

MEDIA RELEASE**24 September 2020****Canberra Light Rail Stage 2a: Economic Analysis**

Auditor-General, Mr Michael Harris, today presented a report on the **Canberra Light Rail Stage 2a: Economic Analysis** to the Speaker for tabling in the ACT Legislative Assembly.

The audit found that a significant amount of the benefits identified for Light Rail Stage 2a are predicated on the project being a catalyst for the acceleration of the development of the Acton Waterfront, but that neither the Stage 2a Business Case or Economic Appraisal Report provides information or evidence on how Light Rail Stage 2a is expected to accelerate development at the site. Mr Harris said, 'should the Acton Waterfront not be developed as fast as is hoped, then the timing and quantification of the expected benefits of Light Rail Stage 2a are at risk'.

The audit also found that the economic appraisal was developed in the context of a series of 'transformational projects' and revitalisation activities and Mr Harris said 'any failure to implement these projects on a timely basis will have a negative impact on the expected benefits of Light Rail Stage 2a'.

The audit recommended that the economic analysis associated with Light Rail Stage 2a be reviewed and updated. Mr Harris said 'expected costs associated with Light Rail Stage 2a, including costs associated with the accelerated development of the Acton Waterfront, should be updated in revised, publicly available documents'.

The Stage 2a Business Case identified a commitment to the development of a Benefits Realisation Plan for Light Rail Stage 2a, but this has not yet occurred. Benefit management activities, including the development of a Benefits Realisation Plan, should be undertaken at the earliest possible stages of a project to 'ensure that a mindset of accountability and structured approach towards achieving set benefits is embedded from the early stages of planning' according to the 2016 *Australian Transport Assessment and Planning Guidelines*.

The summary of the **Canberra Light Rail Stage 2a: Economic Analysis** audit, with audit conclusions and key findings are attached to this media release.

Copies of **Canberra Light Rail Stage 2a: Economic Analysis: Report No. 08/2021** are available from the ACT Audit Office's website www.audit.act.gov.au . If you need assistance accessing the report please phone (02) 6207 0833

SUMMARY

On 20 April 2019, Light Rail Stage 1 commenced public passenger operations. Light Rail Stage 1 involved the design, construction and subsequent operation of a 12-kilometre light rail route from the City to Gungahlin. It is being delivered through a 20-year Availability Public Private Partnership with Canberra Metro.

Since the decision to proceed with Light Rail Stage 1, the Territory has pursued an intention to extend the network to Woden as part of Stage 2. In September 2019, the ACT Government announced it had decided to split Light Rail Stage 2 into two components:

- Stage 2a – a 1.7-kilometre extension of the existing City to Gungahlin light rail track from the City to Commonwealth Park via London Circuit (West) and Commonwealth Avenue; and
- Stage 2b – a 9-kilometre light rail track from Commonwealth Park to Woden via State Circle (East).

On 10 September 2019, a redacted version of the *City to Woden Light Rail: Stage 2a City to Commonwealth Park Business Case* (Stage 2a Business Case) was made publicly available. It provided details for the design and construction of light rail between the City and Commonwealth Park and the ongoing operation and maintenance of that component of the light rail system. The Stage 2a Business Case also includes information associated with the economic analysis for Light Rail Stage 2a.

The purpose of the audit was to review the effectiveness of the economic analysis for the Light Rail Stage 2a Business Case.

Conclusions

PROJECT COST ESTIMATES

For the purpose of the economic appraisal, the September 2019 Stage 2a Business Case identified a present value figure of \$162 million (2019, discounted at 7 percent) for capital costs associated with the construction of Light Rail Stage 2a. However, the capital cost of Light Rail Stage 2a is expected to be higher than what was estimated in the Stage 2a Business Case. Capital cost estimates in the Stage 2a Business Case did not include costs associated with retrofitting the existing light rail vehicle fleet with wire-free technology. This cost was estimated at approximately 17 percent of the estimated capital cost. This is a requirement of Commonwealth approval for Light Rail Stage 2a. At the time of the preparation of the Stage 2a Business Case there was a very strong likelihood that wire-free technology would be required for any extensions towards and through the Parliamentary Zone but this cost, and other costs associated with urban design finishes, were not explicitly included in the capital cost estimate for Light Rail Stage 2a.

