in supporting technical documents’ or ‘an audit of the detailed data or values used’.

## Design of the Capital Metro light rail

- 3.49 As at August 2015, the Capital Metro Agency had spent more than \$10 million on engineering and related technical advice in support of the Capital Metro Light Rail Project. Nearly \$6 million was spent to support advice to Government up to and including its consideration and approval of the *Full Business Case* in September 2014. The majority of this advice informed a Definition Design and was provided in less than six months between February and July 2014.

### Definition Design

- 3.50 The purpose of the Definition Design was to inform the development of the *Full Business Case* for presentation to key stakeholders for decision-making on the project. It followed the Feasibility and Scoping phases of the project, which were completed on 14 April and 19 May 2014 respectively. The Capital Metro Agency advised:

The definition design was essential not only for the Business Case, but it:

- provided the foundation for the reference design used in the project's RFP documentation;
- was used in the Territory's mitigation of utility risks;
- contributed to the Territory obtaining value for money through the procurement process by reducing technical uncertainty for bidders; and
- enabled the Territory to progress EIS and development approval process and other activities.

- 3.51 Completed on 21 July 2014 and comprising five volumes of material, the Definition Design contains technical and design information, intended to provide the information necessary to support the environmental approvals process and an estimate of the price of the project.

- 3.52 It was intended, however, that there be some flexibility in the actual design of the Capital Metro light rail. The Definition Design report notes:

As CMA intends to deliver this project under a PPP contract for most of the works, and in line with current good industry practice, the current work has provided a design as unconstrained as possible in order to allow tenderers to seek economies and improvements.

### Timing of the Definition Design

#### *Original timeframe for design*

- 3.53 The original schedule for the Capital Metro Light Rail Project saw the design stage commencing in mid-2013 and culminating in a Definition Design and Refined Business Case (i.e. a *Full Business Case*) by November 2013. The original schedule allowed five months in which to achieve a solid set of requirements and a *Full Business Case* supported by financial analysis with which to approach the market.



- 3.54 By December 2013, schedule slippage was evident and was identified as a 'red' risk. The recommended risk treatments were:

Test the validity of re-using material from similar projects; e.g. contract documentation from [*Gold Coast Rapid Transit*] to accelerate the procurement phase.

Weight evaluation criteria for specialist consultants towards those with experience on very similar projects, in an effort to accelerate the procurement phase.

Test the limits of what 'tracks in the ground' means; i.e. does it represent any type of major construction, PPP financial close, etc? Public information on timeframes is carefully considered and, if appropriate, made available on the website and updated regularly to reflect changes.

Open and clear communication with the public to ensure that they are aware that progress [sic] and understand any reasons for delay.

#### *Revised timeframe for design*

- 3.55 On 16 January 2014 the Capital Metro Project Board directed that a new project schedule be prepared for the February Board meeting. On 13 February 2014 the Board approved a revised schedule that provided for feasibility, scoping and definition design phases, running from March 2014 to mid-July 2014 (some five months), with refinement of the design up to the end of September 2014. At that meeting, the Board received and noted the proposed scope of work to be undertaken by a technical advisor.
- 3.56 The original schedule for the development of the design of the Capital Metro Light Rail Project for incorporation in the *Full Business Case* for presentation to stakeholders for decision-making purposes saw the design stage commencing in mid-2013 and delivering a Definition Design and Refined Business Case (i.e. a *Full Business Case*) by November 2013. Following slippage in the project a revised schedule was developed, which had a similar five-month timeframe for the development of the design.

### Technical inputs into the Definition Design

- 3.57 The key consultant for the purpose of the Definition Design was Arup, which was engaged as the technical advisor to the Capital Metro Agency.

#### Technical deliverables for Definition Design

Following an open tender process, Arup was appointed technical advisor to the Capital Metro Agency in February 2014, under a contract valued at \$3.29 million. Two subsequent variations increased the total value of the contract to \$5.52 million by the conclusion of the design phase of the project. The advice to be provided by Arup to the Capital Metro Agency was specified for three design phases, consistent with the schedule provided to the Capital Metro Project Board in February 2014, shown in Table 3-1.

**Table 3-1 Technical Advisor's deliverables and due dates**

Phase	Deliverable	Due date
Design Feasibility:	Business Requirements Specification	10 March 2014
	All deliverables this phase	14 April 2014
Design Scoping:	Design documentation	19 May 2014
	All deliverables this phase	19 May 2014
Definition Design:	Design documentation	30 June 2014
	All deliverables this phase	28 July 2014

Source: ACT Audit Office

- 3.58 The deliverables at each phase were specified in detail in a Schedule to the contract as a set of requirements and tasks. This accords with better practice.
- 3.59 The principal deliverables to be delivered by Arup for the purpose of the Definition Design were set out in the contract with Arup and, to a lesser extent, contracts with other consulting firms (including Veitch Lister for the modelling of light rail patronage and the effects on other modes of transport).
- 3.60 Arup provided the Feasibility and Scoping reports to the Capital Metro Agency on 14 April and 19 May 2014 (on schedule) and the Definition Design report on 21 July 2014 (one week early).
- 3.61 Arup's deliverables were in accordance with those identified in the contract, and reflected additional work, beyond that initially specified, in a number of areas such as:
- the engineering design component was expanded to include extensive drawing packs for civil works, a safety hazard log updated as the design progressed, a traction power study, and a log of design risks and opportunities updated as the design progressed;
  - the urban design and access plans were successively refined, with substantial attention paid to trees and other vegetation along the proposed route; and
  - the sustainability strategy included an Infrastructure Sustainability Council of Australia Infrastructure Sustainability Rating Scheme score of 63.1 ('Excellent') with the possibility of improvement during the refinement of the design.
- 3.62 Although Arup provided the Definition Design report on 21 July 2014, it was incomplete and did not include some important technical deliverables, such as:
- contamination assessments, spot surveys and site remediation/management plans;
  - documentation of any sites or locations with potential contamination, including the scale and nature of the contamination and recommended management or remedial strategies; and

- development of a Utility and Services Management Plan which identifies all utility services that may be affected and/or require re-location, including cost, time and responsibilities.
- 3.63 These technical deliverables were not completed and provided as they were dependent on the outcomes of other studies that had yet to be finalised, including:
- **Contamination studies** – not completed until 31 October 2014; and
  - **Utility surveys** – at 9 July 2015, some utility relocation costs had still to be quantified.
- 3.64 Other studies yet to be finalised when the *Full Business Case* was approved were:
- **Flooding studies of the Sullivan’s Creek catchment** – not available until 17 September 2014, requiring additional analysis to determine effects on the Flemington stabling yards and adjacent tracks; and
  - **Geotechnical studies** - not commenced at the time of Definition Design.
- 3.65 The completion and inclusion of these deliverables would have provided the Capital Metro Agency with a stronger basis on which to develop and identify costs associated with the Capital Metro Light Rail Project.
- 3.66 Some technical advice and inputs were not available at the time that the Definition Design report was completed in July 2014, to inform the *Full Business Case* for presentation to stakeholders for decision on the Capital Metro Light Rail Project. These included contamination studies, utility surveys, flooding studies and geotechnical studies. As these studies were not complete at the time of the preparation of the Definition Design report in July 2014 and the presentation of the *Full Business Case* to decision-makers in September 2014, the technical design of the Capital Metro light rail was subject to further refinement as better information was developed.
- 3.67 On this issue, the Capital Metro Agency has advised:
- The Full Business Case was finalised based upon a wholly appropriate degree of technical information, consistent with the development of other similar projects in the Australian market.
- ...
- Additional information was obtained post submission of the Definition Design for consideration in the Enhanced Definition Design provided to tenderers. This was provided for information as part of the Request For Proposal (RFP) and also formed the basis of the Development Application.

3.68 EY, on behalf of the Capital Metro Agency, has also advised:

The amount of technical information available to CMA at the time of Full Business Case drafting was adequate and appropriate and at the same level or in excess of other precedent complex infrastructure projects.

At different stages in a project's development and procurement, there is always a level of uncertainty (this level reduces over time).

At Business Case stage for complex infrastructure projects, it is not unusual for the full suite of supporting technical studies to be incomplete.

...

To account for uncertainty at any stage in the project's development, the cost estimate considers the particular level of uncertainty at that point in time through an appropriate contingency and risk allowance. This was achieved through having workshop participants involved in the project and aware of the level of documentation on hand. In the case of studies mentioned in the draft report many had preliminary findings presented at the time of the Business Case so these findings were considered as part of the risk assessment and contingency process.

## Enhanced Definition Design

3.69 The Definition Design formed the basis for the Enhanced Definition Design, which was completed on 26 March 2015. The Enhanced Definition Design provided further design details for areas of the project, including:

- light rail systems and vehicles;
- utilities;
- geotechnical (including ground investigations, flood studies and rail alignment and clearances);
- urban design and access
- safety requirements; and
- options for stops, terminus, and interchanges.

3.70 The Enhanced Definition Design was provided to potential bidders as part of the procurement process. Providing the Enhanced Definition Design to potential bidders as part of the procurement process allows them to understand the nature of the project, its scope and design, and provide a response identifying how they intend to deliver the project and at what cost. It was incumbent on the Capital Metro Agency to provide potential bidders with as much information as possible, to allow them to provide an informed and appropriately costed response.

## Review and acceptance of technical advice

3.71 Technical advice underpinned the Capital Metro Agency's advice to ACT Government decision-makers regarding the feasibility and estimated cost and benefits of the project. Before providing this advice, it was incumbent on the Capital Metro Agency – as far as possible – to validate and verify this advice in order to mitigate the risk of providing inaccurate information.

3.72 The Capital Metro Agency's contract with Arup specified the procedure for the Capital Metro Agency's review and acceptance of Arup's deliverables:

At the end of each phase the Consultant will present the findings of that phase for review and 'agreement in principle' to proceed to the next phase and completion of documentation. The review process will include:

- Submission of draft documentation of the findings of the phase (Day 1).
- Presentation of a summary of findings (in a workshop format) to CMA's project team representatives (Day 2).
- Presentation of a summary of findings (in a workshop format) to the Operations Review Panel (Day 3).
- Allowance of two days for Capital Metro to review draft documentation (Day 3 and 4).
- Allowance of one day for the Operations Review Panel to review draft documentation (Day 4).
- Interactive session where the comments from Capital Metro and the Operations Review Panel are presented and discussed (Day 5).
- Completion of the final documentation by the Consultant (following week).

In addition to the sign off of each phase there will be a sign off process for the Preliminary Product Brief. This deliverable is due [10 March 2014] and will be submitted to CMA's project team representatives for approval.

3.73 The review process specified in the contract with Arup was not followed. Arup advised the Audit Office that the process, as provided for by the contract was modified, but for each of the three key deliverables (Feasibility Design Report - 14 April 2014, Scoping Design Report - 19 May 2014 and Definition Design Report - 21 July 2014) the following process was conducted:

1. Arup prepared the design submission, meetings and discussions were conducted with the CMA Project Team and key stakeholders during the development of the submissions
2. Arup submitted the documents for review
3. Documents were shared within the CMA Project Team and key stakeholders (e.g. TAMS, EPD etc) for comment
4. Discussions/meetings were conducted with CMA's Executive Director for Procurement and Delivery and members of CMA's Project Team to review the submissions
5. Meetings were conducted between Arup's Technical Director and CMA's Operations Review Panel to obtain and discuss feedback

6. Comments, issues and queries were returned to CMA by reviewers and consolidated by CMA into a Design Comments Register
7. Design Comments Register was issued to Arup for consideration
8. Arup considered the feedback in the Design Comments Register and provided confirmation as to whether it was appropriate and if not, why not
9. Meetings/discussions were conducted with CMA's Project Team and key stakeholders as necessary to resolve and clarify any outstanding issues
10. Comments were considered in the subsequent report and the Design Comments Register was included as an appendix in the subsequent report as a formal record

3.74 The Capital Metro Agency's contract with Arup (the technical advisor for the Capital Metro Light Rail Project) identified a robust process to be followed for the review and acceptance of technical advice provided as part of the development of the Definition Design. This process was modified in practice, and significant reliance was placed on the existence of a Design Comments Register that was prepared, and responded to, for each of the key design deliverables. While this facilitated Capital Metro Agency and other stakeholders' review of the technical advice, it was not as rigorous or robust as originally planned.

3.75 The Capital Metro Agency's contracts with other technical advisers, including Veitch Lister for the modelling of light rail patronage and the effects on other modes of transport, did not articulate robust processes for the review and acceptance of technical advice that was provided. Nevertheless, the Capital Metro Agency advised:

An interactive process was utilised with assumptions being queried and reviewed by the CMA as the modelling was developed, followed by a presentation of the model and final review of the validation report.

In developing the model, the following process took place between Veitch Lister and CMA:

1. Inception/kick off meeting;
2. Meetings and correspondence to define demographic and employment assumptions;
3. Meetings and correspondence to define future network assumptions;
4. Correspondence to define parking assumptions;
5. Submission and presentation of validation report; and
6. Formal review of validation report and comments.

It is further noted that EY attended regular workshops and meetings with members of the CMA and Veitch Lister around the inputs and outcomes of transport modelling and their incorporation into the Business Case. These meetings acted as a forum for review and verification of the transport modelling undertaken.

## Selection of the delivery method (procurement method) for the Capital Metro light rail

3.76 The *Full Business Case* states that it was prepared with reference to the ACT Government's Capital Framework and Partnerships Framework. The Capital Framework is a suite of

guidance materials for agencies contemplating capital projects; the Partnerships Framework provides advice to agencies on the use of complex procurement methods such as Public-Private Partnerships (PPPs).

## The Capital Framework

### 3.77 According to the Partnerships Framework:

... *The Capital Framework* has been implemented to provide a platform for more progressive and sophisticated approaches towards capital project delivery in the ACT. *The Capital Framework* was developed to support investments of any type, complexity or cost through rigorous internal government processes for assessing the case for new investment projects in the ACT.

## The Partnerships Framework

### 3.78 In December 2013, the ACT Government published *The Partnerships Framework - Guidelines for public private partnerships* (The Partnerships Framework). The Partnerships Framework:

... provides further guidance on the procurement of public infrastructure using complex delivery models that involve the private sector to a greater degree, including public private partnerships.

... provides a transparent and guiding framework for the ACT Government to develop and deliver PPP projects in the ACT that adhere to the *National Public Private Partnerships Guidelines* and link to existing ACT policy on capital procurement and funding.

The document's main objective is to provide consistency and clarity to parties involved in a PPP project, both private and public sectors alike. In particular, how a PPP project will be identified, assessed, tendered and managed in order to meet the ACT Government's requirement of ensuring public interest, delivering value for money, and achieving appropriate service delivery outcomes.

... will ensure that accountability and fairness is maintained throughout the procurement and delivery process, while maximising value for money to the ACT and staying within the ACT Government's affordability envelope.

### 3.79 According to the Partnerships Framework:

For projects where the use of more sophisticated procurement methods are considered desirable and greater private sector involvement is required, *The Capital Framework* will be complemented by *The Partnerships Framework* via ... specific policy guidelines:

- For projects solicited by the ACT Government, that are being considered under a PPP model, this policy document should be applied in conjunction with the *National PPP Guidelines* ...

Infrastructure Australia's *National PPP Guidelines* is the official PPP framework for the ACT Government. This document [the Partnerships Framework - Guidelines for public private partnerships] assists practitioners in navigating the *National PPP Guidelines* and the jurisdictional departures that outline the ACT Government's key policy and commercial positions for PPPs in the ACT.

### Availability public private partnership

3.80 The purpose of the *Full Business Case* was to:

... seek Capital Metro Sub-Committee of Cabinet (Cabinet) approval for the ACT Government, represented by Capital Metro Agency, to procure the project on the basis set forth herein.

3.81 The *Full Business Case* stated:

Capital Metro Agency recommends that:

1. The ACT Government procure the project in a form substantially similar to that described herein, including the procurement of the project via an Availability Public-Private Partnership.
2. The ACT Government approval contemplated by the foregoing paragraph be subject to:
  - a. subsequent decisions of Cabinet from time to time, including approvals to be sought from Cabinet at various points during the project's procurement process; and
  - b. subsequent decisions of the Project Board, Project Director or Capital Metro Agency Executive from time to time, to the extent:
    - i. such stakeholders are authorised to make decisions regarding the project; and
    - ii. such decisions are not in material conflict with the project as described herein.

3.82 The *Full Business Case* also stated:

It is recommended the project be procured via an Availability Public-Private Partnership (PPP) delivery model. Under this model, the design, construction, operations and maintenance of the light rail system shall be bundled with private sector finance for a proposed operating term equal to an anticipated three year construction period plus 20 years.

### Availability payments

3.83 Under an Availability PPP, direct costs of constructing and operating the Capital Metro light rail will be borne by the private sector operator, in return for an ongoing 'availability payment'. 'Availability' refers to the operation of the light rail and its availability for use by patrons. Availability payments are to commence once the Capital Metro light rail is available for use by patrons.

3.84 The *Full Business Case* notes that:

It is the market - not Capital Metro Agency - which will ultimately determine the cost of the project. The occurrence (or otherwise) and severity of risk events may also influence ultimate project costs.

3.85 The *Full Business Case (Board Version)* notes:

[Availability] payments are influenced by a range of factors, including:

- the level of upfront capital delivery cost incurred by the PPP project company;
- the length of the concession term;
- the nature and scope of risks transferred to the private sector (and those retained by the ACT Government);



- the amount and timing of any government capital contribution (if applicable); and
- the level of ongoing operating expenses.

## Cost estimates

3.86 For the purpose of assessing options for the delivery of the Capital Metro Light Rail Project, e.g. through a public private partnership and its different variations, or potentially through a more conventional contracting arrangement, it was incumbent on the Capital Metro Agency to provide a preliminary cost estimate for the Capital Metro Light Rail Project. The preliminary cost estimate was used to inform the calculation of the PPP Proxy and Public Sector Comparator for the project, which informed decision-making on the procurement and delivery method for the project.

### *PPP Proxy and Public Sector Comparator*

3.87 According to the *Full Business Case*, the PPP Proxy:

... represents an estimate of the hypothetical, risk-adjusted whole-of-life cost of a public infrastructure project that is assumed for comparison purposes to be delivered by the private sector.

3.88 On the basis of preliminary cost estimates associated with the project, the PPP Proxy represented the expected cost of the project if its delivery was to be undertaken by the private sector. The *Full Business Case* estimated that the PPP Proxy for the Capital Metro Light Rail Project would be \$874 million (present value, July 2014).

3.89 According to the *Full Business Case*, the Public Sector Comparator:

... represents an estimate of the hypothetical, risk-adjusted whole-of-life cost of a public infrastructure project that is assumed for comparison purposes to be delivered by the government.

3.90 On the basis of preliminary cost estimates associated with the project, the Public Sector Comparator represented the expected cost of the project if its delivery was to be undertaken by the public sector. The *Full Business Case* estimated that the Public Sector Comparator for the Capital Metro Light Rail Project was \$970 million (present value, July 2014).

3.91 Cost estimates are a factor in any consideration or comparison of delivery approaches. In considering the advice that was provided to decision-makers in relation to the selection of an Availability PPP as the preferred method for the delivery of the Capital Metro Light Rail Project, the Audit Office specifically considered:

- estimates of capital costs associated with the project; and
- estimates of ongoing operating expenses associated with the project.

### Capital cost estimates

3.92 The *Full Business Case* includes a capital cost estimate for the Capital Metro Light Rail Project. This is shown in Table 3-2, expressed as a nominal amount, i.e. not discounted.

**Table 3-2 Capital cost estimate (P75) (\$'m nominal, July 2014)**

Cost Area	\$'m Nominal
Stops and Precincts	11
Roads and Utilities Infrastructure	118
Rail Alignment	96
Signalling, Rail Systems and Power	137
Depot and Stabling	59
Contractor's Overhead and Profit	59
<b>Total Construction Costs</b>	<b>479</b>
Rolling Stock	65
<b>Total Alignment Costs</b>	<b>545</b>
Escalation	65
<b>Sub Total</b>	<b>610</b>
Contingency	173
<b>Total Project Outturn Cost</b>	<b>783</b>

Source: ACT Audit Office based on Capital Metro Light Rail Project Full Business Case

3.93 The *Full Business Case* identifies a nominal capital cost estimate (i.e. not discounted) for the Capital Metro Light Rail Project of \$783 million (July 2014). The capital cost estimate is presented as a P75 figure. 'P75' means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent. By way of contrast the P50 nominal capital cost estimate of the project is \$759 million (July 2014 estimate) (where the probability of the estimated cost being exceeded is estimated to be less than 50 percent) and the P90 nominal capital cost estimate of the project is \$806 million (July 2014 estimate) (where the probability of the estimated cost being exceeded is estimated to be less than 10 percent).

3.94 The capital cost estimate for the Capital Metro Light Rail Project, as per the *Full Business Case*, includes:

- \$479 million in expected construction costs. This includes:
  - Stops and Precincts: site clearance, earthworks, platform finishes and roofs
  - Roads: earthworks associated with new roadways and footpaths, road furniture, landscaping, street lighting and resurfacing and line marking
  - Utilities: protection or relocation of water (storm and supply), gas and telecommunication services
  - Rail Alignment:
    - Signalling, Rail Systems and Power: High voltage supply systems, overhead wiring, communication systems and ticketing systems
    - Depot and Stabling: stabling and maintenance facility in Mitchell.
- \$65 million in expected 'rolling stock' cost. This represents the cost of the light rail vehicles.
- \$65 million in escalation costs. This represents the expected rate at which costs for the project will increase over the life of the project.
- \$173 million contingency cost. This P75 figure represents a provision for probable, but as yet unquantifiable, cost increases during project implementation for capital costs.

3.95 Capital cost estimates included in the *Full Business Case* are based on two pieces of work performed by consultants:

- a capital base cost estimate prepared by Turner and Townsend (29 July 2014); and
- an estimate of risk/contingency prepared by EY. An estimate of risk/contingency was prepared by EY on a Monte Carlo simulation basis, based upon inputs determined at various risk identification, quantification and allocation workshops.

#### *Turner and Townsend estimate of capital cost*

3.96 Turner and Townsend was engaged by the Capital Metro Agency to 'provide cost planning and cost estimating services for the project during the development of the Definition and Pre-Feasibility Design'. Turner and Townsend provided a draft report on the expected capital cost associated with the Capital Metro Light Rail Project on 29 July 2014. The draft report provided an initial capital cost estimate for the project and, according to Turner and Townsend:

The cost plan summary represented a first draft for review and comment and it was our expectation that elements of that draft, including contingency, may be subject to change and required discussion with the Territory and the project team; and

The first draft cost plan was not intended to be accepted by the Territory as our issued cost estimate for the project and nor was it accepted as such, as we understand, by the Territory.

- 3.97 The Turner and Townsend initial capital cost estimate for the Capital Metro Light Rail Project was prepared on a quantity survey basis, i.e. an estimation based on creating a detailed inventory of every item of material, equipment, labour, overhead, and fees involved in the construction of the Capital Metro light rail. This is an appropriate basis for preparing a capital cost estimate. The initial capital cost estimate represented 'a first draft for review and comment' and did not contain details of the cost basis for each cost element.
- 3.98 Turner and Townsend prepared an initial capital cost estimate based on the Definition Design document prepared by Arup, and provided to the Capital Metro Agency on 21 July 2014. This initial capital cost estimate put the total capital cost of the Capital Metro Light Rail Project at \$1,011,439,147.

#### *Revised capital cost estimate*

- 3.99 On 31 July 2014, the Capital Metro Agency facilitated a Value Engineering Workshop. The Value Engineering Workshop was attended by representatives of the Capital Metro Agency, Turner and Townsend, Arup, EY and other advisors. According to the Capital Metro Agency, the aims of the Value Engineering Workshop were:
1. To allow Turner and Townsend an opportunity to clarify elements of the design for their costing assumptions; and
  2. To allow the group to opine on whether elements of the design might be refined to provide a better value for money outcome whilst not detracting from the service.
- 3.100 The *Definition Design - Cost Plan Report* (August 2014), produced by Turner and Townsend, states:
- The cost estimate excludes any property acquisition, pre-contract design fees and Capital Metro Agency internal costs (including project and other management fees). Any additional transaction costs associated with a public private partnership delivery model have [been] excluded from this specific cost plan.
- Risk and contingency have also been excluded from the estimate, such analysis having been undertaken by Ernst & Young. Consequently, the capital costs summarised in Appendix A do not constitute the total potential costs of the complete light rail project.
- 3.101 Table 3-3 shows the changes to the initial capital cost estimate (29 July 2014) and the revised *Definition Design - Cost Plan Report* (August 2014) produced by Turner and Townsend.