For the purpose of the economic appraisal, the Stage 2a Business Case identified a present value figure of \$23 million (2019, discounted at 7 percent) for development costs associated with the accelerated development of the Acton Waterfront. A nominal capital cost estimate for this figure was not identified in the Stage 2a Business Case. Inadequate information was provided in the Stage 2a Business Case in relation to the development costs, the methodology for quantification and the assumptions underpinning the estimate.

The expected costs associated with Light Rail Stage 2a, including costs associated with the accelerated development of the Acton Waterfront, should be updated in revised, publicly available documents.

PROJECT BENEFIT ESTIMATES

For the purpose of the economic appraisal, the Stage 2a Business Case identified a present value figure of \$150 million (2019, discounted at 7 percent) in benefits associated with Light Rail Stage 2a. This compared with a present value figure of \$268 million (2019, discounted at 7 percent) of estimated costs for the project.

A significant amount of the benefits identified for Light Rail Stage 2a are predicated on the project being a catalyst for the acceleration of development of the Acton Waterfront. Neither the Stage 2a Business Case or Economic Appraisal Report provides information or evidence on how Light Rail Stage 2a is expected to accelerate development at the site. Should the Acton Waterfront not be developed as fast as is hoped, then the timing and quantification of the expected benefits of Light Rail Stage 2a are at risk.

The economic appraisal was developed in the context of a series of ‘transformational projects’ and revitalisation activities. As well as the Acton Waterfront Development, these other projects include: raising London Circuit to be at-grade with Commonwealth Avenue; and a National Capital Authority proposal to reconfigure Kings and Commonwealth Avenues as grand boulevards and the development of Section 100 (formerly Section 63) at City Hill. The implementation of Light Rail Stage 2a is dependent on the raising of London Circuit and will be influenced by the National Capital Authority’s plans for the Commonwealth Avenue Bridge. Any failure to implement these projects on a timely basis will have a negative impact on the expected benefits of Light Rail Stage 2a.

BENEFITS MANAGEMENT

The Stage 2a Business Case identified a commitment to the development of a Benefits Realisation Plan for Light Rail Stage 2a. This has not occurred. Benefits management activities should be undertaken at the earliest possible stages of a project to ‘ensure that a mindset of accountability and structured approach towards achieving set benefits is embedded from the early stages of planning’. Benefits management activities should include the development and implementation of a Benefits Realisation Plan; the 2016 *Australian Transport Assessment and Planning Guidelines*

envisages that benefits planning occur when options for the transport initiative are being considered and the business case is being developed.

Key findings

PROJECT COST ESTIMATES

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For the purpose of the economic appraisal, the Stage 2a Business Case identified a present value figure of \$162 million (2019, discounted at 7 percent) for capital costs associated with the construction of Light Rail Stage 2a. The Stage 2a Business Case also identifies a nominal capital cost estimate (i.e. not discounted) for Light Rail Stage 2a. The capital cost estimate includes expected construction costs, expected 'rolling stock' cost (the cost of the light rail vehicles), escalation costs (the expected rate at which costs for the project will increase over the life of the project/construction), and a contingency cost. The contingency cost represents a provision for probable cost increases during project implementation for capital costs. The Stage 2a Business Case acknowledges the complexity of the project as a key project risk and notes 'the project has a larger proportional contingency when compared to City-Gungahlin'.

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The Stage 2a Business Case identified that the project's contingency figure was predominantly driven by risks associated with Commonwealth planning approvals and environmental approvals for the project and 'risks associated with third party developments that may impact on the Project, including the raising of London Circuit, land developments such as Section 63 and the Acton Waterfront, as well as road and other infrastructure upgrades'. Since the development of the Stage 2a Business Case in September 2019, it has become apparent that the Australian Government has confirmed the need for Light Rail Stage 2a (and any other extensions through the Parliamentary Triangle) will need to be wire-free, i.e. this risk has materialised. In light of this, it is appropriate for the capital cost estimates for the project to be reviewed and published.

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The Stage 2a Business Case identified that there were other costs that were excluded from the capital cost estimate, including the cost of retrofitting the existing light rail vehicle fleet with wire-free technology. The estimated cost of retrofitting the existing light rail vehicle fleet with wire-free technology equates to approximately 17 percent of the estimated capital cost of Light Rail Stage 2a. At the time of the preparation of the Stage 2a Business Case there was a very strong likelihood that wire-free technology would be required for Light Rail Stage 2a and that to use the existing light rail vehicles on the additional 1.7-kilometre extension, wire-free technology would need to be retrospectively fitted. For example, on 22 October 2018, the Joint Standing Committee on the National Capital and External Territories produced its report of an inquiry into Commonwealth and Parliamentary approvals for the proposed Light Rail Stage 2 and recommendations from the inquiry determined that wire-free technology, visual amenity and urban design considerations were mandatory for the project. These recommendations were agreed-in-principle by the Australian Government. Notwithstanding the strong likelihood that costs associated with wire-free running and urban design finishes would be a requirement of

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Commonwealth approval for Light Rail Stage 2a (and any other light rail routes entering into the Parliamentary Triangle), they were not included in the Light Rail Stage 2a cost estimate. Explicitly identifying these costs would have provided greater accuracy and transparency in the economic appraisal and Cost Benefit Analysis for Light Rail Stage 2a.

Disruption costs relate to disruption during the construction period on road users', pedestrians, residents and businesses. Consistent with the approach taken for the Stage 1 Business Case, the Stage 2a Business Case did not include any potential disruption costs associated with the delivery of Light Rail Stage 2a. Business owners located near where the Gungahlin terminus is now located asserted that Light Rail Stage 1 had caused major road closures and general noise and disturbance in the area and that this had led to a drop in foot traffic and subsequent revenue decline. Given the construction complexities of Light Rail Stage 2a, it could be reasonably expected that there will be disruption costs associated with the project. Douglas Economics advised 'an estimate should be included in the [cost-benefit analysis]. This would be best included as a negative benefit (i.e. with project benefits rather than costs)'. 2.50

For the purpose of the economic appraisal, the Stage 2a Business Case identified a present value figure of \$82 million (2019, discounted at 7 percent) for operating, maintenance and lifecycle costs associated with Light Rail Stage 2a. The Stage 2a Business Case also identifies a nominal operating, maintenance and lifecycle cost estimate (i.e. not discounted) for Light Rail Stage 2a. The cost estimate includes operating costs, maintenance costs, lifecycle costs and a contingency cost. The operating, maintenance and lifecycle costs for Light Rail Stage 2a are calculated over a 14-year operation period, coinciding with the conclusion of the Public Private Partnership that is currently in place with Canberra Metro for Light Rail Stage 1. A review of the operating, maintenance and lifecycle costs for Light Rail Stage 2a against other light rail operations (e.g. the Gold Coast Light Rail and Sydney Inner West Light Rail (Dulwich Hill Line)) shows the estimated unit cost per service and unit cost per passenger compares favourably to other operations, but the unit cost per kilometre is considerably higher. 2.55

For the purpose of the economic appraisal, the Stage 2a Business Case identifies a present value figure of \$23 million for accelerated development costs. No further information is provided in the Stage 2a Business Case in relation to the different components of the development costs and their timing. A nominal value of the development costs is not identified in the Stage 2a Business Case. No further information is provided in the draft Economic Appraisal Report in relation to the development costs, the methodology for quantification and the assumptions underpinning the calculation. 2.61