**Table 3-3 Adjustment to the Turner and Townsend initial capital cost estimate following Value Engineering Workshop**

Construction Cost Categories	Reasons for Change	Previous Total (\$) (29 July 2014)	Revised Total (\$) (August 2014)	Reduction (\$)
Stops and Precincts	Deletion of the Sandford Street stop	11,078,241	10,754,916	-323,325
Roads & Utilities Infrastructure	Reduced allowance for tree grates and guards along Northbourne Avenue, scope now includes for Civic Terminus only	118,052,200	117,833,006	-219,194
Rail Alignment	<ul style="list-style-type: none"> <li>Reduced cost allowances for culverts and bridges taking into account an uncomplicated design approach</li> <li>Substitution of concrete trackform for direct fix along alignment north of Randwick Road, excluding intersections, stops and pedestrianised zones</li> </ul>	104,902,714	96,040,581	-8,862,133
Signalling, Rail Systems & Power	<ul style="list-style-type: none"> <li>Deletion of the Sandford Street stop</li> <li>Substitution of overhead wiring side poles for centre poles along Northbourne Avenue</li> <li>Reduction in building services allowance to maintenance shed</li> <li>Reduction in building services allowance to Operations Control Centre</li> </ul>	140,866,657	136,900,142	-3,966,515
Depot and Stabling	<ul style="list-style-type: none"> <li>Reduction in earthworks based on the assumption that the stabling will be accommodated at multiple levels rather than flat across the entire site</li> <li>Reduction in plan area of maintenance shed by approx. 300m<sup>2</sup></li> <li>Substitution of embedded concrete track for direct fix track in stabling</li> <li>Removal of two turnouts in the stabling yard</li> </ul>	64,654,241	58,978,528	-5,675,713

Construction Cost Categories	Reasons for Change	Previous Total (\$) (29 July 2014)	Revised Total (\$) (August 2014)	Reduction (\$)
	<ul style="list-style-type: none"> <li>• Removal of trees in the depot</li> <li>• Substitution of rolled turf for seeding of the dept/stabling</li> <li>• Reduction in fit out allowance to OCC / office</li> </ul>			
Rolling Stock		65,500,000	65,500,000	0
Main Works Contractors Overhead and Profit	Excluded by CMA	61,537,568	58,871,005	-2,666,563
Owners Costs - Project Management and Advisors	Excluded by CMA	95,357,000	-	-95,357,000
Owners Costs - Approvals	Excluded by CMA	4,284,000	-	-4,284,000
Owners Costs - Insurance & Other Costs	Excluded by CMA	2,346,000	-	-2,346,000
Contingency - Main Works	Excluded by CMA	226,637,000	-	-226,637,000
Contingency – Owner's Costs	Excluded by CMA	40,795,000	-	-40,795,000
Escalation Allowance	Excluded by CMA	75,428,526	64,639,442	-10,789,104
<b>Total</b>		<b>1,011,439,147</b>	<b>609,517,600<sup>9</sup></b>	<b>-401,921,547</b>

Source: ACT Audit Office, Turner and Townsend Definition Design - Cost Plan Report, August 2014

3.102 In August 2014 Turner and Townsend prepared a revised *Definition Design - Cost Plan Report*, which identified a capital cost estimate for the Capital Metro Light Rail Project (without contingency) of \$609,517,600. Key changes to the initial cost estimate prepared by Turner and Townsend (29 July 2014) and the revised *Definition Design - Cost Plan Report* are:

- the removal of owner's costs of \$101,987,000 (and a contingency for owner's costs of \$40,795,000);
- the removal of a contingency for the main works of \$226,637,000;
- reduction of escalation allowance by \$10,789,104; and

<sup>9</sup> Plus contingency, to be estimated by EY, and owner's costs, estimated in the economic analysis (but not in the capital cost estimate) in the Business Case at \$45 million across the three year construction period.

- savings of \$21,713,443 derived from design revisions derived from a Value Engineering Workshop conducted on 31 July 2014.

3.103 In relation to owner's costs, the Capital Metro Agency advised the Audit Office that:

'Owner's costs' were addressed through the ACT budget process and, in any event, (i) 'owner's costs' would not form part of project costs bid by respondents to a procurement process, (ii) the Full Business Case was clear as to inclusions and exclusions from the base cost estimate, including in relation to agency costs, and (ii) CMA costs were included in the economic analysis within the Business Case.

3.104 In relation to the contingency amount, the Capital Metro Agency advised the Audit Office that:

The first draft of the Turner and Townsend cost report (i.e. the draft upon which we conducted the value engineering workshop) was received by the Capital Metro Agency on 29 July 2014. At that point the Capital Metro Agency had already committed to undertaking the risk quantification exercise through EY-led processes ... That followed a risk identification and allocation workshop conducted by EY on 4 July 2014. Given:

- the EY led risk quantification process (i) would be based upon group work with representatives from across the project (including Turner and Townsend), (ii) would be based on identified project-specific risks, (iii) was already organised to occur, and (iv) would be project specific; and
- the Turner and Townsend risk figure in their draft analysis was a simple percentage applied to the base costs without any analysis or group work sitting behind it,

the Capital Metro Agency instructed Turner and Townsend to exclude that contingency amount from the report on the basis the risk quantification outcomes from the already underway EY-led work would be used for contingency purposes.

#### *Capital Metro Light Rail Project contingency*

3.105 The Audit Office was advised that the 'EY-led processes' mentioned above included development of the contingency estimate using a Monte Carlo statistical simulation method.<sup>10</sup> The application of Monte Carlo techniques to the modelling of financial risks, generally speaking, can provide valid information regarding risk.

3.106 With respect to the calculation of the contingency amount, the Audit Office was provided with an undated *Construction Risks Estimates Matrix*, which was produced by EY, which identifies various risks to the Capital Metro Light Rail Project, assesses their impact, and quantifies them in dollar terms. The *Construction Risks Estimates Matrix* provides for a total value of \$146.3 million (in real terms). However, there is no documentation of the process by which the quantification was derived. The Capital Metro Agency did not maintain sufficient documentation with respect to the Monte Carlo statistical simulation, used to calculate the expected contingency for the capital cost estimate for the project. This was specifically lacking with respect to the input assumptions (important because different assumptions will produce different results), the algorithm used (important because different algorithms will produce different results) or the number of iterations, or

<sup>10</sup> A computational algorithm that relies on repeated random sampling to obtain numerical results.

repetitions, performed (important because more iterations will produce more accurate results).

#### *Owner's costs*

3.107 The initial Turner and Townsend capital cost estimate for the Capital Metro Light Rail Project included an estimate of \$95,357,000 plus contingency of \$40,795,000 in owner's costs associated with the construction of the project. This has been removed from the revised capital cost estimate of the project, as put forward in the *Full Business Case*.

3.108 The Capital Metro Agency advised that:

As at August 2014, 'Owner's costs' were still to be separately (and publicly) identified through the ACT Budget process, so Turner and Townsend were not required to include owners cost amounts for the purposes of their final definition design cost report. The Business Case was clear that costs presented in Table 15 were an estimate of capital delivery costs only and did not represent a project budget. Nevertheless, Capital Metro Agency costs were separately discussed in the Full Business Case (refer p. 81 of the Business Case) and included in economic analysis. ... it was also made clear to [ACT Government decision-makers] that the capital delivery cost did not include past and future Capital Metro Agency management costs.

#### *Rolling stock replacement*

3.109 The capital costs for the Capital Metro Light Rail Project are expected to be incurred early in the project, i.e. through to 2018, and are associated with the construction of the light rail and the purchase of the rolling stock. The Capital Metro Agency does not intend to replace the rolling stock until 2049.

3.110 The Audit Office sought advice from Dr Geoffrey Clifton, from the Institute of Transport and Logistics Studies at the University of Sydney, with respect to aspects of the Capital Metro Light Rail Project. Dr Clifton advised:

Similar networks have replaced vehicles after at least 15 years in service with some lasting more than twenty years.

3.111 Dr Clifton identified that trams in Sydney were replaced in 2015 after approximately 18 years of service, while some trams in Manchester were replaced after 15 years (others were replaced after 22 years) and trams in Birmingham were replaced after 16 years. Dr Clifton further identified that trams in Sheffield have been operating for more than 22 years (since 1994) following a refurbishment in 2005-06.

3.112 The Capital Metro Agency advised:

It is not unusual to see trams in operation beyond 30 years. The Yarra tram fleet, for example, includes A-class trams introduced between 1984-86 and Z-class trams that began entering service in 1975.

3.113 The Capital Metro Agency also identified that 'a design economic life of 30 years has been adopted for [light rail vehicles]' for the Gold Coast Light Rail.



3.114 The Capital Metro Agency also identified that risks associated with the useful life of the trams has been addressed through the procurement process, whereby potential bidders ‘provided fitness for purpose / residual life warranties with respect to their rolling stock of (at least) 30 years’, i.e. the procurement process ‘has resulted in the Territory receiving (at least) 30 year [light rail vehicle] life warranties’.

3.115 The Capital Metro Agency does not intend to replace the rolling stock until 2049, i.e. the initial trams are expected to continue operating for 30 years. There are some risks with this approach, as there is evidence that trams in other jurisdictions have been replaced anywhere between 15 to 22 years. There is also evidence that trams in other jurisdictions, e.g. Melbourne, have operated for close to forty years. The Capital Metro Agency has sought to manage this risk through the procurement process, whereby potential bidders ‘provided fitness for purpose / residual life warranties with respect to their rolling stock of (at least) 30 years’.

### Operating cost estimates

3.116 The *Full Business Case* includes an operating cost estimate for the Capital Metro Light Rail Project.<sup>11</sup> This is shown in Table 3-3, expressed as a nominal amount, i.e. not discounted.

**Table 3-4 Operating, maintenance and lifecycle costs (P75) (\$m, nominal, July 2014 estimate)**

Cost Type	Financial Year Ended 30 June 2019 to 2039 PPP Operating Period	Financial Year Ended 30 June 2019 to 2048
Sub Total Operating Costs	484	848
Sub Total Maintenance Costs	96	161
Lifecycle Costs	48	83
Risk Adjustment (P75)	116	197
<b>Total Risk Adjusted O&amp;M Costs</b>	<b>744</b>	<b>1,289</b>

Source: ACT Audit Office, Capital Metro Agency Full Business Case

Note 1: Part financial years for 2019 and 2039

3.117 The nominal operating cost estimate for the Capital Metro Light Rail Project included in the *Full Business Case* up to 2039 (the operating period for the public private partnership) comprises:

- total operating costs (between 2019 and 2039) of \$484 million;
- total maintenance costs (between 2019 and 2039) of \$96 million;
- total lifecycle costs (between 2019 and 2039) of \$48 million; and
- a total risk adjustment amount of \$116 million.

<sup>11</sup> Table 16, p. 85

- 3.118 The *Full Business Case* identifies a nominal operating cost estimate (i.e. not discounted) for the Capital Metro Light Rail Project of \$1,289 million (July 2014 estimate). The operating cost estimate is presented as a P75 figure. 'P75' means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent.

## Packaging and delivery

- 3.119 The Capital Metro Agency's activities to select and recommend a delivery method for the Capital Metro Light Rail Project sought to identify the means by which the project would be delivered. According to the *Full Business Case*, in doing so the Capital Metro Agency sought to assess two key questions:

- How should the various project components be packaged to deliver best value-for-money outcomes?
- Which contracting models are preferred for delivery of the proposed project?

- 3.120 The *Full Business Case* states:

The methodology applied to determine a recommended procurement and delivery strategy for the project is consistent with Infrastructure Australia Guidelines and *The Capital Framework*. The fundamental approach taken in assessing delivery models has been:

- Assessing on a 'best for project' basis with no preconceived bias in favour of one model over another - including whether a PPP should be adopted or not;
- Undertaking a bottom up analysis based on the needs of the project; and
- Being cognisant of the nature of the inherent project risks.

- 3.121 The *Full Business Case* identified that 'significant data has been collated for the purposes of assessing delivery model alternatives' and that this included:

- the project objectives;
- the project requirements (scope of works and services);
- the project risk assessment;
- project cost estimates; and
- 'other information as contained throughout [the] business case.'

## Packaging options

- 3.122 The *Full Business Case* considered two key issues associated with packaging options for the Capital Metro Light Rail Project, including:

- whether or not to package the delivery of the Capital Metro light rail with urban development, i.e. have a developer deliver the Capital Metro light rail as part of land and infrastructure development activities; and
- (if the first option was not preferred) how to integrate the delivery of the different components of the Capital Metro Light Rail Project, including:

- the rail infrastructure and rolling stock (as part of the construction of the Capital Metro light rail); and
- maintenance and operations (as part of the operation of the Capital Metro light rail).

3.123 The *Full Business Case* identified that packaging the delivery of the Capital Metro light rail with urban development was not preferred, for a number of reasons, including:

- not packaging would enable ‘a range of developers (including smaller and local groups) to be involved in individual developments’;
- packaging ‘could constrain ACT Government’s flexibility and control over the light rail solution and may inhibit certain urban renewal opportunities’;
- packaging could mean ‘transport services outcomes may be compromised where light rail operations form only an exceptionally minor part of overall works’;
- packaging ‘may require provision of a very significant parcel of ACT land to a single developer, increasing land development risks’; and
- ‘packaging land development with the light rail project will potentially substantially increase the scope and size of risks associated with the project.’

3.124 With respect to the integration of the different components of the Capital Metro Light Rail Project the *Full Business Case* identified that a ‘single vertically integrated package’, which incorporated the delivery of the rail infrastructure, rolling stock, operations and maintenance, was the preferred option. The *Full Business Case* identified that this option provided ‘optimal risk transfer’:

Vertical integration of the contract packages mitigates interface risks. This is seen as important and relevant for the ACT which does not have existing light rail operations or large construction markets (unlike Melbourne and Adelaide where packages have been procured separately). Integration is also seen to best drive outcomes in relation to cost, time and management of community impacts:

- Allows the market to identify and attract the best suppliers and avoids the requirement for a large project management office to contract in procurement and contractor integration;
- Appears sufficient to generate market interest given the size of the integrated project; and
- Can address future flexibility contractually: e.g. the potential inclusion of break points in the operating contract to change operator; competitively bid pricing on changes to frequency/route extensions.

## Delivery options

3.125 The *Full Business Case* noted that *The Capital Framework* identified nine delivery models:

**Table 3-5 The Capital Framework delivery models**

The Capital Framework delivery models		
Project Management Agreement	Construct Only	Design Construction Maintain Operation (DCMO)
Alliance	Design and Construct	PPP (BOOT)
Managing Contractor	Design Construct Maintain	PPP (Availability)

Source: ACT Audit Office, based on Full Business Case

3.126 According to the *Full Business Case*:

... the primary drivers for the decision on procurement model was price certainty, risk transfer, innovation and incentive. Time to market and flexibility were considered potentially lesser drivers for this project. This immediately suggests a model which tends away from models typically chosen for their flexibility and timing advantages (such as project management agreements, alliances or managing contractor) and which generally provide lower cost certainty and lower risk transfer.

The innovation and incentive potential in the project also suggests that a model which promotes whole of life considerations being made by potential light rail partners will drive greater value for money for the ACT Government.

Finally, the bundling analysis noted that a single vertically integrated package was the preferred approach. This negates the use of separate contracted framework (such as D&C with a separate O&M contract, construct only or DCM).

3.127 Two delivery models were considered for the purpose of the Capital Metro Light Rail Project:

- PPP (Availability); and
- Design, Construct, Maintain and Operate (DCMO).

3.128 The following table shows the analysis of the two delivery models that were considered for the Capital Metro Light Rail Project, as per the *Full Business Case*.

**Table 3-6** *Full Business Case analysis of delivery models*

Delivery Model	Commentary
PPP (Availability)	<p>Availability PPP involves private sector finance and ownership of the project over the concession term. An Availability PPP transfers the risk of providing the infrastructure and required services over the term but does not include transfer of patronage risk (i.e. how many people use the infrastructure).</p> <p>Availability PPP provides the greatest level of price certainty and risk transfer (excluding patronage), while also providing whole of life incentives for innovations in design and operations.</p> <p>An Availability PPP also provides greater certainty and a reduction in time to delivery when compared with alternative delivery models. Whilst this form of contracting structure may take longer to negotiate, the incentive for the PPP Co to receive availability payments as soon as possible drives them to deliver the project as quickly as possible (as these are not received until operations commence).</p>
Design, Construct, Maintain and Operate (DCMO)	<p>DCMO provides a consortium of a Designer, Constructor, Maintainer and Operator (and potentially rolling stock and other contractors) entering into a long term contract to provide the infrastructure services, where the risk of delivery is jointly held by all parties over the contract term.</p> <p>DCMO has the potential to provide a similar level of price certainty, risk transfer and whole of life incentives as an availability PPP, but generally depends on the degree of risk the operator and other parties are willing to take post construction.</p>

Source: ACT Audit Office, based on Full Business Case

3.129 In relation to the two delivery options, the *Full Business Case* noted:

A PPP offers advantages over DCMO in relation to certainty over cost and time outcomes, optimal risk transfer and scope for innovation. Financiers are the 'glue' that holds the risk transfer and interface management together. Financiers are a significant driver of cost minimisation within PPP consortia, and exercise significant risk management activities within bid teams. Under a DCMO the CMA would need to establish a well-resourced project management office. Additionally, there are precedent Australian light rail PPP contract documents that can be leveraged for Capital Metro. DCMO has not been adopted in the light rail sector.

3.130 The Capital Metro Agency undertook a 'market sounding process' throughout May and June 2014, which sought to receive feedback from a 'cross section of light rail industry participants representing operators, financial sponsors, D&C contractors and rolling stock suppliers' on delivery models. According to the *Full Business Case*, key feedback from the market sounding process included:

- general support for an Availability PPP;
- no support for a Design, Construct, Maintain and Operate (DCMO); and
- none of the participants were willing to accept patronage risk on the Capital Metro Light Rail Project.

### Comparison between PPP Proxy and Public Sector Comparator

3.131 Following its consideration of the different delivery models that might be employed for the delivery of the Capital Metro Light Rail Project, the Capital Metro Agency undertook a comparison of the PPP Proxy and Public Sector Comparator. The following table shows the Capital Metro Agency's comparison.

**Table 3-7 Comparison between Public Sector Comparator and PPP Proxy (July 2014)**

	<b>Public Sector Comparator (net present value)</b>		<b>PPP Proxy (net present value)</b>
Total Raw Public Sector Comparator	\$775 million	Total PPP Proxy	\$804 million
Transferred Risk	\$124 million	NA	-
Retained Risk	\$71 million	Retained Risk	\$71 million
<b>Total</b>	<b>\$970 million</b>	<b>Total</b>	<b>\$875 million</b>

Source: ACT Audit Office, based on Full Business Case

3.132 The Capital Metro Agency's analysis of the Public Sector Comparator and PPP Proxy shows:

- the total estimated cost of delivery of the project through a public-private partnership was \$875 million (present value, July 2014). This includes the present value of estimated availability payments to be made to the successful consortium over the concession period and a contingency amount for the project for the Territory;
- the total estimated cost of delivery of the project through a public-private partnership was estimated to be cheaper than the cost of delivering the project by the public sector, which was estimated to be \$970 million (present value, July 2014);
- the *Full Business Case* estimated that the expected cost of availability payments to be made to the successful consortium over the 20 year concession period would be \$804 million (present value, July 2014); and
- the Territory-retained risk for the Capital Metro Light Rail Project was estimated to be \$71 million (present value, July 2014). (This would be the same irrespective of whether the project was delivered by the public sector or through a public-private partnership). This represents a contingency amount for the project for the Territory.

3.133 The *Full Business Case* recommended an Availability PPP for the delivery of the Capital Metro Light Rail Project, which would involve a single vertically integrated package comprising rail infrastructure, rolling stock, maintenance, and operations. In doing so, the *Full Business Case* notes that 'the project is of such size and complexity that any attempt by the ACT Government to undertake the project outside a PPP model would be fraught with acute cost and timing risks'.

### Assumptions underpinning the PPP Proxy

3.134 A number of assumptions underpin the calculation of the PPP Proxy, which represents the Capital Metro Agency's total estimated cost of delivery of the project through a PPP. An important assumption is the discount rate that is applied to the nominal estimated costs of the project, which results in the \$875 million present value estimate (July 2014).

3.135 The *Full Business Case* states:

A discount rate is used to calculate the present value of future cash flows for a project. It is based on the time value of money and a risk premium imposed by investors. The risk premium reflects systematic risks, also known as market-wide risks, which affect all asset classes and cannot be reduced by way of diversification (e.g. interest rates).

The discount rate is utilised for discounted cash flow analysis. This allows for a consistent comparison of different cash flow streams between the [Public Sector Comparator] and private sector bids to determine whether the Government can obtain value for money from an alternative procurement mechanism.

The discount rate separately calculated for the [Public Sector Comparator] and the [PPP Proxy] will depend on the amount of systematic risk borne by the public sector or private sector. Per the Infrastructure Australia Discount Rate Methodology guidelines, the Capital Asset pricing Model (CAPM) is used to determine the amount of systematic risk in the project. This is then modified to reflect the value to the public sector of transferring some of this risk.

Capital Metro Agency has made [Public Sector Comparator] and [PPP Proxy] discount rate assumptions, including systematic risk premium assumptions, in the [Public Sector Comparator] and PPP Proxy comparison contained in this business case.

3.136 The Capital Metro Agency has advised that the discount rate applied to the Public Sector Comparator is 5.52 percent and the discount rate applied to the PPP Proxy is 7.52 percent as per the calculation methodology in Volume 5 of the *Australian Government National PPP Guidelines*. These were not disclosed in the *Full Business Case*.

## Project costs and availability payments

### Capital and operating cost estimates

3.137 For the purpose of identifying costs associated with the Capital Metro Light Rail Project, the *Full Business Case* identified:

- \$783 million in nominal capital expenditure costs (P75); and
- \$1,289 million in nominal operating and maintenance costs (P75).

3.138 The total nominal capital and operating cost estimate for the Capital Metro Light Rail Project, i.e. not discounted to present value, was \$2,072 million (July 2014 estimate). This figure does not include agency costs, i.e. agency costs in managing the operator during both the construction and operational phases.

- 3.139 These figures include a contingency amount and are escalated, i.e. there is a recognition of an increase in the actual nominal amount due to inflation. They are calculated on a P75 basis, which means that the probability of the estimated cost being exceeded is estimated to be less than 25 percent. Operating and maintenance costs are calculated on the basis of 30 years' operation of the light rail, between 2019 and 2048.

#### *Cost-benefit analysis (present value)*

- 3.140 For the purpose of undertaking the cost-benefit analysis for the Capital Metro Light Rail Project, the *Full Business Case* identifies total project costs of \$823.0 million (present value, July 2014). This figure comprises:
- \$619 million in capital expenditure (present value); and
  - \$204 million in operational expenditure (present value).
- 3.141 These figures are expressed in present value terms, i.e. recognising the time value of money, future costs have been calculated and expressed in terms of their value today. The discount rate is 7 percent. These costs are calculated on a P50 basis, which means that the probability of the estimated cost being exceeded is estimated to be 50 percent. These costs are calculated on a real basis, that is, there is no escalation component. Operating and maintenance costs are calculated on the basis of 30 years' operation of the light rail, between 2019 and 2048.
- 3.142 The capital component includes agency costs, i.e. agency costs in managing the operator during the construction phase.
- 3.143 In nominal terms, i.e. not discounted, the \$619 million figure is \$730 million, while the \$204 million figure is \$665 million, leading to a total nominal cost associated with the construction and operation of the project of \$1,395 million. The *Full Business Case* notes, however, that 'the project will attract financing costs'.

## **Project cost estimates**

#### *Project cost estimates*

- 3.144 The Capital Metro Agency identified that the estimated cost of the Capital Metro Light Rail Project would be \$875 million (present value, July 2014). This represents the PPP Proxy figure that was identified in the *Full Business Case*. According to the *Full Business Case*:

The PPP Proxy model therefore incorporates the following key elements:

- Capital and operational expenditures (including ongoing operations, maintenance and lifecycle costs, plus escalation), including any value driver assumptions and pricing for transferred risk;
- Bid costs and financing costs (including capitalised interest during construction, and debt interest during operations); and
- Equity distributions.



- 3.145 The Full Business Case also notes *'the foregoing PPP Proxy is an estimate only. ... Actual private sector bids may differ materially from the PPP Proxy. It is the market - not Capital Metro Agency - which will ultimately determine the cost of the project'*.
- 3.146 The estimated cost of the project, as represented by the PPP Proxy, was \$875 million (present value, July 2014). This included \$804 million in availability payments (present value, July 2014) and \$71 million in Territory-retained risk (present value, July 2014), representing a contingency amount for the project for the Territory. This figure does not include the Capital Metro Agency (or ACT Government) costs associated with the delivery of the project.