PROJECT BENEFIT ESTIMATES

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A consultant was engaged to develop patronage and demand forecasts (light rail passenger kilometres, car vehicle kilometres etc), which were then used for the purpose of the economic appraisal. A proprietary model was used to develop the patronage and demand forecasts, which was based on Household Travel Survey data from South East Queensland, Sydney and Melbourne; ideally Canberra-based data 3.22

would have been used for the purpose of forecasting. The patronage and demand forecasts were developed in June 2019, which was before the availability of patronage figures for Light Rail Stage 1. Accordingly, the Economic Analysis Report makes no reference to patronage, construction or operational details of Light Rail Stage 1, which commenced operations in April 2019. Douglas Economics advised ‘it would be opportune to revisit the demand model and revise the forecasts in light of the performance of Stage 1’.

In June 2019 the population, employment, land use and car park pricing assumptions for Light Rail Stage 2 were documented. The report documented the assumptions for twelve scenarios including four light rail alignments for three forecasted years (2026, 2036 and 2046). The alignments included Light Rail Stage 1 and three Light Rail Stage 2 alignment options that extended Stage 1 from Alinga St to Woden via: State Circle, Capital Circle and Barton. However, the June 2019 report did not include the Light Rail Stage 2a alignment presented in the Stage 2a Business Case as a discrete stand-alone option, indicating that it was not separately and explicitly considered. Since the documentation of the assumptions and the development of the Stage 2a Business Case, the COVID-19 pandemic has had an impact on working practices and transport. Notwithstanding the immediate and severe impact on public transport usage in 2020, a ‘new normal’ for working practices and transport in the ACT may become apparent, with more people working in professional services industries becoming accustomed to ‘remote’ working and virtual meetings.

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The Stage 2a Business Case was developed in the context of a series of ‘transformational projects’ and revitalisation activities that influenced the economic appraisal of the Light Rail Stage 2a project. The Stage 2a Business Case notes that Light Rail Stage 2a ‘has been carefully designed to optimise and integrate with planned urban renewal activities and other projects in the precinct’. These interdependent projects include the Acton Waterfront development at West Basin, raising London Circuit to be at-grade with Commonwealth Avenue, a National Capital Authority proposal to reconfigure Kings and Commonwealth Avenues as grand boulevards and the development of Section 100 (formerly Section 63) at City Hill. Should there be any risk to the implementation of these projects, then the expected benefits of Light Rail Stage 2a and the timing of those benefits are at risk.

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A Cost Benefit Analysis methodology was used to undertake the economic appraisal of Light Rail Stage 2a. Cost Benefit Analysis is considered an appropriate technique and is widely used for assessing the economic merits of new transport infrastructure. In September 2019, as part of the Cost Benefit Analysis evaluation, EY provided an Economic Appraisal Report for Light Rail Stage 2a. The purpose of the Economic Appraisal Report was to provide ‘a description of the economic appraisal methodology, parameters and results’ for Light Rail Stage 2 and Light Rail Stage 2a. However, Major Projects Canberra did not receive or request spreadsheets demonstrating the assumptions or calculations supporting the components of the Cost Benefit Analysis, or an economic model, similar to one that was produced for the purpose of Light Rail Stage 1. In relation to what processes Major Projects Canberra had in place to oversight and seek assurance as to the economic analysis that was conducted, Major Projects Canberra advised that it undertook quality assurance activities through its review of draft reports from EY (and the other specialist models and reports) but that its methodology and processes for quality

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assurance of the Cost Benefit Analysis were not documented. The lack of documented methodology and processes for quality assurance of the Cost Benefit Analysis, combined with the absence of spreadsheets demonstrating the calculations or an economic model, impairs Major Projects Canberra’s ability to demonstrate the accuracy and appropriateness of the economic appraisal of Light Rail Stage 2a.

The Benefit Cost Ratio for Light Rail Stage 2a, calculated to two decimal places, was 0.38 excluding Wider Economic Benefits and 0.56 including Wider Economic Benefits. These were rounded up to 0.4 and 0.6 respectively for the Stage 2a Business Case. The Stage 2a Business Case also includes a ‘blended indicative Benefit Cost Ratio’ for: Gungahlin to Woden (Stage 1 and Stage 2 combined); and Gungahlin to Commonwealth Park (Stage 1 and Stage 2a combined). The ‘blended indicative Benefit Cost Ratio’ for both routes was calculated at 1.20 (rounded up from 1.18). The ‘blended indicative Benefit Cost Ratio’ was calculated by Major Projects Canberra independently of EY as its economic advisor. Douglas Economics advised that the ‘blended BCR is novel; no example of blending the result of a past investment with a future investment is known’ and also noted it ‘has no relevance to the [Light Rail Stage 2a] investment decision because the Stage 1 costs are ‘sunk’, i.e. cannot be recovered’.

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For the purpose of the economic appraisal, four scenarios were considered. Each scenario was tested to reflect assumptions over the degree of dependence of the delivery of the Acton Waterfront development on Light Rail Stage 2a. Scenario A was selected as the basis for the Stage 2a Business Case, which assumes that the delivery of Light Rail Stage 2a will accelerate the development of the Acton Waterfront (i.e. bring forward the development with a more compressed construction period) by two years. This resulted in the Benefit Cost Ratio of 0.56 (including land use and wider economic benefits). Scenario C, which assumed that the development of the Acton Waterfront will occur regardless of the construction of Light Rail Stage 2a, resulted in a Benefit Cost Ratio of 0.21 (including land use and wider economic benefits). Under Scenario A, the \$23 million cost of the Acton Waterfront development acceleration compares with an estimated acceleration benefit of \$99 million when compared to Scenario C. \$79 million of the advancement benefit of \$99 million (79.8 percent) relates to city shaping benefits and wider economic benefits; this is a high proportion of the benefits associated with Light Rail Stage 2a.

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A significant amount of the benefits identified for Light Rail Stage 2a are predicated on it being a catalyst for acceleration of development of the Acton Waterfront. Neither the Stage 2a Business Case or Economic Appraisal Report provides information or evidence on how Light Rail Stage 2a is expected to accelerate development at the site. Should the Acton Waterfront not be developed as fast as is hoped, then the expected benefits of Light Rail Stage 2a and the timing of those benefits are at risk. As city shaping benefits and wider economic benefits comprise the majority of the benefits associated with the project, any risks to the accelerated development of the Acton Waterfront will have a significant impact.

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The wider economic benefits for Light Rail Stage 2a are estimated at \$48 million (2019, present value, discounted at 7 percent), which equates to 32 percent of the total value of benefits. Neither the Stage 2a Business Case or Economic Appraisal Report provides any narrative that describes, explains or supports the estimates of

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wider economic benefits. In relation to the use of wider economic benefits for Light Rail Stage 2a, Douglas Economics advised ‘despite two decades of [wider economic benefits] being part of the [cost-benefit analysis] lexicon in the UK, NZ and Australia, debate continues over whether or not [wider economic benefits] have merit. For Australia, the estimation of meaningful agglomeration elasticities has proved elusive with no believable elasticities estimated for Canberra’. Elasticities are economic measures of how sensitive one economic factor is to another.

BENEFITS MANAGEMENT

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A draft Benefits Realisation Plan for Light Rail Stage 2 was developed in October 2019. The draft Benefits Realisation Plan was prepared by the Transport Canberra and City Services Directorate and the Chief Minister, Treasury and Economic Development Directorate. The draft Benefits Realisation Plan for Light Rail Stage 2 was ‘developed alongside the Business Case for the Project’ and noted that ‘as the Project moves into the next stages of detailed design, it is recommended that the BRP be updated accordingly’. The draft Benefits Realisation Plan for Light Rail Stage 2 identified, amongst other things, strategic enablers across a range of Territory directorates noting that ‘realising the full suite of benefits requires a number of Territory directorates to institute a range of policies and strategic enablers’.