#### *Availability payments*

- 3.147 Under an Availability PPP, the direct costs of constructing and operating the Capital Metro Light Rail will be borne by the private sector operator, in return for an ongoing availability payment. 'Availability' refers to the operation of the light rail and its availability for use by patrons. Availability payments are to commence once the Capital Metro light rail is available for use by patrons.
- 3.148 The concession term for the Availability PPP is 20 years. That is, the successful consortium is expected to construct the Capital Metro light rail by 2019 and operate it between 2019 and 2038. The capital, operating and maintenance costs associated with the project will be incorporated within availability payments that are to be paid to the successful consortium. Additionally, the successful consortium will also incur financing costs associated with the delivery of the Capital Metro light rail between 2019 and 2038, i.e. costs to the successful consortium of undertaking the project. These costs, along with the consortium's expected profits, will similarly be incorporated within the availability payments that are to be paid to the successful consortium.
- 3.149 The availability payment figure does not cover the operation of the Capital Metro light rail from 2039 to 2048, which was the timeframe for the economic appraisal.

#### *Owner costs*

- 3.150 The estimated cost of the project, as represented by the PPP Proxy (\$875 million present value, July 2014) does not include Capital Metro Agency costs for the delivery and implementation of the Capital Metro Light Rail Project. The Capital Metro Agency will incur costs in the construction phase of the Capital Metro light rail as well as in the operational phase, i.e. through the ongoing management of the contract. The Capital Metro Agency has estimated agency costs during the construction will be \$45 million. The Capital Metro Agency has not identified agency costs following the construction phase, i.e. during the operational phase.

### *Patronage risks*

- 3.151 Under an Availability PPP the ACT Government will retain patronage and revenue risk, i.e. the risk of low passenger use and associated low revenues, but will have the opportunity to set fares. The estimated cost of the Capital Metro light rail will be partially offset by income from fares. The *Full Business Case* has not identified a nominal value of estimated 'indicative potential revenues' over 20 years, but has identified a total of \$81 million in present value terms (July 2014).

### **Updated cost estimates (January 2016)**

- 3.152 On 17 May 2016 the Capital Metro Agency announced:

Contracts were today signed between the ACT Government and the successful light rail consortium, Canberra Metro, paving the way for the start of construction on Canberra's first light rail project.

- 3.153 Following the signing of a contract with the successful consortium and financial close on the project's procurement phase, the Audit Office obtained updated information from the Capital Metro Agency with respect to the expected costs of the project.

- 3.154 The Capital Metro Agency advised that the expected nominal cost of the Capital Metro Light Rail Project, following the signing of contracts was approximately \$1,779,041,000. This figure comprises:

- \$375,000,000 Territory capital contribution;
- \$1,274,352,000 in availability payments to the successful consortium; and
- \$129,689,000 Territory-retained risk amount.

- 3.155 As noted in paragraph 3.150, however, this figure does not include agency costs for the delivery and implementation of the Capital Metro Light Rail Project.

### *Comparison with estimated cost of project (PPP Proxy)*

- 3.156 The Capital Metro Agency further advised that the present value of the expected cost of the Capital Metro Light Rail Project is \$939 million (January 2016, discounted at 7.52 percent). This figure comprises:

- \$305,427,000 Territory capital contribution;
- \$519,672,000 in availability payments to the successful consortium; and
- \$113,919,000 Territory-retained risk amount.

- 3.157 The \$939 million (present value) figure is calculated as at January 2016. It is not directly comparable with the \$875 million (present value) figure that was included in the *Full Business Case*, as the latter figure was calculated as at July 2014, approximately 18 months previously.

3.158 The Capital Metro Agency has provided the Audit Office with a comparison of the estimated cost of the project, as represented by the PPP Proxy, the Public Sector Comparator and an updated cost estimate following the signing of contracts. This is shown in Table 3-8.

**Table 3-8 Comparison of Updated Cost Estimate with Estimated Cost of the Project (PPP Proxy) and Public Sector Comparator**

Public Sector Comparator			PPP Proxy			Updated Cost Estimate	
	\$'million present value (Note 1)	\$'million Discounted to January 2016 (5.52 percent)		\$ million present value (Note 1)	\$ million Discounted to January 2016 (7.52 percent)		\$ million present value January 2016
Total Raw Public Sector Comparator	775	841	Total PPP Proxy	804	896	Availability Payments	520
Transferred Risk	124	134				Territory Contribution	305
Territory- Retained Risk	71	76	Territory- Retained Risk	71	79	Territory- Retained Risk	114
<b>Total</b>	<b>970</b>	<b>1,051</b>	<b>Total</b>	<b>875</b>	<b>975</b>	<b>Total</b>	<b>939</b>

Source: Audit Office, based on Capital Metro Agency advice

Note 1: *Full Business Case* – calculated as at July 2014

3.159 A comparison of the updated cost estimate for the Capital Metro Light Rail Project, following the signing of contracts, against the estimated cost of the project (PPP Proxy) and the Public Sector Comparator shows the Capital Metro Light Rail Project is expected to cost \$939 million (present value, January 2016). The Capital Metro Agency has compared the updated cost estimate for the Capital Metro Light Rail Project, following the signing of contracts, with the PPP Proxy and Public Sector Comparator figures from the *Full Business Case*, which were calculated in July 2014. The Capital Metro Agency has applied a discount rate to these figures to make them comparable to the \$939 million (present value, January 2016) that was achieved as follows:

- PPP Proxy - \$875 million (present value, July 2014) discounted to \$975 million (present value, January 2016) at 7.52 discount rate;
- Public Sector Comparator - \$970 million (present value, July 2014) discounted to \$1,051 million (present value, January 2016) at 5.52 percent discount rate.

3.160 The updated cost estimate for the Capital Metro Light Rail Project, following the signing of contracts, of \$939 million (present value, January 2016) is less than the estimated cost of the project in the *Full Business Case* (PPP Proxy), which is estimated to be \$975 million in January 2016 (discounted at 7.52 percent). The updated cost estimate for the Capital Metro Light Rail Project of \$939 million (present value, January 2016) is also less than the Public Sector Comparator identified in the *Full Business Case*, which is estimated to be \$1,051 million in January 2016 (discounted at 5.52 percent).

*Territory-retained risk*

- 3.161 Following the signing of contracts, the Territory's retained risk amount for the project has increased from \$71 million (present value, July 2014) to \$114 million (present value, January 2016). The Territory's retained risk amount represents a contingency amount for the project for the Territory. The Capital Metro Agency advised that the increased amount is due to a reassessment of the value and allocation of risks through the contract between the successful consortium partner and the Territory, including the allocation of certain contamination and other risks, as well as measuring retained risk from a common January 2016 measurement date.
- 3.162 The Capital Metro Agency advised:
- ... the ACT Government determined it represents better value for money for it to retain the risk of certain contamination remediation events (which it already bears) and to hold a Territory-retained risk contingency amount against that risk, with the consequence that there is an overall sharing of contamination risks between [the successful consortium] and the Territory, albeit one that is different to what was assumed at business case stage.
- 3.163 The effectiveness of the procurement process is likely to be the subject of the forthcoming 2016-17 planned audit: Procurement of the Light Rail Project.

**RECOMMENDATION 3****PUBLIC REPORTING OF CAPITAL METRO LIGHT RAIL COSTS**

The Capital Metro Agency (the Transport Canberra and City Services Directorate as of 1 July 2016) should accurately and transparently report the actual costs of delivering the Capital Metro Light Rail Project. This should include:

- a) public reporting of actual costs compared to published budgets for the Capital Light Rail Project in annual reports of the Transport Canberra and City Services Directorate;
- b) availability payments made to the PPP consortium; and
- c) Capital Metro Agency costs associated with managing the PPP consortium during the construction of the Capital Metro light rail and for the ongoing operation of the Capital Metro light rail.

## 4 REALISING THE BENEFITS OF LIGHT RAIL

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- 4.1 This chapter examines the Capital Metro Agency's approach to realising the benefits of the Capital Metro Light Rail Project, including the practice of benefits management, a project management discipline that seeks to identify, value, plan and manage the benefits to be realised from a project.

Despite its stated intention to do so, the Capital Metro Agency has not yet developed and implemented key documents and processes associated with benefits management, a project management discipline which seeks to provide a framework for the management of a project and decisions to be made for the project. Without a structured, disciplined benefits management approach throughout the project lifecycle there is a risk that the project's benefits will not be optimised. A Benefits Realisation Plan, and associated documentation, is needed as a priority.

The ACT Government has advised that the project is expected to deliver \$984 million (present value, July 2014) in benefits, against an expected cost of \$823 million (present value, July 2014). Transport-related benefits associated with the project are estimated to be \$406 million (present value, July 2014), while wider economic benefits (including land use benefits) associated with the project are estimated to be \$579 million (present value, July 2014). The wider economic benefits (including land use benefits) of the project are very significant and form the majority of expected benefits associated with the project: 58.8 percent of the total expected benefits. This is a significantly higher proportion than other transport-related projects (for which publicly available information is available).

The calculation of wider economic benefits (including land use benefits) needs to be treated with caution. Methodologies for the calculation of wider economic benefits (including land use benefits) are continuously evolving, but have not yet reached a stage where they are widely and uniformly accepted and, in Australia, their calculation is hampered by the lack of necessary base data. Australian better practice guidance from Infrastructure Australia and National Guidelines for Transport System Management in Australia Steering Committee has noted that the 'calculation of these impacts is also still in its infancy, both in Australia and internationally' and that there are 'serious measurement difficulties in Australia due to limited data availability'.

There are two benefit-cost ratio figures presented in the Full Business Case; 1.0 (transport and land use benefits) and 1.2 (transport, land use and wider economic benefits). The benefit-cost ratio of 1.2 takes into account traditional transport-related benefits of \$406 million (present value, July 2014) and land use and wider economic benefits of \$381 million (present value, July 2014) and \$198 million (present value, July 2014) respectively. In the Full Business Case and associated documents emphasis is given to the benefit-cost ratio figure of 1.2, without sufficient discussion and explanation of the inherent risks and limitations associated with this figure and its inclusion of wider economic impacts (including land used benefits).

The achievement of a significant proportion of the benefits identified for the Capital Metro Light Rail Project is predicated on two key assumptions: the implementation of the light rail will be the catalyst for economic activity (including land use benefits); and action will be taken by 'current and future Governments to ensure stated benefits are realised and maximised'. In relation to the former, the economic analysis that underpinned the *Full Business Case* assumed a 'do nothing' base case scenario, including assumptions that 'only already approved and planned changes to road and bus networks occur' and that 'land development activity is concentrated on sites currently controlled or owned by the ACT Government, with no effort to acquire other sites in order to aggregate into precincts or zones'. These actions may have occurred, and benefits may have been achieved, irrespective of the Capital Metro Light Rail Project. Regardless of views on this matter, it is imperative that there be a concerted whole-of-government approach to the management of benefits associated with the Capital Metro Light Rail Project, to ensure that the benefits are realised. A range of actions need to be implemented relating to 'land development decisions undertaken by ACT Government; ticketing and fare setting; bus and park & ride integration; parking charges; value capture activities; signalling priorities; the location of ACT Government staff in the corridor; and other undertakings to promote economic activity in the ACT'.

## Key findings

### Paragraph

The *Full Business Case* identified 18 benefits that are intended to be achieved from the Capital Metro Light Rail Project. Benefits are identified with respect to four identified 'problems': 'the need to build future alternative transport capacity', 'a need for sustainable urban re-development and increased urban densification', 'economic challenges' and 'sub-optimal gateway to the Capital'. The *Full Business Case* does not separately value these benefits, or (apart from identifying high-level 'Possible Key Performance Indicators' for eight of the benefits) indicate how they will be measured.

4.19

The breadth of expected benefits associated with the Capital Metro Light Rail Project, including benefits relating to urban redevelopment and densification and the ACT economy, demonstrates that the project is expected to have broader non-transport related benefits.

4.23

For the purpose of the cost-benefit analysis for the Capital Metro Light Rail Project, the *Full Business Case* identified a total of \$984 million in project benefits (calculated in July 2014 present value dollar terms), including:

4.26

- \$406 million in transport benefits;
- \$381 million in land use benefits; and
- \$198 million in wider economic benefits.

<p>The land use benefits, specifically the urban densification benefits (\$72 million, present value, July 2014) and infrastructure efficiency savings benefits (\$140 million, present value, July 2014) are predicated on the achievement of agglomeration and productivity gains from the densification of housing and development in the light rail corridor. In this respect they are akin to wider economic benefits. The land value benefits (\$168 million, present value, July 2014) represent the benefits that are expected to be derived by land owners and developers due to expected development throughout the light rail corridor.</p>	4.35
<p>The <i>Business Case in Brief</i> states that ‘over 30 years, land use benefits from light rail are estimated to be \$765 million’. This figure represents the nominal value of land use benefits over a thirty year period (i.e. the term of the economic appraisal) which, when discounted, equates to a present value of \$381 million (July 2014). The <i>Business Case in Brief</i> does not identify that this figure is the nominal value and has not been discounted.</p>	4.36
<p>Analysis of the Capital Metro Light Rail Project against other transport infrastructure projects for which there is publicly available information shows wider economic benefits (including land use benefits) i.e. those that are non-transport benefits form a significant component of the overall benefits identified for the Capital Metro Light Rail Project (58.8 percent).</p>	4.38
<p>In guidance published in 2013 (and updated in 2016) Infrastructure Australia urged caution with respect to the calculation of land use benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. Infrastructure Australia advised that such benefits may ‘add texture to the decision making process for certain initiatives’ but that it would treat these benefits separately in its consideration of projects.</p>	4.55
<p>In guidance published in 2013 (and updated in 2016) Infrastructure Australia urged caution with respect to the calculation of wider economic benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. Infrastructure Australia advised that such benefits may ‘add texture to the decision making process for certain initiatives’ but that it would treat these benefits separately in its consideration of projects.</p>	4.58
<p>The <i>2015 National Guidelines for Transport System Management in Australia</i> (the NGTSM Guidelines) published by the Commonwealth Department of Infrastructure and Regional Development advise caution with respect to the use of wider economic benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. The guidelines note that ‘there are serious measurement difficulties, with the availability of Australian specific data needed to</p>	4.62

calculate WEBs being currently sub-optimal’.

In advice to the Audit Office in relation to the use of wider economic benefits (including land use benefits) in economic appraisal, Dr Geoffrey Clifton from the University of Sydney advised ‘whilst recognised as existing, these wider benefits have traditionally been very difficult to accurately measure and have traditionally not been included in economic impact analysis and they are still not uniformly included. The literature suggests that these benefits need to be treated with some caution, given that the way these are measured is still under development’.

4.67

The *Full Business Case* identified a benefit-cost ratio for the Capital Metro Light Rail Project of 1.0, based on transport benefits and land use benefits, and a benefit-cost ratio of 1.2, taking into consideration transport benefits, land use benefits and wider economic benefits.

4.69

The *Full Business Case* identified that ‘as the [benefit-cost ratio] is greater than one, the economic analysis anticipates the project will deliver a net benefit to the ACT community.’ It does not adequately explain the difference in the benefit cost ratio figures of 1.0 (transport benefits and land use benefits) and 1.2 (transport benefits, land use benefits and wider economic benefits).

4.74

It is critical that there be an appropriate understanding, because better practice guidance has highlighted the risks associated with valuing wider economic benefits (including land use benefits). Infrastructure Australia guidance emphasises the importance of traditional cost-benefit analysis, primarily focused on transport-related benefits, as a means to maintain the ‘methodological rigour of the appraisal process’, while noting that transport and land use and wider economic benefits may be considered separately as a means to add texture.

4.75

There is inadequate documentation associated with the assumptions underpinning the calculation of benefits associated with the economic analysis underpinning the Full Business Case. This is apparent with respect to:

4.93

- discussion / justification for values used in the calculation of benefits; and
- discussion / justification for the recognition of timing of the benefits.

While it would not be expected that the estimates in the *Full Business Case* presented to the Capital Metro Project Board (15 August 2014) would necessarily be final, the magnitude and type of changes between this version of the *Full Business Case* and the version presented to ACT Government decision-makers on 10 September 2014 were significant, given the short time between changes. Changes between the 15 August 2014 and 10 September 2014 versions of the *Full Business Case* included a 31 percent decrease in estimated transport benefits,

4.104



indicating that assumptions underpinning the economic analysis were insufficiently developed and were still being developed as decision-makers (including the Capital Metro Project Board and the ACT Government) considered the merits of the *Full Business Case*. There was inadequate documentation maintained with respect to the changes to the calculation of the benefits, including with respect to identifying the reasons for the changes in the calculation of the benefits.

Benefits management is identified as a key feature of the Capital Metro Light Rail Project in the *Capital Metro Project Board Charter* and the *Governance Framework*. The *Governance Framework* states that the Project Owner (Under Treasurer) will 'ensure the project focuses on benefits realisation throughout its life' and the *Capital Metro Project Board Charter* states that the Project Owner will 'ensure the project team focuses on benefits realisation throughout its life'.

4.114

The *Governance Framework* identified the need to prepare a Benefits Realisation Plan, and the first two iterations of the *Project Plan* (Versions 1.0 and 2.0, dated 30 July 2013 and 4 March 2014 respectively) similarly identified a need to prepare a Benefits Management Plan, as a means by which to 'identify the project's benefits and put the long term management processes in place to ensure they are realised', with a Benefits Realisation Plan to be prepared by July 2014. Better practice benefits management, as documented in APMG International's *Managing Benefits* (2012) guide, includes the preparation of a Benefits Management Strategy, a Benefits Realisation Plan and Benefit Profiles. None of these have been produced for the Capital Metro Light Rail Project.

4.115

Better practice benefits management provides that dis-benefits (i.e. negative side-effects and consequences arising from the project) should be identified, managed, tracked and measured in the same way as benefits. This provides transparency of net benefits against costs in the business case, allows dis-benefits to be minimised, and facilitates ongoing review of the economic viability of a project. The *Full Business Case* does not specifically identify the dis-benefits associated with the Capital Metro Light Rail Project.

4.118

The achievement of the Capital Metro Light Rail Project's benefits, including wider economic benefits (including land use benefits), is predicated on a number of key assumptions associated with the project. Two key overarching assumptions are:

- the implementation of the light rail will be the catalyst for economic activity (including land use benefits); and
- action will be taken by 'current and future Governments to ensure stated benefits are realised and maximised'.

4.122

The Capital Metro Light Rail Project's benefits are calculated on a 'do nothing' base case scenario, including assumptions that 'only already approved and planned changes to road and bus networks occur' and that 'land development activity is

4.129

concentrated on sites currently controlled or owned by the ACT Government, with no effort to acquire other sites in order to aggregate into precincts or zones'. It is noted that these actions may occur irrespective of the Capital Metro Light Rail project.

In various governance and planning documents for the Capital Metro Light Rail Project, including the *Capital Metro Project Board Charter, Governance Framework* and Versions 1.0 and 2.0 of the *Project Plan* (dated 30 July 2013 and 4 March 2014 respectively), the Capital Metro Agency identified its intention to practise the project management discipline of benefits management throughout the Capital Metro Light Rail Project. However, there are currently no formal plans to guide benefits management. 4.132

The achievement of the expected benefits associated with the Capital Metro Light Rail Project, including the wider economic benefits (including land use benefits) are predicated on a number of assumptions including alignment of ACT Government policies and the rapid densification of the light rail corridor. It is imperative that there be a concerted whole-of-government approach to the management of benefits associated with the Capital Metro Light Rail Project, to ensure that the benefits are achieved. A structured, disciplined benefits management approach throughout the project lifecycle is needed if the project's benefits (\$984 million, present value, July 2014) are to be achieved and optimised. Given this, it would be prudent to implement the practice of benefits management, in accordance with approved supporting plans to guide and integrate needed actions as a high priority. 4.133

The benefits to be realised from the Capital Metro Light Rail Project are significantly dependent on the light rail acting as a catalyst for economic activity (including land use benefits) and actions taken by 'current and future Governments to ensure stated benefits are realised and maximised'. With respect to the latter, current and future ACT Government policy in a range of areas will be important to realise and optimise the benefits from the project. This will require a concerted whole-of-government effort and the development of a Benefits Realisation Plan to guide actions. 4.140

## Benefits management

- 4.2 A traditional approach to project management considered that projects were successful if the specified output was produced within an acceptable timeframe and at an acceptable cost. However, awareness has grown over the last decade that major projects are not undertaken to produce outputs, assets or capabilities, but are undertaken to produce beneficial outcomes, i.e. benefits.

- 4.3 By way of example, it is possible for a project to deliver its intended outputs on time, on budget and to the required standard but fail to deliver its intended benefits. On this issue, the UK Government's *Managing Successful Programs*® guidance notes that:

Outputs from projects together with associated organisational changes will produce outcomes, but changes alone will not produce measured improvements (benefits). Realising benefits requires active, focused management throughout the change process.

- 4.4 In relation to the identification of benefits as a means by which to guide decision-makers, the Victorian Government's Investment Management Standard (a suite of guidance to assist agencies in making investment decisions) states:

The only reason an organisation makes an investment is to obtain some benefit. This is therefore the prime consideration of investment decision-makers when considering an investment proposal. For this reason people seeking new funding for their proposed investment must articulate the benefits the investment is expecting to deliver. Once funded, with the inevitable challenges and stresses that occur as the investment is implemented, the focus on benefits is often lost.

#### *Australian Government Department of Finance guidance*

- 4.5 The Australian Government Department of Finance has produced guidance with respect to benefits management as a project management discipline. The guidance highlights the importance of identifying benefits early and referring to the identified benefits to help guide the management of a project or program. The Australian Government Department of Finance's *Assurance Review Process - Lessons Learned - Benefits Realisation Management* guidance states:

During the delivery stage of a program, a clear understanding of the expected benefits helps focus on the delivery of the important things – the activities that will achieve the expected benefits. Some interim benefits may be achieved during this stage, which provide an excellent indicator for the ongoing viability of the program.

In addition, if changes occur that affect the scope of the program, any impact can be assessed against the existing benefits and the extent to which they are still likely to be achieved. This information can be used to inform an updated Business Case. This approach provides governance bodies with an excellent tool to manage and monitor programs, particularly those programs that are in the delivery stage for a number of years.

#### *New South Wales Government Transport for NSW guidance*

- 4.6 In March 2013 Transport for NSW released *Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives; Transport Economic Appraisal Guidelines (NSW Transport Appraisal Guidelines)*. These guidelines were revised and updated in March 2015. In relation to benefits management, the *NSW Transport Appraisal Guidelines* state:

Benefit is a positive outcome arising from the implementation of an initiative. Traditionally, major capital investment projects are measured on their success in relation to cost, quality and time of delivery, and not in relation to the benefits or impact that they have delivered. Benefit Realisation [benefits management] is emerging as one of the methods to assist organisations to manage the whole life cycle of programs and projects.

## Benefits management as a project management discipline

- 4.7 APMG International, a leading publishing, examination and accreditation organisation in the field of project management, has published guidance in relation to benefits management as a project management discipline. The Audit Office considered this to be the most comprehensive documentation of better practice benefits management available at the time this audit was conducted. APMG International's *Managing Benefits* (2012) guide defines benefits and benefits management as:

Benefits – the measureable improvement resulting from an outcome perceived as an advantage by one or more stakeholders, which contributes towards one or more organisational objective(s).

Benefits management – the identification, definition, tracking and realisation and optimisation of benefits.

## ACT Government guidance on benefits management

- 4.8 The ACT Government's Capital Framework, comprising investment logic workshops, early project overviews, the Single Assessment Framework and post implementation reviews, addresses benefits identification to a limited extent (requiring a description of planned benefits, and a cost-benefit analysis in business cases for Tier 3 [> \$50 million] projects). However, the ACT Government's Capital Framework does not provide any further guidance on benefits management.

## Benefits management principles

- 4.9 APMG International's *Managing Benefits* (2012) guide identifies five phases of the benefits management process, referred to as the Benefits Management Cycle, as follows:

- Identify and Quantify;
- Value and Appraise;
- Plan;
- Realise;
- Review.

- 4.10 These phases are broadly similar to the *NSW Transport Appraisal Guidelines*, which provide that a 'benefit management approach should consist of the following stages as a guideline':

- benefit identification
- benefit profiling
- benefit realisation plan and strategy
- benefit dependency map
- benefit monitoring and review.

- 4.11 For the purpose of this audit, the Audit Office has examined benefits management practices for the Capital Metro Light Rail Project with respect to the first three phases of APMG International's *Managing Benefits* (2012) guide: Identify and Quantify; Value and Appraise; and Plan. In doing so, the Audit Office necessarily considers the first four components of the *NSW Transport Appraisal Guidelines*.

## Identifying and valuing benefits

### Identifying and quantifying benefits

- 4.12 According to APMG International's *Managing Benefits* (2012) guide, the objective of identifying and quantifying benefits 'is to lay the basis for: informed options analysis, investment appraisal, and portfolio prioritisation; and the management of benefits realisation in due course'. It involves:

- 'the identification of benefits - primarily via benefits discovery workshops, benefits mapping and customer insight'; and
- 'quantification of benefits - here we are concerned with forecasting/estimating the scale of benefits anticipated.'

- 4.13 In relation to the identification and quantification of benefits, APMG International's *Managing Benefits* (2012) guide states:

The importance of this practice cannot be overstated because it lays the basis for all that follows. If we start off with inaccurate and unreliable benefits forecasts then subsequent management of these benefits is severely compromised.

### Valuing and appraising benefits

- 4.14 According to APMG International's *Managing Benefits* (2012) guide, the objective of valuing and appraising benefits 'is to ensure resources are allocated to those change initiatives that individually and collectively represent best value for money'. It involves:

- the valuation of benefits in monetary terms; and
- investment appraisal methods and decision-making, e.g. cost-benefit analysis.

- 4.15 In discussing this phase of the benefits management cycle, APMG International's *Managing Benefits* (2012) guide notes that the valuation of benefits through this process involves:

[determining] a 'level playing field' or consistent basis on which to undertake:

- Options analysis - to compare the various options or alternative ways of achieving the desired outcomes and benefits.
- Investment appraisal - to assess whether the benefits justify the costs required.
- Portfolio prioritisation - to rank potential investments in priority order where resources are limited.

- 4.16 In relation to cost-benefit analysis, APMG International's *Managing Benefits* (2012) guide notes:

Cost-benefit analysis quantifies in monetary terms as many costs and benefits of an initiative as possible to determine whether the benefits exceed the costs and hence whether investment is justified.

### Benefits identified in the *Full Business Case*

- 4.17 The *Full Business Case* identifies a range of benefits associated with the Capital Metro Light Rail Project. These are identified in Chapter 4 of the *Full Business Case*, with reference to four identified problems:

- Problem 1 - 'the need to build future alternative transport capacity';
- Problem 2 - 'a need for sustainable urban re-development and increased urban densification';
- Problem 3 - 'economic challenges'; and
- Problem 4 - 'sub-optimal gateway to the Capital'.

- 4.18 Table 4-1 shows the benefits identified for the Capital Metro Light Rail Project against the four identified problems, as shown in the *Full Business Case*, as well as how these benefits are matched to the categories of benefits identified in the cost-benefit analysis conducted for the project.

**Table 4-1 Capital Metro Light Rail Project benefits (*Full Business Case*)**

<b>Problem 1: Building alternative transport capacity</b>	<b>Category of benefit as identified in the cost-benefit analysis</b>
Light rail is anticipated to increase public transport mode share	Transport benefits
Light rail will reduce traffic congestion and associated costs	
Light rail will improve the health of Canberrans	
Light rail reduces the ACT's carbon emissions per capita	
Light rail improves customer experience for locals and visitors	
Light rail improves accessibility	
<b>Problem 2: The need for sustainable urban re-development and increased urban densification.</b>	
Light rail facilitates densification which helps to support a higher population with attendant economic benefits	Land use benefits
Urban densification facilitates the cost efficient delivery of public infrastructure and services to households	
Urban densification resulting from light rail increases Government revenue	
Light rail increases productivity through agglomeration and wider economic benefits	
Light rail facilitates accelerated densification which helps to protect conservation areas into the future	
<b>Problem 3: Canberra faces substantial economic challenges which have the potential to increase social and economic dislocations.</b>	
Light rail contributes to economic growth for the ACT	Wider economic benefits
Light rail creates jobs	
Light rail contributes to a more sustainable and diverse economy	
Light rail increases government revenue as any increases in land values increase the tax base	
<b>Problem 4: The Federal Highway – Northbourne Avenue corridor is a sub-optimal gateway to the Nation's capital.</b>	
Light rail contributes to higher values for land along the corridor	Land use benefits
Light rail aligns with and helps to achieve the Burley Griffin vision for the corridor	
Light rail and the anticipated resulting urban renewal will create a more grand entrance to the City befitting its status as the Nation's Capital	

Source: Audit Office, based on the *Full Business Case*, Capital Metro Agency

4.19 The *Full Business Case* identified 18 benefits that are intended to be achieved from the Capital Metro Light Rail Project. Benefits are identified with respect to four identified 'problems': 'the need to build future alternative transport capacity', 'a need for sustainable urban re-development and increased urban densification', 'economic challenges' and 'sub-optimal gateway to the Capital'. The *Full Business Case* does not

separately value these benefits, or (apart from identifying high-level 'Possible Key Performance Indicators' for eight of the benefits) indicate how they will be measured.

4.20 The Capital Metro Agency advised that:

Anticipated project benefits were indeed valued in Chapter 6 of the Business Case.

The Capital Framework does not require *project benefits* discussed in a qualitative sense in the 'Needs Analysis' chapter to actually be assigned a dollar value. Indeed, had CMA or its advisors attempted to apply a value against individual benefits identified in Chapter 4, it would have been in a manner not reflective of industry standards.

Benefits from the project were properly valued in accordance with applicable industry guidelines and principles in Chapter 6, and a diagram showing linkages between benefits identified in Chapter 4 and in Chapter 6 was provided in section 4.1 of the Business Case for the reader's convenience.

4.21 Twelve of the eighteen benefits identified for the Capital Metro Light Rail Project relate to:

- Problem 2 - 'a need for sustainable urban re-development and increased urban densification';
- Problem 3 - 'economic challenges'; and
- Problem 4 - 'sub-optimal gateway to the Capital'.

4.22 Twelve of the eighteen benefits identified for the Capital Metro Light Rail Project relate to the Wider Economic Benefits (including Land Use Benefits) that have been identified for the purpose of the economic appraisal (refer to Table 4-2). The significance of wider economic benefits (including land use benefits) for the Capital Metro Light Rail Project is highlighted in the *Full Business Case*:

The project has two key rationales:

- To increase overall levels of transportation service for Canberrans, facilitating a shift to public transport consistent with ACT Government policy; and
- To spur further sustainable urban development and revitalisation along the proposed rail corridor, with employment, economic and other benefits potentially extending to all Canberrans.

Associated with these rationales are attendant economic and other benefits for Canberra.

4.23 The breadth of expected benefits associated with the Capital Metro Light Rail Project, including benefits relating to urban redevelopment and densification and the ACT economy, demonstrates that the project is expected to have broader non-transport related benefits.



## Business Case economic analysis

4.24 The *Full Business Case* presents economic analysis in relation to the Capital Metro Light Rail Project, for the purpose of a cost-benefit analysis of the project. The *Full Business Case* states:

A cost benefit analysis is a systematic means of analysing the financial, economic, environmental and social costs and benefits associated with a project. The analysis provides a decision-making framework that considers net impacts on society, both positive and negative.

4.25 Table 4-2 shows the benefits identified from the Capital Metro Light Rail Project for the purpose of the economic analysis conducted in the *Full Business Case*.

**Table 4-2 Value of benefits identified in the *Full Business Case* cost-benefit analysis (present value, July 2014)**

Cost Scenario	Value \$'m (present value)
<b>Project Benefits</b>	
Transport Benefits (of which:)	<b>406</b>
Time Savings	222
Public transport operating savings	54
Other transport benefits	129
<b>Land Use Benefits</b>	<b>381</b>
<b>Wider Economic Benefits</b>	<b>198</b>
<b>Total Project Benefits</b>	<b>984</b>

Source: Capital Metro Full Business Case (public version), Table 18.

4.26 For the purpose of the cost-benefit analysis for the Capital Metro Light Rail Project, the *Full Business Case* identified a total of \$984 million in project benefits (calculated in July 2014 present value dollar terms), including:

- \$406 million in transport benefits;
- \$381 million in land use benefits; and
- \$198 million in wider economic benefits.

## Inclusion of wider economic benefits (including land use benefits)

4.27 As discussed in paragraph 4.17, a range of benefits are identified for the Capital Metro Light Rail Project with respect to four identified 'problems':

- 'the need to build future alternative transport capacity';
- 'a need for sustainable urban re-development and increased urban densification';
- 'economic challenges'; and

- ‘sub-optimal gateway to the Capital’.

4.28 The identification and quantification of wider economic benefits and land use benefits for the project is consistent with the breadth of expected benefits that have been identified for the project (refer to Table 4-1)

### Wider economic benefits

4.29 As shown in Table 4-2, the *Full Business Case* includes wider economic benefits to the value of \$198 million (present value, July 2014) as a benefit for the purpose of its cost-benefit analysis. The *Full Business Case* states:

Wider Economic Impacts (WEIs) are impacts from a project which are not adequately covered by a standard cost-benefit analysis model. The analysis of WEIs attempts to capture the broader productivity impacts of a project including the effects of connectivity, land development and business logistics improvement. They capture the net additional benefits from the improvement in connectivity that the project delivers. The impacts are categorised in this study under Agglomeration Benefits, Imperfect Competition and Additional Tax Revenue.

4.30 The ‘wider economic benefits’ comprise:

- agglomeration benefits (\$165 million, present value, July 2014)
  - ‘agglomeration economies are the productivity benefits firms derive from being located in close proximity to each other and to workers’ and ‘improvements to transport infrastructure that reduce travel times for workers and freight have the potential to increase the density of economic activity by effectively bringing existing firms and workers closer to each other’
- tax from increased labour supply (\$31 million, present value, July 2014)
  - a transport project can encourage new workers into the labour force, either by reducing travel times or by physically causing jobs and workers to locate closer together’
- imperfect competition (\$2 million, present value, July 2014)
  - ‘imperfect competition benefits represent additional economic benefits arising if output increases in sectors where competition is less than perfect’

4.31 Further practical guidance on the wider economic benefits associated with the Capital Metro Light Rail Project are provided in the *Business Case in Brief*, which states:

Improvements in the transport network as a result of light rail will enhance local economic productivity and growth, create more jobs and increase the diversity and sustainability of the local economy.

The wider economic benefits of the project ... include:

- Benefits from bringing workers, employers and suppliers in closer proximity to each other (referred to as ‘agglomeration benefits’)
- Benefits from an increase in jobs.

EY is a global firm that has advised on some of Australia’s most complex transport and urban transformation projects. Following their appointment to the project, EY has established a

presence in Canberra. This is an example of how the Capital Metro project will attract people and businesses to Canberra.

### Land use benefits

4.32 As shown in Table 4-2, the *Full Business Case* includes 'land use benefits' to the value of \$381 million (present value, July 2014) as a benefit for the purpose of its cost-benefit analysis. The *Full Business Case* states:

In combination with supportive government policies, light rail has the potential to drive significant land use changes. These will lead to additional benefits over and above those captured within transport benefits, both by realising higher and better use of existing land, reducing the cost of providing public services and delivering densification benefits such as agglomeration.

4.33 The *Full Business Case* identifies land use benefits as:

- urban densification benefits (\$72 million, present value, July 2014) -
  - 'change in housing stock formation ... will affect the amount of electricity and water required to maintain a certain living standard' and 'this foregone use of electricity and water has a corresponding decrease in environmental impacts when compared to what will otherwise be realised'
  - 'changes in land use will also deliver agglomeration and productivity gains similar to those captured as wider economic impacts by encouraging firms and workers to locate in closer physical proximity'
- land value benefits (\$168 million, present value, July 2014) -
  - 'efforts to activate development along the light rail corridor will generate economic benefits by replacing existing land use with higher value use by improving quality and/or increasing density of developments'
- infrastructure efficiency savings (\$140 million, present value, July 2014) -
  - 'future population growth will require the provision of additional public services and physical infrastructure in order that existing service standards are maintained' and 'the future spatial location of population and jobs can impact the future government costs of providing physical infrastructure such as roads, rail and other transport, water and sewerage, electricity, gas and telecommunications' and 'it is well understood that the cost to provide these services to "greenfield" (i.e. outer suburban or fringe development) locations is much higher than to already well serviced "brownfield" (i.e. inner city) locations.'

4.34 Further practical guidance on the wider economic benefits associated with the Capital Metro Light Rail Project are provided in the *Business Case in Brief*, which states:

Capital Metro is expected to accelerate urban densification within the light rail corridor, supporting Canberra's continued population growth within the Territory's constrained boundaries. Benefits of densification within the light rail corridor include:

- More cost efficient delivery of public infrastructure and services
- Increased economic productivity

- Reduced carbon emissions
- Changing the utilisation of land along the corridor to higher value uses
- Over 30 years, land use benefits from light rail are estimated to be \$765 million.

4.35 The land use benefits, specifically the urban densification benefits (\$72 million, present value, July 2014) and infrastructure efficiency savings benefits (\$140 million, present value, July 2014) are predicated on the achievement of agglomeration and productivity gains from the densification of housing and development in the light rail corridor. In this respect they are akin to wider economic benefits. The land value benefits (\$168 million, present value, July 2014) represent the benefits that are expected to be derived by land owners and developers due to expected development throughout the light rail corridor.

4.36 The *Business Case in Brief* states that ‘over 30 years, land use benefits from light rail are estimated to be \$765 million’. This figure represents the nominal value of land use benefits over a thirty year period (i.e. the term of the economic appraisal) which, when discounted, equates to a present value of \$381 million (July 2014). The *Business Case in Brief* does not identify that this figure is the nominal value and has not been discounted.

#### Comparison with other transport projects

4.37 The following table compares the benefits identified for the Capital Metro Light Rail Project with the benefits identified in other transport infrastructure projects for which there is publicly available information. Details of these projects, including the identification and calculation of traditional ‘transport’-related benefits and land use and wider economic benefits is discussed in detail in Appendix B.

**Table 4-3 Benefits identified for transport projects (present value) (\$ million)**

Category of Benefits	Capital Metro Light Rail (light rail)	Sydney South East Light Rail (light rail)	Melbourne Metro (heavy rail)	WestConnex (road)	Northern Link Legacy Way (road)	East West Link Stage 1 (road)
Transport benefits (user benefits, externalities and residual value)	406	3,812	7,900	22,205	2,056	3,341
Land use benefits	381	-	-	-	-	-
Wider economic benefits	198	222	3,100	2,134	396	2,214
<b>Total project benefits</b>	<b>984</b>	<b>4,034</b>	<b>11,000</b>	<b>24,339</b>	<b>2,452</b>	<b>5,555</b>
<b>Land use benefits and wider economic benefits as a percentage of total project benefits</b>						
	58.8%	5.5%	28.2%	8.8%	16.2%	39.9%

Source: ACT Audit Office analysis<sup>12</sup>

Note: The Melbourne Metro Business Case (February 2016) has included the 'land use impacts' of the project within its wider economic impact analysis.

4.38 Analysis of the Capital Metro Light Rail Project against other transport infrastructure projects for which there is publicly available information shows wider economic benefits (including land use benefits) i.e. those that are non-transport benefits form a significant component of the overall benefits identified for the Capital Metro Light Rail Project (58.8 percent).

#### *Comparison with other transport projects*

4.39 The Capital Metro Agency advised that it had concerns with respect to the Audit Office's comparison of the Capital Metro Light Rail Project with the other transport infrastructure projects in Table 4-3. The Capital Metro Agency advised:

Like-for-like comparisons cannot be made with the listed projects in the Final Draft Report. None have included a comprehensive assessment of land use impacts and benefits, mainly because they are not urban transformation projects - a key objective for Canberra Light Rail.

Apart from being transport focused, the listed projects also have no common characteristics with the Capital Metro project such as population density, maturity of existing transport system, opportunities for urban renewal and development and infill along the corridor.

<sup>12</sup> The Audit Office also examined the *Melbourne–Brisbane Inland Rail Alignment Study Final Report* (July 2010), which identified no wider economic impacts or land use benefits.

4.40 Three of the five projects include significant elements of urban transformation among their objectives, and identify opportunities for urban renewal, development and infill. The other two projects also identify opportunities for urban renewal or land value capture among project benefits.

4.41 In relation to the Sydney South East Light Rail Project, the *Sydney Light Rail CBD and South East Light Rail Business Case Summary* (November 2013) includes a Message from the Minister which states:

Not only will this project bring enormous improvements to the customer experience, it will also boost Sydney's economic growth and productivity ... the project will also revitalise the urban environment along the route.

4.42 The *Sydney Light Rail CBD and South East Light Rail Business Case Summary* (November 2013) also states that:

The Anzac Parade corridor is identified as an area where urban renewal will be supported by improvements to infrastructure and public spaces. The Randwick Urban Activation Precinct supports this corridor with new housing and jobs planned alongside future light rail stops.

4.43 In relation to the Melbourne Metro Project, the *Melbourne Metro Business Case* (February 2016) states that the project will:

Catalyse significant urban renewal in the Arden-Macaulay Precinct, facilitating expansion of the central city and supporting Melbourne's economic prosperity. Direct access to mass transit will facilitate high value, knowledge-based employment in Melbourne's inner west providing a new professional jobs location for Melbourne's key growth corridor to the north-west. With the site's potential to accommodate 25,000 residents and in excess of 43,000 jobs, Arden station has the potential to stimulate over \$7bn of development value in today's dollars.

4.44 The *Melbourne Metro Business Case* (February 2016) also states:

Melbourne is established and will continue to be a strong key service-based employment hub. More efficient public transport services and connectivity are required to support access into and around Central Melbourne to accommodate employment and business growth (especially in knowledge-based sectors), open up new commercial floor space within proximity of the CBD and facilitate development in urban renewal areas, such as the Arden Macaulay Precinct.

4.45 In relation to the WestConnex Project, the *WestConnex Urban Revitalisation Fact Sheet* (September 2013) states:

WestConnex is the trigger for Parramatta Road to become an urban, people-friendly corridor alive with activity and enterprise ... in consultation with councils and communities, sections of the Parramatta Road corridor will be rezoned to encourage construction of new apartments and homes, commercial and retail space, recreational, community and other civic and government buildings.

- 4.46 The Audit Office sought advice from Dr Geoffrey Clifton in relation to the analysis of the Capital Metro Light Rail Project against the other transport infrastructure projects. Dr Clifton advised:

These projects are relevant for two reasons. Firstly they provide a range of transport projects where the BCR is higher, showing that higher BCRs are possible. Secondly, it is not clear whether as an urban transformation project it is logical that economic development outcomes for the Capital Metro should greatly exceed the transport benefits. As an example, the Sydney CBD and South East Light Rail project is a transformational project with a much higher ratio of transport benefits to other benefits.

...

The Business Case Summary (2013) for the Sydney CBD and South East Light Rail notes that 'the project will also revitalise the urban environment along the route' (page 3) and 'sustainability benefits associated with improved urban renewal opportunities'. Furthermore, Sydney's Light Rail Futures report of 2012 noted four key benefits of expansion of the Light Rail system, two of which were 'urban renewal opportunities and improved amenity' (page 10).

The Statement of Response goes on to suggest that there are 'no common characteristics with the Capital Metro project, such as population density, maturity of existing transport system, opportunities for urban renewal and development and infill along the corridor'. ABS figures show that the current population density of the Canberra Metro corridor is lower than the population density of the corridor of the Sydney CBD and South East Light Rail project but both corridors have a mixture of brown field and urban infill opportunities and no evidence has been presented to suggest that the difference in population densities should preclude meaningful comparisons of the two projects. Furthermore, both corridors have similar networks of trunk bus routes that have developed over similar time frames suggesting that meaningful comparisons may be made.

However, it is noted that there is more scope to add additional bus services on the Capital Metro corridor whilst the NSW government has argued that congestion in the Sydney CBD precludes expansion of the bus network. This may account for some of the relatively higher transport benefits expected for the South East Light Rail project but does not account for the much higher (both in absolute and relative terms) land use plus Wider Economic Impacts expected for the Capital Metro project.

- 4.47 For these reasons, the Audit Office has included Table 4-3 in this report, including an analysis of the wider economic benefits (including land use benefits) of the different projects. It is noted and respected that the transport infrastructure projects each have different features and characteristics, which will have an impact on the relative proportion of wider economic benefits (including land use benefits) associated with the project. Nevertheless, the comparison is useful (including further detail that is provided in Appendix B) as it demonstrates the relationship between transport-related benefits and wider economic benefits (including land use benefits) and how these have been treated in the different projects. Appendix B also demonstrates how these have been conveyed in the various publicly available business cases and associated documents.

### Guidance on the use and calculation of wider economic benefits (and land use benefits) for cost-benefit analysis

4.48 Appendix A provides information on guidance available with respect to the use and calculation of wider economic benefits (including land use benefits). Key guidance that is discussed includes:

- ACT Government *Single Assessment Framework Business Case Guidance Notes* (v 1.0);
- Infrastructure Australia *Templates for Stage 7 Solution Evaluation - Transport Infrastructure* (December 2013) and *Assessment Framework - Detailed Technical Guidance* (February 2016);
- *National Guidelines for Transport System Management in Australia* (the NGTSM Guidelines), initially published in 2006 and refreshed in April 2015; and
- Transport for NSW *Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives; Transport Appraisal Guidelines* (NSW Transport Appraisal Guidelines), initially released in March 2013 and revised and updated in March 2015.

#### ACT Government

4.49 There is no ACT guidance specifically in relation to the calculation of land use benefits for transport infrastructure projects. There is very limited ACT guidance in relation to the calculation of wider economic benefits for transport infrastructure projects. The ACT Government's *Single Assessment Framework Business Case Guidance Notes* (v 1.0) states that:

Wider economic impact studies look at the impact of a project option in terms of changes to macroeconomic aggregates such as Gross Regional Product, Gross State Product or Gross Domestic Product and employment – that is the 'economic impacts'. Economic impacts should not be confused with economic costs and benefits described above.

4.50 Because of this distinction between wider economic benefits and economic benefits, the ACT Government's *Single Assessment Framework Tier 3 Business Case Template* requires agencies to provide the estimated value of 'wider economic benefits' separately to the cost-benefit analysis.

#### Infrastructure Australia

4.51 Infrastructure Australia has provided guidance on the calculation of land use benefits and wider economic benefits.

4.52 In its *Templates for Stage 7 Solution Evaluation - Transport Infrastructure* (December 2013), Infrastructure Australia, in relation to innovative appraisal techniques such as those involving land use benefits and wider economic benefits, advised:

Appraisal methodology techniques are subject to constant development, both in Australia and worldwide, reflecting a welcome emphasis on improving the understanding of an initiative's total costs and benefits. However, it is important to achieve an appropriate balance between, on the one hand, the desire to be as comprehensive as possible, and on the other hand,



maintaining the methodological rigour of the appraisal process. There are a number of recent developments being currently debated, and Infrastructure Australia's approach to each is outlined below.

In all cases, Infrastructure Australia will consider these additional benefits/costs separately to the traditional and widely accepted benefit/cost analysis (treating each case on its merits), *and the results should be presented separately in the documentation.*

- 4.53 In relation to land use benefits, in its *Templates for Stage 7 Solution Evaluation - Transport Infrastructure* (December 2013), Infrastructure Australia states:

There is increasing interest in assessing the benefits/costs of different urban densities. These benefits/costs may arise in addition to the time savings and other impacts currently captured in appraisal: in particular, the higher cost of providing a basket of infrastructure services, such as water, electricity and gas, to less dense urban environment as compared to denser environments has been the subject of considerable recent research.

While it is recognised that the calculation of these impacts is also still in its infancy, both in Australia and internationally, Infrastructure Australia believes the correct interpretation and accurate calculation of the benefits/costs of different densities, using the most suitable data available can add texture to the decision making process for certain initiatives. Therefore, Infrastructure Australia will treat such benefits separately to the traditional CBA.

- 4.54 In early 2016, Infrastructure Australia updated its guidance in relation to the calculation of land use benefits. In its *Infrastructure Australia Assessment Framework - Detailed Technical Guidance (February 2016)* Infrastructure Australia reiterated its earlier 2013 guidance and further stated:

... treating each case on its own merits, IA may separately consider urban consolidation benefits in addition to the benefits captured in traditional CBA. In estimating these benefits, proponents should be mindful of potential double counting (e.g. if the travel time savings are already captured).

- 4.55 In guidance published in 2013 (and updated in 2016) Infrastructure Australia urged caution with respect to the calculation of land use benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. Infrastructure Australia advised that such benefits may 'add texture to the decision making process for certain initiatives' but that it would treat these benefits separately in its consideration of projects.