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The draft Benefits Realisation Plan for Light Rail Stage 2 included a section for the identification and articulation of benefit metric profiles, which was intended to provide ‘further details for each benefit and dis-benefit metric identified and tracked as part of this [Benefits Realisation Plan]’. The draft Benefits Realisation Plan had many features and details which, if considered and completed rigorously, could have assisted in the effective management of benefits associated with Light Rail Stage 2. However, because of the decision to proceed with Light Rail Stage 2a, the business case for Light Rail Stage 2 and the draft Benefits Realisation Plan for Light Rail Stage 2 was not finalised.

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Benefits management is outlined in the 2016 *Australian Transport Assessment and Planning Guidelines* as an ‘end-to-end’ process that spans across the whole lifecycle of a project. Benefits management activities should be undertaken prior to commencing delivery and also from delivery to the end of an initiative’s lifecycle. The 2016 *Australian Transport Assessment and Planning Guidelines* also outlines the reasoning for embedding and undertaking the benefits management process at the earliest possible stage to ‘ensure that a mindset of accountability and structured approach towards achieving set benefits is embedded from the early stages of planning’. Notwithstanding the commitment to do so in the Stage 2a Business Case, a Benefits Realisation Plan has not been developed for Light Rail Stage 2a. Major Projects Canberra has advised that a Plan is not required under the ACT Government’s Capital Framework and could not be expected to be developed for ‘a short 1.7 km extension to the 12 km Stage 1 alignment’.

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Recommendations

RECOMMENDATION 1 ECONOMIC ANALYSIS

Major Projects Canberra should review and update the economic analysis associated with Light Rail Stage 2a. In doing so, Major Projects Canberra should:

- a) review the assumptions underpinning the economic analysis, including the identified costs and benefits associated with Light Rail Stage 2a, since the publication of the redacted Stage 2a Business Case in September 2019; and
- b) make publicly available the revised and updated economic analysis in an updated Stage 2a Business Case.

RECOMMENDATION 2 DEVELOPMENT COSTS AND BENEFITS

As part of the revised and updated and publicly available economic analysis for Light Rail Stage 2a, Major Projects Canberra should explicitly identify the nature of the development costs and benefits associated with the project. This should include detailed identification of:

- a) the different components of the development costs and their timing, the methodology for quantification and the assumptions underpinning the calculation; and
- b) the different components of the land use and city shaping benefits to be derived from Light Rail Stage 2a and their relationship to the development of the Acton Waterfront.

RECOMMENDATION 3 BENEFITS REALISATION PLAN

The Chief Minister, Treasury and Economic Development Directorate (ACT Treasury), in cooperation with Major Projects Canberra and the Transport Canberra and City Services Directorate, should develop a Benefits Realisation Plan for Light Rail Stage 2a.

Agencies' responses

In accordance with subsection 18(2) of the *Auditor-General Act 1996*, Major Projects Canberra was provided with:

- a draft proposed report for comment. All comments were considered and required changes were reflected in the second draft proposed report;
- a second draft proposed report for further comment. All comments were considered and required changes were reflected in the final proposed report; and
- a final proposed report for further comment.

In accordance with subsection 18(3) of the *Auditor-General Act 1996* the Chief Minister, Treasury and Economic Development Directorate (ACT Treasury) was also provided with an extract of the draft proposed report, second draft proposed report and final proposed report.

As part of the final proposed report process, Major Projects Canberra and the Chief Minister, Treasury and Economic Development Directorate (ACT Treasury) were also asked to provide comments for inclusion in the final report in the Summary chapter. No comments were provided for inclusion in this Summary chapter.