- 4.56 In relation to wider economic benefits, in its *Templates for Stage 7 Solution Evaluation - Transport Infrastructure* (December 2013), Infrastructure Australia states:

WEBs are improvements in economic welfare that are acknowledged, but which have not been typically captured, in traditional CBA. WEBs are not the same as the economic benefits determined by CGE (computable general equilibrium) or input - output models. WEBs can be disaggregated into a number of specific sources of benefits. The most significant is agglomeration, the notion that similar firms are drawn towards the same location since 'proximity generates positive externality'.

These are the benefits derived from face to face contact, information exchange and networking only available to industries working close to each other.

...

While it is recognised that the calculation of these wider benefits is still in its infancy, both in Australia and internationally, Infrastructure Australia believes the correct interpretation and

accurate calculation of WEBs [wider economic benefits] (using the most suitable data available) can add texture to the decision making process for certain initiatives. However, it is crucial to acknowledge that:

- Only certain initiatives, addressing a specific set of economic fundamentals, will generate WEBs;
- Significant WEBs will only be found in initiatives with strong traditional benefits, since WEBs require high levels of behaviour change, e.g. strong demand for the new asset;
- WEBs may be negative for some initiatives; and
- The availability of Australian specific data needed to calculate WEBs is currently sub-optimal.

Therefore, Infrastructure Australia will treat WEBs separately to the traditional CBA. It is recommended that any proponent seeking to calculate WEBs consults with Infrastructure Australia before proceeding with the analysis. Any subsequent study should base the justification for inclusion of WEBs on the economic theory and applicability of this to the initiative's strategic objectives and impacts upon the transport and labour market. The quantitative analysis should follow the latest guidance and use well informed assumptions about the most appropriate, initiative-specific data. Applying a broad percentage up-lift to the results of the traditional appraisal does not provide any additional or meaningful information for Infrastructure Australia to consider in the decision making process.

4.57 In early 2016, Infrastructure Australia updated its guidance in relation to the calculation of wider economic benefits. In the *Infrastructure Australia Assessment Framework - Detailed Technical Guidance* (February 2016) Infrastructure Australia reiterated its earlier 2013 guidance.

4.58 In guidance published in 2013 (and updated in 2016) Infrastructure Australia urged caution with respect to the calculation of wider economic benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. Infrastructure Australia advised that such benefits may 'add texture to the decision making process for certain initiatives' but that it would treat these benefits separately in its consideration of projects.

#### *National Guidelines for Transport System Management*

4.59 In 2015 guidance in relation to wider economic benefits was prepared by the National Guidelines for Transport System Management in Australia Steering Committee and approved by the Transport and Infrastructure Senior Officials' Committee. The *2015 National Guidelines for Transport System Management in Australia* (the NGTSM Guidelines) were subsequently published by the Commonwealth Department of Infrastructure and Regional Development. The NGTSM Guidelines state:

The concept of 'wider economic benefits' (WEBs) is relatively new to the practice of transport appraisal in Australia.

WEBs are improvements in economic welfare that are acknowledged, but which have not been typically captured, in traditional cost-benefit-analysis (CBA). They arise from market imperfections, that is, prices of goods and services differing from costs to society as a whole.

...

There are currently serious measurement difficulties in Australia due to limited data availability. Pending econometric work funded by the Australian government is expected to result in significantly improved estimation of WEBs for Australia. In the interim, practitioners

should follow Infrastructure Australia's advice and present CBA results *without* WEBs, and then *with* WEBs, treating WEBs effectively as a sensitivity test.

4.60 The NGTSM Guidelines further state:

Each of these three WEBs is a legitimate benefit in theory. However, there are serious measurement difficulties, with the availability of Australian specific data needed to calculate WEBs being currently sub-optimal. So much so that IA recommends that cost-benefit analysis results (BCR and NPVs) be presented first *without* WEBs, and then *with* WEBs, treating WEBs effectively as a sensitivity test.

4.61 In September 2015, the National Guidelines for Transport System Management in Australia Steering Committee provided further guidance in relation to wider economic benefits on its website. The National Guidelines for Transport System Management in Australia Steering Committee stated:

If WEBs are to play a more significant, reliable role in Australian practice, the current poor domestic estimates of key WEBs parameter values need to be improved.

The NGTSM Revision is currently investigating the econometric modelling and data requirements to obtain a robust set of productivity elasticities for Australia (for agglomeration estimation), as well as the parameters needed to estimate the other WEBs. *Developing productivity elasticities for estimating WEBs in Australia—Scoping Study* was published in March 2015.

Following on from the scoping study, the Australian Government recently commissioned KPMG to work with the Australian Bureau of Statistics to undertake econometric and economic modelling to obtain the best possible set of parameter value estimates using currently available data for publication in the Guidelines. This estimation work is being funded by the Australian Government. The work is expected to be completed by early 2017, and interim results may be released during this period.

Following that WEBs parameter values estimation work, the NGTSM guidance on WEBs will be updated and is expected to consist of a methodology supported by more robust parameter value estimates. This will enable WEBs to be estimated with greater confidence for Australian CBAs in the future. Whether estimation of WEBs will become reliable to the point where WEBs can be routinely counted with core benefits and costs in CBAs remains to be seen.

4.62 The 2015 *National Guidelines for Transport System Management in Australia* (the NGTSM Guidelines) published by the Commonwealth Department of Infrastructure and Regional Development advise caution with respect to the use of wider economic benefits and their consideration in the economic appraisal (i.e. cost-benefit analysis) of transport projects. The guidelines note that 'there are serious measurement difficulties, with the availability of Australian specific data needed to calculate WEBs being currently sub-optimal'.

*New South Wales guidance for assessing costs and benefits of urban renewal*

4.63 In relation to the calculation of costs and benefits of 'urban renewal', i.e. the land use benefits identified in the *Full Business Case*, EY, on behalf of the Capital Metro Agency, has advised that the 'assessment has been undertaken in line with the emerging guidelines developed by the [New South Wales] government'.

- 4.64 The Audit Office was advised that the New South Wales Treasury, in conjunction with Urban Growth NSW, a New South Wales government agency, has developed an *Urban Renewal Economic Framework*, which seeks to assist in the economic appraisal of New South Wales projects. The Audit Office was advised by New South Wales Treasury that this framework has been endorsed by the New South Wales Cabinet, but that the framework is not yet available for public release. The Audit Office could not verify the assertions made in relation to the New South Wales guidance or the extent to which the economic appraisal of the Capital Metro Light Rail Project was conducted in accordance with the New South Wales guidance.

*Use of wider economic benefits (including land use benefits) in economic appraisal*

- 4.65 The Audit Office sought advice from Dr Geoffrey Clifton, from the Institute of Transport and Logistics Studies at the University of Sydney, with respect to the use of wider economic benefits (including land use benefits) in economic appraisals for transport infrastructure projects. Dr Clifton advised:

[Wider economic benefits] are benefits not directly captured by traditional travel time savings methodologies. They have been recognised in economic appraisals as something that ought to be measured and included, but only if data is available and a robust and defensible methodology is used. It has been recognised that the size of these benefits (even the sign) would depend on the specific project, the location of the project and the broader economy... Their variability and difficulty to measure means that [wider economic benefits] have rarely been included in evaluations (that is, their existence was acknowledged but they were not included in the analysis itself).

- 4.66 Dr Clifton further advised:

The Cost Benefit Analysis (CBA) and broader Economic Impact Analysis (EIA) methodologies are tools to aid decision making. It is entirely reasonable for a government to select a project with a low Benefit Cost Ratio (BCR) but, from a policy perspective, we should ensure that the methodology itself is not arbitrarily changed for the purposes of projecting a higher BCR. Of course, if a large scale project with a lower BCR proceeds then extra care needs to be taken to ensure that the benefits are realised and that the public's investment is protected.

The traditional CBA methodology for transport projects focussed almost solely on the direct transportation benefits, typically travel time savings. Other effects outside of travel time savings, for instance the impact of changes to land use on productivity, have been recognised in the literature and have been discussed in Cost Benefit studies ... These other benefits (and potentially detriments) may include amenity benefits, health benefits, agglomeration benefits, other productivity benefits, etc.

Whilst recognised as existing, these wider benefits have traditionally been very difficult to accurately measure and have traditionally not been included in economic impact analysis and they are still not uniformly included. The literature suggests that these benefits need to be treated with some caution, given that the way these are measured is still under development.

For these reasons, it is important to carefully assign project benefits to their correct categories and to avoid double counting between categories.

- 4.67 In advice to the Audit Office in relation to the use of wider economic benefits (including land use benefits) in economic appraisal, Dr Geoffrey Clifton from the University of Sydney advised 'whilst recognised as existing, these wider benefits have traditionally been very difficult to accurately measure and have traditionally not been included in economic

impact analysis and they are still not uniformly included. The literature suggests that these benefits need to be treated with some caution, given that the way these are measured is still under development’.

### Categorisation and characterisation of wider economic benefits (including land use benefits)

4.68 The following table shows the cost-benefit analysis information presented in the *Full Business Case*.

**Table 4-4 Cost benefit analysis (Capital Metro Light Rail Business Case) (present value, July 2014)**

Cost Scenario	Value (\$'m) present value
<b>Project Benefits</b>	
Transport Benefits	406
Land Use Benefits	381
Wider Economic Impacts	198
<b>Total Project Benefits</b>	<b>984</b>
<b>Project Costs</b>	
Capex	619
Opex	204
<b>Total Project Costs</b>	<b>823</b>
<b>Project Economic Indicators</b>	
<b>BCR (transport and land use)</b>	<b>1.0</b>
Net Present Value (transport, land use & WEIs)	161
<b>BCR (transport, land use and WEIs)</b>	<b>1.2</b>

Source: ACT Audit Office based on Capital Metro Light Rail Project *Full Business Case*

4.69 The *Full Business Case* identified a benefit-cost ratio for the Capital Metro Light Rail Project of 1.0, based on transport benefits and land use benefits, and a benefit-cost ratio of 1.2, taking into consideration transport benefits, land use benefits and wider economic benefits.

4.70 With respect to the cost-benefit analysis, the *Full Business Case* stated:

This results in the project delivering an anticipated benefit cost ratio of 1.2, comprising a transportation and land use BCR value of 1.0 and the remainder representing wider economic impacts. As the BCR is greater than one, the economic analysis anticipates the project will deliver a net benefit to the ACT community. This does not take into account further social benefits which have not been quantified...

4.71 It is not uncommon for infrastructure business cases to calculate and present two benefit-cost-ratios, one with wider economic benefits and one without, but it is incumbent on the project managers to appropriately explain the different figures. By way of example, on 20 November 2015 the Sydney Motorway Corporation released the *Westconnex Updated Strategic Business Case*. In relation to the economic appraisal of the project, the document stated:

Analysis of the results considers the Benefit Cost Ratio, Net Present Value and Internal Rate of Return metrics using the conventional Cost Benefit Analysis method (without Wider Economic Impacts) as the primary measures of economic viability. The same metrics were calculated inclusive of both conventional Cost Benefit Analysis and Wider Economic Impacts analysis as a secondary measure of viability.

4.72 While Table 18 in the *Full Business Case* provides two separate figures for the benefit-cost ratio, one that includes wider economic benefits and one that doesn't, the *Full Business Case* does not provide further clarification or guidance on the risks associated with using the benefit-cost ratio figure of 1.2 for decision-making purposes. Furthermore, the benefit-cost ratio figure of 1.0 includes land use benefits, which are recognised in Australian better practice guidance as being a form of wider economic benefit and should be treated with the same degree of caution as wider economic benefits, due to the inherent risks associated with the methodology associated with their calculation and the data that is available to assist in their calculation.

4.73 EY, on behalf of the Capital Metro Agency, has advised:

WEBs are a set of productivity benefits associated improved connectivity and are typically incidental (although often significant) to the main objectives (and benefits) of a transport project. Presenting the economic results with and without WEBs helps to highlight this.

The land use benefits identified in the business case, however, are part of the core benefits of Capital Metro. The objective of Capital Metro is as much to support a higher density urban form as it is to improve mobility. The treatment of transport and land use benefits as forming part of the core BCR is therefore justified.

4.74 The *Full Business Case* identified that 'as the [benefit-cost ratio] is greater than one, the economic analysis anticipates the project will deliver a net benefit to the ACT community.' It does not adequately explain the difference in the benefit cost ratio figures of 1.0 (transport benefits and land use benefits) and 1.2 (transport benefits, land use benefits and wider economic benefits).

4.75 It is critical that there be an appropriate understanding, because better practice guidance has highlighted the risks associated with valuing wider economic benefits (including land use benefits). Infrastructure Australia guidance emphasises the importance of traditional cost-benefit analysis, primarily focused on transport-related benefits, as a means to

maintain the 'methodological rigour of the appraisal process', while noting that transport and land use and wider economic benefits may be considered separately as a means to add texture.

4.76 In its response to the Final Proposed Report, the Capital Metro Agency advised:

The project will deliver almost \$1 billion of benefits to the ACT community.

Infrastructure Australia's guidance is positive towards the inclusion of both land use and Wider Economic Benefits (WEBs) for analysis of project benefits.

The Capital metro Business Case presented WEBs in a manner which enabled 'correct interpretation and accurate calculation'. WEBs were disclosed separately in the Business Case in accordance with best practice.

Decision makers were provided with more than ample and very clear information to understand the components of the BCR. Economic benefits from transport use only, transport and land use benefits only, and combined transport, land use and wider economic benefits, are clearly discernible throughout.

4.77 The Audit Office notes this statement, but suggests that, for the reasons outlined in paragraphs 4.68 to 4.72, the inherent risks associated with using and quoting wider economic benefits (including land use benefits) are not clearly conveyed in the *Full Business Case*.

4.78 The Audit Office sought advice from Dr Geoffrey Clifton in relation to the presentation of the wider economic benefits (including land use benefits) in the *Full Business Case*. Dr Clifton advised:

As noted previously, Infrastructure Australia's guidelines and the other sources discussed in Chapter 4 of the Draft Performance Audit Report from paragraph 4.39 suggested that care needs to be taken in the presentation and interpretation of Land Use and Wider Economic Impacts so that these additional benefits and costs can be considered 'separately to the traditional and widely accepted benefit/cost analysis' (Infrastructure Australia *ibid*).

It is recognised that the best practice for economic appraisal is evolving and that methods are being proposed to value benefits (and dis-benefits) that have previously not been valued. However, where this occurs it is very important that full guidance and explanation be provided so that decision makers can be satisfied that the modelling has properly determined the magnitudes of the benefits of the project and has avoided double counting of benefits so that decision makers can be assured of the 'methodological rigour of the appraisal process' (Infrastructure Australia's Templates for Stage 7 Solution Evaluation – Transport Infrastructure). Disclosure is also important so that like for like comparisons may be made with other projects (both within and between jurisdictions) that have been evaluated using traditional methods.

As noted previously, this author has not been able to satisfy himself as to the appropriateness of the way in which a number of benefits have been measured given the lack of documentation for many of the methods and sources used in the economic model. There is a number of instances noted where the potential for double counting of benefits was present and the lack of documentation means that it is not possible to ascertain whether or not double counting had actually occurred. It is suggested that Infrastructure Australia's guidance on the manner in which benefits for transport projects are measured and reported is the appropriate guidelines to follow for the Canberra Metro Project.

In this context, the BCR is rounded to 1.0 if wider economic impacts are excluded and only 1.2 if all wider economic impacts are included. In my opinion, this is marginal, especially when

considered in terms of the BCRs obtained in other projects such as those listed in Table 4-3 (e.g. the BCR of 2.5 for the Sydney CBD and South East Light Rail project).

4.79 In its response to the *Final Proposed Report* the Capital Metro Agency also advised:

In preparing the Report, and despite its emphasis upon economic modelling matters, the ACT Audit Office did not engage the advisory services of a recognised economic modelling expert in the transportation field.

4.80 The Audit Office sought clarification from the Capital Metro Agency in relation to their concerns and consulted with the Capital Metro Agency in relation to the engagement of an additional subject matter expert. The Audit Office engaged the services of Dr Neil Douglas from Douglas Economics in order to provide advice with respect to the Audit Office's interpretation of material and its conclusions and findings. In relation to the Capital Metro Agency's classification of benefits in the *Full Business Case*, Dr Douglas advised:

The [Capital Metro Light Rail] evaluation classifies benefits into transport benefits, land use benefits and wider economic impacts/benefits ...

In consideration, 'agglomeration' and 'job productivity' benefits which are classified in the [Capital Metro Light Rail] Business Case report as 'urban densification benefits' under 'Land Use Benefits' should be reclassified as Wider Economic Benefits.

Also, 'Land Value Realisation' and 'Infrastructure efficiency savings' should be classified as 'Urban Consolidation Benefits (UCBs) based on Infrastructure Australia (IA) guidelines'.<sup>13</sup>

'Energy efficiency' savings which are classified in the [Capital Metro Light Rail] evaluation as 'urban densification benefits' should be classified as Urban Consolidation benefits.

...

In reclassifying the benefit components, no judgment is made on the size of benefit although it should be noted that it would only be correct to infrastructure efficiency savings in so far as "households and businesses do not pay for the full resource cost of the infrastructure they use". Transport and Infrastructure Council (2016).<sup>14</sup> If infrastructure charges are set correctly, metropolitan policy makers should be indifferent as to whether households and businesses choose locations of high or low infrastructure costs. Likewise, for 'land value realization' only those benefits, in addition to transport travel time savings, that can be demonstrated to be attributable to the [Capital Metro Light Rail] and result from market imperfections should be included.

In terms of the inclusion of WEB benefits in the Cost Benefit Appraisal and based on IA requirements, WEBs should be presented separately from the 'traditional' transport user

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<sup>13</sup> Infrastructure Australia "Assessment Framework - Detailed Technical Guidance", January 2016.  
[http://infrastructureaustralia.gov.au/projects/files/Assessment\\_Framework\\_Detailed\\_Technical\\_Guidance.pdf](http://infrastructureaustralia.gov.au/projects/files/Assessment_Framework_Detailed_Technical_Guidance.pdf)

<sup>14</sup> "National Guidelines for Transport System Management in Australia - Stage 2 Content for Stakeholder Consultation" - Draft Report 2015-16 Transport Infrastructure Council Section 7.5 Page 40.



benefits in the documentation.<sup>15</sup> Likewise, in accordance with the IA framework, urban consolidation benefits should be presented separately.<sup>16</sup>

Thus in accordance with the IA framework, WEBs and UCB should be separately presented with the core evaluation limited to transport benefits.

- 4.81 Using the estimated costs and benefits from the *Full Business Case*, and applying current Infrastructure Australia methodology, Dr Douglas calculated that the benefit cost ratio for the project is 0.49.

### Timeliness of benefits quantification

- 4.82 As discussed in paragraph 3.15, three different versions of the *Full Business Case* were presented to various decision makers, including a version presented to the Capital Metro Project Board on 15 August 2014, a version presented to ACT Government decision-makers on 10 September 2014 and a version that was publicly released on 30 October 2014.
- 4.83 Table 4-5 shows the movements in the cost-benefit analysis reported in the different versions of the *Full Business Case* presented to various stakeholders.

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<sup>15</sup> Infrastructure Australia “will consider additional benefits/costs arising from methodological developments (e.g. WEBs) separate to the traditional and widely accepted benefit/cost analysis, and treating each case on its merits. The results should be presented separately in the documentation”. Infrastructure Australia “Assessment Framework - Detailed Technical Guidance”, January 2016. Section 10.7.1 page 39.

<sup>16</sup> IA “may separately consider urban consolidation benefits in addition to the benefits captured in a traditional CBA. In estimating these benefits, proponents should be mindful of potential double counting (e.g. if the travel time savings are already captured)”. Ref 3. Section 10.7.4 page 41.

**Table 4-5 Table 18 of the *Full Business Case* (Cost-benefit analysis): differences between versions (present value) (\$'m)**

	<b>Board: 15/08/2014</b>	<b>Government: 10/09/2014</b>	<b>Public: 30/10/2014</b>
<b>Project Benefits</b>			
Transport Benefits (of which:)	549	377	406
Time Savings	206	201	222
Public transport operating savings	65	59	54
Health Benefits	83	-	-
Other transport benefits	194	117	129
Land Use Benefits	326	381	381
Wider Economic Impacts	169	190	198
<b>Total Project Benefits</b>	<b>1,044</b>	<b>948</b>	<b>984</b>
<b>Project Costs</b>			
Capex	617	619	619
Opex	204	204	204
<b>Total project Costs</b>	<b>821</b>	<b>823</b>	<b>823</b>
<b>BCR (transport and land use)</b>	<b>1.1</b>	<b>0.9</b>	<b>1.0</b>
Net Present Value (transport, land use & WEIs)	222	125	161
<b>BCR (transport, land use and WEIs)</b>	<b>1.3</b>	<b>1.2</b>	<b>1.2</b>

Source: ACT Audit Office, based on different versions of *Full Business Case*.

Note: Estimated health benefits were separately identified and valued at \$83 million in the 15 August 2014 version of the Business Case, reduced to \$6 million and included under 'other transport benefits' in the 10 September version, and reduced to \$5 million and included under 'other transport benefits' in the 30 October version.

4.84 Analysis of the three different versions of the *Full Business Case* shows that between 15 August 2014 and 30 October 2014 there were a number of changes to estimated benefits associated with the Capital Metro Light Rail Project. These included:

- between the version presented to the Capital Metro Project Board in August 2014 and the version presented to ACT Government decision-makers in September 2014, the value of expected health benefits and 'other transport benefits' dropped significantly (from \$83 million to \$6 million and from \$194 million to \$117 million respectively); and
- between the version presented to the Capital Metro Project Board in August 2014 and the version presented to ACT Government decision-makers in September 2014, the value of expected benefits associated with land use changes and wider economic benefits increased (from \$326 million to \$381 million and from \$169 million to \$190 million respectively).

- 4.85 Core hours of operation of the light rail were also revised: the September 2014 *Full Business Case* identifies that these would be from 7 a.m. to 7 p.m. The October 2014 publicly released version identifies that they would be from 7 a.m. to 6 p.m.
- 4.86 As discussed in paragraphs 3.19 to 3.24, calculations associated with the benefits of the Capital Metro Light Rail Project, which underpinned the cost-benefit analysis undertaken for the project, were continuing to be worked on during the period between August and October 2014. There were significant changes to specific components of the benefits associated with the project, indicating that changes were being made to the assumptions underpinning the model.

### Calculation of benefits of the Capital Metro Light Rail Project

- 4.87 The identification and valuation of expected benefits from the Capital Metro Light Rail Project was undertaken by EY, on behalf of the Capital Metro Agency. The benefits were quantified and valued using the output of an economic model developed by EY.
- 4.88 The Capital Metro Agency provided the Audit Office with a copy of the economic model that was used for the calculation of benefits. The model is an Excel workbook comprising input sheets for data, calculation sheets and output sheets including summary results. The output of the model, i.e. various calculations of costs and benefits, was put into the *Full Business Case*.

### Review of the outputs of the economic model

- 4.89 The Audit Office sought to understand what processes were in place to review and provide assurance with respect to the economic model and its outputs. The Capital Metro Agency advised that 'EY has deep economic appraisal expertise and industry leading experience in the field' and that review and oversight was primarily achieved through:
- location of EY personnel in the Capital Metro Agency's office on a full time basis during the preparation of the Business Case, working directly with Capital Metro Agency personnel and overseen on a full time basis by the Executive Director Commercial; and
  - other EY personnel attending Capital Metro Agency's office during the preparation of the Business Case in relation to structuring, economic, financial and other matters and, during these periods, working closely with Capital Metro Agency personnel, including the Executive Director Commercial.
- 4.90 The Capital Metro Agency further advised that review and oversight was also achieved through Treasury involvement, including:
- a review of the economic model and questioning of EY that was undertaken by ACT Treasury;
  - a review meeting conducted between ACT Treasury (Economic Branch) and EY personnel in relation to the economic model; and

- the *Full Business Case* being subject to sign-offs by Treasury officials.

4.91 The only documentation associated with any review or assurance over the output of the economic model that was provided to the Audit Office was a minute that was provided to the Treasurer by the Under Treasurer on 5 September 2014. This is discussed further in paragraph 3.39.

*Documentation of the inputs to the economic model*

4.92 The economic model is necessarily reliant upon the assumptions underpinning the inputs to the model. There are a significant range of assumptions that underpin the model, that broadly include (but are not limited to) categories such as:

- population assumptions;
- patronage assumptions;
- vehicle use assumptions;
- vehicle operating cost assumptions;
- public transport operating costs; and
- land use assumptions.

4.93 There is inadequate documentation associated with the assumptions underpinning the calculation of benefits associated with the economic analysis underpinning the Full Business Case. This is apparent with respect to:

- discussion / justification for values used in the calculation of benefits; and
- discussion / justification for the recognition of timing of the benefits.

4.94 In a number of instances, a value has been identified for the purpose of calculating certain benefits. Appendix A of the *Full Business Case* identifies some, but not all, of these values. By way of example, it is noted that the *Full Business Case* identifies 'wider economic impact assumptions' as follows:

- 'uptick for business user impacts' of 10 percent;
- 'elasticity of labour supply to wages' of 15 percent;
- 'marginal worker productivity' of 69 percent;
- 'work trips percentage' of 9 percent;
- 'commuter trips only' of 50 percent;
- 'tax wedge - new workers' of 34 percent; and
- 'tax wedge - existing workers' of 25 percent.

- 4.95 There is, however, no documentation associated with how these values were determined. During the course of audit fieldwork, EY advised that the 'source/rationale' for these values was 'EY assumptions based on UK Webtag and TfNSW Guidelines'. No other documentation was provided to the Audit Office on the calculation and derivation of these values.
- 4.96 Similarly, it is noted that there is no discussion in Appendix A of the *Full Business Case* of the assumptions underpinning the land use benefits associated with the projects. The calculation of the land use benefits associated with the project would be driven by a number of factors including, but not limited to, the breadth and scale of development along the light rail corridor and its timing. In documentation provided to the Audit Office during the course of audit fieldwork, EY advised of the following 'assumption/value' for the land use benefits:
- Increases in value - more development brought to market
  - Increases in quantity - improved 'carrying capacity' of the land
  - Greater investor confidence - bringing forward the benefits
- 4.97 EY advised that the 'source / rationale' for these assumptions was 'EY assumptions based on ARUP corridor study'. However, no other documentation was provided to the Audit Office on the nature, scale and timing of inter alia expected urban development along the corridor and how this translated into quantified benefits for the project.
- 4.98 Similarly, EY advised of the following 'assumption/value' for the infrastructure efficiency savings that were identified as benefits from the project:
- Benefit of dwellings over houses factor: 45
- 4.99 The 'benefit of dwellings over houses factor' is important because it assists in the calculation of an estimated \$140 million in infrastructure efficiency savings that have been identified as a benefit of the project (approximately 14 percent of the total expected benefits of the project). This represents the efficiencies that are expected to be gained in the delivery of infrastructure services in the ACT in the future, noting that it is expected to be more efficient to deliver infrastructure to infill locations, as opposed to greenfield locations. In relation to this figure, EY advised that the 'source / rationale' for these assumptions were 'EY assumptions'.

#### *Documentation of changes in identified benefits*

- 4.100 The Audit Office sought to understand and identify the extent to which the changes to the benefits identified in the economic appraisal in the *Full Business Case* were clearly documented. For the changes in the identified benefits between the version of the *Full Business Case* provided to the Capital Metro Project Board and the version provided to ACT Government decision-makers, the Audit Office notes that a note was provided to the

Capital Metro Project Board on 28 August 2014 and a briefing was provided to the Treasurer by the Under Treasurer on 5 September 2014.

4.101 The note to the Capital Metro Project Board stated:

Since it commenced drafting the business case for the project, the CMA has undertaken ongoing economic analysis as updated design, transportation modelling and cost information has become available. There is a lag, however, between new information becoming available and new economic analysis being produced. This lag may extend for weeks if errors or areas for refinement are identified in transportation modelling. Transport modelling alone involves high performance computers running for the better part of a business week.

The previous draft of the Full Business Case stated a BCR of 1.3. This was based upon current cost information and the most recent benefits data available to CMA.

Very recently, new economic analysis has been produced. It shows a decrease in the BCR to 1.2 (being a transport and land use BCR of 0.9 with the remainder representing wider economic impacts). The quantum of individuals benefits within the BCR figure have changed.

...

The most recent BCR is based upon the most current and accurate information, including Network 14 ACTION bus data, more recent land data provided through CMTEDD (specifically Economic Development), most recent parking charge estimates, current definition design reports, and most recent envisaged future adjustments to the ACT roads network (among other assumptions). The most recent BCR is the most defensible figure in terms of the currency of the information and robustness of reports underpinning it.

4.102 The briefing was provided to the Treasurer by the Under Treasurer on 5 September 2014 stated:

The change in BCR has occurred due to changes in the benefits associated with the project rather than changes in cost. The consultants have identified that the most recent BCR has been calculated based on more up to date assumptions about the project. This includes revisions and refinements to the transport modelling and land use data inputs ...

A large number of the changes are temporal - ie the new land use data assumes higher densities are achieved earlier, resulting in earlier realisation of benefits and a higher associated [net present value]. Treasury notes that the population levels set out in the business case are based on a number of assumptions about planned use and that there are significant risks in being able to achieve this rapid increase in densification. I understand that Economic Development have also raised concerns with this element of the business case.

In relation to transport modelling, the new data appears to suggest that there will be less active transport resulting from the project compared to what was previously modelled (ie fewer people will walk or ride to catch light rail and/or those who do will travel smaller distances). This change in active transport has resulted in a significant (93 per cent reduction) decrease in Health benefits associated with the project.

The overall impact of these changes has been a large decrease in Transport Benefits (\$168 million or 31 per cent reduction) and slight increase in Land Use Benefits (\$55 million or 17 per cent increase) and WEBs (\$21 million or 12 per cent increase) associated with the project. The Land Use Benefits associated with the project (\$381 million) are now higher than the Transport Benefits (\$377 million).

- 4.103 For the changes in the identified benefits between the version of the *Full Business Case* provided to ACT Government decision-makers and the version that was made publicly available, the Audit Office notes that a Capital Metro Project Board meeting paper stated:

Further consideration of the economic analysis contained within the business case has been undertaken by the project's commercial advisors (EY) in the context of associated Russell augmentation investigations which are currently underway. EY recommends this updated economic analysis be used in the business case, noting that no further consideration of the economic analysis will occur prior to the public release of the business case. Doing so has enabled Capital Metro Agency to make a very slight, positive adjustment to figures contained in the project's benefit-cost analysis. Whilst the project's BCR remains steady at 1.2 (due to rounding) the net present value of benefits has improved from \$125m to \$161m, with changes primarily being driven by an improvement in the value of public transportation user time savings. The BCR excluding wider economic benefits has increased slightly from 0.92 to 0.96 (or 1.0 if rounded).

- 4.104 While it would not be expected that the estimates in the *Full Business Case* presented to the Capital Metro Project Board (15 August 2014) would necessarily be final, the magnitude and type of changes between this version of the *Full Business Case* and the version presented to ACT Government decision-makers on 10 September 2014 were significant, given the short time between changes. Changes between the 15 August 2014 and 10 September 2014 versions of the *Full Business Case* included a 31 percent decrease in estimated transport benefits, indicating that assumptions underpinning the economic analysis were insufficiently developed and were still being developed as decision-makers (including the Capital Metro Project Board and the ACT Government) considered the merits of the *Full Business Case*. There was inadequate documentation maintained with respect to the changes to the calculation of the benefits, including with respect to identifying the reasons for the changes in the calculation of the benefits.

## Benefits management for the Capital Metro Light Rail Project

- 4.105 According to APMG International's *Managing Benefits* (2012) guide, the objectives of planning for benefits are 'ensuring accountability and transparency for the realisation of identified benefits [and] the changes on which they are dependent; mitigation of dis-benefits (both expected and unexpected); and identification and leveraging of emergent benefits'.

- 4.106 According to APMG International's *Managing Benefits* (2012) guide:

While the emphasis should be on planning rather than plans, the latter are still important as the embodiment of the former and to ensure a shared understanding by all relevant stakeholders, inform benefits realisation activity and act as the baseline against which to assess progress. The output of the Plan practice should therefore be a series of benefits documents that clearly identify what benefits are anticipated from an initiative, how they will be managed and who is responsible for realising them.

4.107 APMG International's *Managing Benefits* (2012) guide identifies 'three main initiative-level benefits management planning documents':

- the Benefits Management Strategy - 'defines the approach to realising benefits and the framework within which benefits realisation will be achieved';
- the Benefits Realisation Plan - 'used to track realisation of benefits across the program and set review controls'; and
- the Benefit Profile - 'used to define each benefit (and dis-benefit) and provide a detailed understanding of what will be involved and how the benefit will be realised'.

## Capital Metro Project Board Charter

4.108 The *Capital Metro Project Board Charter* contains several references to benefits management in relation to the project's scope:

The Capital Metro project can be considered as both:

- a transport asset; e.g. track, rolling stock, stations, etc.
- the benefits resulting from the construction of that asset; e.g. economic growth, land use development, social inclusion, etc.

The Board has a role to play for each of these elements. Their core responsibility is to see to the delivery of the light rail transport asset, so accordingly the Board's role regarding this work is to be the primary decision making body.

The Board recognises however that the transport asset is not an end in itself; that it is being built for the economic, social and environmental benefits it brings. The Board also has a role to play in this work then, but as an influencer and coordinator, rather than a decision maker.

4.109 Figure 4-1 shows an excerpt of the *Capital Metro Project Board Charter*, which identifies the role of the Project Board in relation to benefits management: to co-ordinate, influence and endorse benefits.



**Figure 4-1** Role of the Project Board in relation to the project's scope

Project element	Defined by...				The role of the Project Board
	Project Objectives	Project Performance Requirements	Project Definition	Physical Scope	
Transport asset	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Decide, approve, endorse.</li> <li>Holds the primary decision making role for all of these matters. Some matters escalated to the Minister or Cabinet Sub-Committee.</li> </ul>
Benefits of the transport asset	✓				<ul style="list-style-type: none"> <li>Coordinate, influence, endorse.</li> <li>Recommendations and suggestions sent to directorates, Cabinet, Ministers, etc.</li> <li>Not the decision making body on these matters (though individual Board members may be in their day-to-day role).</li> </ul>

Source: Capital Metro Agency Project Board Charter

## Governance Framework

- 4.110 The *Governance Framework* identifies the need to prepare a Benefits Realisation Plan and identifies that the Capital Metro Project Board is to endorse the Benefits Realisation Plan. The *Governance Framework* defines the Benefits Realisation Plan, stating:

[The Benefits Realisation Plan] looks ahead of the project's completion to what benefits it is intended to deliver, then puts in place a management framework to ensure ownership of those benefits. While a project's benefits are often well identified (eg in the Business Case), specific responsibilities for delivering those benefits in the long term is often lacking. The Benefits Realisation Plan begins with the Project Objectives and ends with the role specific individuals (their titles) have in delivering those benefits in years to come. It relies on a number of tools, such as benefits linkage maps and benefit profiles.

- 4.111 In accordance with better practice, both the *Capital Metro Project Board Charter* and the *Governance Framework* assign the following benefits management role to the Project Owner (the Under Treasurer):

Ensure the project benefits are clearly stated and that a clear plan is developed for realising those benefits. Ensure the project's critical success factors are clearly stated and widely known ...

## Project Plan

- 4.112 Versions 1.0 and 2.0 of the *Project Plan* (dated 30 July 2013 and 4 March 2014 respectively) identify the need to develop a 'Sustainability Benefits Analysis by August/September 2013', and 'codify the monetisation of "non-traditional" benefits for future use by the Government; i.e. sustainability benefits, wider economic benefits, etc', as well as to 'identify the project's benefits and put the long term management processes in place to ensure they are realised. This will be achieved through the preparation of a Benefits Management Plan'.
- 4.113 The Capital Metro Agency produced a Sustainability Strategy, dated 26 March 2015, but did not produce a Sustainability Benefits Analysis, Benefits Management Plan or Benefits Realisation Plan. Version 3.0 of the *Project Plan* (Procurement Phase, dated 24 February 2015) contains no mention of benefits management.
- 4.114 Benefits management is identified as a key feature of the Capital Metro Light Rail Project in the *Capital Metro Project Board Charter* and the *Governance Framework*. The *Governance Framework* states that the Project Owner (Under Treasurer) will 'ensure the project focuses on benefits realisation throughout its life' and the *Capital Metro Project Board Charter* states that the Project Owner will 'ensure the project team focuses on benefits realisation throughout its life'.
- 4.115 The *Governance Framework* identified the need to prepare a Benefits Realisation Plan, and the first two iterations of the *Project Plan* (Versions 1.0 and 2.0, dated 30 July 2013 and 4 March 2014 respectively) similarly identified a need to prepare a Benefits Management Plan, as a means by which to 'identify the project's benefits and put the long term management processes in place to ensure they are realised', with a Benefits Realisation Plan to be prepared by July 2014. Better practice benefits management, as documented in APMG International's *Managing Benefits* (2012) guide, includes the preparation of a Benefits Management Strategy, a Benefits Realisation Plan and Benefit Profiles. None of these have been produced for the Capital Metro Light Rail Project.

## Dis-benefits

- 4.116 Notwithstanding that a project may be effectively planned and benefits identified (and costed), better practice project management recognises that a project may also result in negative impacts. APMG International's *Managing Benefits* (2012) guide states:
- ... as well as realising intended benefits, initiatives can result in side-effects and consequences and, in turn, in dis-benefits (or what some term a detriment).
- 4.117 APMG International's *Managing Benefits* (2012) guide defines dis-benefits as 'the measurable decline resulting from an outcome perceived as negative by one or more stakeholders, which detracts from one or more organisational objectives'. Dis-benefits can be distinguished from risks in that they occur as a result of the project itself.

4.118 Better practice benefits management provides that dis-benefits (i.e. negative side-effects and consequences arising from the project) should be identified, managed, tracked and measured in the same way as benefits. This provides transparency of net benefits against costs in the business case, allows dis-benefits to be minimised, and facilitates ongoing review of the economic viability of a project. The *Full Business Case* does not specifically identify the dis-benefits associated with the Capital Metro Light Rail Project.

4.119 EY, on behalf of the Capital Metro Agency, has advised:

A range of dis-benefits are included in the economic analysis but are offsetting to benefits and therefore not highlighted at the full business case.

...

The quantified 'Benefits' of the project therefore include both positive benefits and dis-benefits. Most benefits are quantified based on outputs from a transport model, which estimates end outcomes on travel times, patronage, vehicle kms, etc. These outputs include benefits from, say, quicker and better public transport journey, and dis-benefits from, say, additional delays for cars at junctions.

4.120 The Audit Office notes these comments, but notes that these costs are not clearly identified or transparent in the *Full Business Case* or any other documentation. There is also a need to clearly and separately identify these dis-benefits in a Benefits Realisation Plan (refer to paragraphs 4.114 and 4.115).

## Whole of government approach to benefits management

4.121 As discussed in paragraphs 4.17-4.19, the *Full Business Case* identifies a number of benefits associated with the Capital Metro Light Rail Project. A significant proportion of these, 58.8 percent of the total benefits associated with the project, have been identified as wider economic benefits (including land use benefits).

4.122 The achievement of the Capital Metro Light Rail Project's benefits, including wider economic benefits (including land use benefits), is predicated on a number of key assumptions associated with the project. Two key overarching assumptions are:

- the implementation of the light rail will be the catalyst for economic activity (including land use benefits); and
- action will be taken by 'current and future Governments to ensure stated benefits are realised and maximised'.

### Implementation of the light rail as a catalyst for economic activity (including land use benefits)

- 4.123 In relation to the implementation of the light rail as a catalyst for economic activity (including land use changes), the *Full Business Case* states 'Capital Metro will attract an accelerated rate of urban densification in the rail corridor'. The *Full Business Case* further states:

Revitalisation of this corridor will make it a more active and socially connected precinct for all types of Canberrans and a more fitting gateway to the nation's capital, increasing activity, amenity, productive land use, and boosting the image of the city. The project will act as a catalyst for such urban revitalisation.

- 4.124 Table 12 of the *Full Business Case* further seeks to identify the economic benefits of increased urban density resulting from light rail, noting that 'Canberra may expect to achieve economic benefits of a type experienced by other Australian cities that have pursued light rail and rail projects'.

- 4.125 The *Full Business Case* further states:

The improvements in the transport network offered by the project will help to drive economic growth, create more jobs and increase the diversity and sustainability of Canberra's economy.

...

The project will also expand the productive capacity of Canberra's economy by helping to increase employment concentration and intensity of land use. Capital Metro will enable greater capacity to bring workers along Northbourne Avenue and into the City during morning peak hour. This greater access to workers encourages demand for property in these locations, greater feasibility for large scale developments, and more intensive use of existing floor space. This in turn provides agglomeration benefits to those firms locating in areas which have a higher density of economic activity, as it enables those firms to achieve economies of scale via a potentially larger customer base and opportunities for economies of scope. Canberra currently has a limited area where agglomeration benefits for firms are experienced in comparison with other Australian cities.

A number of international examples demonstrate that light rail can have a positive, material, transformational impact upon cities.

- 4.126 With respect to the 'transformational' nature of light rail, the *Full Business Case* states:

The transformational impact of light rail has been seen worldwide. Of the top ten cities listed on the 2013 Economic Intelligence Unit's global liveability index, eight have light rail systems. Integrated transport is not just about fuels but about the urban fabric associated with walking, (light rail/bus) transit systems and minimising car-based land uses. Importantly, land use change and urban renewal inducted by an integrated transport system underpinned by light rail will enable greater access to jobs as well as better services and facilities for the people of Canberra.

Examples of light rail acting as a catalyst for urban renewal come from across the world: the Centre for Economic Development and Research at the University of North Texas has suggested that the Dallas Area Rapid Transit (DART) light rail generated developments worth \$4.26 billion in around 10 years of operation. Professor Carmen Hass-Klau has suggested that in Dublin, homes near light rail attract a premium of 10-20 per cent. In other cities too, homes near light rail have risen in value. Quality transit is clearly vital if Canberra is to achieve vibrant and compact neighbourhoods with improved connections to amenity.

### Base case for economic analysis

- 4.127 In relation to the implementation of the light rail as a catalyst for economic activity (including land use benefits) and the calculation of benefits to be derived from its implementation, it is important to understand the 'base case' scenario, against which the benefits are calculated. The *Full Business Case* articulates the 'base case' as follows:

A 'base case' (do nothing) project option has been analysed to the extent it informs the economic analysis supporting this paper. The base case scenario represents the likely situation if the project does not proceed. It assumes that only already approved and planned changes to road and bus networks occur. The base case also assumes that land development activity is concentrated on sites currently controlled or owned by the ACT Government, with no effort to acquire other sites in order to aggregate into precincts or zones. Under a 'do nothing' scenario, it is noted that corridor development would occur at a slower pace than would be the case were light rail to exist. This is consistent with commercial discussions underway within the corridor of which Capital Metro Agency is aware.

- 4.128 In relation to the implementation of the light rail as a catalyst for economic activity (including land use benefits) and the concept of the base case for economic analysis, Dr Geoffrey Clifton advised:

There is an issue that the base case against which the project is compared needs to be carefully assessed. There are several possible base cases. There is the do-nothing case but it seems unlikely that it would be possible to do nothing given the growing population and the growing demand for higher density living. The do minimal approach might include moderate increases in density and moderate improvements to the existing transport network. It would also be possible to rezone the land for higher density housing without building the light rail and this could be done with or without major investment in infrastructure for the existing high frequency bus service. Given the importance placed on land value uplift associated with rezoning the land, the economic appraisal is assuming that it would not be possible to significantly raise densities in the corridor without constructing the light rail. This is an assumption that could be questioned and could be better justified in the business case.

- 4.129 The Capital Metro Light Rail Project's benefits are calculated on a 'do nothing' base case scenario, including assumptions that 'only already approved and planned changes to road and bus networks occur' and that 'land development activity is concentrated on sites currently controlled or owned by the ACT Government, with no effort to acquire other sites in order to aggregate into precincts or zones'. It is noted that these actions may occur irrespective of the Capital Metro Light Rail project.

### Action taken by current and future Governments

- 4.130 With respect to dependencies and assumptions underpinning the Capital Metro Light Rail Project, the *Full Business Case* notes that:

The benefits anticipated in this business case are founded upon a number of assumptions. While such assumptions are realistic, actions shall be required by current and future Governments to ensure stated benefits are realised and maximised.

A non-exhaustive list of factors wholly or partly within ACT Government's control which may influence the recognition or maximisation of light rail benefits includes land development decisions undertaken by ACT Government; ticketing and fare setting; bus and park & ride integration; parking charges; value capture activities; signalling priorities; the location of ACT

Government staff in the corridor; and other undertakings to promote economic activity in the ACT.

- 4.131 The timing of actions undertaken by current and future Governments will also be important, given that the timing of the implementation of the Capital Metro light rail, and the associated Government actions, will also impact the realisation of the benefits associated with the project. As noted in paragraph 4.102, Treasury has identified risks associated with the expected pace of urban redevelopment and densification, noting:

Treasury notes that the population levels set out in the business case are based on a number of assumptions about planned use and that there are significant risks in being able to achieve this rapid increase in densification. I understand that Economic Development have also raised concerns with this element of the business case.

### Whole of government approach to benefits management

- 4.132 In various governance and planning documents for the Capital Metro Light Rail Project, including the *Capital Metro Project Board Charter, Governance Framework* and Versions 1.0 and 2.0 of the *Project Plan* (dated 30 July 2013 and 4 March 2014 respectively), the Capital Metro Agency identified its intention to practise the project management discipline of benefits management throughout the Capital Metro Light Rail Project. However, there are currently no formal plans to guide benefits management.

- 4.133 The achievement of the expected benefits associated with the Capital Metro Light Project, including the wider economic benefits (including land use benefits) are predicated on a number of assumptions including alignment of ACT Government policies and the rapid densification of the light rail corridor. It is imperative that there be a concerted whole-of-government approach to the management of benefits associated with the Capital Metro Light Rail Project, to ensure that the benefits are achieved. A structured, disciplined benefits management approach throughout the project lifecycle is needed if the project's benefits (\$984 million, present value, July 2014) are to be achieved and optimised. Given this, it would be prudent to implement the practice of benefits management, in accordance with approved supporting plans to guide and integrate needed actions as a high priority.

- 4.134 The Under Treasurer advised that processes are in place to 'drive benefits realisation'. The Under Treasurer specifically cited:

- current and future planned work to activate the light rail corridor; and
- policies and programs aimed at ensuring the realisation of the benefits associated with the light rail project, including:
  - public housing renewal;
  - participation in the Commonwealth Government's Asset Recycling Initiative;
  - public transport initiatives, such as work on ACTION bus system integration;
  - parking policy;
  - urban renewal policy;
  - the papers commissioned by the Government: *Value Capture Options* and *Funding and Financing*; and
  - the inherent design and delivery of the actual light rail system.

4.135 The Audit Office recognises that ‘current and future planned work to activate the light rail corridor’, i.e. facilitate the urban development of the light rail corridor, and the other policies and programs identified, is expected to contribute to the achievement of the project’s benefits (refer to paragraph 4.122). While these activities, policies and programs form part of the work that will need to be done in order to realise the project’s benefits, a formalised and approved benefits management regime is considered necessary.

4.136 The Capital Metro Agency similarly advised:

Benefits management is not simply a task for CMA, but something which requires a whole of government effort. Refer Chapter 7 of the Full Business Case.

Benefits management activities are indeed being undertaken by CMA. For example, CMA is presently participating in the Transport Canberra formation process and in various other ACT Government fora relating to Territory development.

The primary benefits realisation task rightly being undertaken by CMA as a priority is to ensure a timely and competitive procurement process is being undertaken leading to the timely completion of a ‘best for Canberra’ light rail project.

The CMA also notes benefits realisation tasks being undertaken elsewhere in ACT Government.

4.137 This Capital Metro Agency further advised:

Benefits management will be developed as a priority in the transition phase of the project...it was always the intention of the CMA to practise benefits management at this stage in the project in line with the practice adopted by other large scale infrastructure projects in Australia.

The CMA notes that practising benefits management earlier in the project lifecycle has been described as better practice, but notes that limited guidance has been issued in this regard in Australia.

4.138 The Under Treasurer similarly advised:

While a benefit realisation plan has not yet been produced, the intention was always for this plan to be developed on completion of the tender evaluation phase of the project.

4.139 The advice from the Capital Metro Agency and the Under Treasurer and the suggestion that benefits management was not intended to be practised during the bid stage is noted. However, benefits management is of particular importance during procurement, in order to ensure that the impact on expected benefits of any amendments to the project’s requirement is understood and managed. Small changes to the specified outputs can have large effects on outcomes. Any proposed change to the specified output needs to be assessed in terms of its impact on benefits realisation, and this assessment is best managed in the context of a robust and approved benefits management regime.

4.140 The benefits to be realised from the Capital Metro Light Rail Project are significantly dependent on the light rail acting as a catalyst for economic activity (including land use benefits) and actions taken by ‘current and future Governments to ensure stated benefits are realised and maximised’. With respect to the latter, current and future ACT Government policy in a range of areas will be important to realise and optimise the benefits from the project. This will require a concerted whole-of-government effort and the development of a Benefits Realisation Plan to guide actions.

**RECOMMENDATION 4**

**BENEFITS MANAGEMENT**

**HIGH PRIORITY**

The Chief Minister, Treasury and Economic Development Directorate should, as a priority, take a lead role in implementing benefits management, including developing a whole-of-government Benefits Realisation Plan and associated documentation. This plan should identify and document the benefits to be realised by the project, their timing, ownership, critical dependencies for the achievement of the benefits and associated key performance indicators.



## APPENDIX A: ECONOMIC APPRAISAL

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### Guidance on the calculation of land use benefits and wider economic benefits

There is no ACT guidance specifically in relation to the calculation of land use benefits. There is very limited ACT guidance in relation to the calculation of wider economic benefits for infrastructure projects. Wider economic benefits are briefly mentioned in the ACT Government's *Single Assessment Framework Business Case Guidance Notes* (v 1.0) which state:

Wider economic impact studies look at the impact of a project option in terms of changes to macroeconomic aggregates such as Gross Regional Product, Gross State Product or Gross Domestic Product and employment – that is the 'economic impacts'. Economic impacts should not be confused with economic costs and benefits described above.

Because of this distinction between wider economic benefits and economic benefits, the ACT Government's Single Assessment Framework Tier 3 Business Case Template requires agencies to provide the estimated value of 'wider economic benefits' separately to the cost-benefit analysis.

### Other guidance on the calculation of land use benefits and wider economic benefits

Infrastructure Australia has provided guidance on the calculation of land use benefits and wider economic benefits.

In its *Templates for Stage 7 Solution Evaluation - Transport Infrastructure* (December 2013), Infrastructure Australia, in relation to innovative appraisal techniques such as those involving land use benefits and wider economic benefits, advises:

Appraisal methodology techniques are subject to constant development, both in Australia and worldwide, reflecting a welcome emphasis on improving the understanding of an initiative's total costs and benefits. However, it is important to achieve an appropriate balance between, on the one hand, the desire to be as comprehensive as possible, and on the other hand, maintaining the methodological rigour of the appraisal process. There are a number of recent developments being currently debated, and Infrastructure Australia's approach to each is outlined below.

In all cases, Infrastructure Australia will consider these additional benefits/costs separately to the traditional and widely accepted benefit/cost analysis (treating each case on its merits), *and the results should be presented separately in the documentation.*

### Land use benefits

In relation to land use benefits, in its *Templates for Stage 7 Solution Evaluation - Transport Infrastructure* (December 2013), Infrastructure Australia states:

There is increasing interest in assessing the benefits/costs of different urban densities. These benefits/costs may arise in addition to the time savings and other impacts currently captured in appraisal: in particular, the higher cost of providing a basket of infrastructure services, such

as water, electricity and gas, to less dense urban environment as compared to denser environments has been the subject of considerable recent research.

While it is recognised that the calculation of these impacts is also still in its infancy, both in Australia and internationally, Infrastructure Australia believes the correct interpretation and accurate calculation of the benefits/costs of different densities, using the most suitable data available can add texture to the decision making process for certain initiatives. Therefore, Infrastructure Australia will treat such benefits separately to the traditional CBA.

In early 2016, Infrastructure Australia updated its guidance in relation to the calculation of land use benefits. In the *Infrastructure Australia Assessment Framework - Detailed Technical Guidance (February 2016)* Infrastructure Australia advised:

There is increasing interest in assessing the benefits/costs of different land use outcomes. These benefits/costs may arise in addition to the time savings and other impacts currently captured in an appraisal. In particular, the cost of providing public utilities, such as water, electricity and gas, to less dense urban areas as compared to denser areas has been the subject of considerable recent research.

Three possible urban consolidation benefits may be considered in addition to typical transport user benefits:

- Urban consolidation resource savings - The higher cost of providing infrastructure services, such as water, electricity and gas, to less dense urban environment as compared to denser environments has been the subject of considerable recent research. IA believe the correct interpretation and accurate calculation of infrastructure cost savings, using the most suitable data available can add texture to the decision making process for certain initiatives. Further guidance for estimating benefits associated with avoiding infrastructure costs from unlocking new housing developments is available at: <https://www.gov.uk/government/publications/webtag-tag-unit-a2-3-transport-appraisal-in-the-context-of-dependent-development>.
- Urban consolidation transport benefits - Households clustered more tightly around trip destinations may take shorter trips and make more use of walking, cycling and public transport, while more spread out land uses can be associated with longer trips and car use (though causality is debated). Therefore, by changing land use, a project can change transport patterns and external costs (pollution, crash costs, etc.) of the total transport task. These second round effects can be isolated, and potentially attributed as benefits (or disbenefits) of a transport project. This would require robust analysis of the land use changes expected, as well as separate demand model forecasts that compare the Project Case with and without the forecast land use changes reflected.
- Gains from housing or business relocation - A third potential benefit may be considered where a transport project triggers land use changes. While the previous urban consolidation benefits focus on the external savings made, this category considers the benefits realised by the household or business that may choose to relocate if a transport project is introduced. The housing and business location decision is a complex one, involving financial dimensions (e.g. property prices) and travel dimensions (ranging from day-to-day commute costs to occasional travel to friends/relatives or business associates), so it is difficult to directly relate the marginal changes in transport outcomes from a transport initiative to the net benefits received by households in a way that does not double count benefits captured elsewhere. To date, IA has not seen analysis of this third benefits undertaken, and would require considerable demonstration of the approach and theory for consideration of such benefits.

Therefore, treating each case on its own merits, IA may separately consider urban consolidation benefits in addition to the benefits captured in traditional CBA. In estimating

these benefits, proponents should be mindful of potential double counting (e.g. if the travel time savings are already captured).

## Wider economic benefits

### *Infrastructure Australia*

In relation to wider economic benefits, in its *Templates for Stage 7 Solution Evaluation - Transport Infrastructure* (December 2013), Infrastructure Australia states:

Infrastructure Australia will use the national and State and Territory guidelines on economic appraisal as the primary framework in which to assess the economic costs and benefits of all transport initiatives. The main area of departure from the existing guidelines is that where appropriate, Infrastructure Australia may take into consideration what have been referred to as “wider economic benefits” (WEBs) of initiatives, such as agglomeration effects.

WEBs are improvements in economic welfare that are acknowledged, but which have not been typically captured, in traditional CBA. WEBs are not the same as the economic benefits determined by CGE (computable general equilibrium) or input - output models. WEBs can be disaggregated into a number of specific sources of benefits. The most significant is agglomeration, the notion that similar firms are drawn towards the same location since ‘proximity generates positive externality’.

These are the benefits derived from face to face contact, information exchange and networking only available to industries working close to each other.

Another source of benefit covered by WEBs is that related to imperfect competition in the labour market. Travel time savings are used as a measure of improved productivity following the reduction in journey time associated with a transport improvement. However, if the labour market is imperfect, the value of the travel time change is not equal to the production change, so that the travel time benefit will underestimate the true production improvement.

Finally, WEBs can include changes in welfare which result from a deepening of the labour market and changes in productivity which result from improved job matching when they are directly attributable to the transport initiative.

While it is recognised that the calculation of these wider benefits is still in its infancy, both in Australia and internationally, Infrastructure Australia believes the correct interpretation and accurate calculation of WEBs [wider economic benefits] (using the most suitable data available) can add texture to the decision making process for certain initiatives. However, it is crucial to acknowledge that:

- Only certain initiatives, addressing a specific set of economic fundamentals, will generate WEBs;
- Significant WEBs will only be found in initiatives with strong traditional benefits, since WEBs require high levels of behaviour change, e.g. strong demand for the new asset;
- WEBs may be negative for some initiatives; and
- the availability of Australian specific data needed to calculate WEBs is currently sub-optimal.

Therefore, Infrastructure Australia will treat WEBs separately to the traditional CBA. It is recommended that any proponent seeking to calculate WEBs consults with Infrastructure Australia before proceeding with the analysis. Any subsequent study should base the justification for inclusion of WEBs on the economic theory and applicability of this to the initiative’s strategic objectives and impacts upon the transport and labour market. The quantitative analysis should follow the latest guidance and use well informed assumptions about the most appropriate, initiative-specific data. Applying a broad percentage up-lift to the results of the traditional appraisal does not provide any additional or meaningful information for Infrastructure Australia to consider in the decision making process.

In early 2016, Infrastructure Australia updated its guidance in relation to the calculation of wider economic benefits. In the *Infrastructure Australia Assessment Framework - Detailed Technical Guidance* (February 2016) Infrastructure Australia reiterated its earlier 2013 advice, and advised:

Where appropriate, IA will consider wider economic benefits (WEBs), such as agglomeration effects, for particular types of initiatives. In general, these are the benefits derived from face to face contact, information exchange and networking only available to industries working close to each other.

WEBs are improvements in economic welfare that are acknowledged, but which have not been typically captured, in traditional CBA. Importantly, WEBs are not the same as the economic benefits determined by CGE (computable general equilibrium) or input - output models. WEBs can be disaggregated into a number of specific sources of benefits. The most significant is agglomeration, the notion that similar firms are drawn towards the same location since 'proximity generates positive externality'.

While it is recognised that the calculation of these wider benefits is still in its infancy, both in Australia and internationally, Infrastructure Australia believes the correct interpretation and accurate calculation of WEBs [wider economic benefits] (using the most suitable data available) can add texture to the decision making process for certain initiatives.

As part of updating NGTSM, the Commonwealth Bureau of Infrastructure, Transport and Regional Economics (BITRE) is undertaking work to develop detailed Australian guidelines by 2017 as part of the future NGTSM. In the interim, proponents may sue principles outlined in current BITRE guidance (see [http://bitre.gov.au/publications/2015/cr\\_002.aspx](http://bitre.gov.au/publications/2015/cr_002.aspx)). They may also apply the Transport Analysis Guidance (WebTAG) approach, developed by the UK Government (see <https://www.gov.uk/transport-analysis-guidance-webtag>).

It should also be noted that some state and territory jurisdictions have developed guidance on the treatment of WEBs in recent years, for example, in the Transport for NSW guidelines (2015). While the national guidelines on WEBs are being refreshed, proponents should also consult the relevant state and territory guidelines. In quantifying WEBs, it is advisable that the proponent discusses with IA the guidelines they have reviewed and which one it intends to follow. In particular, it is crucial to acknowledge that:

- Only certain initiatives, addressing a specific set of economic fundamentals, will generate WEBs;
- Significant WEBs will only be found in initiatives with strong traditional benefits, since WEBs require high levels of behaviour change, e.g. strong demand for the new asset;
- WEBs may be negative for some initiatives; and
- the availability of Australian specific data needed to calculate WEBs is currently sub-optimal.

It is recommended that any proponent seeking to calculate WEBs consults with IA to discuss the justification for inclusion of wider economic benefits on the economic theory and applicability of this to the initiative's strategic objectives and impacts upon the transport and labour market.

The quantitative analysis should follow the latest guidance and use well informed assumptions about the most appropriate, initiative specific data. Applying a broad percentage uplift to the results of the traditional appraisal does not provide any additional or meaningful information for IA to consider in the decision making process.

### *National Guidelines for Transport System Management*

In 2015 guidance in relation to wider economic benefits was prepared by the National Guidelines for Transport System Management in Australia Steering Committee and approved by the Transport and Infrastructure Senior Officials' Committee. The *National Guidelines for Transport*

*System Management in Australia* (Stage 1, April 2015) (the NGTSM Guidelines) were subsequently published by the Commonwealth Department of Infrastructure and Regional Development. The NGTSM Guidelines state:

The concept of 'wider economic benefits' (WEBs) is relatively new to the practice of transport appraisal in Australia.

WEBs are improvements in economic welfare that are acknowledged, but which have not been typically captured, in traditional cost-benefit-analysis (CBA). They arise from market imperfections, that is, prices of goods and services differing from costs to society as a whole.

...

Although the calculation of WEBs is still in its infancy, the correct interpretation and accurate calculation of WEBs (using the most suitable data available) can add texture to the decision making process for certain initiatives.

Importantly, WEBs are not the same as the economic impacts determined by CGE (computable general equilibrium) or input-output models. It is also important not to include in WEBs secondary impacts that do not increase net benefits, or that double count benefits already captured in the CBA or the above accepted WEBs.

There are currently serious measurement difficulties in Australia due to limited data availability. Pending econometric work funded by the Australian government is expected to result in significantly improved estimation of WEBs for Australia. In the interim, practitioners should follow Infrastructure Australia's advice and present CBA results *without* WEBs, and then *with* WEBs, treating WEBs effectively as a sensitivity test.

The NGTSM Guidelines state:

Each of these three WEBs is a legitimate benefit in theory. However, there are serious measurement difficulties, with the availability of Australian specific data needed to calculate WEBs being currently sub-optimal. So much so that IA recommends that cost-benefit analysis results (BCR and NPVs) be presented first *without* WEBs, and then *with* WEBs, treating WEBs effectively as a sensitivity test.

It is recognised that the calculation of these wider benefits is still in its infancy, both in Australia and internationally. Notwithstanding this, the correct interpretation and accurate calculation of WEBs (using the most suitable data available) can add texture to the decision making process for certain initiatives. In currently estimating WEBs, however, it is crucial to acknowledge the following key points:

- Only certain initiatives, addressing a specific set of economic fundamentals, will generate WEBs. For example, a project would have to show a significant change in business travel between employment centres in order for agglomeration benefits to be material. This is because agglomeration benefits derive from business-to-business interaction.
- Significant WEBs will only be found in initiatives with strong traditional benefits, since WEBs require high levels of behaviour change, e.g. strong demand for the new asset.
- WEBs may be negative for some initiatives, and
- The availability of Australian specific data needed to calculate WEBs is currently sub-optimal.

Therefore, WEBs should be treated separately to the traditional CBA. It is recommended that practitioners seeking to calculate WEBs consults with Infrastructure Australia before proceeding with the analysis. Any subsequent study should base the justification for inclusion of WEBs on the economic theory and applicability of this to the initiative's strategic objectives and impacts upon the transport and labour market. The quantitative analysis should use well informed assumptions about the most appropriate, initiative-specific data.

In September 2015, NGTSM provided further guidance in relation to WEBs. NGTSM stated:

If WEBs are to play a more significant, reliable role in Australian practice, the current poor domestic estimates of key WEBs parameter values need to be improved.

The NGTSM Revision is currently investigating the econometric modelling and data requirements to obtain a robust set of productivity elasticities for Australia (for agglomeration estimation), as well as the parameters needed to estimate the other WEBs. *Developing productivity elasticities for estimating WEBs in Australia—Scoping Study* was published in March 2015.

Following on from the scoping study, the Australian Government recently commissioned KPMG to work with the Australian Bureau of Statistics to undertake econometric and economic modelling to obtain the best possible set of parameter value estimates using currently available data for publication in the Guidelines. This estimation work is being funded by the Australian Government. The work is expected to be completed by early 2017, and interim results may be released during this period.

Following that WEBs parameter values estimation work, the NGTSM guidance on WEBs will be updated and is expected to consist of a methodology supported by more robust parameter value estimates. This will enable WEBs to be estimated with greater confidence for Australian CBAs in the future. Whether estimation of WEBs will become reliable to the point where WEBs can be routinely counted with core benefits and costs in CBAs remains to be seen.

## Transport for NSW

In March 2013 Transport for NSW released *Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives; Transport Appraisal Guidelines* (NSW Transport Appraisal Guidelines). These guidelines were revised and updated in March 2015. The purpose of the guidelines is to:

... put together the underlying principles and guidelines to inform the economic appraisal of transport projects and initiatives. It promotes a standard appraisal framework to be applied to proposed projects, programs and initiatives within the NSW transport portfolio. A consistent set of economic parameters and values are also provided for use in economic appraisal across the transport sector.

## Land use benefits

The NSW Transport Appraisal Guidelines state:

Specific land use outcomes particularly densification or infill development both affect and are affected by transport infrastructure. Land use patterns in turn affect the sustainability of population centres. Land use assumptions are key inputs to strategic transport models ... which in turn, provide the demand forecasts for transport [cost benefit analyses]. Land use assumptions describe where people live and work and expectations relating to population and employment growth. The assumptions in turn determine the demand for transport journeys.

With conventional transport CBA, land use assumptions affect the viability of transport initiatives by influencing:

- the total demand for transport trips in any given period
- the origin and destination (OD) of these trips
- trip purposes
- mode choice and
- time of day in which the trip is undertaken

The NSW Transport Appraisal Guidelines discuss the interaction between transport and land use. In relation to the impacts of a transport system on land use, the NSW Transport Guidelines state:

The land use system, as represented by residential properties, households, industries, floor spaces and location accessibilities, provide drivers for travel generations. Travel costs in the transport system provide the feedback to the land use system which affects the household's choice on where to live, where to work and land use patterns in a lagged fashion.

The NSW Transport Appraisal Guidelines state:

Impacts of land use on the transport system is often specified in transport demand modelling, but the impacts of the transport system on land use is less apparent. An important consideration is the degree to which roads and vehicle uses contribute to urban sprawl (dispersed, automobile oriented land use development patterns).

The NSW Transport Appraisal Guidelines state:

Conventionally, economic appraisal capture land use impacts indirectly. Land use changes will result in transport demand changes whose effects are evaluated in changed travel costs. Transport changes affect land use by improved accessibility, which usually leads to reduced travel cost, improved public transport share, more opportunities for employment and education and increased property prices. In the integrated land use transport system, some of these benefits are captured in a lagged fashion. However, traditional economic appraisals do not capture changes in the employment opportunities, property price, economic development, clustering and agglomeration. There is a growing interest in measuring these impacts in recent years known as Wider Economic Impacts (WEI) evaluation ...

The NSW Transport Appraisal Guidelines subsequently provide guidance on the calculation of wider economic benefits for transport projects, focusing on:

- agglomeration economies;
- increased competition as a result of better transport;
- increased output in imperfectly-competitive markets; and
- economic welfare benefits arising from improved labour supply.





## APPENDIX B: WIDER ECONOMIC BENEFITS (INCLUDING LAND USE BENEFITS)

The Capital Metro Light Rail Project Business Case claims that there will be approximately \$381 million in land use benefits (present value, July 2014) and \$198 million in wider economic benefits (present value, July 2014). Collectively these represent 58.8 percent of the project's claimed total benefits of \$984 million (present value, July 2014) (including wider economic benefits).

The following table compares the benefits identified for the Capital Metro Light Rail Project with the benefits identified in other transport infrastructure projects for which there is publicly available information.

### Benefits identified for selected projects (present value) (\$ million)

Category of Benefits	Capital Metro Light Rail (light rail)	Sydney South East Light Rail (light rail)	Melbourne Metro (heavy rail)	WestConnex (road)	Northern Link Legacy Way (road)	East West Link Stage 1 (road)
Transport benefits (user benefits, externalities and residual value)	406	3,812	7,900	22,205	2,056	3,341
Land use benefits	381	-	3,100	-	-	-
Wider economic benefits	198	222		2,134	396	2,214
<b>Total project benefits</b>	<b>984</b>	<b>4,034</b>	<b>11,000</b>	<b>24,339</b>	<b>2,452</b>	<b>5,555</b>
<b>Land use benefits and wider economic benefits as a percentage of total project benefits</b>						
	58.8%	5.5%	28.2%	8.8%	16.2%	39.9%

Source: ACT Audit Office analysis<sup>18</sup>

Note: The Melbourne Metro Business Case (February 2016) has included the 'land use impacts' of the project within its wider economic impact analysis.

### Capital Metro Light Rail

The Capital Metro Light Rail Project claims that the project will deliver a total of \$984 million in benefits (present value, July 2014) as follows:

<sup>18</sup> The Audit Office also examined the *Melbourne–Brisbane Inland Rail Alignment Study Final Report* (July 2010), which identified no wider economic impacts or land use benefits.

- \$406 million in transport benefits;
- \$381 million in land use benefits; and
- \$198 million in wider economic benefits.

The *Full Business Case* identifies transport benefits as:

- time savings (\$222 million, present value, July 2014) - 'the principal transport benefits from a project are changes in the journey cost for journeys being made';
- vehicle operating costs (\$10 million, present value, July 2014) - 'a reduction in the kilometres travelled on the network will also reduce vehicle operating costs';
- net externalities (\$13 million, present value, July 2014) - 'changes in travel patterns will cause changes in network-wide emissions';
- accident costs (\$7 million, present value, July 2014) - 'the human and physical costs of accidents on the road network have been estimated as an average cost saving per reduction in vehicle km travelled on the network';
- health benefits (\$5 million, present value, July 2014) - 'the project has the potential to influence health outcomes for the people who change their travel behaviour to more active forms (walking and cycling)';
- amenity and reliability benefits (\$14 million, present value, July 2014) - 'for users of public transport, the perceived journey costs reflect not only the different components of the journey time, but also the quality of the journey';
- residual value (\$81 million, present value, July 2014) - 'the residual value of the benefits to be derived from light rail assets at the end of the evaluation period';
- public transport operating savings (\$54 million, present value, July 2014) - 'the introduction of the proposed light rail system is anticipated to result in the reduction of costs of the provision of alternative public transport services'.

The *Full Business Case* identifies land use benefits as:

- urban densification benefits (\$72 million, present value, July 2014) -
  - 'change in housing stock formation ... will affect the amount of electricity and water required to maintain a certain living standard' and 'this foregone use of electricity and water has a corresponding decrease in environmental impacts when compared to what will otherwise be realised'
  - 'changes in land use will also deliver agglomeration and productivity gains similar to those captured as wider economic impacts by encouraging firms and workers to locate in closer physical proximity'
- land value benefits (\$168 million, present value, July 2014) -
  - 'efforts to activate development along the light rail corridor will generate economic benefits by replacing existing land use with higher value use by improving quality and/or increasing density of developments'

- infrastructure efficiency savings (\$140 million, present value, July 2014) -
  - ‘future population growth will require the provision of additional public services and physical infrastructure in order that existing service standards are maintained’ and ‘the future spatial location of population and jobs can impact the future government costs of providing physical infrastructure such as roads, rail and other transport, water and sewerage, electricity, gas and telecommunications’ and ‘it is well understood that the cost to provide these services to “greenfield” (i.e. outer suburban or fringe development) locations is much higher than to already well services “brownfield” (i.e. inner city) locations.’

The *Full Business Case* identifies wider economic benefits as:

- agglomeration benefits (\$165 million, present value, July 2014)
  - ‘agglomeration economies are the productivity benefits firms derive from being located in close proximity to each other and to workers’ and ‘improvements to transport infrastructure that reduce travel times for workers and freight have the potential to increase the density of economic activity by effectively bringing existing firms and workers closer to each other’
- tax from increased labour supply (\$31 million, present value, July 2014)
  - a transport project can encourage new workers into the labour force, either by reducing travel times or by physically causing jobs and workers to locate closer together’
- imperfect competition (\$2 million, present value, July 2014)
  - ‘imperfect competition benefits represent additional economic benefits arising if output increases in sectors where competition is less than perfect’

### Capital Metro Light Rail benefit-cost ratio

The *Full Business Case* states that the project is expected to deliver:

... an anticipated benefit cost ratio (BCR) of 1.2, comprising a transportation and land use value BCR of 1.0 and the remainder representing wider economic impacts. As the BCR is greater than one, the economic analysis anticipates the project will deliver a net benefit to the ACT community.

### Sydney South East Light Rail

The *Sydney Light Rail CBD and South East Light Rail Business Case Summary* (November 2013) claims the ‘CBD and South East Light Rail will deliver an estimated \$4 billion in benefits to Sydney and NSW’. There is little specific information provided with respect to the specific composition of this figure, but the business case summary states:

The majority of the economic benefits (\$2.2 billion, or 57 per cent) result from the transport benefits related to faster, more comfortable, more reliable journeys.

The business case summary further states that ‘additionally, the light rail is expected to provide’:

- 'road users with benefits worth \$264 million from decongestion, operating savings and road safety improvements';
- 'journey time savings and amenity improvements worth an estimated \$333 million for pedestrians';
- 'around \$707 million in public transport operational savings, including increased revenues, reduced bus operating costs and efficiencies from integrating with the existing [Inner West Light Rail system];
- environmental and social benefits worth \$308 million, including a reduction in air and noise pollution, a reduction in greenhouse gas emissions and improvements in health; and
- 'wider economic benefits worth \$222 million, including the sustainability benefits associated with improved urban renewal opportunities.'

### Sydney South East Light Rail benefit-cost ratio

The *Sydney Light Rail CBD and South East Light Rail Business Case Summary* (November 2013) claims:

A cost-benefit analysis (CBA) of the project based on the expected \$1.6 billion project cost and predicted demand over a 30 year period following the start of operations, has identified almost \$4 billion worth of benefits to be generated by the project.

This equates to a benefit-cost ratio (BCR) of 2.5 or, to put more simply, \$2.50 worth of benefits for each dollar invested.

### Melbourne Metro

The *Melbourne Metro Business Case* (February 2016) claims that the project will deliver a total of \$7.9 billion in benefits, which comprise:

- \$4.7 billion in public transport user benefits;
- \$2.3 billion in road user benefits;
- \$0.8 billion in non-user benefits; and
- \$0.2 billion in benefits in the residual value of the assets; and
- \$3.1 billion in wider economic benefits (\$1.5 billion in agglomeration economies, \$1.5 billion in labour market deepening and \$0.1 billion in increased output under imperfectly competitive markets).

According to the *Melbourne Metro Business Case* (February 2016) the public transport user benefits include:

- travel time savings for public transport users;
- reduced crowding on trains and stations;
- improved punctuality;

- improved network resilience, which reflects ‘the ability of the system to respond to and recover from out of course incidents and delays’;
- improved customer environment;
- reduced station crowding; and
- a farebox resource cost correction, which offsets ‘the perceived disbenefit of fares in the public transport user benefits’.

According to the *Melbourne Metro Business Case* (February 2016) the road user benefits include:

- travel time savings;
- vehicle operating cost savings;
- road journey time reliability;
- travel time in congested conditions, reflecting that ‘some road links will become less congested [and] remaining road users will benefit from travelling in less congested conditions’; and
- savings in parking and toll charges.

According to the *Melbourne Metro Business Case* (February 2016) the non-user benefits include:

- savings in crash costs, reflecting that ‘there will be fewer vehicle-kilometres travelled on the network. Consequently, fewer crashes will occur’;
- environmental externalities, reflecting savings in ‘greenhouse gas emissions, air pollution, noise pollution, water pollution, nature and landscape impacts, urban separation effects and upstream and downstream impacts’;
- improved health by walking and cycling.

According to the *Melbourne Metro Business Case Melbourne Metro Business Case* (February 2016) the residual value of the assets reflects that ‘the infrastructure will have an economic life beyond the end of the 50-year project evaluation period. The residual value is an estimate of the economic benefits of the infrastructure from the end of the evaluation period to the end of the economic life of the asset.’

### Wider economic benefits

Three categories of wider economic benefits, with a total estimated value of \$3.1 billion, are identified in the *Melbourne Metro Business Case* (February 2016):

- agglomeration economies – change in effective density and clustering effects;
- labour market deepening – move to more productive jobs and increased labour supply; and
- increased output due to imperfectly competitive markets.

In relation to agglomeration economies, the *Melbourne Metro Business Case* (February 2016) states:

‘Agglomeration economies’ (WB1) refers to benefits which flow to firms and workers located in close proximity (or agglomerating).

...

By lowering travel costs and enabling land use densification, transport projects can have a significant impact on agglomeration / density (i.e. effective density). Lower generalised costs or greater physical density of employment result in enhanced accessibility / connectivity which facilitates increased formal and informal interaction. This in turn enables increased input and output sharing and, more importantly, knowledge spillovers, the principal source of agglomeration economies in the modern economy.

Agglomeration economies can be facilitated by either improving connectivity between employment dense areas (proximity effects), or enabling land use changes which lead to more jobs locating in areas that are already employment dense (cluster effects) or both.

In relation to labour market deepening, the *Melbourne Metro Business Case* (February 2016) states:

In deciding whether to work, a worker weighs, among other factors, travel costs associated with the job against the wage received from the job. Lowering of transport cost may encourage workers to work longer hours or encourage the under-engaged and disengaged workforce into active employment. This may result in an increase in overall labour supply in the economy.

This increased labour supply in turn will result in increased value added or gross domestic or state product (GDP/GSP).

...

‘Move to more or less productive jobs’ ... refers to how improved transport accessibility may provide employers with access to a broader range of employees (to recruit the most suitable skills), and employees with access to a wider range of jobs better suited to their skills. Better skills matching / alignment, in turn, results in workers being more productive. Ultimately this will lead to an increase in GSP and GDP.

In relation to increased output due to imperfectly competitive markets the *Melbourne Metro Business Case* (February 2016) states:

‘Output change in imperfectly competitive markets’ ... arises from a reduction in transport costs allowing for an increase in production or output of goods or services that use transport.

The Melbourne Metro Business Case (February 2016) states:

[Wider Economic Benefits] comprise 27 per cent of the total benefits. These arise from economic restructuring and land use changes facilitated by the Melbourne Metro Program due to the constraints on central city growth.

### Value capture and integrated development opportunities

The *Melbourne Metro Business Case* (February 2016) states ‘the [Wider Economic Benefits] analysis takes into account the land use impacts of the Melbourne Metro Program.’ Under the heading of ‘Guiding and stimulating growth through land use’ the *Melbourne Metro Business Case* (February 2016) notes ‘given the scale of the project, Melbourne Metro can influence Melbourne’s long-term urban form’ and states:

New stations at Arden, Parkville, CBD North, CBD South and Domain are expected to attract development.

...

The new stations are also expected to attract residential development. The future land use impacts of Arden station are high due to improvements in accessibility and the significant development potential as evidenced by the larger net population change in this area. Other complementary urban, infrastructure and service improvements will be needed in the Arden area to fully realise this urban renewal potential. These complementary improvements at Arden will be subject to a separate business case.

...

A range of economic benefits arise from facilitating residential development in established areas such as the Arden-Macaulay Precinct. Under a scenario where there is a relatively fixed demand for dwellings within a given timeframe, providing additional dwellings in the established areas will commensurately reduce demand from the urban fringe. In addition to the economic efficiency arising from changes in transport patterns, land use intensification will also contribute to benefits. The most significant of these benefits include cost savings from reduced need to extend trunk infrastructure services such as roads, public transport, water and sewerage, drainage and storm water, electricity, gas and other utilities. Other benefits include:

- reduction in non-urban land consumption
- amenity and biodiversity impacts.

To avoid double counting, these benefits (and costs) have not been incorporated in the current analysis. It is expected that these will be investigated and formalised in a separate Arden Urban Renewal business case.

The *Melbourne Metro Business Case* (February 2016) provides for 'identifying opportunities for Melbourne Metro to directly generate and capture value through integrated development and other commercial opportunities.' The *Melbourne Metro Business Case* (February 2016) states that 'the Department has analysed the relevant opportunities associated with Melbourne Metro to identify, evaluate and, where appropriate, implement integrated development and other commercial opportunities' and that:

Value capture opportunities considered as part of this assessment have included the potential to:

- incorporate retail or other commercial opportunities within the new stations
- expand station infrastructure to accommodate additional development
- capture value from existing properties and/or planned developments in the vicinity of the new stations (such as by offering direct pedestrian access via underground pedestrian walkways)
- develop 'air rights' above the new infrastructure (over sit development)
- develop surplus land (land required for construction purposes but not for ongoing use by the project)
- stimulate urban renewal and capture value from the associated new development activities

The *Melbourne Metro Business Case* (February 2016) examined opportunities for areas as follows:

- Arden
- Parkville
- CBD North
- CBD South

- Domain
- Portals (tunnel entrances at South Kensington and South Yarra)

In relation to the Arden, the *Melbourne Metro Business Case* (February 2016) states:

The Arden-Macaulay Precinct is an expanded central city urban renewal area and the southern part of Arden-Macaulay Precinct (the Arden Precinct), which is largely government-owned land (the Arden Government Land), has been identified as suitable for more intense redevelopment should a station be constructed at Arden.

A range of interventions would be required to facilitate urban renewal in this area.

...

The City of Melbourne has identified this area as suitable for more intensive redevelopment should a railway station be provided.

While a preliminary assessment of the feasibility of Arden has been undertaken in conjunction with MPA, the interventions above will be subject to a separate investment submission.

This investment will require preparation of a further detailed business case and a co-ordinated approach between relevant local and Victorian Government departments and agencies, including the Department, the City of Melbourne, Melbourne Water, MPA, the Department of Environment, Land, Water and planning, DPC and DTF.

The value of the integrated development opportunity at Arden has therefore not been quantified as part of this Business Case.

In relation to Parkville, the *Melbourne Metro Business Case* (February 2016) notes:

The Department has assessed the potential for over site or air rights development at Parkville station.

...

The Department has also considered value capture options relating to properties adjacent to Parkville station, including underground retail, commercial and educational redevelopment opportunities. Following consultation with the relevant stakeholders and high level financial assessment, it has been concluded that these opportunities are not likely to be feasible, due to negative value and technical constraints.

The Department will continue to consider other value capture opportunities, including development seeking to increase accessibility to educational and research institutions in the vicinity of the station.

In relation to CBD North and CBD South areas, the *Melbourne Metro Business Case* (February 2016) notes:

... it is considered that this [CBD North and CBD South areas] is a significant integrated development opportunity, with a potential value capture from the sale of surplus land and air rights ...

In relation to CBD North and CBD South areas, the *Melbourne Metro Business Case* (February 2016) has identified the value capture from the sale of surplus land and air rights at these sites, but these have been redacted from the document.

In relation to Domain, the *Melbourne Metro Business Case* (February 2016) notes:

Although there may be limited small-scale opportunities at the station entrances or over the station box, any value capture is not expected to be significant and these opportunities have not been considered in detail for the purposes of this Business Case.



Analysis indicates some limited opportunity for value capture associated with the properties surrounding Domain station.

In relation to the Portals, the *Melbourne Metro Business Case* (February 2016) notes:

It is possible that land required for construction activities at the portals might not be required for ongoing use and that some of this land could be available for redevelopment.

In relation to the Portals the *Melbourne Metro Business Case* (February 2016) has identified the residual land value capture opportunities at these sites, but these have been redacted from the document.

### Melbourne Metro benefit-cost ratio

The *Melbourne Metro Business Case* (February 2016) states:

The economic analysis shows that the Melbourne Metro Program is economically viable with a BCR of 1.1 using the standard 7 per cent discount rate. The BCR increases to 2.4 if a lower discount rate of 4 percent is applied. The economic case for Melbourne Metro is strengthened further, with a BCR of 1.5 to 3.3 when Wider Economic Benefits (WEBs) are included.

### WestConnex

The *Westconnex Updated Strategic Business Case* (November 2015) claims that the project will deliver a total of \$24.339 billion (present value) in benefits, comprising:

- user benefits of \$20.564 billion (present value) - 'benefits to private and public transport users as a result of the introduction of Westconnex. User benefits include the travel time savings, vehicle operating cost savings and reliability benefits';
- other benefits of \$1.641 billion (present value) - 'benefits accruing to society as a whole as a result of changes to travel behaviour following the introduction of Westconnex. This includes changes in road crash costs, environmental externalities and road maintenance savings'; and
- wider economic impacts of \$2.134 billion (present value) - 'including improving the ability of business to access other businesses (agglomeration economies) and increased labour supply benefits.'

### Wider Economic Benefits

Two categories of wider economic benefits, with a total estimated value of \$2.134 billion (present value), are identified in the *WestConnex Updated Strategic Business Case* (November 2015):

- agglomeration economies (WB1) - agglomeration impacts were calculated as the incremental change in the effective density metric (i.e. the mass of economic activity) across the modelled area, resulting from changes in the respective accessibility of firms and workers to each other; and
- improved labour supply (WB2) - labour market deepening was estimated as the additional tax revenue resulting from more people choosing to work as a result of better accessibility to employment (lower after commuting cost wage), resulting from WestConnex.

## Land use benefits

The *WestConnex Updated Strategic Business Case* (November 2015) states:

WestConnex forms an important part of a much broader land use strategy for Sydney, as part of A Plan for Growing Sydney. It has been developed with urban renewal in mind, particularly along the Parramatta Road corridor and in The Bay's Precinct. Enabling urban renewal and housing development is one of the objectives of the project

The *WestConnex Updated Strategic Business Case* (November 2015) identifies opportunities for urban transformation along the Parramatta Road corridor (including 40,000 new homes) and states that the project will bring further certainty to medium and long-term land use planning, allowing consideration of 'a wide range of possible land uses for Cooks Cove and to plan for those uses into the future'.

However, the value of these changes in land use is not included in the *WestConnex Updated Strategic Business Case* (November 2015) or included in the benefit-cost ratio. The *WestConnex Updated Strategic Business Case* (November 2015) states:

The [urban renewal projects] reflect the State's broader planning strategies - the NSW Long Term Transport Master Plan, Strategy Infrastructure Strategy, and A Plan for Growing Sydney.

Many of them, such as the urban and transport transformation of Parramatta Road, Western Harbour Tunnel and Beaches Link, the Southern Connector, the Westconnex Enabling Works (Airport East Precinct) and the St Peters and Mascot local road upgrades are a part of, or directly support Westconnex's objectives.

Because they are separate projects, costs and benefits specific to these projects are not part of the financial and economic analysis in this business case. However, given the importance of Westconnex to enabling these other key projects, the indirect benefits of Westconnex to the city are demonstrably broad and strategic in nature.

## WestConnex benefit-cost ratio

The *WestConnex Updated Strategic Business Case* (November 2015) states that the project is expected to have a benefit-cost ratio of 1.71 (without wider economic benefits) and a benefit-cost ratio of 1.88 (with wider economic benefits).

## East West Link

The *East West Link Business Case* (June 2013) claimed that the project would deliver approximately \$5,555 million in benefits (present value). This figure comprises:

- \$3,341 million in transport and other user benefits (present value); and
- \$2,214 million in wider economic benefits (present value).

The *East West Link Business Case* (June 2013) identified a series of benefits as follows:

- 'travel time savings - car and commercial vehicle users' - \$2,079 million (present value);
- 'reduced vehicle operating costs' - \$651 million (present value);

- 'reduced road accidents' - \$39 million (present value);
- 'improved reliability in travel times' - \$192 million (present value);
- 'provision of M1 corridor redundancy (related to Burnley Tunnel risk of inoperability)' - \$66 million (present value);
- 'reduced air emissions (carbon dioxide equivalent, carbon monoxide, oxides of nitrogen, particulate matter upstream/downstream costs) - \$27 million;
- 'travel time savings - public transport users' - \$240 million (present value);
- 'avoided public transport costs' - \$35 million (present value); and
- 'residual value of assets' - \$153 million (present value).

Collectively, these benefits amount to \$3,487 million (present value).

The *East West Link Business Case* (June 2013) also identifies a 'negative benefit', i.e. a cost, of \$141 million (present value) relating to 'reduced other externalities (amenity (nature and landscape, urban separation and noise) water pollution and upstream/downstream costs)'. The *East West Link Business Case* (June 2013) states 'externality benefits estimated across the transport network are negative because while some improvement is expected due to more trips in the Road Link, across the network longer trips and more trips on roads is expected.'

### Wider Economic Benefits

Two categories of wider economic benefits, with a total estimated value of \$2,214 million (present value) are identified in the *East West Link Business Case* (June 2013):

- 'agglomeration economies' - \$2,153 million (present value); and
- 'imperfect competition and tax revenue from additional employment/longer hours' - \$61 million (present value).

### Land use benefits

The *East West Link Business Case* (June 2013) states that the project would:

... have an enduring impact on residential and commercial development and growth in the inner north of Melbourne as a major piece of city shaping infrastructure. Improvements in local amenity (particularly the removal of traffic from arterial and local roads) will expedite opportunities for urban renewal projects and mixed use development, and improve access to major retail, commercial and tourism destinations such as Lygon, Smith and Brunswick Streets ...

These opportunities have not been investigated in sufficient detail to cost or estimate their potential impacts; therefore, they have not been captured in the CBA or CGE analysis.

### East West Link benefit cost ratio

The *East West Link Business Case* (June 2013) stated that the project was expected to have a 'direct benefit-cost ratio excluding [wider economic benefits]' of 0.8 and a 'direct benefit-cost ratio' of 1.4.

## Northern Link (Legacy Way)

The *Northern Link Final Business Case* (September 2010) claims that the project will deliver \$2,452 million in benefits (present value), which comprise:

- 'standard' benefits of \$2,056.0 million (present value)<sup>19</sup>; and
- wider economic benefits of \$396.4 million (present value).

The *Northern Link Final Business Case* (September 2010) provides for the calculation of 'standard' benefits as follows:

- 'vehicle operating' benefits of \$1,081.8 million (present value);
- 'travel time' benefits of \$720.3 million (present value);
- 'accidents' benefits of \$144.2 million (present value); and
- 'environmental' benefits of \$109.7 million (present value).

## Wider Economic Benefits

The *Northern Link Final Business Case* (September 2010) identifies \$396.0 million in wider economic benefits (present value), under the following categories:

- agglomeration economies;
- increased competition, which is assumed to be zero;
- imperfect competition;
- additional tax revenue arising from:
  - increased supply of new workers;
  - existing workers working longer hours, which is assumed to be zero; and
  - workers relocating to more productive jobs.

The *Northern Link Final Business Case* (September 2010) values these wider economic benefits as follows:

- 'agglomeration' - \$230.3 million (present value);
- 'imperfect competition' - \$46.8 million (present value);
- 'increased labour supply' - \$73.2 million (present value); and
- 'productivity impacts' - \$46.1 million (present value).

## Northern Link benefit-cost ratio

The *Northern Link Final Business Case* (September 2010) has identified a 'standard' cost-benefit ratio of 2.08 and a 'standard and [WEBs]' cost-benefit ratio of 2.52.

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<sup>19</sup> The *Northern Link Final Business Case* (September 2010) is internally inconsistent, as it also identifies a figure of \$2,059 million in 'standard benefits' elsewhere in the document.

## APPENDIX C: BENEFITS MANAGEMENT

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### Recent Australian guidance on benefits management

#### Transport for NSW

In March 2013 Transport for NSW released *Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives; Transport Appraisal Guidelines* (NSW Transport Appraisal Guidelines). These guidelines were revised and updated in March 2015. The purpose of the guidelines is to:

... put together the underlying principles and guidelines to inform the economic appraisal of transport projects and initiatives. It promotes a standard appraisal framework to be applied to proposed projects, programs and initiatives within the NSW transport portfolio. A consistent set of economic parameters and values are also provided for use in economic appraisal across the transport sector.

In relation to benefits management, the NSW Transport Appraisal Guidelines state:

Benefit is a positive outcome arising from the implementation of an initiative. Traditionally, major capital investment projects are measured on their success in relation to cost, quality and time of delivery, and not in relation to the benefits or impact that they have delivered. Benefit Realisation is emerging as one of the methods to assist organisations to manage the whole life cycle of programs and projects.

The NSW Transport Appraisal Guidelines advise that a 'benefit management approach should consist of the following stages as a guideline':

- benefit identification
- benefit profiling
- benefit realisation plan and strategy
- benefit dependency map
- benefit monitoring and review

In relation to benefit identification, the NSW Transport Appraisal Guidelines state:

All desired benefits should be identified and documented. Benefit identification could be a combined approach of interviews and workshops involving key stakeholders. The best practice is to involve the stakeholders to identify and agree desired benefits. This maximises the likelihood of commitment to realising those benefits across a range of levels in the business or across transport portfolio.

In relation to benefit profiling, the NSW Transport Appraisal Guidelines state:

Benefit profiles should be established so these can be managed with the same rigour as costs.

The benefit profiles should include:

- a description for each benefit or disbenefit
- how it will be measured

- its financial valuation where possible
- how it will change current business processes
- how it interacts with other benefits
- the extent to which it depends on the success of other projects within a program
- at what stage it is likely to come on stream

In relation to benefit realisation planning and strategy, the NSW Transport Appraisal Guidelines discuss the need to prepare a:

- benefits realisation plan; and
- benefit dependency map.

In relation to a benefit realisation plan, the NSW Transport Appraisal Guidelines state:

Costs and benefits cannot be viewed in isolation and the benefits management process and the overall investment appraisal should be planned together. Plans should be developed to monitor whether the intended benefits are gained during or after implementation of a project. The benefit realisation plan includes key assumptions and sensitivity and risk analysis of those benefits expected to contribute most to outcomes. Without a plan it is difficult to predict how to effectively realise business benefits.

It is important to ensure that there is a link between project deliverables and benefits, i.e. which deliverables makes which benefit available. These links should be represented in the business cases. Making the link between deliverables and benefits in a business case highlights the role of project deliverables as a means of achieving specific benefits, rather than the deliverables being “ends” in themselves.

In relation to a benefit dependency map, the NSW Transport Appraisal Guidelines state:

A benefit dependency network maps all the cause and effect relationships to include stakeholders, changes and criteria for success. As the project is implemented and the impact on processes is better known, results chains will be developed for each benefit type. During the implementation of the project, more detailed benefit dependencies will emerge as processes are better defined.

## Infrastructure Australia

Infrastructure Australia's *Assessment Framework - Detailed Technical Guidance* (January 2016) includes, in its core criteria for Stage 4 (Business Case Assessment), the requirement that 'a plan is in place to realise the benefits'.

The *Stage 4: Business Case Assessment – Process* includes an assessment by Infrastructure Australia of whether 'benefits realisation has been actively considered, and an appropriate benefits measurement and monitoring strategy proposed'.

The *Stage 4 Business Case Template Guidance Overview* states that:

Proponents should include information that articulates:

- What the major benefits of the project will be. For each of these major benefits, include the benefits profile over a 30 year period in the accompanying Excel Stage 4B template. Each benefit profile should accurately express the practical, 'real world' benefit that is expected to be realised, rather than monetising these benefits. For example, benefits may include the number of additional trains or vehicles per hour in

a location; or the additional volume of water, energy or data provided per period in a location;

- Describe how these benefits will be measured and monitored;
- Describe the benefits realisation strategy: how will the benefits be actively managed and realised? Who will be accountable for this? What are the key risks with delivering the benefit?
- Please include the costs associated with benefits realisation.





## Audit reports

Reports Published in 2015-16	
Report No. 04 – 2016	The management of the financial arrangements for the delivery of the Loose-fill Asbestos (Mr Fluffy) Insulation Eradications Scheme
Report No. 03 – 2016	ACT Policing Agreement
Report No. 02 – 2016	Maintenance of Public Housing
Report No. 01 – 2016	Calvary Public Hospital Financial and Performance Reporting and Management
Report No. 10 – 2015	2014-15 Financial Audits
Report No. 09 – 2015	Public Transport: The Frequent Network
Report No. 08 – 2015	Annual Report 2014-15
Reports Published in 2014-15	
Report No. 07 – 2015	Sale of ACTTAB
Report No. 06 – 2015	Bulk Water Alliance
Report No. 05 – 2015	Integrity of Data in the Health Directorate
Report No. 04 – 2015	ACT Government support to the University of Canberra for affordable student accommodation
Report No. 03 – 2015	Restoration of the Lower Cotter Catchment
Report No. 02 – 2015	The Rehabilitation of Male Detainees at the Alexander Maconochie Centre
Report No. 01 – 2015	Debt Management
Report No. 07 – 2014	2013-14 Financial Audits
Report No. 06 – 2014	Annual Report 2013-14
Reports Published in 2013-14	
Report No. 05 – 2014	Capital Works Reporting
Report No. 04 – 2014	Gastroenterology & Hepatology Unit, Canberra Hospital
Report No. 03 – 2014	Single Dwelling Development Assessments
Report No. 02 – 2014	The Water and Sewerage Pricing Process
Report No. 01 – 2014	Speed Cameras in the ACT
Report No. 08 – 2013	Management of Funding for Community Services
Report No. 07 – 2013	2012-13 Financial Audits
Report No. 06 – 2013	ACT Auditor-General's Office Annual Report 2012-13
Report No. 05 – 2013	Bushfire Preparedness
Reports Published in 2012-13	
Report No. 04 – 2013	National Partnership Agreement on Homelessness
Report No. 03 – 2013	ACT Government Parking Operations
Report No. 02 – 2013	Executive Remuneration Disclosed in ACTEW Corporation Limited's (ACTEW) 2010-11 Financial Statements and Annual Report 2011
Report No. 01 – 2013	Care and Protection System
Report No. 10 – 2012	2011-12 Financial Audits
Report No. 09 – 2012	Grants of Legal Assistance
Report No. 08 – 2012	Australian Capital Territory Public Service Recruitment Practices
Report No. 07 – 2012	Annual Report 2011-12
Report No. 06 – 2012	Emergency Department Performance Information

These and earlier reports can be obtained from the ACT Audit Office's website at <http://www.audit.act.gov.au>.

